Basic Engineering Science. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: Preparatory

Course Specification

A-Basic Information

Title: ***Mathematics(1-A)*** ***Code Symbol:BES011***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Basic Engineering Science*. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
4	2	----	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
------	100%	-----	------	-------	------	-------	100%

B-Professional Information

2- Course Aims:

This course is designed to give the students a basic idea regarding the principle of Engineering Mathematics and its applications. This course is designed to give the students basic requirements for mathematics education. Students must know the basic principles of mathematics and be able to apply them to engineering problems.

3- Course Objectives:

- Illustrate the philosophy of the differentiation and the importance of finding the differentiation of various type of functions as an essential part of the mathematical background of engineers.
- Explain theory of equations and partial fractions.
- Demonstrate understanding the concepts of binomial theorm, and matrics.
- Demonstrate understanding of the basic principales of limits, continuity, rate of change of functions commonly used in engineering problems.
- Explain the fundamentals of explicit and implicit functions differentiation with successive differentiation and total differentiation.
- Explain the fundamentals of L'Hospital theorm.
- Demonstrate understanding of expansion of functions.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A5	B3	C1	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Classify the functions according to degree, and continuity. a1-2)Demonstrate understanding of concepts for solving different types of simultaneous Algebraic equations. a1-3)Explain binomial theorem. a1-4)Report the basic principales of mathematical induction.
	A5)Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies forsolving Math problems, including derivatives, differential equations. a5-2)Illustrate Methodologies for solving matrics problems. a5-3) Illustrate Methodologies forsolving Math problems , including Partial Fraction
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Examin the solutions obtained by Binomial theorm. b3-2)Solve problems serve to illustrate the studied equations. b3-3)Use the fundamentals of differentiation in engineering applications.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Build a mathematics models and solve problems in engineering applications.
General skills	D9) Refer to relevant literatures..	d9-1)Utilize the IT and literature base resources for Engineering. D9-2)Seek learning opportunities outside the classroom environment.

6- Course Topics.

Topic No.	General Topics (Algebra)	Weeks
1st	Partial Fractions .	1-2
2nd	Mathematical Induction .	3-4
3rd	Theory of equations	5-7
4th	Binomial Theorem	9-11
5th	Matrics	12-15

Topic No.	General Topics (Calculus)	Weeks
1st	Basic definitions of Limits	1
2nd	Main value theorem, graph of polynomials	2
3rd	Basic rules of differentiation	3-4
4th	Differentiation exponential and Logarithmic functions	5
5th	Differentiation of trigonometric and inverse trigonometric functions.	6-7
6^{th}	Differentiation of hyperbolic and inverse hyperbolic functions.	9-11
7^{th}	N^{th} Derivative, total differentiation	12-13
8th	L'Hospital Rule and expansion of functions	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	-Parial fraction. -Differentiation basic definitions and limits.	6	4	2	-	a1-1,a1-2
WEEK-2	-Parial fraction applications. -Main value theorem, graph of polynomials..	6	4	2	-	a1-3
WEEK-3	-Mathematical Induction (Part I). -Basic rules of differentiation	6	4	2	-	a1-4
WEEK-4	-Mathematical Induction (Part II). -Differentiation of uv and u/v	6	4	2	-	b3-1
WEEK-5	-Theory of equation (Part I). -Differentiation exponential and logarithmic functions.	6	4	2	-	b3-2
WEEK-6	-Theory of equation (Part II). -Differentiation of trigonometric	6	4	2	-	b3-1, d9-1
WEEK-7	-Theory of equation (Part III). -Differentiation of inverse trigonometric functions.	6	4	2	-	A5-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	-Binomial Theorem (Part I) -Differentiation of hyperbolic functions (Part I).	6	4	2	-	a1-4
WEEK-10	-Binomial Theorem (Part II) -Differentiation of hyperbolic functions (Part II).	6	4	2	-	a5-1
WEEK-11	-Binomial Theorem (Part III) -Differentiation of inverse hyperbolic functions	6	4	2	-	b3-1
WEEK-12	-Basic properties of matrices -N^{th} derivative	6	4	2	-	b3-1
WEEK-13	-Different methods of finding inverse of matrices -Total differentiation	6	4	2	-	a5-3
WEEK-14	-Eigen values and Eigen vectors -L'Hospital rule.	6	4	2	-	b1-2, c1-1, d9-1
WEEK-15	-Solve system of linear equations using matrices. -Taylor an Maclaurin expansion of functions,	6	4	2	-	a5-2, b3-1, d9-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*			*	*								
	a1-2	*			*	*								
	a1-3	*			*	*								
	a1-4	*			*	*								
	a5-1	*			*	*								
	a5-2	*			*	*								
	a5-3	*			*	*								
Intellectual Skills	b3-1	*			*	*								
	b3-2	*			*	*								
	b3-3	*			*	*								
Professional Skills	c1-1	*			*	*								
General Skills	d9-1		*							*	*			
	d9-2		*							*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	*											
	a1-2	*		*									
	a1-3	*	*	*	*	*		*				*	
	a1-4	*		*		*							
	a5-1	*		*	*								
	a5-2	*	*										
	a5-3	*											
Intellectual Skills	b3-1	*	*	*		*	*						*
	b3-2	*											

	b3-3	*								*			
Professional Skills	**c1-1**	*		*									
General Skills	**d9-1**						*	*	*	*			
	d9-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	100	66.66%	16th
Mid-Term Examination (Written)	40	26.66%	8th
Term work (Tutorial and report assessment)	10	6.66%	Weekly
Total	150	100%	

11- Facilities required for teaching and learning:

11-1 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

12-1 Essential books

1- Thomas and finney Addison, "Calculus and Analytic Geometry", Westey Publishing Company, U.S.A., 2006

2- LB Prasad, "A Text Book of Practical Mathematics (Two Volume)" , Khanna Publishers Delhi – India,1990 .

3-Hamdy A.Taha, "Operations research an iintroduction", 2003

4-Schaum's outlines series calculus, 1974

5-Th.Shifrin, "Multivariable Mathematics", wiley, 2005

6-J.H.Hubbard and B.B.Hubbard, "Vector Calculus, Linear Algebra, and differential Forms", (second edition), Prentice Hall, 2001.

12-2 Periodicals, Web sites, ---- etc.

-Cauchy Schwarz inequality on Wikipedia

http://en.wikipedia.org/wiki/Cauchy-Schwarz_inequality

www.lix.polytechnique.fr/~liberti/kissing-ctw.ps.gz

http://college.cengage.com/mathematics/larson/calculus_analytic/7e/students/

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Course coordinator **Head of the Department**

Dr. Adel Mohamed Elrefaey Prof. Dr. Gamal Ibrahim Mohamed

Basic Engineering Science. Dept. Academic year: 2011-2012
Faculty of Engineering **Academic term: 1st and 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: *Mechanics* ***Code Symbol:*** *BES003*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: Basic Engineering sciences ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	---	50%	50%	-------	------	-------	100%

B-Professional Information

2- Course Aims:

To develop an understanding of the principles of statics, vectors and force systems. To introduce the concepts of free body diagram also, analysis of structures: trusses, frames and machines. Also to know the basic concepts of the dry friction.

3- Course Objectives:

- To understand engineering applications on vectors
- To calculate the group force and momentum of a group of forces
- To study the equilibrium of a body and a group of bodies
- To study and apply principles of friction
- To understand principles of body kinematics

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1	B2,B3,B11	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1- 1) Demonstrate understanding forces and their resultants by scalar and vector approach. a1-2)Recognize ability to draw free body diagrams for systems. a1-3) Explain simplify systems of forces and moments to equivalent systems. a1-4) Explain how to determine internal forces within a system. a1-5)Illustrate the laws of dry friction and their applications. a1-6) Explain relate time, position, velocity, and acceleration of particles using common coordinate systems. a1-7)Choose Newton's law, work energy methods, and impulse momentum methods to Solveparticle kinetics problems. a1-8) Choose vectors to describe the motion of a rigid body undergoing translation, rotation about a fixed axis, and general plane motion. a1-9) Choose Newton's law and work-energy methods to solve kinetics problems involving coplanar motion of a rigid body. a1-10) Demonstrate understanding the intersection of forces and moments with motion variables: position, velocity, and acceleration.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Design time, position, velocity, and acceleration of particles. b2-2) Solve particle kinetics problems using Newton's second law. b2-3) Formulate the interaction of forces and moments with motion variables: position, velocity, and acceleration.
	B3) Think in a creative and innovative way in problem solving and design.	b3-1) Design idealize practical problems by mathematical models.
	B11) Analyze results of numerical models and assess their limitations.	b11-1)Analyze simple structures such as beams, trusses, frames and mechanical systems. b11-2)Develop the analytical skills to solve equilibrium problems involving particles and rigid bodies.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Use the various branches of mechanics and the difference between the statics and dynamics. c1-2) Express force in a Cartesian vector form c1-3)Resolve a force into components along specified directions. c1-4)Use the dot product to determine the angle between the two vectors. c1-5)Express force in a Cartesian vector form. c1-6)Resolve a force into components along specified directions.
General skills	D3) Communicate effectively.	d3-1 Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to statics, Mechanics, the subject and axioms of statics, Newton's three laws of motion, Newton's law of gravitational attraction, moment of force about a point O, replacement of a force by a force and couple.	1
2nd	Force Vector, Force resultant in two dimensions, scalar and vectors, types of vectors, operations on vectors.	2
3rd	Parallelogram law, addition of rectangular force components, the dot and cross product, some examples of dot product and examples of the cross product (moment of force)	3
4th	Force resultant in three dimensions, (converging and non-converging forces).	4
5th	Plane system of converging forces, The composition of two forces applied at a single point, the projection of a geometric sum of vectors on an axis.	5
6th	An analytical method for determination of a resultant of a plane system of converging forces and graphical methods (polygon of forces).	6
7th	Conditions of equilibrium of a plane system of converging forces, a theorem on the equilibrium of three non parallel forces lying in one plane.	7
8th	Plane system of non-converging forces, the composition of two parallel forces acting in the same direction, the composition of two forces unequal in magnitude and acting in opposite direction	9
9th	Non-concurrent coplanar forces, methods for determining the resultant, analytical methods and graphical method (Funicular or string polygon), conditions for equilibrium for system of non converging forces.	10
10th	Plane trusses, simple truss, stresses, Bow's notation, support reactions and free body diagram, zero force members, methods for solving the trusses.	11
11th	Analytical method of isolated joints. Methods of sections.	12
12th	Cantilever truss and graphical methods.	13
13th	Frames and machines, applications for equations of equilibrium.	14
14th	Friction, types of friction, the laws of sliding friction and the laws of rolling friction.	15
15th	Introduction to dynamics, Background, basic concepts, Newton's laws, engineering and mechanics, and methods for solving problems.	16
16th	Kinematics of particles, 1. rectilinear motion, basic concepts such as position, velocity, and acceleration, distance , displacement and speed.	17
17th	Determination of the motion of the particle.	18
18th	Graphical solution of rectilinear motion.	19
19th	Curvilinear motion, Basic concepts, position vector, velocity and acceleration. Rectangular components of the velocity and acceleration.	20
20^{th}	Application on the rectangular components of velocity and acceleration, Projectiles.	21
21th	Tangential and normal components, radial and transverse components of the velocity and acceleration, cylindrical and spherical coordinates.	22
22th	Motion of several particles, dependent motion and relative motion of two particles.	24
23th	Kinematics of particles, Newton's second law of motion, Linear momentum of a particle, systems of units, and equations of motion in rectangular coordinates including friction force.	25
24^{th}	Newton's second law of motion in tangential and normal components and radial and transverse components.	26
25th	Work of a force, work exerted by constant force, weight force, spring force, and principle of work and energy.	27
26th	Power and efficiency	28
27th	Principle of impulse and momentum.	29
28th	Direct central impact, and Oblique central impact	30

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Introduction to statics, Mechanics, the subject and axioms of statics, Newton's three laws of motion, Newton's law of gravitational attraction, moment of force about a point O, replacement of a force by a force and couple.	4	2	2	-	a1-1,a1-2,a1-3, a1-4,a1-5,a1-6, b2-1,b2-2,b2-3, c1-1
WEEK-2	Force Vector, Force resultant in two dimensions, scalar and vectors, types of vectors, operations on vectors.	4	2	2	-	a1-3,a1-4,a1-5, a1-6,a1-7, b2-3
WEEK-3	Parallelogram law, addition of rectangular force components, the dot and cross product, some examples of dot product and examples of the cross product (moment of force)	4	2	2	-	a1-8,b2-3, c1-2
WEEK-4	Force resultant in three dimensions, (converging and non-converging forces).	4	2	2	-	a1-8,b2-3
WEEK-5	Plane system of converging forces, The composition of two forces applied at a single point, the projection of a geometric sum of vectors on an axis.	4	2	2	-	a1-8,a1-9,a1-10, b2-3
WEEK-6	An analytical method for determination of a resultant of a plane system of converging forces and graphical methods (polygon of forces).	4	2	2	-	a1-9,a1-10,b11-1
WEEK-7	Conditions of equilibrium of a plane system of converging forces, a theorem on the equilibrium of three non parallel forces lying in one plane.	4	2	2	-	a1-9,a1-1,b2-3, c1-2
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Plane system of non-converging forces, the composition of two parallel forces acting in the same direction, the composition of two forces unequal in magnitude and acting in opposite direction	4	2	2	-	a1-9,a1-10,b2-3
WEEK-10	Non-concurrent coplanar forces, methods for determining the resultant, analytical methods and graphical method (Funicular or string polygon), conditions for equilibrium for system of non converging forces.	4	2	2	-	a1-9,a1-10,b2-3, c1-5
WEEK-11	Plane trusses, simple truss, stresses, Bow's notation, support reactions and free body diagram, zero force members, methods for solving the trusses.	4	2	2	-	a1-9,a1-10,b2-3, c1-3
WEEK-12	Analytical method of isolated joints. Methods of sections.	4	2	2	-	a1-9,a1-10, b11-2, c1-3
WEEK-13	Cantilever truss and graphical methods.	4	2	2	-	a1-2, a1-9,a1-10, b3-1, d5-1
WEEK-14	Frames and machines, applications for equations of equilibrium.	4	2	2	-	a1-9,a1-10, b11-2, d5-1
WEEK-15	Friction, types of friction, the laws of sliding friction and the laws of rolling friction.	4	2	2	-	a1-9,a1-10, b11-2
WEEK-16	Introduction to dynamics, Background, basic concepts, Newton's laws, engineering and mechanics, and methods for solving problems.	4	2	2	-	a1-9,a1-10, b2-1, b3-1, c1-5, c1-6

WEEK-17	Kinematics of particles, 1. rectilinear motion, basic concepts such as position, velocity, and acceleration, distance , displacement and speed.	4	2	2	-	a1-9,a1-10, b2-3, c1-5, c1-6
WEEK-18	Determination of the motion of the particle.	4	2	2	-	a1-9,a1-10, b3-1, b11-2,
WEEK-19	Graphical solution of rectilinear motion.	4	2	2	-	a1-9,a1-10, b11-1, c1-1, d5-1
WEEK-20	Curvilinear motion, Basic concepts, position vector, velocity and acceleration. Rectangular components of the velocity and acceleration.	4	2	2	-	a1-9,a1-10, b2-1, b3-1, c1-3, c1-4
WEEK-21	Application on the rectangular components of velocity and acceleration, Projectiles.	4	2	2	-	a1-9,a1-10, b2-1, b3-1,
WEEK-22	Tangential and normal components, radial and transverse components of the velocity and acceleration, cylindrical and spherical coordinates.	4	2	2	-	a1-9,a1-10, b2-1, b3-1
WEEK-23	**MIDTERM OF SECOND TERM (WRITTEN EXAMINATION)**					
WEEK-24	Motion of several particles, dependent motion and relative motion of two particles.	4	2	2	-	a1-9,a1-10, b2-1, b3-1
WEEKS-25	Kinematics of particles, Newton's second law of motion, Linear momentum of a particle, systems of units, and equations of motion in rectangular coordinates including friction force.	4	2	2	-	a1-9,a1-10, b2-2, b2-3, b3-1, c1-5, c1-6
WEEKS-26	Newton's second law of motion in tangential and normal components and radial and transverse components.	4	2	2	-	a1-9,a1-10, b2-2, c1-5, c1-6
WEEKS-27	Work of a force, work exerted by constant force, weight force, spring force, and principle of work and energy.	4	2	2	-	a1-9,a1-10, b2-2, c1-5, c1-6
WEEK-28	Power and efficiency	4	2	2	-	a1-9,a1-10,b11-2,
WEEK-29	Principle of impulse and momentum.	4	2	2	-	a1-9,a1-10, b2-3
WEEK-30	Direct central impact, and Oblique central impact	4	2	2	-	a1-9,a1-10, b3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a1-2	*	*	*	*	*	*	*		*	*			*
	a1-3	*	*	*	*	*	*	*		*	*			*
	a1-4	*	*	*	*	*	*	*		*	*			*
	a1-5	*	*	*	*	*	*	*		*	*			*
	a1-6	*	*	*	*	*	*	*		*	*			*
	a1-7	*	*	*	*	*	*	*		*	*			*
	a1-8	*	*	*	*	*	*	*		*	*			*
	a1-9	*	*	*	*	*	*	*		*	*			*
	a1-10	*	*	*	*	*	*	*		*	*			*
Intellectual Skills	b2-1	*	*	*	*	*	*	*		*	*	*	*	
	b2-2	*	*	*	*	*	*	*		*	*	*	*	
	b2-3	*	*	*	*	*	*	*		*	*	*	*	
	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b11-1	*		*	*	*	*	*		*		*	*	
	b11-2	*		*	*	*	*	*		*		*	*	
Professional Skills	c1-1	*	*	*	*	*	*	*		*	*		*	
	c1-2	*	*	*	*	*	*	*		*	*		*	
	c1-3	*	*	*	*	*	*	*		*	*		*	
	c1-4	*	*	*	*	*	*	*		*	*		*	
	c1-5	*	*	*	*	*	*	*		*	*		*	
	c1-6	*	*	*	*	*	*	*		*	*		*	
General Skills	d3-1	*	*	*	*	*	*	*		*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	*	*	*			*	*	*	*	*	*	
	a1-2	*	*	*			*	*	*	*	*	*	
	a1-3	*	*	*			*	*	*	*	*	*	
	a1-4	*	*	*			*	*	*	*	*	*	
	a1-5	*	*	*			*	*	*	*	*	*	
	a1-6	*	*	*			*	*	*	*	*	*	
	a1-7	*	*	*			*	*	*	*	*	*	
	a1-8	*	*	*			*	*	*	*	*	*	
	a1-9	*	*	*			*	*	*	*	*	*	
	a1-10	*	*	*			*	*	*	*	*	*	
Intellectual Skills	B2-1	*		*	*	*	*	*		*		*	
	B2-2	*		*	*	*	*	*		*		*	
	B2-3	*		*	*	*	*	*		*		*	
	B3-1	*	*	*	*	*	*	*	*	*	*		
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c1-2	*	*	*	*		*	*	*	*	*	*	
	c1-3	*	*	*	*		*	*	*	*	*	*	
	c1-4	*	*	*	*		*	*	*	*	*	*	
	c1-5	*	*	*	*		*	*	*	*	*	*	
	c1-6	*	*	*	*		*	*	*	*	*	*	
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	140	70%	30th
Mid-Term Examination of First Term (Written)	20	10%	8th
Term work (Tutorial and report assessment)	20	10%	Weekly
Mid-Term Examination of Second Term (Written)	20	10%	23th
Total	200	100%	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

Computer Laboratory is used to help the students for using graphic Software.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

R. C. Hibbeler; "Engineering mechanics, statics" Prentice Hall, 2004

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Course coordinator	**Head of the Department**
Dr. Isalm Mohamed Desoki	Prof. Dr. Gamal Ibrahim Mohamed

Basic Engineering Science. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Physics(1-A)*** ***Code Symbol:BES012***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*----*	*2*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	60%	20%	------	-------	20%	-------	100%

B-Professional Information

2- Course Aims:

- The aim of this course is to ensure that all students have a basic knowledge and understanding of elementary physics that is not covered in other courses
- also to provide them with basic cognitive and practical skills required for future study.
- Study of physics not only contributes to students understanding of the physical environment,
- it also develops their abilities to reason analytically and to test hypotheses.
- These abilities are useful in many fields other than physics

3- Course Objectives:

- Introduce the students to the basic concepts of units, gravitation and the properties of matter and their engineering applications.
- Give knowledge of fundamentals of mechanical properties of matter and properties of fluids.
- Develop a good understanding of topics of temperature, heat and thermodynamics and their engineering applications.
- Derive the fundamental laws of the properties of matters, heat and thermodynamics and their engineering applications.
- Provide the concepts of acoustic Phenomena.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A3	B2,B3	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)**Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) List the importance of units, dimensions and gravitation . a1-2)Compare similarities and differences between fluid statics and fluid dynamics and their engineering applications . a1-3)Report the mechnical properties of matter and coustic phenomena . a1-4)Recognize the basic principales of the properties of matter, heat, thermodynamics, and their engineering applications.
	A3)Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1) Demonstrate the origin of elastic properties of material .
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Show the validity of all the used equations using the unites and dimensional analysis. b2-2)Analyze the basic laws of the properties of matters, heat, acoustics and thermodynamics and apply them in the engineering applications.
	B3) Think in a creative and innovative way in problem solving and design	b3-1) Thinking about new application of fluid dynamics . b3-2) Discuss scintific problems in field of properties of matters, gravitation, heat and thermodynamics and solve them.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Check the unites and dimensions of all studied physical quantities . c1-2)Verify exprementally the basic laws of the properties of matters and gravitation. c1-3)Examine the basic concepts of heat and thermodynamics and their engineering applications. c1-4)Construct and examine some of experiments in the field of the properties of matters, heat, acoustics and thermodynamics in physics Laboratory .
General skills	D3) Communicate effectively.	d3-1)Collect data and scientific materials from text book . d3-2) Work in team to conduct an experiment in physics laboratory . d3-3)Communicate effectively and deals with others. d3-4) Seek learning opportunities outside the classroom environment. d3-5)Improve the engineering profession and thinking..

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Units and Dimensions .	1
2nd	Gravitation, Newton's law, kepler's laws.	2
3rd	Elastic properties of solid, Hook's law, elasticity modulus and its types .	3
4th	Fluid mechanics, pressure, fluid statics, Fluid dynamics, Bernoulli's equitation and its application .	4-6
5th	Zero law of thermodynamics, Temperatures, Thermal expansion .	7

6th	Heat and heat transfer .	9
7th	Kinetic theory of gases .	10
8^{th}	First law of thermodynamics and its application.	11-12
9^{th}	Heat engines, Entropy and second law of thermodynamics .	13
10th	Geometrical optics	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Units and Dimensions .	5	3	--	2	a1-1, b3-1, c1-1, d3-1
WEEK-2	Gravitation, Newton's law,.	5	3	--	2	a1-2,b2-1, b3-2, c1-2
WEEK-3	kepler's law, gravitational force.	5	3	--	2	a3-1, b5-1,b5-2, c1-1
WEEK-4	Elastic properties of solid, Hook's law, elasticity modulus and its types .	5	3	--	2	a1-3, a3-1, b2-1, b3-2 c1-2, d3-2
WEEK-5	Fluid mechanics, pressure, Fluid dynamics.	5	3	--	2	a1-2, b2-2, b3-2, c1-4
WEEK-6	Bernoulli's equitation and its a application .	5	3	--	2	a1-2, b2-2, b3-2, c1-4
WEEK-7	Zero law of thermodynamics, Temperatures, Thermal expansion .	5	3	--	2	a1-4, b2-1, b3-2, c1-3 c1-4, d3-2, d3-3, d3-4
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Heat and heat transfer .	5	3	--	2	a1-4, b2-2, b3-2, c1-4 d3-2, d3-3, d3-4
WEEK-10	Kinetic theory of gases.	5	3	--	2	a1-3,a1-4,b2-2,b3-2, c1-3,d3-1,d3-2,d3-3
WEEK-11	First law of thermodynamics	5	3	--	2	a1-3,a1-4,b2-1,b2-2, c1-3, d3-4,d3-5
WEEK-12	Applications of first law of thermodynamics.	5	3	--	2	a1-3, a1-4, b5-1, b5-2 c1-5, c1-6, c1-9, d7-1 d7-2,d7-3
WEEK-13	Heat engines, Entropy and second law of thermodynamics .	5	3	--	2	a1-3,a1-4,b2-2,b3-2, c1-3, c1-4,d3-1,d3-2
WEEK-14	Geometrical optics (Part I).	5	3	--	2	a1-3,a1-4,b2-2,b3-2, c1-3,c1-4,d3-4,d3-5
WEEK-15	Geometrical optics (Part II).	5	3	--	2	A1-3,a1-4,b2-2,b3-2, c1-3,c1-4,d3-4,d3-5

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a 1-2	*	*	*	*	*	*	*		*	*			*
	a1-3	*	*	*	*	*	*	*		*	*			*
	a1-4	*	*	*	*	*	*	*		*	*			*
	a3-1	*		*	*	*				*	*		*	
Intellectual Skills	b2-1	*	*	*	*	*		*		*	*		*	*
	b2-2	*	*	*	*	*		*		*	*		*	*
	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c1-3	*	*	*	*	*	*	*	*	*	*		*	
	c1-4	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d3-1	*	*	*	*	*	*	*	*	*	*			
	d3-2	*	*	*	*	*	*	*	*	*	*			
	d3-3	*	*	*	*	*	*	*	*	*	*			
	d3-4	*	*	*	*	*	*	*	*	*	*			
	d3-5	*	*	*	*	*	*	*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	*	*				*	*	*	*	*	*	
	a 1-2	*	*				*	*	*	*	*	*	
	a1-3	*	*				*	*	*	*	*	*	
	a1-4	*	*				*	*	*	*	*	*	
	a3-1	*	*				*	*		*	*		
Intellectual Skills	b3-1	*	*		*	*	*	*		*	*		
	b3-2	*	*		*	*	*	*		*	*		
	b3-1	*	*				*	*		*	*		
	b3-2	*	*				*	*		*	*		
Professional Skills	c1-1	*	*		*		*	*	*	*	*	*	
	c1-2	*	*		*		*	*	*	*	*	*	
	c1-3	*	*		*		*	*	*	*	*	*	
	c1-4	*	*		*		*	*	*	*	*	*	
General Skills	d3-1	*			*		*	*	*	*		*	
	d3-2	*			*		*	*	*	*		*	
	d3-3	*			*		*	*	*	*		*	
	d3-4	*			*		*	*	*	*		*	
	d3-5	*			*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	75	60%	16th
Mid-Term Examination(Written)	20	16%	8th
Term Laboratory Assessment	20	16%	15th
Term work (Quizzes, Tutorial and report assessment)	10	8%	Every weeks
Total	100	100%	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Serway Jewett; "Physics for scientists and engineers";6th edition, 2004.
2- Halliday and Resnick, "Introduction to Physics", 6 th edition, 2001.
3- M.N.Avadhanulu and P.G.Kshirsagar, Engineering physics , 2010.
4- George shortly& Dudley Williams,"Elements of physics", 4 th edition, 1965.
5- F. W Sears. M. W. Zemansky and H. D Young, University physics , 6 th edition, 1982.
6- Frederick J. Bueche, Introduction to physics for scientists and Engineers , 4 th edition, 1980.
7- Douglas C. **Giancoli** ,Physics for scientists and Engineers with modern physics, 2 nd edition, 2000.

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Course coordinator **Head of the Department**

Prof. Dr. Kamel M El-ShokrofyProf. Dr. Gamal Ibrahim Mohamed Ali
Dr.Kasim El Sayed Rady

Basic Engineering Science. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Chemistry*** ***Code Symbol:BES013***
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course:Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*----*	*2*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	20%	20%	40%	-------	20%	-------	100%

B-Professional Information

2- Course Aims:

The aims of this course are to provide the students, full understanding regarding the chemical phenomena such as the ideal gases and its applications in the real life, the basic concepts of the electrochemistry. Attain the knowledge of the solutions and how it is formed and its presence in nature. In addition, give an introduction to structure of metals and alloys in the solid state. Moreover, presenting types of pollution such as water and air pollution and their effects on the environment besides the methods of combating them. It is alsoaimed to study of the building materials industry systems, such as cement, glass and bricks manufacturing and study the petrochemicals and polymers. Understand the basics of dynamic equilibrium in chemical engineering.

3- Course Objectives:

- Demonstrate of the knowledge and understanding of choosing specific fuel and its nature and quality.
- Defination of the corrosion and how to protect the metals from corrosion.
- Realizing of the different types of alloys and its formation.
- Evaluation of water and air quality and its different types of pullution.
- Review of the fundamental of dynamic equilibrium.
- Record the types of bricks, glass and cement as structural materials.
- Analysis the main types of synthetic polymers, their uses in our life.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A3,A5,A11	B2,B9	C5,C8,C12	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) **Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Describe the principale of ideal gases, solutions and dynamic equilibrium. a1-2)Recognize the reasons of corrosion and electrochemistry. a1-3)Identify the raw materials of constructing materials.
	A3) Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1)Demonstrate basic charateristics of solutions.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1)Identify the different types of alloys preparation. a5-2)Identify the protection requirement for metals from corrosion. a5-3)Recognize the main sources of air and water pollution.
	A11) Recognise Professional ethics and impacts of engineering solutions on society and environment	a11-1)Define the problems of air and water pollution and differential protection schemes. a11-2)Recognize the solutions and types.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Select the suitable protective sheme for different environmental pollution. b2-2)Analyze the corrosion sources and protection ways.
	B9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1)Select the structral materials which suits definite cases. b9-2)Investigate the protections ways from corrosion. b9-3)Think for innovative ways to protect from water and air pollution.
Professional skills	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments related to corrosion, electrochemistry, alloys, Manufacture material, petrochemicals and Dynamic Equilibrium in Chemical Engineering.
	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	c8-1) Practice and analyze problems on fuel and combusion. c8-2)Analyze the problems concerning cement industry.
	C12) Prepare and present technical reports.	c12-1) Prepare and present technical reports of heaters and cooling curves in dynamic equilibrium, and methods drawing alloys cooling curves.
General skills	D9) Refer to relevant literatures.	d9-1) Refer to standard methods for examination waster and wastewater. d9-2)refer to an introduction to metallic corrosion.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Ideal gases, fuel and comustion.	1-2
2nd	Solutions.	3-4
3rd	Electrochemistry and Corrosion .	5-6
4th	Alloys .	7
5th	Air Pollution and water treatment .	9
6th	Manufacture materials and petrochemicals.	10
7th	Dynamic Equilibrium in Chemical Engineering .	11-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	The State of mater, gases equation, Charts equation, Gorham equation, Dalton's equation for parial pressure, relative humidity, air conditioning.	4	2	--	2	a1-1
WEEK-2	Kinetic theory of gases, Boil's law, Avogadro assumption, fuel and combustion.	4	2	--	2	a1-1,c8-1
WEEK-3	Types of solutions, basic characteristics of solutions.	4	2	--	2	a3-1, a11-2
WEEK-4	Galavanic cells, electode potential, Nernst equation, concentration cells, electrolytic cells, decomposition potential and its applications .	4	2	--	2	a1-2,b2-2
WEEK-5	Technical electrochemical processes, corrosion, factors affecting on corrosion.	4	2	--	2	a1-2,b2-2, c5-1
WEEK-6	Basics of corrosion, methods of protecting metals from corrosion.	4	2	--	2	a1-2,a5-2,b9-2, c5-1
WEEK-7	Alloys and its composition, methods of alloys analysis, methods drawing alloys cooling curves.	4	2	--	2	a5-1, c12-1, c5-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Air Pollution types, sources.	4	2	--	2	a5-3,a11-1,b2-1, b9-3
WEEK-10	Sources of water hardness, types of water hardness, impurities in water	4	2	--	2	a5-3, d9-1
WEEK-11	Qualification of water used in boilers, types of water treatment.	4	2	--	2	a5-3, d9-3
WEEK-12	Water softening, outside boilers treatment, inside boiler water treatment, advanced water treatment methods, problems of water treatment. .	4	2	--	2	a1-3,a11-1,b2-1, c5-1
WEEK-13	Cement industry, brick manufacture, glass industry.	4	2	--	2	a1-3,b9-1,c8-2
WEEK-14	Petrochemicals, polymers and its manufacture .	4	2	--	2	a1-3, c5-1
WEEK-**15**	Heaters and cooling curves in dynamic equilibrium, phase rule, equilibrium equations, hydrolysis buffer solutions .	4	2	--	2	a1-1, c5-1, c12-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*				*								
	a1-2	*				*								
	a1-3	*												
	a3-1	*		*		*				*	*		*	
	a5-1	*				*								
	a5-2	*				*				*				
	a5-3	*												
	a11-1	*												
	a11-2	*												
Intellectual Skills	b2-1	*				*								
	b2-2									*				
	b9-1	*												
	b9-2	*												
	b9-3									*		*		
Professional Skills	c5-1	*		*		*	*	*	*	*	*		*	*
	c8-1	*				*								
	c8-2	*	*							*	*			
	c12-1	*	*	*		*	*	*	*	*	*			*
General Skills	d9-1	*	*							*	*			
	d9-2	*	*							*	*			

<u>9- Teaching and Learning Methods for Low Capacity and Outstanding Students:</u>

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a1-1**	*											
	a1-2	*											
	a1-3	*	*		*			*			*	*	
	a3-1	*	*				*	*		*	*		
	a5-1	*				*							
	a5-2	*			*						*		
	a5-3	*	*		*	*	*				*		*
	a11-1	*											
	a11-2	*			*	*					*		
Intellectual Skills	**b2-1**	*	*				*	*	*	*			
	b2-2	*					*		*	*			
	b9-1	*											
	b9-2	*	*										
	b9-3	*					*						
Professional Skills	**c5-1**	*	*		*		*		*	*	*		
	c8-1	*											
	c8-2	*				*							
	c12-1	*	*		*		*	*	*	*	*		
General Skills	**d9-1**	*	*				*						
	d9-2	*											

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**60**	**60%**	**16th**
End of Term assessment (oral)	**10**	**10%**	**8th**
End of term Laboratory examination	**10**	**10%**	**16th**
Mid-Term Examination(Written)	**10**	**10%**	**8th**
Quizzes	**5**	**5%**	**Every two weeks**
Homework and report (Term work)	**5**	**5%**	**weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

Students are expected to prepare and conduct some laboratory exprements relating to the analytical chemistry..

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- Alph Awwa Wef, "Standard methods for examination of water and wastewater", 18th ed., 1992.

2- J.M. Coulson, J.F.Richardson, Coulson & Richardson's chemical engineering, Volume 1, 6th ed., Elsevier, 1999

3-P.N.Cheremisinoff, "Handbook and wastewater treatment technonlogy", 103-117, Marcel Deckker Inc., New York, 1995

4-G. Kiely, "Environmental engineering", 437-493, McFraw-Hill Publisher, 1997

5-Ulick R. Evans, "An introduction to Metallic Corrosion", Edward Arnold, London, UK, 1948.

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Course coordinator **Head of the Department**

Dr. Reda Ali Abo-ElazemProf. Dr. Gamal Ibrahim Mohamed Ali

Dr.Shehrazad Youssef Ezzeldeen

Production and Mech. Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st and 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Engineering Drawing&Projection*** *Code Symbol:* ***PRE001***
Element of program: *Major* *Date of specification approval:* *2011*
Department offering the course: *Production and Mech. Eng. Dept.* *By law 2006*

Lecture	Tutorial	Laboratory	Total
2	4	----	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
------	16.66%	50%	16.66%	-------	16.66%	-------	100%

B-Professional Information

2- Course Aims:

This course integrates the basic theories in the Engineering drawing and projection .

3- Course Objectives:

- To give the student a correct understanding of the fundamentals of engineering drawing
- To give the student the ability of thinking in three dimensions.
- To give the student the ability of visualize quickly and accurately to build a clear mental image about objects.
- To give the student the ability of preparing engineering drawings for different designed objects.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A4	B3	C12	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Know and Understand Geometric constructions . a1-2) Know and Understand Engineering projection . a1-3) Know and Understand Steel sections . a1-4) gain experience to draw .
	A4)Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a4-1) gain experience to solve most of structural problems .
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1) Drawing the machine parts by isometric and multi-views Projections b3-2) Drawing steel sections . b3-3)Projection of point, lines and intersection of shapes .
Professional skills	C12) Prepare and present technical reports.	c12-1) Access the internet and search for Help the engineers in general to draw any Parts or sections .
General skills	D3) Communicate effectively.	d3-1 Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Drawing Instruments	1
2nd	Geometric constructions	2
3rd	Introduction of Engineering drawing	3
4th	Geometrical constructions	4-5
5th	Orthographic projections of Eng. Bodies	6-7
6th	Isometric of bodies	9,11
7th	Mechanical joints	12-13
8th	Construction of Isometric from projection	14-15
9th	Assembly drawing and sectional projection	16-19
10th	Projection of point, lines and planes	20-22
11th	Steel structure and joints	24-25
12th	Orthographic or Multi-view projection	26
13th	Isometric projection	27-28
14th	Drawing the sections in parts	29
15th	Drawing steel sections	30

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Drawing Instruments	6	2	4	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEK-2	Geometric constructions	6	2	4	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEK-3	Introduction of Engineering drawing	6	2	4	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-4,5	Geometrical constructions	12	4	8	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-6,7	Orthographic projections of Eng. Bodies	12	4	8	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9-11	Isometric of bodies	18	6	12	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-12-13	Mechanical joints	12	4	8	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-14-15	Construction of Isometric from projection	12	4	8	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-16-19	Assembly drawing and sectional projection	24	8	16	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-20-22	Projection of point, lines and planes	18	6	12	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEK-23	**MIDTERM OF SECOND TERM (WRITTEN EXAMINATION)**					
WEEKS-24,25	Steel structure are joints	12	4	8	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-26	Orthographic or Multi-view projection	6	2	4	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEKS-27-28	Isometric projection	12	4	8	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEK-29	Drawing the sections in parts	6	2	4	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1
WEEK-30	Drawing steel sections	6	2	4	-	a1-1, a1-2, a1-3, a1-4, b3-1, b3-2, b3-3, c12-1, d3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a1-2	*	*	*	*	*	*	*		*	*			*
	a1-3	*	*	*	*	*	*	*		*	*			*
	a1-4	*	*	*	*	*	*	*		*	*			*
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
	b3-3	*	*	*	*	*	*	*		*	*	*	*	*
Professional Skills	c12-1	*	*	*	*	*	*	*	*	*	*			*
General Skills	d3-1	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	*		*			*	*	*	*		*	
	a1-2	*		*			*	*	*	*		*	
	a1-3	*		*			*	*	*	*		*	
	a1-4	*		*			*	*	*	*		*	
Intellectual Skills	b3-1	*		*	*	*	*	*	*	*			
	b3-2	*		*	*	*	*	*	*	*			
	b3-3	*		*	*	*	*	*	*	*			
Professional Skills	c12-1	*		*	*		*	*	*	*			

General Skills	**d3-1**	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**180**	**60%**	**30th**
Mid-Term Examination of First Term (Written)	**40**	**13.33%**	**8th**
Term work (Tutorial and report assessment)	**40**	**13.33%**	**Weekly**
Mid-Term Examination of SecondTerm (Written)	**40**	**13.33%**	**23th**
Total	**300**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for programs such as Autocad, Graphics

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Machine Drawing by P.S. Gill-Katson publishing House 1983

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Course coordinator — **Head of the Department**

Prof. Dr. Taha Ali El-Tawil — Prof. Dr. Taha Ali El-Tawil

Basic Engineering Science. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st and 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: *English language* ***Code Symbol:*** *BES004*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Production and Mech. Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
----	2	----	2

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
100%	------	-----	-----	-------	------	-------	100%

B-Professional Information

2- Course Aims:

To provide the knowledge and skills required to read, speak and write proper scientific English. Exploring the importance of figurative language, typical English writing errors, Effective reading skills, organizing written materials.

3- Course Objectives:

- To gain the knowledge about history, divisions and main subjects of Engineering
- To understand scientific English in a proper manner, with special reference to Engineering and other associated fields.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A9,A10	B4	C12	D3,D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A9)Discuss Topics related to humanitarian interests and moral issues.	a9-1)Give oral presentations using a variety of visual aids
	A10)Write report with technical language	a10-1) demonstrate knowledge to Introduction to Scientific Statements. a10-2)Demonstrate knowledge and understanding of Dimensions and Properties Dimensions

Intellectual skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1)write and arrange scientific engineering materials. b4-2)Give oral presentations using a variety of visual aids
Professional skills	C12) Prepare and present technical reports.	c12-1)Read, prepare and write scientific reports. c12-2)Give oral presentations using a variety of visual aids
General skills	D3) Communicate effectively.	d3-1)Communicate effectively with colleagues and others, using both written and oral methods. d3-2) Working effectively as a member in a multi-disciplinary team. d3-3)Give oral presentations using a variety of visual aids.
	D9) Refer to relevant literatures.	d9-1) Retrieve information and organize data. d9-2)Collect data, draw, (block diagram, charts, curves) and interpret data.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Preview on the English Language First Principals	1
2nd	Principals on Writing the Effective Sentence and Check Its Grammars	2
3rd	Combinations and Reductions	3
4th	The Accuracy and Combinations	4
5th	Variability, Insist on the Meaning	5
6th	The Principal on Writing the Effective Paragraph	6
7th	Different Way for Interviewing between Persons	7
8th	Using some Verbs with Similar Meaning	9
9th	Sensitivity and Diplomatic in Request	10
10th	Easy Reading	11
11th	Writing and Arrange the Subject Form	12-13
12th	Review and Editing	14-15
13th	Introduction to Scientific Statements *Be* and *have* in scientific statements Statements requiring the Present Simple Exercises	16-17
14th	Dimensions and Properties Dimensions Properties 'Fronted' statements Qualified Statements of Dimensions Exercises	18-19
15th	Comparisons and Modals Simple statements of comparison Qualified comparative statements A note on modals in scientific English	20-22
16th	Impersonal Scientific Statements The Passive Form of the passive Use of the passive *By* and the agent *Must, should*, and the passive Passives and infinitives Passive and active	24,27
17th	Technical Readings Four different Engineering topics	28-30

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Preview on the English Language First Principals	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-2	Geometric constructions	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-3	Introduction of Engineering drawing	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-4	Principals on Writing the Effective Sentence and Check Its Grammars	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-5	Combinations and Reductions	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-6	The Accuracy and Combinations	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-7	Variability, Insist on the Meaning	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Using some Verbs with Similar Meaning	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-10	Sensitivity and Diplomatic in Request	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-11	Easy Reading	2	---	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-12-13	Writing and Arrange the Subject Form	4	---	4	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-14-15	Review and Editing	4	---	4	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-16,17	Introduction to Scientific Statements Be and have in scientific statements Statements requiring the Present Simple Exercises	4	---	4	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-18-19	Dimensions and Properties (Dimensions , Properties , Fronted' statements, Qualified Statements of Dimensions , Exercises)	4	---	4	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-20-22	Comparisons and Modals Simple statements of comparison Qualified comparative statements A note on modals in scientific English	6	---	6	--	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEK-23	**MIDTERM OF SECOND TERM (WRITTEN EXAMINATION)**					

WEEKS-24-27	Impersonal Scientific Statements The Passive Form of the passive Use of the passive By and the agent Must, should, and the passive Passives and infinitives Passive and active	8	--	8	-	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-28-30	Technical Readings Four different Engineering topics	6	--	6	-	a9-1, a10-1, a10-2, b4-1, b4-2, c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a9-1**	*		*			*	*			*			
	a10-1	*	*	*	*		*	*	*	*	*			*
	a10-2	*	*	*	*		*	*	*	*	*			*
Intellectual Skills	**b4-1**	*	*	*	*	*	*	*		*	*	*	*	*
	b4-2	*	*	*	*	*	*	*		*	*	*	*	*
Professional Skills	**c12-1**	*	*	*	*	*	*	*	*	*	*			*
	c12-2	*	*	*	*	*	*	*	*	*	*			*
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		
	d3-2	*	*	*	*	*	*	*	*	*	*	*		
	d3-3	*	*	*	*	*	*	*	*	*	*	*		
	d9-1	*		*	*	*	*	*	*	*	*	*		
	d9-2	*		*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a9-1**	*	*				*			*			
	a10-1	*	*	*			*	*	*	*	*		
	a10-2	*	*	*			*	*	*	*	*		
Intellectual Skills	**b4-1**	*	*	*	*	*	*	*	*	*	*		
	b4-2	*	*	*	*	*	*	*	*	*	*		
Professional Skills	**c12-1**	*	*	*	*		*	*	*	*	*		
	c12-2	*	*	*	*		*	*	*	*	*		
General Skills	**d3-1**	*	*	*	*		*	*	*	*	*	*	
	d3-2	*	*	*	*		*	*	*	*	*	*	
	d3-3	*	*	*	*		*	*	*	*	*	*	
	d9-1	*	*	*	*	*	*	*	*	*	*	*	
	d9-2	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**80**	**80%**	**24th**
Mid-Term Examination of First Term (Written)	**---**	**---**	**8th**
Term work (Tutorial and report assessment)	**20**	**20%**	**Weekly**
Mid-Term Examination of Second Term (Written)	**---**	**---**	**23th**
Oral	**---**	**---**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

English Laboratory is used to help the students for Listen.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- A textbook of English as a Foreign Language for students of Physical and Engineering Sciences

2-Web sites related to the studied topics

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Course coordinator **Head of the Department**

Prof. Dr. Gamal Ibrahim Mohamed Prof. Dr. Gamal Ibrahim Mohamed

Basic Engineering Science. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***History of Engineering Sciences*** ***Code Symbol:BES014***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	1	----	3

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
40%	------	30%	------	-------	------	30%	100%

B-Professional Information

2- Course Aims:

- To provide the students with the basic knowledge of the engineering history as a dynamic process in Egypt and its relation to the state of independency of the country.
- To provide the basic concepts of science and technology and historical relation between them.
- Introduce the basic information about the faculty programs (Courses, specialization, fields of work—etc.)
- To provide students with the ability to write technical report.
- To provide students with an approach to evaluate two of the national problems: water and energy.

3- Course Objectives:

- Demonstrate of the knowledge and understanding of engineering education in Egypt as a dynamic process through the last two century
- Answering of the question: What are the reasons of diacrities of engineering education through the last four decades.
- Introducing the basic concepts of science and technology.
- Demonstrating the historical relation between science and technology, and identifying the historical emerging of engineering career.
- Demonstrate the basic knowledge of the faculty programs (Electrical power Eng., Mechanical power Eng., Production Eng., Civil Eng., Architecture Eng. and Electrical and Computer Eng.).
- Demonstrate the main information of two of our major national resources: Water and Energy, and using system theory approach to evaluate each of them.
- Develop skills of technical writing.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A3,A8, A9	B2	C12	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1)Identify the main concepts of science and technology.
	A3) Demonstrate Characteristics of engineering materials related to the discipline.	a3-1)Demonstrate the main engineering discipilines.
	A8) Explain Current engineering technologies as related to the discipline.	a8-1)Describe the Current engineering technologies in Egypt.
	A9) Discuss Topics related to humanitarian interests and moral issues.	a9-1)Identify the water and energy problems in Egypt.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Select of apprpriate package for solving the main problems of water and energy.
Professional skills	C12) Prepare and present technical reports.	c12-1) Developing the technical writing skills.
General skills	D9) Refer to relevant literatures.	d9-1)Refer to Fouad Zakaria book of scientific thinking. d9-2)Refer to Fawzy Gergis book of Egypt History.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introducation-science & technology concepts and relation – scientific thinking.	1-3
2nd	Recent history of Egypt – History of engineering education.	4-5
3rd	Water problem in Egypt – analysis of the water resources – water uses reduction in agriculture and industry.	6-7,9
4th	Energy situation in Egypt – Energy balance – Energy alternatives.	10
5th	Engineering programs: (Electrical power and Machine Eng., Mechanical Power Eng., Mechanical Deign and Production Eng., Civil Eng., Architecture Eng.)	11-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	-Contents, aims and objectives of the course. -Methodology and evaluation of students. -Topics of technical reports. -References. -Usage of INTERNET.	3	2	1	-	a1-1

WEEK-2	-Concepts of science and technology. -Historical relation between science and technology. -Historical emerging of engieering career. -Selection of reports topics.	3	2	1	-	a3-1
WEEK-3	-Scientific thinking. -The scientific theory of knowledge. -Obstacles against scientific thinking. How to write a technical report?	3	2	1	-	a8-1
WEEK-4	History of egypt from Mohamed Ali untill now. -Identifying the main rising and diacritic periods. -The relation between national independency and education. -Conducting report writing.	3	2	1	-	a9-1
WEEK-5	-Engineering education in nineteen century. -Engineering education after the first college of engineering. -Enginering education now. -Conducting the report writing.	3	2	1	-	b2-1
WEEK-6	-Water problem in Egypt. -Water balance. -Aspects of the problem. -Conducting the reports writing.	3	2	1	-	a1-1
WEEK-7	-Can We increase our net water income for the next few years? -Situation of understanding water. -Situation of underground water. -Situation of Nile water. -Deasalination. -Rain water. -Wastwater treatment & reuse. -Conducting the reports writing.	3	2	1	-	a3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK9	-Reduction of water in agriculture. -Reduction of water uses in industry. -Reduction of drinking water. -Reports evaluation.	3	2	1	-	c12-1
WEEK-10	Energy in Egypt. Energy balance. Role of natural gas & oil. Generation of Electricity in Egypt. Energy alternatives. Reports evaluation.	3	2	1	-	b2-1
WEEK11	Mechanical Power Engineering: (Program aims, Courses, Specialization, Work fields and report evaluation)	3	2	1	-	a9-1
WEEK-12	Mechanical Deign and Production Eng.: (Program aims, Courses, Specialization, Work fields and report evaluation)	3	2	1	-	a8-1

WEEK-13	Electrical Engineering: (Program aims, Courses, Specialization, Work fields and report evaluation)	3	2	1	-	c12-1
WEEK-14	Civil Eng.: (Program aims, Courses, Specialization, Work fields and report evaluation)	3	2	1	-	d9-1
WEEK-15	Architecture Engineering: (Program aims, Courses, Specialization, Work fields and report evaluation)	3	2	1	-	d9-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**Simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a1-1**	*			*	*								
	a3-1	*			*	*								
	a8-1	*			*	*								
	a9-1	*			*	*								
Intellectual Skills	**b2-1**	*			*	*								
Professional Skills	**c12-1**	*			*	*								
General Skills	**d9-1**		*							*	*			
	d9-2		*							*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a1-1**	*											
	a3-1	*			*								
	a8-1	*	*	*	*			*			*	*	
	a9-1	*			*	*							
Intellectual Skills	**b2-1**	*	*	*	*	*	*				*		*
Professional Skills	**c12-1**	*		*	*								
General Skills	**d9-1**						*		*	*			
	d9-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**50**	**66.66%**	**16th**
Mid-Term Examination (Written)	**15**	**20%**	**8th**
Term work (Tutorial and report assessment)	**10**	**13.33%**	**Weekly**
Total	**75**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-History of Engineering and Technology: Prof. Dr. Atef Mohamed Alam Ud-Din, Vice-president of Suez Canal University, Port Said Branch,2006.
2-History of Science and Engineering Technology: Dr. Ahmed Ali Al-Erian, 1996.
3-History of Science and Technology in the Ancient & Medieval Periods: Dr. Mustafa Mahmoud Sulaiman, 1995.
4-كتاب تاريخ العلوم والتكنولوجيا الهندسية، أ.د/أحمد العريان، 1996، عالم الكتب، مصر.
5-التفكير العلمى، أ.د/فؤاد زكريا، سلسلة عالم المعرفة الكويتية، 1978، الكويت.
6-دراسات فى تاريخ مصر السياسى منذ العصر المملوكى، فوزى جرجس، مكتبة المصطفى الإلكترونية www.mostafa.com

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Course coordinator **Head of the Department**

Prof. Dr. Prof. Gamal Ibrahim Mohamed Prof. Dr. Prof. Gamal Ibrahim Mohamed

Basic Engineering Science. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Mathematics(1-B)*** ***Code Symbol:BES021***
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course:Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*----*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
------	100%	-----	------	-------	------	-------	100%

B-Professional Information

2- Course Aims:

This course is designed to give the students a basic idea regarding the principle of Engineering Mathematics and its applications. This course is designed to provide students with the ability to understand analytical geometry. Also, Devlop skills of students for solving engineering applications containing integration problem. This course also give students how to think creatively in order to find the proper method of calculation the integral of the function.

3- Course Objectives:.

- Illustrate the philosophy of the integration and the importance of finding the integration of various type of functions as an essential part of the mathematical background of engineers.
- Demonstrate the basic definitions and principals of analytical geometry.
- Demonstrate understanding the concepts of conic sections and its importance in engineering.
- Demonstrate understanding of parabola, hyperbola, ellipse, circle and its standard forms commonly used in engineering problems.
- To understand indefinite integral, methods of integrations and definite integral and its applications.
- To give knowledge of fundamentals of trapezoidal rule to findthe area under curve.
- To give an understanding of impror integral..

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A5	B3	C1	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) **Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Classify the types of conic sections according to equation.. a1-2)Discuss different types of analytical geometry equations. a1-3)Derive main idea of trapezoidal method of finding area under curve. a1-4)Report the basic principales of mathematical induction.
	A5)Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies forsolving Math problems, including integration of trigonometric functions. a5-2)Illustrate conic sections and its engineering applications . a5-3) Illustrate Methodologies of straight line equations.
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Examine the solutions obtained by Trapezoidal rule.. b3-2)Solve problems serve to illustrate the studied equations. b3-3)Use the fundamentals of Integration in engineering applications.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Build a mathematics models and solve problems in engineering applications.
General skills	D9) Refer to relevant literatures..	d9-1)Utilize the IT and literature base resources for Engineering. D9-2)Seek learning opportunities outside the classroom environment.

6- Course Topics.

Topic No.	General Topics (Algebra)	Weeks
1st	Transformation of coorinates	1-2
2nd	Conic sections	3
3rd	Equations of two straight lines	4-5
4th	Circle	6-7
5th	Parabola	9-11
6th	Ellipse	12-13
7th	Hyberbola	14-15

Topic No.	General Topics (Calculus)	Weeks
1st	Basic definitions of integration	1
2nd	Basic rules of integration	2
3rd	Methods of integration	3-5
4th	Integraation of irrational functions	6-7
5th	Integraation of irrational algebraic functions	9-10
6th	Integration of trigonometric functions.	11-12
7th	Definite integral	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	-Traslation of origin -Integration basic definitions	6	4	2	-	a1-1,a1-2,
WEEK-2	-Changing sections classification -Basic rules of integration	6	4	2	-	a1-3
WEEK-3	-Conic sections classification -Integration by method of substituation	6	4	2	-	a1-4
WEEK-4	-Equation of two straight lines -Integration by parts	6	4	2	-	b3-1
WEES-5	-Straight line applications -Integration by partial fractions	6	4	2	-	b3-2
WEEK-6	-Circle -Integration of irrational functions (Part I)	6	4	2	-	b3-1, d9-1
WEEK-7	-Equation of tangent to circle and applications. -Integration of irrational functions (Part II)	6	4	2	-	a5-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	-Basics of parapola -Integration of irrational algebraic functions	6	4	2	-	a1-4
WEEK-10	-Polar and parametric of parabola -Integration of irrational functions (Part III)	6	4	2	-	a5-1
WEEK-11	-Application of parabola -Integration of inverse hyperbolic functions.	6	4	2	-	b3-1
WEEK-12	-Ellipse -Integration of trigonometric functions (Part I)	6	4	2	-	b3-1
WEEK-13	-Application on Ellipse. -Integration of trigonometric functions(Part II)	6	4	2	-	a5-3
WEEK-14	-Hyperbola -Definite Integral	6	4	2	-	b1-2, c1-1, d9-1
WEEK-15	-Applications of Hyberbola -Applications of definite integral	6	4	2	-	a5-2, b3-1, d9-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a1-1**	*			*	*								
	a1-2	*			*	*								
	a1-3	*			*	*								
	a1-4	*			*	*								
	a5-1	*			*	*								
	a5-2	*			*	*								
	a5-3	*			*	*								
Intellectual Skills	**b3-1**	*			*	*								
	b3-2	*			*	*								
	b3-3	*			*	*								
Professional Skills	**c1-1**	*			*	*								
General Skills	**d9-1**		*							*	*			
	d9-2		*							*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a1-1	*											
	a1-2	*		*									
	a1-3	*		*	*	*		*				*	
	a1-4	*		*		*							
	a5-1	*		*	*								
	a5-2	*											
	a5-3	*											
Intellectual Skills	b3-1	*		*		*	*						*
	b3-2	*											
	b3-3	*								*			
Professional Skills	c1-1	*		*									
General Skills	d9-1						*	*	*	*			
	d9-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**100**	**66.66%**	**16th**
1st Mid-Term Written Examination (Term Work)	**20**	**13.33%**	**8th**
2nd Mid-Term Written Examination (Term Work)	**20**	**13.33%**	**12th**
Tutorial and report assessment (Term Work)	**10**	**6.66%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Thomas and finney Addison, "Calculus and Analytic Geometry", Westey Publishing Company, U.S.A., 2006
2-LB Prasad, "A Text Book of Practical Mathematics (Two Volume)" , Khanna Publishers Delhi – India,1990 .
3-Hamdy A.Taha, "Operations research an iintroduction", 2003
4-Schaum's outlines series calculus, 1974
5-Th.Shifrin, "Multivariable Mathematics", wiley, 2005
6-J.H.Hubbard and B.B.Hubbard, "Vector Calculus, Linear Algebra, and differential Forms", (second edition), Prentice Hall, 2001.

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Course coordinator **Head of the Department**

Dr. Adel Mohamed Elrefay Prof. Dr. Gamal Ibrahim Mohamed

Basic Engineering Science. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Physics(1-B)*** ***Code Symbol:BES022***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Basic Engineering Science. ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*----*	*2*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	60%	20%	-----	-------	20%	-------	100%

B-Professional Information

2- Course Aims:

- To provide knowledge and understanding of the basic principles of electricity, electric circuits, magnetism and magnetic materials and experimental observations.
- To provide a basis for creative careers in many areas of engineering and technoklogy.
- To continuing attempt to understand how thing work.

3- Course Objectives:

- Develop a good understanding of a the basic concepts of electricity and magnetism and their engineering applications.
- Establish the idea that electricity and magetism are related phenomena.
- Introduce the basic laws of electricity and magnetism and their engineering applications.
- Illustrate the electric field and electric potential associated with some charge distribution.
- Explain the basic idea of the capictors and electric current and their electric circuit (a-c and d-c)
- Explain the basic laws of magnetism and sources of magnetic field.
- Show the properties of magnetic materials and their engineering applications.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A3	B2,B3	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)**Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)List the basic concepts of physics in the field of electricity and magnetism and explain the electric and magnetic fields for several configurations of charges and current respectively . a1-2)Demonstrate the different applications of the fundamentals laws of electricity and magnetism . a1-3) Recognize the d-c and a-c electic currents and their components . a1-4) Describethe different types of magnetic materials, capacitors and their engineering applications .
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Analyze some of DC and AC circuits and their engineering applications. b2-2)Thinking about the similarities between electric and magnetic laws.
	B3) Think in a creative and innovative way in problem solving and design	b3-1) Discuss scientific problems in electricity, magnetism and solve them. b3-2) Use mathematical methods to derive expressions for the electric and magnetic fields for several configuration and their engineering applications.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Apply the concepts of electricity and magnetism in different electric equipments. c1-2)Verify experimentally the electrical and magnetic laws and their engineering applications. c1-3)Construct and examine some of the electric and magnetic circuits in physics laboratory . c1-4)Build models for some selected electric circuits.
General skills	D3) Communicate effectively.	d3-1)Collect data and scientific materials from text book . d3-2) Work in team to conduct an experiment in physics laboratory . d3-3)Communicate effectively and deals with others. d3-4) Seek learning opportunities outside the classroom environment. d3-5)Improve the engineering profession and thinking..

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Electric charges and columb's law .	1
2nd	Electric field intensity.	2-3
3rd	Electric flux, Gauss's law and its application	4-5
4th	Electric potential.	6
5th	Capacitance and dielectric.	7
6th	Electric current, resistance and Kirchhoff's law.	9-10
7th	Magnetic forces, and sources of magntic field.	11-12
8th	Farady's law, magnetic induction and a-c circuits .	13-14
9th	Magnetism and magnetic materials	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Electric charge and coulmb's law .	5	3	--	2	a1-1,a1-2,b3-1,b3-2, c1-1,c1-2, d3-2
WEEK-2	Electric field intensity (Part I) .	5	3	--	2	a1-2 ,c1-1, d3-2
WEEK-3	Electric field intensity (Part II) .	5	3	--	2	a1-2 ,c1-1, d3-2
WEEK-4	Electric flux, Gauss's law	5	3	--	2	a1-1,a1-2,b3-1,b3-2, c1-1,c1-2, d3-2
WEEK-5	Gauss law applications.	5	3	--	2	a1-1,a1-2,b3-1,b3-2, c1-1,c1-2, d3-2
WEEK-6	Electric potential.	5	3	--	2	a1-2, a1-3,c1-4, d3-2
WEEK-7	Capacitance and dielectric .	5	3	--	2	a1-2,c1-4, d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Electric current and Resistance.	5	3	--	2	a1-2, a1-3,b2-2,c1-3, c1-4
WEEK-10	Kirchhoff's law.	5	3	--	2	a1-2, a1-3,b2-2,c1-3, c1-4
WEEK-11	Magnetic force.	5	3	--	2	a1-2,c1-4, d3-3, d3-4, d3-5
WEEK-12	Sources of magnetic field.	5	3	--	2	a1-2,c1-4, d3-3, d3-4, d3-5
WEEK-13	Faraday's law, magnetic induction.	5	3	--	2	a1-4,b2-1,b3-2,c1-3, d3-5
WEEK-14	A-C Circuits .	5	3	--	2	a1-4,b2-1,b3-2,c1-3, d3-5
WEEK-15	Magnetism and magnetic materials	5	3	--	2	a3-1,c1-4, d3-2,d3-5

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**Simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a1-1**	*	*	*		*					*			*
	a 1-2	*	*	*		*					*			*
	a1-3	*	*	*		*					*			*
	a1-4	*	*	*		*					*			*
Intellectual Skills	**b2-1**	*	*	*		*					*		*	*
	b2-2	*	*	*		*					*		*	*
	b3-1	*	*	*		*					*	*	*	*
	b3-2	*	*	*		*					*	*	*	*
Professional Skills	**c1-1**	*	*	*		*			*		*		*	
	c1-2	*	*	*		*			*		*		*	
	c1-3	*	*	*		*			*		*		*	
	c1-4	*	*	*		*			*		*		*	

General Skills	**d3-1**	*	*	*		*			*		*			
	d3-2	*	*	*		*			*		*			
	d3-3	*	*	*		*			*		*			
	d3-4	*	*	*		*			*		*			
	d3-5	*	*	*		*			*		*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	*	*				*	*		*	*	*	
	a 1-2	*	*				*	*		*	*	*	
	a1-3	*	*				*	*		*	*	*	
	a1-4	*	*				*	*		*	*	*	
Intellectual Skills	**b2-1**	*	*		*	*	*	*		*	*		
	b2-2	*	*		*	*	*	*		*	*		
	b3-1	*	*				*	*		*	*		
	b3-2	*	*				*	*		*	*		
Professional Skills	**c1-1**	*	*		*		*	*		*	*	*	
	c1-2	*	*		*		*	*		*	*	*	
	c1-3	*	*		*		*	*		*	*	*	
	c1-4	*	*		*		*	*		*	*	*	
General Skills	**d3-1**	*			*		*	*		*		*	
	d3-2	*			*		*	*		*		*	
	d3-3	*			*		*	*		*		*	
	d3-4	*			*		*	*		*		*	
	d3-5	*			*		*	*		*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**75**	**60%**	**16th**
Mid-Term Examination(Written)	**20**	**16%**	**8th**
Term Laboratory Assessment	**20**	**16%**	**15th**
Term work (Quizzes, Discussion and report assessment)	**10**	**8%**	**Every weeks**
Total	**125**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Serway Jewett; "Physics for scientists and engineers"; 2004, 6^{th} edition
2-Holliday and Resnick, "Introduction to Physics", 6th edition.
3-M.N.Avadhanulu and P.G.Kshirsagar, "Engineering physics"
4-Gerge Shortly and Dudley Williams, "Elements of physics"

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Course coordinator **Head of the Department**

Prof. Dr. Kamel M El-ShokrofyProf. Dr. Gamal Ibrahim Mohamed Ali
Dr.Kasim El Sayed Rady

Production Engineering and Mechanical Design Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: Preparatory

Course Specification

A-Basic Information

Title: ***Production Engineering*** ***Code Symbol:*** ***PRE011***
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course: Production Engineering and Mechanical Design Dept. ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*----*	*2*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
25%	----	25%	25%	-------	25%	-------	100%

B-Professional Information

2- Course Aims:

This Course provides the Student with Basic knowledge for both Manufacturing and Industrial engineering beside the information about engineering material , workshop safety and Bench work .

3- Course Objectives:.

- To gain knowledge about different engineering materials & its properties
- To get experience about foundry process, metal formation and cutting,
- To acquire understanding and experience about metal forming and machining processes

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A3,A8	B3	C1,C8,C11	D2

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3) Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1)Demonstrate understanding the basic consent about manufacturing and industrial engineering science
	A8)Explain current engineering technologies as related to electrical engineering	a8-1) Understanding basic mathematics, science and technologies relevant to modern power and machines.

Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1) State the difference between forming and cutting processes b3-2) Describe machine tool elements .
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) State the differences between engineering materials.
	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	**C8-1)** Apply workshop safety
	C11) Exchange knowledge and skills with engineering community and industry.	**c11-1)**DO(perform) work part on materials. c11-2)DO Some bench work Samples .
General skills	D2) Work in stressful environment and within constraints.	d2-1) Be aware with workshop safety and machine tool types and related operation.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Workshop safety	1
2nd	Fundamentals of Engineering Materials	2
3rd	Casting processes	3-4
4th	Forming processes (Rolling – Drawing ,Extrusion , Spinning)	5-6
5th	Welding processes	7,9
6th	Bench work (Measurement , Filling ,Taping , Drilling , Sawing)	10-11
7th	Metal Machining principles (Turning – Milling – Shaping – Drilling – Grinding)	12-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	workshop safety	4	2	--	2	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEK-2	Fundamentals of Engineering Materials	4	2	--	2	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2
WEEKS-3,4	Casting processes	8	4	--	4	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEKS-5,6	Forming processes (Rolling – Drawing , Extrusion , Spinning)	8	4	--	4	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEK-7	Welding processes	4	2	--	2	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Welding processes	4	2	--	2	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEKS-10-11	Bench work (Measurement , Filling ,Taping , Drilling , Sawing)	8	4	--	4	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEKS-12-15	Metal Machining principles (Turning – Milling – Shaping – Drilling – Grinding)	16	8	--	8	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a3-1	*		*		*				*	*		*	
	a8-1	*	*	*		*	*	*	*	*	*		*	*
Intellectual Skills	b3-1	*	*	*		*	*	*		*	*	*	*	*
	b3-2	*	*	*		*	*	*		*	*	*	*	*
Professional Skills	c1-1	*	*	*		*	*	*	*	*	*		*	
	c8-1	*	*	*				*	*	*	*	*		
	c11-1	*	*	*		*		*	*	*	*	*		
	c11-2	*	*	*		*		*	*	*	*	*		
General Skills	D2-1	*	*	*			*	*	*	*	*	*		

<u>9- Teaching and Learning Methods for Low Capacity and Outstanding Students:</u>

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

<u>10- Assessment</u>

<u>10.1 Assessment Methods:</u>

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a3-1	*	*				*	*		*	*		
	a8-1	*	*		*	*	*	*	*	*	*		
Intellectual Skills	b3-1	*	*		*	*	*	*	*	*	*		
	b3-2	*	*		*	*	*	*	*	*	*		
Professional	c1-1	*	*		*		*	*	*	*	*	*	

Skills	**c8-1**				*		*		*	*	*		
	c11-1	*			*		*	*	*	*		*	
	c11-2	*			*		*	*	*	*		*	
General Skills	**d2-1**	*						*	*	*	*		

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**60**	**60%**	**16th**
Mid-Term Examination(Written)	**10**	**10%**	**8th**
Term work (Tutorial and report assessment)	**10**	**10%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**5**	**5%**	**8th**
End of term laboratory examination (*Lab*)	**5**	**5%**	**16th**
Oral Examination	**10**	**10%**	**15th**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Workshop Usage:

Workshop is used to help the students for implementing and solving different industrial applications.

11-2 Library

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1 -An introduction into Production Technology Staff members , production engineering department Faculty of Engineering Minuofiya University

2-

1- مدخل فى الهندسة الانتاج   ا.د / حسن حسين فهمى واخرون

2- مقدمة فى هندسة الانتاج   ا.د / احمد سالم الصباغ واخرون

3- سلسلة الاسس التكنولوجية   مؤسسة الاهرام المصرية

3-Krar . et al . "Technology of machine Tools", Mc Graw Hill Book Company

4- D Maslov et al , "Engnineeing Manufacturing Processes", Mir Pubisher

5-S.Kalpakjian ," Manufacturing Processes Engineering Material", Addison Wesley

6- ALL about machine tools Gerling , Wiley Eastern Book Company

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Course coordinator	**Head of the Department**
Prof.Dr. Taha Ali El Tawel	Prof.Dr. Taha Ali El Tawel

Electrical Engineering Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Computer and Programming*** ***Code Symbol:*** ***ELE021***
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course: ***Basic Engineering Science. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*------*	*1*	*3*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
33.33%	------	------	--------	33.33%	33.33%	-------	100%

B-Professional Information

2- Course Aims:

This course introduces the student to basic knowledge and understanding of computers and programming. The course starts with a brief history about how computers were developed. The students learn the function of the main components and how computer works. Features of numbering systems and Software development are other objectives. The student also learn about computer algorithms, flow charts and how to develop computer programs

3- Course Objectives:

- To get knowledge about computers
- To understand and experience computer hardware & software
- To be knowledgeable about windows OS + Computer programming Languages
- To analyze any problem and find the appropriate algorithm.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2,A9	B1,B8	C1,C6,C7	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT)	a2.1) Demonstrate understanding of Computer hardware and software a2.2)Explain development of computer algorithm, flow charts and programs

	A9) Discuss Topics related to humanitarian interests and moral issues.	a9-1)Recognize copyrights of software. a9-2)Discuss marketing using INTERNET
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems	b1-1) Adopt suitable theoretical and computer-based techniques to use for the analysis of Engineering Problems.
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1) Design computer algorithms, flow charts and program to solve small engineering problem
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Access the internet and search for information to obtain knowledge about a specific problem.
	C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	C6-1)Use computational tools and software packages
	C7)Apply numerical modelling methods to engineering problems.	c7-1) Use appropriate high level programming by applying numerical modelling methods to engineering problems.
General skills	D4) Demonstrate efficient IT capabilities.	d4-1 Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction Types of computer and their features-classification of computers –computer generation-historical development of computers.	1
2nd	COMPUTER HARDWARE Hardware components – CPU – input devices(key board, mouse, ..etc) – output devices(Printer, scanner,. .etc) - Ports- units of measuring computer size	2
3rd	COMPUTER SOFTWARE Classification of software- Operating systems- Application software0 Software generation.	3
4th	DOS (Basic differences between command line interface and GUI – DOS commands – Error messages).	4-5
5th	NUMBERING SYSTEMS Basic features- Decimal NS – Binary N.S- Octal N.S. – Hexadecimal N. S. – Transformation between different numbering systems – direct transformation between binary and hexadecimal systems.	6
6th	ALGORITHMS AND FLOW CHARTS Development of algorithms- How problems can be solved- examples	7
7th	PROGRAMMING Introduction to programming – Input output statements- Examples	9-11
8th	Copyrights of Software and marketing using INTERNET.	12-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS Lec.	Tut.	Lab.	COURSE ILOS COVERED (BY NO.)
WEEK-1	Introduction Types of computer and their features-classification of computers –computer generation-historical development of computers.	2	--	1	-	a2-1,a2-2, b1-1, c1-1
WEEK-2	COMPUTER HARDWARE Hardware components – CPU – input devices(key board, mouse, ..etc) – output devices(Printer, scanner,. .etc) - Ports- units of measuring computer size	2	--	1	-	a2-1,a2-2, b1-1, c1-1
WEEK-3	COMPUTER SOFTWARE Classification of software- Operating systems-Application software0 Software generation.	2	--	1	-	a2-1,a2-2, b1-1, c1-1
WEEKS-4,5	DOS (Basic differences between command line interface and GUI – DOS commands – Error messages).	2	--	1	-	a2-1,a2-2, b1-1, c1-1
WEEK-6	NUMBERING SYSTEMS Basic features- Decimal NS – Binary N.S-Octal N.S. – Hexadecimal N. S. – Transformation between different numbering systems – direct transformation between binary and hexadecimal systems.	2	--	1	-	a2-1,a2-2
WEEK-7	ALGORITHMS AND FLOW CHARTS Development of algorithms- How problems can be solved- examples	2	--	1	-	a2-1,a2-2, b1-1, b8-1 c1-1 , c6-1, c7-1
WEEK-8	Midterm written examination					
WEEKS-9-11	PROGRAMMING Introduction to programming – Input output statements- Examples	4	---	2	-	a2-1,a2-2, b1-1, b8-1 c1-1 , c6-1, c7-1
WEEKS-12-15	Copyrights of Software, role of information Technology in Education and marketing using INTERNET	12	--	6	-	a9-1,a9-2,c1-1, c6-1,d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a2-1**	*		*		*	*			*	*			*
	a2-2	*		*		*	*			*	*			*
	a9-1	*		*			*	*			*			
Intellectual Skills	**b1-1**	*	*	*		*	*	*		*	*		*	*
	b8-1	*	*	*		*	*	*	*	*	*			*
Professional Skills	**c1-1**	*	*	*		*	*	*	*	*	*		*	
	c6-1	*	*	*		*	*	*	*	*	*		*	*
	c7-1	*	*			*		*	*	*			*	*
General Skills	**d4-1**		*	*		*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a2-1**	*	*					*		*	*	*	
	a2-2	*	*					*		*	*	*	
	a9-1	*	*				*			*			
Intellectual Skills	**b1-1**	*				*	*	*		*		*	
	b8-1	*					*		*		*		
Professional Skills	**c1-1**	*	*		*		*	*	*	*	*	*	
	c6-1	*			*	*		*	*	*	*	*	
	c7-1	*			*	*	*		*	*	*		
General Skills	**d3-1**	*	*		*		*	*	*	*	*	*	
	d4-1	*	*		*	*	*	*	*	*	*	*	
	d4-2	*	*		*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**45**	**60%**	**16th**
Mid-Term Examination (Written)	**5**	**6.66%**	**8th**
Term work (Tutorial and report assessment)	**5**	**6.66%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**5**	**6.66%**	**8th**
End of term laboratory examination (*Lab*)	**10**	**13.33%**	**16th**
Oral Examination	**5**	**6.66%**	**15th**
Total	**75**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-David Reed, "A Balanced Introduction to Computer Science", Prentice Hall , ISBN :013046709X, 2004.

2-Max Hailperin, Barbara Kaiser, and Karl Knight Paperback, "An Introduction to Computer Science Using Scheme" ISBN0-534-95211-9,1999

3-Robert L. Read , "How to be a Programmer: A Short, Comprehensive, and Personal Summary", 2003

4-Introduction to Computers and Programming , *http//* citeseerx.ist.psu.edu/viewdoc/ download? doi=10.1.1.184...

5- ICDL materials,

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Course coordinator **Head of the Department**

Prof. Dr. Shaban Mabrouk Osheba Prof.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 1st year**

Course Specification

A-Basic Information

Title: ***Mathematics(2)*** *Code Symbol:* ***BES111***
Element of program: ***Major*** *Date of specification approval:* ***2011***
Department offering the course: Basic Engineering Science. ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*4*	*----*	*8*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
------	100%	-----	------	-------	------	-------	100%

B-Professional Information

2- Course Aims:

- To know the basic knowledge and skills for solving differential equations.
- To use the multiple integral methods for finding the area, mass, center of gravity, and the moment of inertia.
- To use Laplace transformation and inverse Laplace transformation for solving differential equations.
- To develop skills of testing series for convergence and how to find Fourier expansion for functions related to Electrical Engineering applications.

3- Course Objectives:

- Illustrate the philosophy of the differential equations and the importance of solving the differential equations as an essential part of the mathematical background of engineers.
- Demonstrate the basic definitions and principals of multiple integrals (double and triple integrals)..
- Demonstrate understanding the concepts of Laplace transformation and inverse Laplace transformation for solving differential equations in Electrical Engineering applications .
- Demonstrate understanding of the basic principals of infinite sequences and series and different tests of convergence of some important type of series.
- Demonstrate understanding of fundamentals of Fourier series and the difference between Fourier series and Taylor expansion.
- To give knowledge of fundamentals of analytical geometry.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A5	B3	C1	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & Understanding	A1) **Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Classify the differential equations according to order and degree.. a1-2)Demonstrate understanding to solve different types of ordinary differential equations. a1-3)Derive main idea for solving first order first degree method . a1-4)Report the basic principals of multiple integrals.
	A5)Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies for solving differential equation using Laplace Transformation. a5-2)Illustrate infinite series and its engineering applications . a5-3) Illustrate Methodologies of Fourier series.
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Examin the solutions obtained by different methods of solving differential equations. b3-2)Solve problems serve to illustrate the studied equations. b3-3)Use the fundamentals of Laplace Transformation in engineering applications.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Build a mathematics models and solve problems in engineering applications.
General skills	D9) Refer to relevant literatures..	d9-1)Utilize the IT and literature base resources for Engineering. D9-2)Seek learning opportunities outside the classroom environment.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction	1
2nd	Ordinary differential equations.	2-5
3rd	Multiple integrals	6-7
4th	Laplace transform	9-10
5th	Infinite series	11
6th	Fourier analysis	12-13
7th	Analytical Geometry	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Introduction, Classification of differential equations according to order and degree, homogenous and no homogenous differential equations.	8	4	4	-	a1-1,a1-2
WEEK-2	1st order 1st degree differential equations with linear coefficient (Part I).	8	4	4	-	a1-3
WEEK-3	Bernoulli's differential equations, integrating factor, second order first degree differential equations.	8	4	4	-	a1-4
WEEK-4	1st order higher degree differential equations, homogenous linear differential equations with constant coefficient, non homogenous linear differential equations with constant coefficient.	8	4	4	-	b3-1
WEEK-5	Eular differential equations. Orthogonal trajectory System of simultaneous linear differential equations	8	4	4	-	b3-2
WEEK-6	Introduction, double integral application of double integral (area, mass).	8	4	4	-	b3-1, d9-1
WEEK-7	double integral application of double integral (moment of inertia), triple integral volume.	8	4	4	-	a5-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Laplace Transformation	8	4	4	-	a1-4
WEEK-10	Inverse Laplace Transformation	8	4	4	-	a5-1
WEEK-11	Infinite sequence and series. Comparison test, ratio test, Cauchy test, integral test, and raabi's test. Alternating series. Power series.	8	4	4	-	b3-1
WEEK-12	Basic idea of function expansion. Fourier expansion.	8	4	4	-	b3-1
WEEK-13	Change of interval, odd and even expansion of functions.	8	4	4	-	a5-3
WEEK-14	Normal form of the equation of a plane. Transformation of the general equation of a plane to the normal form. Direction cosines of normal to a plane.	8	4	4	-	b1-2 , c1-1,d9-1

	Determination of a plane under given conditions. Equation of a plane in terms of its intercepts on the axes.					
WEEK-15	Equation of the plane through three given points. Systems of planes. Two sides of a plane length of he perpendicular from a given point to a given plane. Bisectors of angles between two planes.	8	4	4	-	a5-2 , b3-1,d9-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a1-1**	*			*	*								
	a1-2	*			*	*								
	a1-3	*			*	*								
	a1-4	*			*	*								
	a5-1	*			*	*								
	a5-2	*			*	*								
	a5-3	*			*	*								
Intellectual Skills	**b3-1**	*			*	*								
	b3-2	*			*	*								
	b3-3	*			*	*								
Professional Skills	**c1-1**	*			*	*								
General Skills	**d9-1**		*							*	*			
	d9-2		*							*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a1-1	*											
	a1-2	*		*									
	a1-3	*	*	*	*	*		*				*	
	a1-4	*		*		*							
	a5-1	*		*	*								
	a5-2	*	*										
	a5-3	*											
Intellectual Skills	b3-1	*	*	*		*	*						*
	b3-2	*											
	b3-3	*								*			
Professional Skills	c1-1	*		*									
General Skills	d9-1						*	*	*	*			
	d9-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	140	70%	16th
Mid-Term Examination (Written)	30	15%	8th
Term work (Tutorial and report assessment)	30	15%	Weekly
Total	200	100%	

11- Facilities required for teaching and learning:

11-1 1Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

12-1Essential books

1-Matthew Hutton, "Vector Analysis Notes", 2006
2-Hamdy A Taha, "Operation Research an introduction", Eighth, 2003
3-Schaum's series, theory and problems of vector analysis, 1974
4-Schaum's series, ordinary differential equations, 1986
5-Th.Shifrin, "Multivariable Mathematics", wiley, 2005
6-J.H.Hubbard and B.B.Hubbard, "Vector Calculus, Linear Algebra, and differential Forms", (second edition), Prentice Hall, 2001.

12-2Periodicals, Web sites---- etc.

1-http://en.wikipedia.org/wiki/cuchy-schawarz_inequality
2-www.lix.polytechnique.fr/~liberti/kissing-ctw.ps.gz
3-http://college.cengage.com/mathematics/larson/calculus_analytic/7e/students/

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Course coordinator **Head of the Department**

Dr. Adel Mohamed Elrefaey Prof. Dr. Gamal Ibrahim Mohamed

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: Preparatory

Course Specification

A-Basic Information

Title: *Applied Mechanics* ***Code Symbol:*** *PRE117*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: **Production Engineering and Mechanical Design Dept** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*1*	*1*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	---	50%	50%	-------	------	-------	100%

B-Professional Information

2- Course Aims:

This course targets to learning the fundamentals of applied mechanics- static and dynamic analysis of the particles and rigid bodies .

3- Course Objectives:

- Develop skills on Structure analysis as static study and the basic of the dynamics of particles and rigid bodies during their accelerated motion .
- learn and apply the dynamics laws in machine

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1	B2	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Develop skills on Structure analysis as static study and the basic of the dynamics of particles and rigid bodies during their accelerated motion . a1-2)learn and apply the dynamics laws inelectrical machines.

Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)SelectNewton's laws and its applications on structure elements, simple beam, cantilever and on particles and rigid bodies during their accelerated motion .
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Helps the engineers to deal with the different some structure elements and dynamic problems of the particles system and rigid bodies .
General skills	D3) Communicate effectively.	d3-1 Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Analysis of structure elements	1
2nd	Mass moment of inertia	2
3rd	Dynamics of particles and particle systems	3
4th	Plane motion of rigid bodies	4
5th	Vibration of one degree of freedom systems	5

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1-3	Analysis of structure elements	8	4	2	2	a1-1,a1-2, b2-1, c1-1, d3-1
WEEK-4	Mass moment of inertia	4	2	1	1	a1-1,a1-2, b2-1, c1-1, d3-1
WEEKS-5-7	Dynamics of particles and particle systems	8	4	2	2	a1-1,a1-2, b2-1, c1-1, d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Dynamics of particles and particle systems	4	2	1	1	a1-1,a1-2, b2-1, c1-1, d3-1
WEEK-10-12	Plane motion of rigid bodies	8	4	2	2	a1-1,a1-2, b2-1, c1-1, d3-1
WEEK-13-15	Vibration of one degree of freedom systems	8	4	2	2	a1-1,a1-2, b2-1, c1-1, d3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a1-2	*	*	*	*	*	*	*		*	*			*
Intellectual Skills	b2-1	*	*	*	*	*	*	*		*	*	*	*	
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d3-1	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a1-1	*	*	*			*	*	*	*	*	*	
	a1-2	*	*	*			*	*	*	*	*	*	
Intellectual Skills	b2-1	*		*	*	*	*	*		*		*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	60	60%	16th
Mid-Term Examination of First Term (Written)	10	10%	8th
Term work (Tutorial and report assessment)	10	10%	Weekly
Experimental Examine	20	20%	15th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

Computer Laboratory is used to help the students for using graphic Software.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

R. C. Hibbeler; "Engineering mechanics, statics" Prentice Hall, 2004

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Course coordinator	**Head of the Department**
Dr. Rafat Abdelhafeez Abou-Elnaser	Prof. Dr. Taha Ali El-Taweel

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: First Year**

Course Specification

A-Basic Information

Title: *Physics(2)* ***Code Symbol:****BES115*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Basic Engineering Science*. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*2*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	66%	17%	-----	-------	17%	-------	100%

B-Professional Information

2- Course Aims:

- To provide knowledge and understanding of the basic principles of oscillatory motion, waves, vibrations, physical optics, and fundamental concepts of photoelasticity and their relation to ordinary phenomena and experimental observations .

3- Course Objectives:

- Give the theoretical concepts of simple harmonic motion in mechanical and electrical systems and their engineering applications.
- Give a broad description of the basic theoretical concepts of travelling waves and their engineering applications .
- Develop a good understanding of the basic concepts of the interference, diffraction and polarization of electromagnetic waves and their engineering applications .
- Give an understanding of the basic principales applied physics.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A5	B2,B3	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)**Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)List the basic concepts of physics in the field of simple harmonic motions (SHM's) in electrical and mechanical systems. a1-2)Demonstrate the basic concepts of travelling waves and their engineering applications. a1-3)Explain the basic principales of interference, diffraction and polarization of electromagnetic waves. a1-4)Recognize the fundamentals law of photoelasticity and nuclear physics and their engineering applications.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1)Demonstrate the basic properties of a photoeolastic model.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Discuss scientific problems in simple harmonic motion, waves and physical optics and solve them. b2-2) Analyze the fundamental laws of photoelasticity and nuclear physics and their engineering applications.
	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Solve engineering applications using laws of SHMs . b3-2)Use mathematical methods to derive the basic laws of SHMs, wave and physical optics .
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Design and perform experiments related to some laws of SHMs, waves, physical optics, photoelasticity and nuclear physics. c1-2)Design and perform experiments in the field waves, physical optics. c1-3)Examine the different types of waves, interference, diffraction and polarization and their engineering applications . c1-4)Design and perform experiments in the field of photoelasticity .
General skills	D3) Communicate effectively.	d3-1)Collect data and scientific materials from text book . d3-2) Work in team to conduct an experiment in physics laboratory . d3-3)Communicate effectively and deals with others. d3-4) Seek learning opportunities outside the classroom environment. d3-5)Improve the engineering profession and thinking..

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Simple Harmonic Motion (SHM) and examples on SHMs.	1
2nd	Superposition of SHMs and energy of SHM	2
3rd	Oscillations in mechanical and electrical systems.	3
4th	Damped oscillations in mechanical and electrical systems.	4
5th	Travelling, standing, sound waves and doppler effect.	5-7
6th	Interference of light waves.	9-10
7th	Diffraction of light waves.	11-12
8th	Polarization f light waves.	13
9th	Principales of photoelasticity and applied physics.	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Simple Harmonic Motion (SHM) and examples.	6	2	2	2	a1-1,b3-1,c1-1, d3-1
WEEK-2	Superposition of SHMs and energy of SHM..	6	2	2	2	a1-1,b2-1,b3-2,c1-2
WEEK-3	Oscillations in mechanical and electrical systems	6	2	2	2	a1-1,b2-1,b3-2,c1-2, d3-2
WEEK-4	Damped oscillations in mechanical and electrical systems.	6	2	2	2	a1-1,b2-1,b3-1,c1-2
WEEK-5	Travelling, standing waves.	6	2	2	2	a1-2,b2-1,b3-2,c1-2, d3-2,d3-3,d3-4
WEEK-6	Sound Waves.	6	2	2	2	a1-2,b2-1,b3-2,c1-2, d3-2,d3-3,d3-4
WEEK-7	Dopper effect.	6	2	2	2	a1-2,b2-1,b3-2,c1-2, d3-2,d3-3,d3-4
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Interference of light waves (Part I).	6	2	2	2	a1-3,b2-2,b3-2,c1-2, d3-2,d3-3,d3-4
WEEKS-10	Interference of light waves (Part II).	6	6	6	6	a1-3,b2-2,b3-2,c1-2, d3-2,d3-3,d3-4
WEEK-11	Diffraction of light waves (Part I)	6	6	6	6	a1-3,b2-2,b3-2,c1-3, d3-1,d3-2,d3-3
WEEK-12	Diffraction of light waves (Part II)	6	2	2	2	a1-3,b2-2,b3-2,c1-3, d3-1,d3-2,d3-3
WEEK-13	Polarization of light waves.	6	2	2	2	a1-3,b3-2,c1-3, d3-4, d3-5
WEEK-14	Principales of photoelasticity and applied physics (Part I)	6	2	2	2	a1-4, a5-1, b2-2,b3-2, c1-4, d3-1,d3-2, d3-3
WEEK-15	Principales of photoelasticity and applied physics (Part II)	6	2	2	2	a1-4, a5-1, b2-2,b3-2, c1-4, d3-1,d3-2, d3-3

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a 1-2	*	*	*	*	*	*	*		*	*			*
	a1-3	*	*	*	*	*	*	*		*	*			*
	a1-4	*	*	*	*	*	*	*		*	*			*
	a5-1	*		*	*	*				*	*		*	
Intellectual Skills	b2-1	*	*	*	*	*	*	*		*	*	*	*	
	b2-2	*	*	*	*	*	*	*		*	*	*	*	
	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c1-3	*	*	*	*	*	*	*	*	*	*		*	
	c1-4	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d3-1	*	*	*	*	*	*	*	*	*	*			
	d3-2	*	*	*	*	*	*	*	*	*	*			
	d3-3	*	*	*	*	*	*	*	*	*	*			
	d3-4	*	*	*	*	*	*	*	*	*	*			
	d3-5	*	*	*	*	*	*	*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*	*	*	
	a 1-2	*	*	*			*	*	*	*	*	*	
	a3-1	*	*	*			*	*	*	*	*	*	
	a3-2	*	*	*			*	*	*	*	*	*	
	a5-1	*	*	*			*	*		*	*		
Intellectual Skills	**b2-1**	*		*	*	*	*	*		*		*	
	b2-2	*		*	*	*	*	*		*		*	
	b3-1	*	*	*			*	*		*	*		
	b3-2	*	*	*			*	*		*	*		
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*	*	*	
	c1-2	*	*	*	*		*	*	*	*	*	*	
	c1-3	*	*	*	*		*	*	*	*	*	*	
	c1-4	*	*	*	*		*	*	*	*	*	*	
General Skills	**d3-1**	*		*	*		*	*	*	*		*	
	d3-2	*		*	*		*	*	*	*		*	
	d3-3	*		*	*		*	*	*	*		*	
	d3-4	*		*	*		*	*	*	*		*	
	d3-5	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**90**	**60%**	**16th**
Mid-Term Examination(Written)	**20**	**13.33%**	**8th**
Term Laboratory Assessment	**30**	**20%**	**15th**
Term work (Quizzes, Tutorial and report assessment)	**10**	**6.67%**	**Every weeks**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Serway Jewett; "Physics for scientists and engineers"; 2004, 6^{th} edition
2-Holliday and Resnick, "Introduction to Physics", 6th edition.
3-M.N.Avadhanulu and P.G.Kshirsagar, "Engineering physics"
4-Gerge Shortly and Dudley Williams, "Elements of physics"

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Course coordinator **Head of the Department**

Dr.Kasim El Sayed Rady
Prof. Dr. Kamel M El-ShokrofyProf. Dr. Gamal Ibrahim Mohamed Ali

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 1st ELEC.

Course Specification

A-Basic Information

Title: *Electrical Engineering* ***Code Symbole :*** *ELE111*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
4	2	2	8

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	25%	50%	-----	12.5%	12.5%	---	100%

B- Professional Information

2- Course Aims:

The course introduces the student to develop and understanding of the direct and alternating current circuit theory. The course includes magnetism and electro-magnetism , magnetic circuit quantities, BH curve and magnetic materials. This course will included electrostatics and capacitance, Transient in direct current circuits, Periodic non sinusoidal currents in electric circuits and alternating current series and parallel circuits . The course will Contain three – phase circuits and power measurement.

3- Course Objectives:

- To learn basic Knowledge of Electrical Engineering such as direct current, alternating current circuit theory
- To know Magnetism and electro-magnetism , magnetic circuit quantities .
- To understand Three – phase circuits and power measurement.
- To explain Electrostatics and capacitance, Transient in direct current circuits,
- To know periodic non sinusoidal currents in electric circuits.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A5, A8	B2, B5	C1	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A5)Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1) Explain Direct current and alternating current circuit theory . a5-2)Explain Magnetism and electro-magnetism, magnetic circuit quantities a5-3)Explain Three – phase circuits and power measurement.
	A8)Explain Current engineering technologies as related to electrical engineering.	a8-1)Illustrate Electrostatics and capacitance, Transient in direct current circuits, a8-2)Illustrate Periodic non sinusoidal currents in electric circuits.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Think in a creative for solving electrical circuits using either direct or alternating current circuit theory. b2-2)Select appropriate solution of magnetism and electro-magnetism circuit. b2-3)Capability of measuring of single and three phase power.
	B5) Solve engineering problems, often on the basis of limited and possibly contradicting information.	b5-1)Solve DC and AC circuits theory. b5-2)Solve Composite magnetic circuit.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Analyze periodic non sinusoidal currents in electric circuit. c1-2)Obtain the average and effective value for any waveforms. c1-3)Measuring of single and three phase power
General skills	D9) Refer to relevant literatures.	d9-1)Compare between electric and magnetic circuit.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	The basic circuit elements, systems of units, ohm's law, power and energy, simple resistor network.	1
2nd	Voltage and current sources, delta/star and star/delta transformation, the superposition theorem.	2
3rd	Kirchoff's laws, the mesh (loop) current method, the node voltage method.	3
4th	Thevenin's theorem, Norton theorem, mutual conversion of Thevenin's and Norton equivalent circuits.	4
5th	Millman's theorem, mixed networks with potential and current sources.	5
6th	Magnetism and electro-magnetism, magnetic circuit quantities, BH curve and magnetic materials.	6
7th	Electrostatics and capacitance, construction of capacitors, types of capacitors, capacitance of capacitor and capacitor network.	7
8th	Transient in R-C circuits , charging and discharging of a capacitor through a resistor , the time constant of R-C circuit , voltage across resistance and capacitor during charging and discharging.	9
9th	Vector algebra, AC fundamentals, rotating vector.	10

10th	AC series circuits, AC parallel circuits, the phasor diagrams.	11
11th	AC series circuits, AC parallel circuits, the phasor diagrams.	12
12th	Power in AC circuit, series and parallel resonance, bandwidth and quality factor.	13
13th	Poly-phase circuits, balanced three phase, analysis of star/ star and star/delta circuits. Power calculation imbalanced three-phase circuits. Measurement of average power in three-phase circuits.	14-15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	**Tut.**	
WEEK-1	The basic circuit elements, systems of units, ohm's law, power and energy, simple resistor network.	4	2	a8-1, a8-2, c1-1, c1-2, c1-3, d9-1
WEEK-2	Voltage and current sources, delta/star and star/delta transformation, the superposition theorem.	4	2	a5-1, a5-2, a5-3, a8-1, a8-2, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-3	Kirchoff's laws, the mesh (loop) current method, the node voltage method.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-4	Thevenin's theorem, Norton theorem, mutual conversion of Thevenin's and Norton equivalent circuits.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-5	Millman's theorem, mixed networks with potential and current sources.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-6	Magnetism and electro-magnetism, magnetic circuit quantities, BH curve and magnetic materials.	4	2	a5-1, a5-2, a5-3,, c1-1, c1-2, c1-3, d9-1
WEEK-7	Electrostatics and capacitance, construction of capacitors, types of capacitors, capacitance of capacitor and capacitor network.	4	2	a5-1, a5-2, a5-3, a8-1, a8- 2, c1-1, c1-2, c1-3, d9-1
WEEK-8	Midterm written examination			
WEEK-9	Transient in R-C circuits , charging and discharging of a capacitor through a resistor , the time constant of R-C circuit , voltage across resistance and capacitor during charging and discharging.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-10	Vector algebra, AC fundamentals, rotating vector.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-11	AC series circuits, AC parallel circuits, the phasor diagrams.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-12	AC series circuits, AC parallel circuits, the phasor diagrams.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-13	Power in AC circuit, series and parallel resonance, bandwidth and quality factor.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1

WEEK-14	Poly-phase circuits, balanced three phase, analysis of star/ star and star/delta circuits. Power calculation imbalanced three-phase circuits. Measurement of average power in three-phase circuits.	4	2	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1
WEEK-15	Transient in R-C circuits , charging and discharging of a capacitor through a resistor , the time constant of R-C circuit , voltage across resistance and capacitor during charging and discharging.	8	4	a5-1, a5-2, a5-3, b2-1, b2-2, b2-3, b5-1,b5-2, c1-1, c1-2, c1-3, d9-1

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1: Resistance- Ohm's law and Potentiometer. 1- The relation between the voltage V, the current I and the resistance R. 2- Series and parallel resistance. 3- The operation of the potentiometer.	2	a5-1,b5-1
WEEK-3&4	Exp-2: Superposition and Reciprocity theorems and power matching. 1- Superposition and Reciprocity theorems .	2	a5-3,b2-3
WEEK-5&6	Exp-3: Superposition and Reciprocity theorems and power matching. 2- Investigate the conditions required for maximum power transfer from a source to load .	2	a5-3, b2-1, b5-1
WEEK-7&8	Exp-4: Alternating current networks, Purely resistive, purely inductive and purely capacitive circuits. 1- Determination of the impedance in case of single resistance, single inductance and single capacitance as a load. 2- Evaluation of the effect of the frequency in each single case.	2	a8-1, b5-1,
WEEK-9&10	Exp-5: Alternating current networks, Circuits with resistance, inductance and capacitance.	2	a5-1
WEEK-11&12	Exp-6: Series and parallel resonant circuits. 1- The resonance conditions detection. 2- Measure the resonance frequencies, the pass-bands and the quality factors.	2	a5-1
WEEK-13&14	Exp-7: Study of transient condition of a circuit with resistance and capacitance.	2	a5-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & Understanding	**a5-1**	*	*	*	*	*	*	*	*		*		*	*
	a5-2	*	*	*	*	*	*	*	*		*		*	*
	a5-3	*	*	*	*	*	*	*	*		*		*	*
Intellectual Skills	**b2-1**	*	*	*	*	*	*	*		*	*	*	*	*
	b2-2	*	*	*	*	*	*	*		*	*	*	*	*
	b2-3	*	*	*	*	*	*	*		*	*	*	*	*
	b5-1	*	*	*	*	*		*		*	*		*	*
	b5-2	*	*	*	*	*		*		*	*		*	*
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c1-3	*	*	*	*	*	*	*	*	*	*		*	
General Skills	**d9-1**	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a5-1**	*	*	*	*	*	*	*		*	*		
	a5-2	*	*	*	*	*	*	*		*	*		
	a5-3	*	*	*	*	*	*	*		*	*		
Intellectual Skills	**b2-1**	*		*	*	*	*	*		*	*	*	
	b2-2	*		*	*	*	*	*		*	*	*	
	b2-3	*		*	*	*	*	*		*	*	*	
	b5-1	*	*	*	*	*	*	*		*	*		
	b5-2	*	*	*	*	*	*	*		*	*		
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*		*	
	c1-2	*	*	*	*		*	*	*	*		*	
	c1-3	*	*	*	*		*	*	*	*		*	
General Skills	**d9-1**	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**120**	**60%**	**16th**
Mid-Term Examination **(Written)**	**20**	**10%**	**8th**
Term work **(Tutorial and report assessment)**	**20**	**10%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**10**	**5%**	**8th**
End of term laboratory examination (*Lab*)	**10**	**5%**	**16th**
Oral Examination	**20**	**10%**	**15th**
Total	**200**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Electrical Engineering Lab., and Computer Lab. to help the students for preparing Experimental and writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- R.L.Boylested , "Introductory circuit analysis " Macnillan Publishing Company.
2-A.E.Fitzgerald, D.E.Higginbotham and A.Grabel, "Basic electrical engineering " Mc Graw – Hill International Book Company.
3-R.E. Gupta ," Principles of electrical engineering " S.Chand &Company LTD.
4-B.L.Theraja, "Fundamental of electrical engineering and electronics", Nirja construction & Development Co. LTD , Delhi.

Recommended books

I.M.Smith ,and K.T.Hosie, "Basic electrical engineering science" ,Longman Group Ltd.

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Course coordinator **Head of the Department**

Prof. Shokry Saad Shokralla **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 1st ELEC.

Course Specification

A-Basic Information

Title: ***Computer Applications(1)*** ***Code Symbol:*** ***ELE112***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*-----*	*2*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	------	------	--------	50%	25%	25%	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of programming using an appropriate high level Language and its applications.

3- Course Objectives:

- To learn basic structure of computer program.
- To analyze any problem and find the appropriate algorithm.
- To understand basic elements of FORTRAN language
- To provide students with a good knowledge to design and implement computer programming for solving Electrical Engineering problems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2, A5, A13	B1, B2, B7, B8	C1,C5,C6	D4, D7

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT)	a2-1)Explain the basic principles of programming using an appropriate high level language.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1) Illustrate Methodologies of solving engineering problems, data collection and interpretation using an appropriate high level language.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose a computer methods for solving problems of machines and power systems.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.	b1-1) Select appropriate mathematical and computer-based methods for modelling and analyzing electrical engineering problems
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Think in a creative for selecting appropriate solutions for engineering problems based on analytical thinking.
	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	a7-1) Solve engineering problems, often on the basis of limited and possibly contradicting information.
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1)Construct the proper model to use in the analysis of machines and power systems. b8-2) Adopt suitable theoretical and computer-based techniques to use for the analysis of machines and power system problems.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1)Use a computer program toanalyze and interpret results.
	C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1)Use computational tools and software packages for solving engineering problems.
General skills	D4) Demonstrate efficient IT capabilities.	d4-1)Give oral presentations using a variety of visual aids.
	D7) Search for information and engage in life-long self learning electrical engineering.	d7-1)Use information technologies effectively d7-2)Collect data, draw, (block diagram, charts, curves) and interpret data.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Program Fundamentals (Algorithms, and source program)	1-2
2nd	Input/output data format	3
3rd	Flowcharts, and Unconditional/Conditional branches	4-5
4th	Loops.	6-7
5th	Arrays.	8-10
6th	Functions	11
7th	Subroutines	12
8th	Complex numbers.	13
9th	Different applications	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Lab.	
WEEK-1	PC Software (Operating Systems, Computer Languages, Language Compilers, Application Programs and Specific Application Programs), and Algorithms.	4	2	2	a2-1, b1-1, c1-1 , d4-1, d7-1
WEEK-2	Arithmetic Statement , Constants and Variable, Type of Statement, Arithmetic Expression, Mathematical Functions. Principals of writing a Source Program.	4	2	2	a2-1, b1-1, c1-1 , d4-1, d7-1
WEEK-3	Input and Output Statements -Input Operation -Output Operation	4	2	2	a2-1, b1-1, c1-1 , d4-1, d7-1
WEEK-4	Flowcharts (Examples in Electrical Engineering)	4	2	2	a5-1, b1-1, c5-1 , d4-1, d7-1
WEEK-5	Unconditional Transfer Conditional Transfer (Examples in Electrical Engineering)	4	2	2	a5-1, b1-1, c5-1 , d4-1, d7-1
WEEK-6	Closed Loops without using Condition Transfer (Examples in Electrical Engineering)	4	2	2	a5-1, a13-1, b7-1, c5-1 , d4-1
WEEK-7	Closed Loops using Condition Transfer (Examples in Electrical Engineering)	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2
WEEK-8	Midterm written examination				
WEEK-9	Arrays or subscripted variables (Linear or one-dimensional array,). (Examples in Electrical Engineering)	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2
WEEK-10	Multi-dimensional arrays (Examples in Electrical Engineering)	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2
WEEK-11	Rules of Functions Subprograms, and how to call it? (Examples in Electrical Engineering)	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2
WEEK-12	Rules of Subroutines Subprograms, and how to call it? (Examples in Electrical Engineering)	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2

WEEK-13	Complex numbers. (Examples in Electrical Engineering)	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2
WEEK-14	Design and solve different Applications programs such as solving second order equation, solving differential equation, solving integral equation (Examples in Electrical and Electronic Engineering).	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2
WEEK-15	Numerical Calculations programs such as solving polynomial equation, and solving linear equations (Examples in Electrical and Electronic Engineering).	4	2	2	a13-1, b2-1, b7-1,b8-1, b8-2,c1-1, c5-1,c6-1, d4-1, d7-1, d7-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a2-1**	*		*	*	*	*			*	*			*
	a5-1	*	*	*	*	*	*	*	*		*		*	*
	a13-1	*		*	*	*	*			*	*		*	
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	*
	b2-5	*	*	*	*	*	*	*		*	*	*	*	
	b7-1	*		*	*	*	*	*		*	*			
	b8-1	*	*	*	*	*	*	*	*	*	*			*
	b8-2	*	*	*	*	*	*	*	*	*	*			*
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c5-1	*		*	*	*	*	*	*	*	*		*	*
	c6-1	*	*	*	*	*	*	*	*	*	*		*	*
General Skills	**d4-1**		*	*	*	*	*	*	*	*	*	*	*	*
	d7-1	*	*	*	*	*	*	*	*	*	*			
	d7-2	*	*	*	*	*	*	*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a2-1	*	*	*				*		*	*	*	
	a5-1	*	*	*	*	*	*	*		*	*		
	a13-1	*		*				*		*			
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b2-5	*		*	*	*	*	*		*		*	
	b7-1	*		*	*		*	*		*		*	
	b8-1	*		*			*		*		*		
	b8-2	*		*			*		*		*		
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c5-1	*	*	*	*		*		*	*	*		
	c6-1	*		*	*	*		*	*	*	*	*	
General Skills	d4-1	*	*	*	*	*	*	*	*	*	*	*	
	d7-1	*		*	*		*	*	*	*		*	
	d7-2	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	60	60%	16th
Mid-Term Examination (Written)	10	10%	8th
Term work (Tutorial and report assessment)	10	10%	Weekly
Mid term laboratory assessment (*Oral*)	5	5%	8th
End of term laboratory examination (*Lab*)	5	5%	16th
Oral Examination	10	10%	15th
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- Seymour Lipschutz and Arhur Poc, "Programming with FORTRAN", Schaum's Outline series, MacGraw Hill book Company, 1990.
2- Clive G. Page , "Professional Programmer's Guide to Fortran77" , University of Leicester, UK , 7th June 2005 .
3- Clive G. , Seymour Lipschutz and Arhur Poc, " Programming with FORTRAN", Schaum's Outline series, MacGraw Hill book Company, 1990.

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Course coordinator	Head of the Department
Prof. Ashraf Salah El Din Zein El Din	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 1st ELEC.

Course Specification

A-Basic Information

***Title:** Electronics* ***Code Symbol:** ELE121*
***Element of program:** Minor* ***Date of specification approval:** 2011*
Department offering the course:** Electrical Eng. Dept.* ***By law 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*2*	*8*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	62.5	25%	---	12.5%	----	100%

B-Professional Information

2- Course Aims:

The course aims to understand the characteristics, principles of operation, measurements and simple application circuits of analog electronic devices.

3- Course Objectives:

- To provide students with a sound understanding of modern electronic-device-principles
- To prepare students for the next generation of devices

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A8	B13,B15	C13	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A8) Recognize current engineering technologies as related to the electrical power engineering	a8-1) Recognize the performance of semiconductor devices, diodes, Bipolar transistor, Unipolar transistor, IGBT's and their biasing "techniques".
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Test, use, troubleshoot and measure the analog device. b13-2)Solve nonlinear electric circuits which contain power switches.
	B15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	b15-1)Use the transistors as amplifier and as a switch b15-2)Construct operation and control of electric circuits which contain power switches.
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1)Design and perform a simple electronic circuit. c13-2)Analyze the performance of electronic circuit in order to find the relationship between input and output signals waveforms, related to the device characteristics .
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1)Collaborate effectively within multidisciplinary team to design simple transistor circuits,
	D4) Demonstrate efficient IT capabilities.	d4-1)Use software such as MATLAB/SIMULINK, ORCAD. effectively to analysis the designed circuits at different operating modes.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Semiconductor materials	1-2
2nd	Semiconductor P.N junction	3-4
3rd	Semiconductor diodes, light – emitting diodes, (LED), light dependant disdes (LDD), liquied crystal display (LCD) zenner….etc	5-6
4th	Diode circuits, rectifiers, clipping, clamping and application in power supplies "D.C supplies".	7,9
5th	Bipolar Transistors, Unipolar transistors, construction, biasing techniques. Circuits comctions "common base, collector and common emitters	10-11
6th	Simple applications: Small – signal amplifier and large signal amplifiers	12-13
7th	Special application: Using transistors as a switch.	14-15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	Tut.	
WEEKS-1-2	Semiconductor materials	8	4	a8-1
WEEKS-3-4	Semiconductor P.N junction	8	4	a8-1
WEEKS-5-6	Semiconductor diodes, light – emitting diodes, (LED), light dependant diodes (LDD), liquid crystal display (LCD) zener….etc	8	4	a8-1,b13-1,b13-2, c13-1,c13-2,d1-1, d4-1
WEEK-7	Diode circuits, rectifiers, clipping, clamping.	4	2	a8-1,b13-1,c13-1, d1-1,d4-1
WEEK-8	Midterm written examination			
WEEK-9	Application in power supplies "D.C supplies".	4	2	a8-1,b13-1, c13-1, d1-1,d4-1
WEEKS-10-11	Bipolar Transistors, Unipolar transistors, construction, biasing techniques. Circuits connections "common base, collector and common emitters	8	4	a8-1,b13-1,b13-2, c13-1,d1-1
WEEKS-12-13	Simple applications: Small – signal amplifier and large signal amplifiers	8	4	a8-1,b13-1,b13-2, c13-1,d1-1,d4-1
WEEKS-14-15	Special application: Using transistors as a switch .	8	4	a8-1,b13-1,b13-2, c13-1,d1-1,d4-1

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1: Semiconductor diode characteristics and its applications. 1- Diode testing and its V-I characteristics. 2- Half wave and full wave rectifiers.	2	a8-1, b15-2, c13-1, c13-2
WEEK-3&4	Exp-2: Filtering cells for a power supply unit. 1- The effect of a filtering cell on a rectified voltage. 2- Analyzing the features of a capacitive filter on half wave and full wave.	2	a8-1, c13-1, c13-2
WEEK-5&6	Exp-3: Diode applications. 1- Diode circuits and voltage doublers. 2- Clamping and clipping circuits.	2	a8-1, c13-1, c13-2
WEEK-7&8	Exp-4: Zener diode characteristics and its use in stabilizing circuit.	2	a8-1, c13-1, c13-2

WEEK-9&10	Exp-5: Transistor circuits. 1- Transistor testing. 2- Transistor characteristic curve.	2	a8-1, b15-1, b15-2, c13-1, c13-2, d1-1
WEEK-11&12	Exp-6: Transistor applications: 1- Common emitter transistor amplifier.	2	a8-1, b15-1, c13-1, c13-2, d1-1
WEEK-13&14	Exp-7: Transistor applications: 2- Common collector and common base transistor amplifier.	2	a8-1, b15-1, c13-1, c13-2, d1-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Tests
Knowledge & understanding	**a8-1**	*	*	*	*	*	*	*	*	*	*		*	*
Intellectual Skills	**b13-1**	*		*	*	*	*	*		*	*			*
	b13-2	*		*	*	*	*	*		*	*			*
Professional Skills	**c13-1**	*		*	*	*		*	*		*		*	*
	c13-2	*		*	*	*		*	*		*		*	*
General Skills	**d1-1**	*	*	*	*	*	*	*	*	*	*	*		*
	d4-1		*	*	*	*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge& Understanding	a8-1	*	*	*	*	*	*	*	*	*	*		
Intellectual Skills	b13-1	*		*			*	*		*			
	b13-2	*		*			*	*		*			
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		
	c13-2	*	*	*	*	*	*	*		*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	120	60%	16th
Laboratory assessment (*Oral*)	20	10%	Weekly
End of term laboratory examination (*Lab*)	20	10%	-
Mid term written Examination1 (*Term Work*)	20	10%	8th
Tutorial and report assessment (*Term Work*)	20	10%	Weekly
Total	200	100%	

11- Facilities required for teaching and learning:

11-1 Laboratory

Electronics Lab. is used to execute all experimental related to electronics course.

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1- Thomas L Floyd "Electronic Devices' Fifth Edition Prentic Hall International Inc. 1999.

Course coordinator **Head of the Department**

Prof. Dr. Fahmy Mohamdi El-Kholy **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 1st ELEC.

Course Specification

A-Basic Information

Title: *Electrical* Materials — ***Code Symbol:*** *ELE122*
Element of program: *Major* — ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* — ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*		*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
----	.....	20%	70%	---	10%	---	100%

B-Professional Information

2- Course Aims:

The aims of this course are to provide the student, upon completing the Electrical Engineering Program, with the basic knowledge of electrical materials, their classifications and applications. Also, select a suitable electrical material for any equipment in industry is attained in this course. This course will also provide students with the practical concepts such as bearings,lubrication of electrical machine and the basics of earthing.

3- Course Objectives:

This course is designated to give students of Electrical engineering a basic knowledge of:

- Electrical materials and their characteristics.
- Electrical materials application in electrical equipments.
- Bearings and lubrications of electrical equipment.
- High current arcs representation.
- Earthing Basics.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A3, A21	B5, B6	C7,C16	D6

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3)Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1)Recognize the atomic structure, properties and applications of the electrical materials. a3-2)Realize the high arc current characteristics. a3-3 Identify the requirements of a permanent magnet. a3-4)Identify properties and functions of special purpose materials.
	A21) Distinguish basic power system design concepts for underground, cable tray, grounding, and lighting systems.	a21-1)Recognizethe basic principles of earthing
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5.1)State the factors affecting on insulating material selection. b5.2) Calculate charge, capacity, energy stored of the condenser, potential gradient in the dielectric, flux density, field intensity and relative permeability. b5.3)Compare between dia-magnetic material, paramagnetic material and ferromagnetic material. b5-4) State the purpose, types and methods of lubrication of electrical equipment
	B6)Investigate the failure of components, systems, and processes.	b6-1)Idetify the variation of resistance with temperature of conductors, insulators and semi-conductors.
Professional skills	C7)Apply numerical modeling methods to engineering problems.	c7-1) Model the arc. c7-2) Model the material by FEM package.
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1) Demonstrate the process of polarization of a dielectric material.
General skills	D6) Effectively manage tasks, time, and resources.	d6-1)Cooperate with the colleagues to present collaborative work. d6-2)Use specialized books and related internet websites to prepare reports.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Classification and conducting of electrical materials	1-3
2nd	High current Arcs	4-5
3rd	Electrical materials applications	6-13

4th	Bearings and Lubrication of Electrical Machine	14
5th	Basics of Earthing	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	**Classification of electrical materials**: - Classification of electrical engineering materials and inter atomic bonds.	4	2	2	a3-1, d6-1, d6-2
WEEK-2	**Conducting materials**: - Conductivity, resistivity and factors affecting resistivity of electrical conductors. - Classification of conducting materials and superconductivity.	4	2	2	a3-1, b6-1, d6-1 , d6-2
WEEK-3	**Conducting materials cont.**: - Low and high resistivity materials and their applications. - Properties of materials for high conductivity and for heating devices.	4	2	2	a3-1, b6-1, d6-1 , d6-2
WEEK-4	**High current Arcs** : - DC arc characteristic equation. - AC static arc characteristics - Energy balance characteristics. - Energy balance theories	4	2	2	a3-2 , c7-1
WEEK-5	**High current Arcs cont.** : - Cassie / Mayr equations, Arc time constant - Arcing Fault and arc Furnace equations.	4	2	2	a3-2 , c7-1
WEEK-6	**Semiconducting materials**: - Semi-conductor materials and applications. - Materials used for electronic components.	4	2	2	a3-1, b6-1 , d6-1 , d6-2
WEEK-7	**Insulating materials**: - Properties of insulating materials: • Electrical properties: Dielectric resistance, capacitance, strength, constant, and loss. • Visual properties, mechanical, thermal and Chemical properties.	4	2	2	a3-1, b6-1, b5-1, d6-1 , d6-2
WEEK-8	Midterm written examination				
WEEK-9	**Insulating materials cont.**: - Ideal insulating material - Classification of insulating materials.	4	2	2	a3-1, b5-1, d6-1, d6-2
WEEK-10	**Insulating materials cont.**: - Applications: Plastics, natural insulating materials and gaseous materials.	4	2	2	a3-1, b5-1 , d6-1, d6-2
WEEK-11	**Dielectrics Materials**: - Electric field strength, electric flux and electric flux density. - Dielectric constant and Polarization.	4	2	2	a3-1, b5-2, c16-1, c7-2 , d6-1, d6-2
WEEK-12	**Magnetic Materials**: - Classification of magnetic materials. - Application and Requirements of permanent magnets.	4	2	2	a3-1, a3-3, b5-2, b5-3 , d6-1 , d6-2
WEEK-13	**Special Materials**: Fuses, Solders, Lead, Carbon and Bimetals or thermostats	4	2	2	a3-4
WEEK-14	**Bearings and Lubrication of Electrical Machine**:	4	2	2	b5.4

	- Types of bearings. - Lubrication of electrical equipment.				
WEEK-15	**<u>Basics of Earthing</u>**	4	2	2	a21-1, d6-1, d6-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a3-1**	*		*						*	*			
	a3-2	*		*										
	a3-3	*		*										
	a3-4	*		*										
	a21-1	*		*	*	*				*	*			
Intellectual Skills	**b6-1**	*		*	*	*								
	b5-1	*		*										
	b5-2	*		*	*	*								
	b5-3	*		*										
	b5-4	*		*										
Professional Skills	**c7-1**	*		*	*	*							*	
	c7-2			*	*	*							*	
	c16.1	*		*										
General Skills	**d6-1**			*						*	*			
	d6-2			*						*	*			

<u>*9- Teaching and Learning Methods for Low Capacity and Outstanding Students:*</u>

For low capacity students	Assign a portion of the office hours for those students.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a3-1	*					*						
	a3-2	*											
	a3-3	*											
	a3-4	*											
	a21-1	*			*								
Intellectual Skills	b6-1	*			*								
	b5-1	*											
	b5-2	*			*								
	b5-3	*											
	b5-4	*											
Professional Skills	c7-1	*			*								
	c7-2				*		*						
	c16.1	*											
General Skills	d6-1									*			
	d6-2									*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	85	68%	16th
Mid term laboratory assessment (*Oral*)	-	-	8th
End of term laboratory examination (*Lab*)	-	-	16th
Mid term written Examination1 (*Term Work*)	10	8%	8th
Mid term written Examination 2 (*Term Work*)	10	8%	12th
Tutorial and report assessment (*Term Work*)	20	16%	Weekly
Total	125	100%	

11- Facilities required for teaching and learning:

1-Laptop, datashow and white board.
2-FEM package licensed for several PCs to carry out the tutorial problems.

12- List of references:

1-P. L. Kapur, "A Textbook of Electrical Engineering Materials", Hindustan Offset Press, Naraina, Delhi, 1994.
2-T. K. Basak, Electrical engineering materials, New Age Science, 2009.

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Course coordinator | **Head of the Department**

Prof. Mohamed Izzularab,
Dr. Lotfy Elzeftawy
Dr. Nehmdoh A. Sabiha

Prof.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 1st ELEC.

Course Specification

A-Basic Information

Title: *Energy Conversion* ***Code Symbol:*** *ELE123*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*-----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
25%	37.5%	37.5%	--------	--------	--------	--------	100%

B-Professional Information

2- Course Aims:

This course introduces the student to develop a deep understanding of the sources of electrical energy, solar and wind energy. The course will deal with the magnetic field and properties of magnetic materials. Hysteresis , eddy current losses and permanent magnets are also included in this course. This course introduces electro- mechanical energy conversion principles for single and doubly excited magnetic field system, introduction to rotating machines , M.M.F of distributed AC and DC machines windings and the torque production in alternating current and direct current machines.

3- Course Objectives:

- To understand energy and its conversion.
- To understand types of energy generation such as electromagnetic, ionization thermoelectric, battery, solar cell.
- To know different types of energy such as wind energy, potential energy, water energy, geothermal energy.
- To know applications of energy such as traction, lighting.
- To know distribution of electrical line lighting in building.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A3, A15	B4, B13	C13	D7

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Illustrate the sources of electrical energy, solar and wind energy
	A3) Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1)Explain the magnetic field and properties of magnetic materials. a3-2) Demonstrate Hysteresis, eddy current losses and permanent magnet.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1)Show principles of electro-mechanical energy conversion . a15-2)Explain introduction of rotating machines. a15-3)Illustrate M.M.F. of distributed in alternating current and direct current machines. Windings. a15-4)Show production of rotating magnetic field.
Intellectual skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1)Identify the sources of electrical energy.
	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Obtain E.M.F. in alternating current and direct current machines. b13-2)Identify and formulate engineering problems of AC and DC Machines.
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power and machines systems.	c13-1)Analyze single and doubly-excited field systems
General skills	D7) Search for information and engage in life-long self learning electrical engineering.	d7-1)Learning effectively for continuing professional development and in a wider context throughout the career. d7-2)Being enthusiastic in the application of their skills in the pursuit of the practice of engineering and promotion of the discipline.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Sources of electrical energy, thermal, hydro-electric and nuclear power stations.	1
2nd	Solar and wind energy.	2
3rd	Electric machines and power systems, rotational motion , Newton's law and power relationship, the magnetic field and properties of magnetic materials.	3
4th	Magnetically induced e.m.f. , inductance and force , magnetic circuit with ac excitation.	4

5th	Hysteresis and eddy current losses, permanent magnets.	5
6th	Electro-mechanical energy conversion principles, energy in single excited magnetic system.	6-7
7th	Energy in magnetic field, field energy and mechanical force, reluctance motor as a single – excited magnetic field system. Solved Examples.	9-10
8th	Doubly excited magnetic field systems. Solved Examples.	11
9th	Introduction to rotating machines, generation of emf in ac and dc machines.	12
10^{th}	M.M.F. of distributed ac and dc machines windings, an electromechanical energy conversion device and its relationships with coupling field.	13
11^{th}	Production of rotating magnetic field , graphical analysis of poly- phase emf.	14
12th	Induction machine and dc machine construction and principles of operation and production of torque.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Sources of electrical energy, thermal, hydro-electric and nuclear power stations.	4	2	2	a1-1,b4-1
WEEK-2	Solar and wind energy.	4	2	2	a1-1,b4-1
WEEK-3	Electric machines and power systems, rotational motion , Newton's law and power relationship, the magnetic field and properties of magnetic materials.	4	2	2	a3-1,a15-2,
WEEK-4	Magnetically induced e.m.f. , inductance and force , magnetic circuit with ac excitation.	4	2	2	a15-3,a15-4, b13-1
WEEK-5	Hysteresis and eddy current losses, permanent magnets.	4	2	2	a3-2
WEEKS-6-7	Electro-mechanical energy conversion principles, energy in single excited magnetic system.	4	2	2	a15-1, a15-2,
WEEK-8	Midterm written examination				
WEEKS-9-10	Energy in magnetic field, field energy and mechanical force, reluctance motor as a single – excited magnetic field system. Solved Examples.	4	2	2	a3-1, b13-2, c13-1,d7-1
WEEK-11	Doubly excited magnetic field systems. Solved Examples.	4	2	2	a3-1, b13-2, c13-1,d7-1
WEEK-12	Introduction to rotating machines, generation of emf in ac and dc machines.	4	2	2	a15-2,b13-1, c13-1,d7-1
WEEK-13	M.M.F. of distributed ac and dc machines windings, an electromechanical energy conversion device and its relationships with coupling field.	4	2	2	A15-3,c13-1,d7-1
WEEK-14	Production of rotating magnetic field , graphical analysis of poly- phase emf.	4	2	2	a15-4,b13-2, c13-1,d7-2
WEEK-15	Induction machine and dc machine construction and principles of operation and production of torque.	4	2	2	a15-2,b13-2, d7-1,d7-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			
	a3-1	*		*	*	*				*	*		*	
	a3-2	*		*	*	*				*	*		*	
	a15-1	*	*	*	*	*		*	*					
	a15-2	*	*	*	*	*		*	*					
	a15-3	*	*	*	*	*		*	*					
	a15-4	*	*	*	*	*		*	*					
Intellectual Skills	b4-1	*	*	*	*	*	*	*	*	*	*	*		
	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
Professional Skills	c13-1	*	*	*	*	*	*	*	*	*	*			
General Skills	d7-1	*	*	*	*	*	*	*	*	*	*			
	d7-2	*	*	*	*	*	*	*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*	*	*	
	a3-1	*	*	*			*	*		*	*		
	a3-2	*	*	*			*	*		*	*		
	a15-1	*		*			*	*	*	*			
	a15-2	*		*			*	*	*	*			
	a15-3	*		*			*	*	*	*			
	a15-4	*		*			*	*	*	*			
Intellectual Skills	**b4-1**	*	*	*	*	*	*	*	*	*	*		
	b13-1	*		*			*	*		*			
	b13-2	*		*			*	*		*			
Professional Skills	**c13-1**	*	*	*	*	*	*	*		*	*		
General Skills	**d7-1**	*		*	*		*	*	*	*		*	
	d7-2	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination **(Written)**	**10**	**10%**	**8th**
Term work **(Tutorial and report assessment)**	**20**	**20%**	**Weekly**
Oral Examination	**----**	**---**	**---**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory and representation reports. At least one representation report should involve a significant component of library research to encourage this component of study.

12- List of references:

12-1**Essential books (text books)**

1-Fitzgerald, A. E., Kingsley, C. and Kusko, A. " Electric Machinery" Third Edition, (Book) McGraw- Hill, Inc, N.Y. 1971

2-Slemon, R., and Straughen A. "Electric Machines", (Book) Addison-Wesley Publishing Company, Inc. 1980.

3-Sen, P. C., "Principles of Electric Machines and Power Electronics", Second Edition, (Book) John Wiley & Sons, Inc. 1977.

12-2**Recommended books**

1-Guru, B. S., and Hiziruglu, H., "Electric Machinery and Transformers", Second Edition, (Book) Harcourt Brace & Company, 1988.

12-3**Periodicals, web sites, … etc**

1-S.S.Sokralla ,N.N.Twieg and A.M.Sharaf" A photovoltaic powered separately excited dc motor for rural /desert pump irrigation" IEE Conference , sixth international conference on electrical machines and drives , 8-10 September 1993.

2- K. Nataran, A. M. Sharaf ,S. Sivakumar and S. Naganathan, "Modeling and control design for energy power conversion scheme using self excited induction generator " , IEEE Transaction on energy conversion , Vol.EC-2 , No3 ,September 1987..

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Course coordinator	Head of the Department
Prof. Dr. Shokri Saad Shokralla	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: First Year**

Course Specification

A-Basic Information

Title: ***Fluid mechanics*** ***Code Symbol:MPE127***
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course:Mechanical Power Engineering ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*2*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	16.66%	33.33%	16.66%	-------	16.66%	-------	100%

B-Professional Information

2- Course Aims:

The subject aims at providing the student with the basic principles of fluid mechanics and the applications of these principles to engineering problems.

3- Course Objectives:

- The students shouldgain the information about the basic principles of fluid mechanics, governing equations, solving problems and the applications of these principles in engineering fields.
- The students will see and understand the behavior of fluid static and dynamic during the experiments in the laboratory.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A3	B1	C1	D4,D5

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) **Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Gain the information about the basic principles of fluid mechanics, governing equations, solving problems and the applications of these principles in engineering fields.

	A3) Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1)Show the behaviour of fluid static and dynamic during the experiments in the laboratory.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Select appropriate mathematical and computer-based methods for modeling and analyzing problemsof fluid flow in network systems
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Use computational facilities to solve problems of fluid flow through pipes and design the surfaces or bodies under hydrostatic pressure (immersed or partially immersed in fluids).
General skills	D4) Demonstrate efficient IT capabilities.	d4-1) Gain the knowledge of solving some problems by using the computer .
	D5) Lead and motivate individuals.	d5-1)Gain experience during the run of experiments in the laboratory .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Properties of Fluids	1
2nd	Fluid statics Forces on submerged planes and curved surfaces	2-3
3rd	Fluid kinematics Velocity, acceleration, vortices, stream functions	4-5
4th	Dynamics of Fluid Flow: Introduction – Bernoulli's and Euler's Equations for motion – velocity and flow rate – Velocity head – Pressure head – Friction losses and Minor Losses – Bernoulli's Equation for Real flow – energy Gradient and Hydraulic Gradient – Reynolds Number.	6-7,9-10
5th	Flow of incompressible ideal fluids Bernoulli's equation and its applications	11-13
6th	Flow of incompressible viscous fluids in ducts Hydraulic losses, losses in fittings, applications	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Properties of Fluids	6	2	2	2	a3-1,b1-1, d5-1
WEEKS-2-3	Fluid statics Forces on submerged planes and curved surfaces	12	4	4	4	a1-1,b1-1,c1-1, d4-1
WEEKS-4-5	Fluid kinematics Velocity, acceleration, vortices, stream functions	12	4	4	4	a3-1,b1-1,c1-1, d4-1
WEEKS-6-7	Dynamics of Fluid Flow: Introduction – Bernoulli's and Euler's Equations for motion – velocity and flow rate – Velocity head – Pressure head – Friction losses and Minor Losses –	12	4	4	4	a3-1,b1-1,c1-1, d4-1, d5-1

WEEK-8	Midterm of first Term (written examination)					
WEEKS-9-10	Bernoulli’s Equation for Real flow – energy Gradient and Hydraulic Gradient – Reynolds Number.	12	4	4	4	a1-1, ,b1-1, d4-1, d5-1
WEEKS-11-13	Flow of incompressible ideal fluids Bernoulli's equation and its applications	18	6	6	6	a1-1, b1-1,c1-1, d4-1, d5-1
WEEKS-14-15	Flow of incompressible viscous fluids in ducts. Hydraulic losses, losses in fittings, applications	6	2	2	2	a1-1,a1-3,b1-1,c1-1, d4-1,d5-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a3-1	*		*	*	*				*	*		*	
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d4-1		*	*	*	*	*	*	*	*	*	*	*	*
	d5-1		*	*	*	*	*	*	*	*	*	*	*	*

<u>9- Teaching and Learning Methods for Low Capacity and Outstanding Students:</u>

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge& Understanding	**a1-1**	*	*	*			*	*	*	*	*	*	
	a3-1	*	*	*			*	*		*	*		
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*	*	*	
General Skills	**d4-1**	*	*	*	*	*	*	*	*	*	*	*	
	d5-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**90**	**60%**	**16th**
Mid-Term Examination (Written)	**30**	**20%**	**8th**
Term work (Tutorial and report assessment)	**15**	**10%**	**Weekly**
Laboratory assessment (*Oral*)	**15**	**10%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- Frank M. White, “Fluid Mechanics”, 1994 McGraw Hill.
2- Munson Young Okiishi, “Fundamentals of Fluid Mechanics”, 1994, Wiley.
3- Victor L. Streeter, “Fluid Mechanics”, 1988, McGraw Hill.

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Course coordinator **Head of the Department**

Dr. Essam Wahbah Prof. Dr. Shedid Shams El Din

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: First Year**

Course Specification

A-Basic Information

Title: ***Thermodynamics*** ***Code Symbol:MPE128***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Mechanical Power Engineering ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*---*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
25%	25%	50%	----	-------	----	-------	100%

B-Professional Information

2- Course Aims:

Understanding differences between forms of energy and the principles of transformation of one form to the other.

3- Course Objectives:

- Learn Energy conversion to work
- Learn Governing laws of thermodynamics
- Know Methods of obtaining work from heat

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A5	B1	C1,C5	D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1)Illustrate energy conversion to work a5-2)Show governing laws of thermodynamics a5-3)Describe the methods of obtaining work from heat.

Intellectual skills	B1)Select and appraise appropriate ICT tools to a variety of engineering problems.	b1-1) Select and appraise appropriate Softwareto a variety of working with different unit systems. b1-2) Identify thermodynamic conditions during processes b1-3) Analysis of Power generation thermodynamics
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Evaluate system properties at equilibrium states c1-2)Apply modern techniques for working with Real and Ideal process
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1)Evaluate various energy interactions c5-2)Evaluate cycles' of thermodynamics
	D3) Communicate effectively.	d3-1) Communicate effectively with electrical engineers in practice through learned basics of thermodynamics.
	D4) Demonstrate efficient IT capabilities.	d4-1)Evaluating of any power system and energy conversion processes

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Definitions – Ideal gas – Heat and work	1-2
2nd	Thermodynamics processes	3-4
3rd	First law of Thermodynamics	5-6
4th	Thermodynamic cycles	7,9
5th	Heat engines	10-11
6th	Second law of thermodynamic entropy	12-13
7th	Air standard cycles	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEKS-1-2	Definitions – Ideal gas – Heat and work	8	4	4	--	a5-1,a5-2,a5-3, c1-1, c1-2,d3-1
WEEKS-3-4	Thermodynamics processes	8	4	4	--	a5-1,a5-2,a5-3, c1-1, c1-2,d3-1
WEEKS-5-6	First law of Thermodynamics	8	4	4	--	a5-1,a5-2,a5-3,c5-1, c5-2,d4-1
WEEK-7	Thermodynamic cycles (Part-1)	4	2	2	--	a5-1,a5-2,a5-3, c1-1, c1-2,d3-1,d4-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Thermodynamic cycles (Part-2)	4	2	2	--	a5-1,a5-2,a5-3, c1-1, c1-2,d3-1,d4-1
WEEKS-10-11	Heat engines	8	4	4	--	a5-1,a5-2,a5-3, c1-1, c1-2,d3-1,d4-1
WEEKS-12-13	Second law of thermodynamic entropy	8	4	4	--	a5-1,a5-2,a5-3,c5-1, c5-2, d4-1
WEEKS-14-15	Air standard cycles	8	4	4	--	a5-1,a5-2,a5-3, c1-1, c1-2,d3-1,d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a5-1**	*	*	*	*	*	*	*	*		*		*	*
	a5-2	*	*	*	*	*	*	*	*		*		*	*
	a5-3	*	*	*	*	*	*	*	*		*		*	*
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
	b1-3	*	*	*	*	*	*	*		*	*		*	*
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c5-1	*		*	*	*	*	*	*	*	*		*	*
	c5-2	*		*	*	*	*	*	*	*	*		*	*
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a5-1**	*	*	*	*	*	*	*		*			
	a5-2	*	*	*	*	*	*	*		*			
	a5-3	*	*	*	*	*	*	*		*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
	b1-3	*		*		*	*	*		*		*	
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*		*	
	c1-2	*	*	*	*		*	*	*	*		*	
	c5-1	*	*	*	*		*		*	*			
	c5-2	*	*	*	*		*		*	*			
General Skills	**d3-1**	*	*	*	*		*	*	*	*		*	
	d4-1	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination (Written)	**15**	**15%**	**8th**
Term work (Tutorial and report assessment)	**15**	**15%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-G.J. Van Wylen and R. E. Sonntag; Fundamentals of engineering thermodynamics. John Wiley and Sons, 1998

2- Kenneth Wark, Engineering Thermodynamics, McGraw Hill, 2005

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Course coordinator	**Head of the Department**
Prof.Dr.Ali El-Ghalban	Prof. Dr. Shedid Shams El Din

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: First Year

Course Specification

A-Basic Information

Title: *Economy &Project Management* ***Code Symbol:*** *PRE127*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Production Eng. and Mechanical Design Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	1	-----	3

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
66.66%	------	------	--------	----	33.33%	-------	100%

B-Professional Information

2- Course Aims:

Develop the skills of students in economy and projects management fields.

3- Course Objectives:

- Upon completion this course the student will be able to understand the symbols, terminology and usefulness of cash flow diagram, fitted and variables cost, depreciation methods, Gantt chart, CPM and PERT, break-even point in both linear and nonlinear problem, and some technique of decision making .
- Makes the students to be able to treatment some of problems may occurred in engineering economy and projects management

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A6,A7,A16	B9,B10	C1,C9,C10	D1,D3, D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A6) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1)Explain the symbols, terminology and usefulness of cash flow diagram, fitted and variables cost, depreciation methods, Gantt chart, CPM and PERT, break-even point in both linear and nonlinear problem, and some technique of decision making . a6-2)Demonstrate treatments of some problems in engineering economy and projects management .

	A7) Remember Business and management principles relevant to engineering.	a7-1) Remember Business and management principles relevant to engineering.
	A16) Apply fundamentals of engineering management.	a16-1) Apply fundamentals of engineering management
Intellectual skills	B9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1)Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
	B10) Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1) Incorporate economic, societal, environmental dimensions and risk management in design.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. C9) Demonstrate basic organizational and project management skills. C10) Apply quality assurance procedures and follow codes and standards.	c1-1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. c9-1) Demonstrate basic organizational and project management skills. c10-1) Apply quality assurance procedures and follow codes and standards.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Develop group working skills
	D3) Communicate effectively.	d3-1 – Develop Communication Skills.
	D4) Demonstrate efficient IT capabilities.	d4-1) Collect data, draw, (block diagram, charts, curves) and interpret data.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Time value of money	1
2nd	Discounted cash flow	2-3
3rd	Comparison of alternatives	4-5
4th	Break-even analysis	6-7
5th	Depreciation methods	9-10
6th	Decision making	11-12
7th	Replacement analysis	13
8th	Ganltchert, CPM, and PERT	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Time value of money	2	--	1	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1
WEEKS-2,3	Discounted cash flow	4	--	2	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1
WEEKS-4,5	Comparison of alternatives	4	--	2	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1

WEEKS-6,7	Break-even analysis	4	--	2	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Depreciation methods	4	--	2	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1
WEEKS-11-12	Decision making	4	---	2	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1
WEEKS-13,14	Replacement analysis	4	--	2	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1
WEEK-15	Ganltchert, CPM, and PERT	6	--	3	-	a6-1, a6-2,a7-1, b9-1,c1-1,c9-1, c10-1,d3-1,d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a6-1**	*	*	*	*	*	*		*	*	*			
	a6-2	*	*	*	*	*	*		*	*	*			
	a16-1	*		*		*		*	*		*			
Intellectual Skills	**b9-1**	*	*		*	*	*	*	*	*	*			
	B10-1	*		*	*			*	*		*			
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c9-1			*				*	*		*			
	c10-1	*		*	*			*	*	*	*	*		
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	*

<u>9- Teaching and Learning Methods for Low Capacity and Outstanding Students:</u>

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a6-1	*		*			*	*	*	*			
	a6-2	*		*			*	*	*	*			
	a16-1	*		*			*	*	*	*			
Intellectual Skills	b9-1	*		*	*		*	*	*	*		*	
	b10-1	*		*	*		*		*	*		*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*		*	
	c9-1	*			*		*			*			
	C10-1	*		*	*		*	*		*		*	
General Skills	d3-1	*	*	*	*		*	*	*	*		*	
	d4-1	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	50	66.66%	16th
Mid-Term Examination(Written)	10	13.33%	8th
Term work (Tutorial and report assessment)	15	20%	Weekly
Total	75	100%	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for solving problems relted to Economy and project management.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-E Paul, Engineering economy, Macmillian Publishil comp. new york 1984 .

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Course coordinator | **Head of the Department**

Prof. Dr. Mohamed Fattouh | Prof.Dr.Taha Ali El-Taweel

Electrical Eng. Dept. Academic year: 2011-2012
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 2nd year**

Course Specification

A-Basic Information

Title: ***Mathematics(3)*** ***Code Symbol:*** ***BES211***
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course: Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
------	100%	-----	------	-------	------	-------	100%

B-Professional Information

2- Course Aims:

- To develop skills of how to differentiate and integrate a vector field function.
- To use the integral theorems (Green, stocks, Gauss) for simplifying integral calculations of vector field functions.
- To develop skills of using coordinate system transformation that make integral calculation very easy.
- To develop skills of linear programming problems using simplex method. Using special functions with application on finding improper integral..

3- Course Objectives:

- Illustrate the philosophy of the vectors and the importance of vector analysis as an essential part of the mathematical background of engineers.
- Demonstrate the basic of dot product, cross product, gradient, divergence, curl, vector differentiation and vector integrations
- Demonstrate understanding the concepts of divergence theorem of gauss Stokes theorem and Green theorem in the plane.
- Demonstrate understanding the concepts of vectors in Electrical Engineering applications..
- Demonstrate understanding of fundamentals of linear programming, graphical solution and simplex method.
- To give knowledge of fundamentals of special functions..

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A8	B1,B2,B3,B7	C1	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) **Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)List the importance of vector analysis. a1-2)Compare similarities and diffences between scalar field and vector field.. a1-3)Derive main idea of dot product, cross product, gradient, divergence and curl. a1-4)Report the basic principals of vector differentiation and vector integrations.
	A8) Explain Current engineering technologies as related to electrical engineering.	a8-1)Explain the principles of divergence theorem of Gauss, Stokes theorem, and Green theorem in the plane.. a8-2)Illustrate linear programming in engineering applications . a8-3) Illustrate Methodologies of special functions..
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Employ the concepts of vectors in electrical applications. b1-2)Apply computer usage in vector analysis.
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	B2-1)Examine the solutions obtained by different methods of integration.
	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Solve problems serve to illustrate the studied vectors theorems.
	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1)Use the fundamentals of linear programming in engineering applications.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Build a mathematics models and solve problems in engineering applications.
General skills	D9) Refer to relevant literatures..	d9-1)Utilize the IT and literature base resources for Engineering. D9-2)Seek learning opportunities outside the classroom environment.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Vectors and scalars	1
2nd	Vector differentiation	2-4
3rd	Line integral	5
4th	Multiple integral	6
5th	Green theorem	7
6th	Surfaces and surface integrals	9
7th	Stoke theorem and Gauss theorem	10-11
8^{th}	Special functions	12-13
9th	Linear programming	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Introduction, vector decomposition, unit vector, operations on vectors, cross product, triple scalar product, and triple vector product.	4	2	2	-	a1-1,a1-2
WEEK-2	Introduction, ordinary derivatives of vectors, continuity and differentiability and differential formulae.	4	2	2	-	a1-3
WEEK-3	Partial derivatives of vectors, differential of vectors, Interpretation of the gradient, direction derivative.	4	2	2	-	a1-4
WEEK-4	Divergence of a vectors, Curl, conservative, Laplace operator.	4	2	2	-	b1-1
WEEK-5	Ordinary integral of vectors, evaluating line integral, using parametric form, contour integral and its application with conservative field.	4	2	2	-	b3-1
WEEK-6	Introduction, double integral, Jacobians, properties of double integral, (area, mass, moment of inertia), triple integral (volume).	4	2	2	-	b3-1, d9-1
WEEK-7	Green theorem in plane	4	2	2	-	a8-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Surface element, surfaces integral of a scalar function, surfaces integral of a vector function, the flux of a vector field.	4	2	2	-	a1-4,b2-1
WEEK-10	Stockes' theorem, and Gauss' theorem.	4	2	2	-	a8-1
WEEK-11	Applications on Stockes 'theorem and Gauss' theorem.	4	2	2	-	b3-1
WEEK-12	Special functions, Beta function, Gamma function.	4	2	2	-	b2-1
WEEK-13	Bessel function, Legendre function applications.	4	2	2	-	a8-3
WEEK-14	Basic definitions of linear programming, graphical solutions.	4	2	2	-	b1-2 , c1-1,d9-1
WEEK-15	Simplex method for solving linear programming problems.	4	2	2	-	a8-2 , b7-1,d9-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*			*	*								
	a1-2	*			*	*								
	a1-3	*			*	*								
	a1-4	*			*	*								
	a8-1	*			*	*								
	a8-2	*			*	*								
	a8-3	*			*	*								
Intellectual Skills	b1-1	*			*	*								
	b1-2	*			*	*								
	b2-1	*			*	*								
	b3-1	*			*	*								
	b7-1	*			*	*								
Professional Skills	c1-1	*			*	*								
General Skills	d9-1		*							*	*			
	d9-2		*							*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	*											
	a1-2	*		*									
	a1-3	*	*	*	*			*				*	
	a1-4	*		*		*							
	a8-1	*			*								
	a8-2	*	*										
	a8-3	*		*									
Intellectual Skills	**b1-1**	*	*		*	*	*						*
	b1-2	*											
	b2-1	*		*									
	b3-1	*											
	b7-1	*		*									
Professional Skills	**c1-1**	*											
General Skills	**d9-1**						*	*	*	*			
	d9-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination (Written)	**15**	**15%**	**8th**
Term work (Tutorial and report assessment)	**15**	**15%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1 1Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

12-1Essential books

1-Matthew Hutton, "Vector Analysis Notes", 2006

2-Hamdy A Taha, "Operation Research an introduction", Eighth, 2003

3-Schaum's series, theory and problems of vector analysis, 1974

4-Th.Shifrin, "Multivariable Mathematics", wiley, 2005

5-J.H.Hubbard and B.B.Hubbard, "Vector Calculus, Linear Algebra, and differential Forms", (second edition), Prentice Hall, 2001.

12-2 Periodicals, Web sites---- etc.

1-http://en.wikipedia.org/wiki/cuchy-schawarz_inequality

2-www.lix.polytechnique.fr/~liberti/kissing-ctw.ps.gz

3-http://college.cengage.com/mathematics/larson/calculus_analytic/7e/students/

Course coordinator	**Head of the Department**
Dr. Mohamed Magdy Elfrash	Prof. Dr. Gamal Ibrahim Mohamed

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 2nd ELEC.

Course Specification

A-Basic Information

Title: ***Electrical Power Engineering (1)*** ***Code Symbol:*** ***ELE211***
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*2*	*8*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	25%	25%	12.5%	12.5%	25%	100%

B-Professional Information

2- Course Aims:

Upon completing the Electrical Engineering Program, this course aims to provide the Student with the basic knowledge and skills of how the configuration of a power system is and to know the elements of power system. This course will also provide students with the ability to compare between different distribution and transmission system. The skill of analyzing the electrical and mechanical characteristics of over head transmission lines and underground cables as represented in different configurations is also provided.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the main elements and different sources of electrical power.
- Definition of the parameters of the transmission lines and how can they be calculated.
- Comparison between different distribution and transmission systems.
- Analysis the electrical and mechanical characteristics of transmission lines.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A15, A17, A18,A22	B13, B16	C16	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A15)Explain Principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1) Explain power system configuration and main components a15-2)Explain different types of electric power sources, transmission and distribution systems.
	A17)Explain Basic electrical power system theory	a17-1)Define transmission line parameters such as resistance, inductance and capacitance. a17-2)Demonstrate Understanding of construction and grading of underground cables.
	A18)Apply Theories and techniques for calculating short circuit, motor starting, and voltage drop	a18-1)Choose suitable methods for transmission line representation. a18-2)Explain the mechanical characteristics of transmission lines.
	A22) Explain basics of low voltage power systems.	a22-1) Explain basics of low voltage power systems.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Compare between different transmission and distribution systems b13-2)Identify the different models of transmission lines and distributors b13-3)Calculate the general constants of transmission lines
	B16)Analyze the performance of electric power generation, control and distribution systems	b16-1)Calculate and compare the volume of copper used in different transmission systems b16-2)Distinguish between capacity grading and inter-sheath grading of underground cables
Professional skills	C16)Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1)Estimate the value of sag in transmission line conductors. c16-2)Evaluate the efficiency and voltage regulation of transmission lines
General skills	D9)Refer to relevant literatures	d9-1)Refer to renewable energy sources d9-2)Refer to EGYPT Electricity Network

6- Course Topics.

Topic No.	General Topics	Weeks
1	Sources of electrical power energy	1
2	Elements of power systems and standard voltage	2-3
3	Direct current (D.C.) and Alternating current (A.C.) distributors	4-7
4	Inductance of T.L.	9-10
5	Capacitance of T.L.	11
6	Underground Power Cables	12
7	Different types of T.L. and their general constants	13-14
8	Overhead T.L. and their mechanical characteristics	15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	Tut.	
WEEK-1	Power system structure Conventional sources of electrical power,	4	2	a15-1, a15-2,a22-1, d9-1 , d9-2
WEEK-2	Elements of transmission and distribution of electrical power Different systems of transmission	4	2	a15-2 ,a22-1, b13-1, b13-2
WEEK-3	Comparison of copper volume used for different transmission systems	4	2	b13-1, b16-1
WEEK-4	DC distribution, two wire distributors DC distributor fed at one end	4	2	b13-2
WEEK-5	DC distributor fed from both ends with equal voltages DC distributor fed from both ends with unequal voltages	4	2	b13-2
WEEK-6	Uniformly loaded distributor Three wires distributors	4	2	b13-2
WEEK-7	Ring-main distributor AC distributors	4	2	b13-2
WEEK-8	Midterm written examination			
WEEK-9	Transmission line parameters Resistance of transmission lines Definition of inductance Inductance of single phase lines	4	2	a17-1
WEEK-10	Inductance of three phase lines Double circuit three phase lines Bundled conductors	4	2	a17-1
WEEK-11	Definition of capacitance Capacitance of single phase transmission lines Capacitance of three phase transmission lines	4	2	a17-1
WEEK-12	Underground cables Insulation resistance of cables Grading of cables	4	2	a17-2 , b16-2
WEEK-13	Transmission circuit calculations Short transmission line Medium lines, Nominal- T and nominal-π methods	4	2	a18-1 , b13-2, c16-2
WEEK-14	General network constants, cascaded network	4	2	b13-3
WEEK-15	Overhead lines and its mechanical characteristics Types of conductors Sag-tension calculations, effect of wind and ice	4	2	a18-2 , c16-1

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp 1: Digital and experimental simulation of DC distributer	2	a15-1, a15-2, b13-1, b13-2
WEEK-3&4	Exp 2: The characteristic of a line: 1-short circuit test	2	a15-1, a17-1

WEEK-5&6	Exp 3: The characteristic of a line: 2- No-load test	2	a15-1, a17-1
WEEK-7&8	Exp 4: Double busbar basic system: 1- Operating a switching station with two busbars and different voltages at no-load	2	a15-1, a15-2, b13-1
WEEK-9&10	Exp 5: Double busbar basic system: 1- Operating a switching station with two busbars and different voltages with load	2	a15-1, a15-2, b13-1
WEEK-11&12	Exp 6: Performance of medium transmission line represented by T-method	2	a15-1, a15-2, a18-1, b13-1, b13-2, c16-2
WEEK-13&14	Exp 7: Performance of medium transmission line represented by π-method	2	a15-1, a15-2, a18-1, b13-1, b13-2, c16-2

8- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modeling**	**Lab. Tests**
Knowledge & understanding	a15-1	*	*	*					*	*				*
	a15-2	*	*	*					*	*				*
	a17-1	*		*	*	*							*	*
	a17-2	*	*	*	*	*							*	*
	a18-1	*		*	*	*							*	*
	a18-2	*		*	*	*								*
Intellectual Skills	b13-1	*		*	*	*								*
	b13-2	*		*	*	*							*	*
	b13-2	*		*	*	*								*
	b16-1	*		*	*	*								*
	b16-2	*	*	*	*	*								*
Professional Skills	c16-1	*		*	*	*							*	*
	c16-2	*		*	*	*							*	*
General Skills	d9-1		*	*					*		*	*		*
	d9-1		*	*					*		*	*		*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.

For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & understanding	a15-1	*	*	*			*		*	*			
	a15-2	*	*	*			*		*	*			
	a17-1	*	*	*				*					
	a17-2	*	*	*									
	a18-1	*	*	*									
	a18-2	*	*	*									
Intelectual Skills	b13-1	*	*	*	*								
	b13-2	*	*	*	*								
	b13-3	*		*	*								
	b16-1	*		*	*								
	b16-2	*	*	*	*								
Professional Skills	c16-1	*		*	*								
	c16-2	*		*	*								
General Skills	d9-1		*	*			*			*			
	d9-1		*	*			*			*			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**120**	**60**	**16th**
End of term laboratory examination (*Lab*)	**20**	**10**	**16th**
Mid term written Examination (*Term Work*)	**20**	**10**	**8th**
Tutorial and report assessment (*Term Work*)	**20**	**10**	**Weekly**
laboratory assessment (*Term Work*)	**20**	**10**	**Weekly**

Total	**200**	**100%**	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

Students are expected to prepare and conduct some laboratory experiments related to studying the electrical characteristics of the transmission lines and DC distributors. Students should be able to measure the parameters of transmission lines.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports. At least one report should be prepared by students.

12- List of references:

1- W. Stevenson," Elements of Power System Analysis", Book USA, 1975
2- S. L. Uppa, "Electrical Power", Book, India 1985.
3- I. J. Nagrath and D. R. Kothari, "Modern Power System Analysis", Book, USA, 1990.
4- A Course in Power Systems, J. B. Gupta

****

Course coordinator **Head of the Department**

Dr. Tamer Fetouh Abd El-Ghany **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 1st Term
Academic level: 2rd ELEC.

Course Specification

A-Basic Information

Title: ***Measurements & Measuring instruments*** ***Code Symbol:*** *ELE212*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
4	2	2	8

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	62.5%	25%	----	---	12.5%	----	100%

B-Professional Information

2- Course Aims:

The aim of this course is to introduce students to the different physical concepts of measurements process and gives them ability to use numbers and statistics in measurement and evaluation. Also, gives ability to identify, select and perform appropriate measurement in various fields.

3- Course Objectives:

- Realizing and understanding of the diverse electrical and electronic instruments in use and their design
- Demonstration of the knowledge of measurement manufacturing techniques and their communication with the user
- Basic understanding of direct and alternating current electric measurements as evolved from concepts on DC and AC systems
- Employment of a detailed study of measurement systems and their application in the areas of monitoring, control and experimental engineering analysis.
- Analysis of different laboratories measurement instruments problems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A3, A19	B1	C1, C3, C4,C5	D4,D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3) Recognize the Electrical Measurements: Fundamentals, Concepts.	a3-1)Identify the different type of measurement instruments. a-3-2)Identify the fundamentals of measuring process
	A19)Diverse Applications of electrical equipment	a19-1) Define the operation of direct and alternating current electric measurements.
Intellectual skills	B1)Apply theories of electrical engineering and basic sciences with creative thinking to analyze and solve electrical measurement problem.	b1-1) Select the suitable measurement instruments for different system configurations based on analysis.
Professional skills	C1)Propose and discuss different aspects related to basic electrical measurement components and its design	c1-1).Analyze and design basic electrical measurement instruments.
	C3)Integrate electrical, electronic and mechanical components and equipments with transducers, actuators and controllers in creatively computer controlled system.	c3-1)Study the measurement systems and their application in the areas of monitoring and experimental engineering analysis.
	C4)Perform the necessary repair and maintenance of electrical equipments.	c4-1)Analyze the problems concerning system and proposed appropriate solutions
	C5)Employ computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.	c5-1)Design and perform experiments on different electrical measuring instruments
General skills	D4)Use information technology resource in electrical measurements application.	d4-1) Identify the different technology resource in electric measurements application
	D9)Refer to relevant literatures.	d9-1) Refer to measurement performance handbooks

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Electrical Measurements Definition and its Fundamentals characteristics.	1-2
2nd	DC meters	3-4
3rd	AC meters	5-6
4th	DC bridges and AC bridges	7
5th	oscilloscope	9-11
6th	Digital meters and A/D converters	12-13
7th	Instrument Transformers and transducers	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	Tut.	
WEEK-1	The objectives of the course Electrical Measurements Definition and its Fundamentals characteristics	4	2	a3-1,a3-2,a19-1
WEEK-2	Errors in Measurement, Classification of errors and Introduction to the use of IS specifications in measurement work.	4	2	a3-1,a3-2,a19-1
WEEK-3	Introduction to DC meters Permanent magnet moving coil (PMMC) meter construction and its applications..	4	2	a3-1,a3-2,a19-1, b1-1, c1-1,c5-1
WEEK-4	Multi range to DC meters	4	2	a3-1,a3-2,a19-1, b1-1, c1-1,c5-1
WEEK-5	Introduction to AC meters Permanent magnet moving iron (PMMC) meter construction and its applications.	4	2	a3-1,a3-2,a19-1, b1-1, c1-1,c5-1
WEEK-6	The electrodynamics instrument The electrodynamics instrument for D.C and A.C uses	4	2	a3-1,a3-2,a19-1, b1-1, c1-1,c5-1
WEEK-7	DC bridges. AC bridges.	4	2	c1-1, c5-1
WEEK-8	Midterm written examination			
WEEK-9	oscilloscope	4	2	c3-1, c4-1, c5-1, d4-1
WEEK-10	Applications on oscilloscope	4	2	c3-1, c4-1, c5-1, d4-1
WEEK-11	Applications I	4	2	c1-1,c3-1
WEEK-12	Digital meters and A/D converters	4	2	c3-1, c5-1
WEEK-13	Exercises	4	2	c1-1
WEEK-14	Instrument Transformers	4	2	c3-1, c5-1
WEEK-15	Transducers	4	2	c3-1, c5-1

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1: Calibration of wattmeter using: 1- Three ammeters. 2- Three voltmeters.	2	a3-1, a3-2, a19-1,c5-1, d9-1
WEEK-3&4	Exp-2: Basic voltmeter design and multimeters.	2	a3-1, a3-2, a19-1,b1-1, c5-1,d9-1

WEEK-5&6	Exp-3: AC voltmeter and its frequency response.	2	a3-1, a3-2, a19-1,b1-1, c1-1, c5-1, d9-1
WEEK-7&8	Exp-4: Measuring of unknown resistance by using Wheatston bridge.	2	a3-1, a3-2, a19-1,b1-1, c1-1, c5-1, d9-1
WEEK-9&10	Exp-5: The Maxwell bridge.	2	a3-1, a3-2, a19-1,b1-1, c1-1, c5-1, d9-1
WEEK-11&12	Exp-6: Oscilloscope operation and its basic measurements	2	a3-1, a3-2, a19-1, c3-1, c5-1, d4-1, d9-1
WEEK-13&14	Exp-7: Measuring frequency and phase shift with the oscilloscope.	2	a3-1, a3-2, a19-1, c3-1, c5-1, d4-1, d9-1

8- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Lab. Tests
Knowledge & understanding	a3-1	*	*		*				*					*
	a3-2	*	*	*	*	*							*	*
	a19-1	*	*	*	*	*				*	*		*	*
Intellectual Skills	b1-1	*	*		*	*	*		*					*
Professional Skills	c1-1	*			*	*	*							*
	c3-1	*			*									*
	c4-1	*	*	*	*									*
	c5-1	*	*	*	*				*					*
General Skills	d4-1		*							*	*			*
	d9-1		*							*	*			*

9- ***Teaching and Learning Methods for Low Capacity and Outstanding Students:***

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a3-1	*		*									
	a3-2	*		*	*								
	a19-1	*		*	*						*		
Intellectual Skills	b1-1	*	*	*	*	*	*				*		*
Professional Skills	c1-1	*	*	*	*					*			
	c3-1	*	*	*									
	c4-1	*	*	*								*	
	c5-1	*		*		*					*		
General Skills	d4-1			*			*	*	*	*			
	d9-1			*			*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	Week
Final Examination (*written*)	120	60%	16th
Mid term laboratory assessment (*Oral*)	20	10%	8th
End of term laboratory examination (*Lab*)	10	5%	16th
Mid term written Examination1 (*Term Work*)	10	5%	8th
Mid term written Examination 2 (*Term Work*)	20	10%	13th
Tutorial and report assessment (*Term Work*)	20	10%	Weekly
Total	200	100%	

11- Facilities required for teaching and learning:

11-1 laboratory Usage:

Students are expected to prepare and conduct some laboratory experiments relating to measurements of voltage, current, resistance, self inductance, capacitance, mutual inductance, frequency and location of Cable Faults. Also, it's important to be able to read meter scale correctly and to be aware of the possible error in measured quantity.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-W. d Cooper and A. D. Helfrick, "Electronic Instrumentation and Measurement Techniques", Prentice Hall, 1985
2-B. Getz, "Principles of Electronic Instrumentation and Measurement", Merill, 1988
3-A. A. El-Hefnawy, "Electrical Measurement Instruments", Shebin El Kom, 1983, 1983

****

Course coordinator	Head of the Department
Prof. Dr. Sabray Mohamed Abd El-Latif	Prof. Abdel-Mohsen Kenawy
Dr. Hala Soliman El sayed	

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 2nd ELEC.

Course Specification

A-Basic Information

Title: ***Electrical circuits theory*** ***Code Symbol:*** ***ELE213***
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-----*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	16.66%	50%	33.33%	----	----	----	100%

B-Professional Information

2- Course Aims:

The aim of this course is to present circuit analysis techniques in time-domain, Laplace transform domain and in phasors presentation. Methods of analysis: Branch Current Analysis and Mesh or Nodal Analysis, and Network Theorems are performed on AC circuits. Concepts of Transients in linear circuits are covered. Two-port Networks, Filters, and Analogy between Electrical and Mechanical Systems are also included.

3- Course Objectives:

- To know of circuit laws and network theorems in time-domain, Laplace transform domain, and in phasors representation.
- An understanding of the linear and time-invariant properties of lumped circuits.
- To Know an appreciation of the fundamental concept of network functions in characterizing the input/output relationship of linear time-invariant network.
- To recognize delta and star connections and their conversions.
- To apply the maximum power transfer theorems to AC networks.
- To understand low and high pass ladder networks.
- To Know and understand how to determine the transient response of currents and voltages in R-L, R-C, and R-L-C series circuits using differential equations.
- Touse of Laplace transform for circuit analysis proficiency.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A4, A13	B1, B2	C1	D1, D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Explain circuit laws and network theorems in time-domain, Laplace transform domain, and in phasors representation. a1-2)Explain the linear and time-invariant properties of lumped circuits. a1-3)Choose Laplace transform for circuit analysis proficiency.
	A4)Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a4-1)Demonstrate understanding of an appreciation of the fundamental concept of network functions in characterizing the input/output relationship of linear time-invariant network. a4-2) Recognize delta and star connections and their conversions. a4-3)Describe low and high pass ladder networks.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1)Illustrate the maximum power transfer theorems to AC networks. a13-2) Demonstrate understanding how to determine the transient response of currents and voltages in R-L, R-C, and R-L-C series circuits using differential equations.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.	b1-1)Identify and formulate network theorems in either time-domain, or Laplace transform domain, or in phasors presentation. b1-2)Perform Laplace transform of circuit variables and its inverse transform.
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Predict the circuit response of an R-L-C network, given non-zero initial conditions. b2-2)Design a low and high pass filter section. b2-3)Interpret circuit characteristics through Bode plot
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Solve simultaneous equations in multi unknowns using determinants. c1-2)Appreciate and use the equivalence of Thevenin and Norton networks. c1-3)Apply the delta-star and star-delta transformations in appropriate AC networks. c1-4)Design a low and high pass filter section. c1-5)Predict the circuit response of an R-L-C network, given non-zero initial conditions.

General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1)Cooperation and teamwork.
	D4)Demonstrate efficient IT capabilities.	D4-1)Evaluate and critically assess the suitability method to solve AC networks. D4-2)Appreciate and use the equivalence of Thevenin and Norton networks using a suitable software programs.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	**Non--linear Circuits:** Graphical methods for resistive circuits containing nonlinear elements.	1
2nd	**AC Network Analysis:** • Introduction to Network Analysis • Branch Current Analysis • Mesh Current and Nodal Analysis • Superposition Theorem • Thevenin's Theorem • Norton's Theorem • Thevenin-Norton Equivalencies • Millman's Theorem • Maximum Power Transfer Theorem • Δ-Y and Y-Δ conversions	2-5
3rd	DC and AC Transients and Laplace Transforms: • Introduction • Reponse of R-C series circuit to a step input. • Response of R-L series circuit to a step input • L-R-C series circuit response • Introduction to Laplace transforms • Inverse Laplace transforms and the solution of differential equations • Laplace transform analysis directly from the circuit diagram • L-R-C series circuit using Laplace transforms • Initial conditions	6-7, 9-10
4th	**Two-port Network:**Introduction, Three-terminal two-port networks, Matrix formulation from loop analysis, Matrix representation of two-port networks, The open-circuit impedance matrix (or simply Z-matrix), The short-circuit admittance matrix (or simply Y-matrix), The transmission matrix (A-matrix), The hybrid matrix (H-matrix with h-parameters), Terminated two-port with z-parameters, Terminated two-port with y-parameters, Terminated two-port with a-parameters, Terminated two-port withh-parameters, Parameter conversion, Interconnection of two-port networks, Circuit analysis via two-port formulation.	11-12
5th	**Filter Networks:** Basics types of filter sections, The characteristic impedance and the attenuation of filter sections, Ladder networks, R-C Low-pass filter, R-C High-pass, Band-pass filter, Band-stop filter, Double-tuned filter.	13-14
6^{th}	**Analogy Between Electrical and Mechanical Systems:** Mass, Dashpot, Spring, Applications.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	**Non--linear Circuits:** Graphical methods for resistive circuits containing nonlinear elements.	6	4	2	-	a1-1
WEEKS-2-5	**AC Network Analysis:** • Introduction to Network Analysis • Branch Current Analysis • Mesh Current and Nodal Analysis • Superposition Theorem • Thevenin's Theorem • Norton's Theorem • Thevenin-Norton Equivalencies • Millman's Theorem • Maximum Power Transfer Theorem • Δ-Y and Y-Δ conversions	24	16	8	-	a1-2,a4-2, a13-1, c1-1, c1-2, c1-3, d4-2
WEEKS-6-7	DC and AC Transients and Laplace Transforms: • Introduction • Reponse of R-C series circuit to a step input. • Response of R-L series circuit to a step input • L-R-C series circuit response	12	8	4	-	a13-2,b2-3, c1-1, c1-5, d1-2
WEEK-8	Midterm written examination					
WEEKS-9-10	• Introduction to Laplace transforms • Inverse Laplace transforms and the solution of differential equations • Laplace transform analysis directly from the circuit diagram • L-R-C series circuit using Laplace transforms • Initial conditions	12	8	4	-	a1-3,b1-1, b2-1, b2-3, c1-1, c1-5, d1-1,d4-2
WEEK11-12	**Two-port Network:**Introduction, Three-terminal two-port networks, Matrix formulation from loop analysis, Matrix representation of two-port networks, The open-circuit impedance matrix (or simply Z-matrix), The short-circuit admittance matrix (or simply Y-matrix), The transmission matrix (A-matrix), The hybrid matrix (H-matrix with h-parameters), Terminated two-port with z-parameters, Terminated two-port with y-parameters, Terminated two-port with a-parameters, Terminated two-port withh-parameters, Parameter conversion, Interconnection of two-port networks, Circuit analysis via two-port formulation.	12	8	4	-	a4-1,b1-1,b1-2, c1-1, c1-3, d1-1
WEEKS-13-14	**Filter Networks:** Basics types of filter sections, The characteristic impedance and the	12	8	4	-	A4-3,b2-2,c1-1, c1-4, d1-1

	attenuation of filter sections, Ladder networks, R-C Low-pass filter, R-C High-pass, Band-pass filter, Band-stop filter, Double-tuned filter.					
WEEK-15	**Analogy Between Electrical and Mechanical Systems:** Mass, Dashpot, Spring, Applications.	6	4	2	-	a1-1, c1-1, d1-1, d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a1-1**	*	*	*	*	*	*	*		*	*			
	a1-2	*	*	*	*	*	*	*		*	*			
	a1-3	*	*	*	*	*	*	*		*	*			
	a4-1	*		*	*	*				*	*		*	
	a4-2	*		*	*	*				*	*		*	
	a4-3	*		*	*	*				*	*		*	
	a13-1	*	*	*	*			*		*	*		*	
	a13-2	*	*	*	*			*		*	*		*	
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	
	b1-2	*	*	*	*	*	*	*		*	*		*	
	b2-1	*	*	*	*	*	*	*		*	*	*	*	
	b2-2	*	*	*	*	*	*	*		*	*	*	*	
	b2-3	*	*	*	*	*	*	*		*	*	*	*	
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c1-3	*	*	*	*	*	*	*	*	*	*		*	
	c1-4	*	*	*	*	*	*	*	*	*	*		*	
	c1-5	*	*	*	*	*	*	*	*	*	*		*	
General Skills	**d1-1**	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	
	d4-2		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Examine	**Oral Examine**	**Tutorial Assessment**	**Project**	**Model**	**Research & Report**	**Quizzes**	**Presentation**	**Discussion**	**Laboratory Test**	**Home Exams**	**Monitoring**
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*		*	
	a1-2	*	*	*			*	*	*	*		*	
	a1-3	*	*	*			*	*	*	*		*	
	a4-1	*	*	*	*			*		*		*	
	a4-2	*	*	*	*			*		*		*	
	a4-3	*	*	*	*			*		*		*	
	a13-1	*		*				*		*			
	a13-2	*		*				*		*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
	b2-1	*		*	*	*	*	*		*		*	
	b2-2	*		*	*	*	*	*		*		*	
	b2-3	*		*	*	*	*	*		*		*	
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*		*	
	c1-2	*	*	*	*		*	*	*	*		*	
	c1-3	*	*	*	*		*	*	*	*		*	
	c1-4	*	*	*	*		*	*	*	*		*	
	c1-5	*	*	*	*		*	*	*	*		*	
General Skills	**d1-1**	*	*	*		*	*	*	*				
	d4-1	*	*	*	*	*	*	*	*	*		*	
	d4-2	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**100**	**66.66%**	**16th**
Mid-Term Examination **(Written)**	**20**	**13.33%**	**8th**
Term work **(Tutorial and report assessment)**	**30**	**20%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs for solving electric circuits.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

References

1-. J. O. Bird “ Electrical Circuit Theory and Technology” (Book) Oxford Auckland Boston, Johannesburg Melbourne, New Delhi, 2000.
2-Floyd, Principles of Electric Circuits, (Text).
3-Bartkowiak, Electric Circuit Analysis, Wiley (Text) (Supplement with circuit simulator).
4-Nilsson J. W. and Riedel S. A. *Electrical Circuits* 5th edn Addison-Wesley, 1996.
5-Tuinenga .P W. SPICE: *A guide to circuit simulation and analysis using PSPICE* (with IBM3.5" disks) 2nd edn, Prentice-Hall, 1992.

****

Course coordinator **Head of the Department**

Prof.Dr.Fahmy Mohamdi El Kholi **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 2nd ELEC.

Course Specification

A-Basic Information

Title: *Computer Applications(2)* ***Code Symbol:****ELE214*
Element of program: *Major/ minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*-----*	*2*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	----	------	-----	50%	25%	25%	100%

B- Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of Using MATLAB/SIMULINK to solve different Electrical and Electronic Engineering problems.

3- Course Objectives:

- To learn basic structure of MATLAB/SIMULINK program.
- To analyze problems and find the appropriate algorithm for Electrical and Electronic Engineering problems.
- To understand basic elements of MATLAB/SIMULINKprogram
- To provide students with a good knowledge to design and implement computer programming using a MATLAB/SIMULINK for solving Electrical Engineering problems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2, A5, A13	B1, B2, B7, B8	C1,C5,C6	D3, D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT)	a2-1)Explain how to carry-out electric circuit analysis using computer programming.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1)Illustrate how to carry-out data analysis and curve fitting.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1)Describe simulation programs for dynamic systems.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.	b1-1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Select appropriate solutions for engineering problems based on analytical thinking.
	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1) Select computer programming as a basic tool for electrical circuit design and analysis.
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1)Gain the awareness of the importance of computer application to electric circuit analysis, dynamic simulation, and data analysis.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve Electrical engineering problems.
	C5)Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results related to Electrical Engineering.
	C6)Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1) Analyze design of more complex systems that can be treated by pencil and paper.
General skills	D3) Communicate effectively	d3-1) Communicate effectively to Analyze design of more complex systems. d3-2) Communicate effectively to assign fairly complex design problems that otherwise would have been unrealistic without the help of such software.
	D4)Demonstrate efficient IT capabilities.	d4-1)Reinforcement of student understanding of theoretical principles by means of enhanced graphical aids and interactive simulations.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to different computer applications in electrical engineering.	1
2nd	Basics of MATLAB programming.	2
3rd	Command window and data entry. Using build-in functions. Online help and help disk.	3
4th	MATLAB expressions. Matrices and matrix operations. Array operations.	4
5th	MATLAB scripts and m-files - Flow control and condition statements.	5
6th	Graphics tools; creating, editing, formatting and printing MATLAB plots.	6
7th	DC circuit analysis using MATLAB.	7
8th	AC circuit analysis using MATLAB.	8
9th	Numerical solutions of differential equations using MATLAB. User defined functions.	9
10th	Transient analysis of electrical circuits using MATLAB.	10
11th	Transfer function analysis; poles, and zeroes using MATLAB.	11
12th	Interpolation and curve fitting of experimental data using MATLAB.	12
13th	Analysis of power electronic circuits using MATLAB.	13
14th	Introduction to programming using MATLAB graphics interface or SIMULINK.	14

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Lab.**	
WEEK-1	Introduction to different computer applications in electrical engineering.	4	2	2	a2-1, c6-1
WEEK-2	Basics of MATLAB programming.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-3	Command window and data entry. Using build-in functions. Online help and help disk.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-4	MATLAB expressions. Matrices and matrix operations. Array operations.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-5	MATLAB scripts and m-files - Flow control and condition statements.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-6	Graphics tools; creating, editing, formatting and printing MATLAB plots.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-7	DC circuit analysis using MATLAB.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-8	Midterm written examination				
WEEK-9	AC circuit analysis using MATLAB.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1

WEEK-10	Numerical solutions of differential equations using MATLAB. User defined functions.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-11	Transient analysis of electrical circuits using MATLAB.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-12	Transfer function analysis; poles, and zeroes using MATLAB.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-13	Interpolation and curve fitting of experimental data using MATLAB.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-14	Analysis of power electronic circuits using MATLAB.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-15	Introduction to programming using MATLAB graphics interface or SIMULINK.	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a2-1**	*		*		*	*			*	*			*
	a5-1	*	*	*		*	*	*	*		*		*	*
	a13-1	*	*	*				*		*	*		*	
Intellectual Skills	**b1-1**	*	*	*		*	*	*		*	*		*	*
	b2-1	*	*	*		*	*	*		*	*	*	*	
	b7-1	*		*		*	*	*		*	*			
	b8-1	*	*	*		*	*	*	*	*	*			*
Professional Skills	**c1-1**	*	*	*		*	*	*	*	*	*		*	
	c5-1	*		*		*	*	*	*	*	*		*	*
	c6-1	*	*	*		*	*	*	*	*	*		*	*
General Skills	**d3-1**	*	*	*		*	*	*	*	*	*	*		
	d3-2	*	*	*		*	*	*	*	*	*	*		
	d4-1		*	*		*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Examine	**Oral Examine**	**Tutorial Assessment**	**Project**	**Model**	**Research & Report**	**Quizzes**	**Presentation**	**Discussion**	**Laboratory Test**	**Home Exams**	**Monitoring**
Knowledge & Understanding	**a2-1**	*	*					*		*	*	*	
	a5-1	*	*		*	*	*	*		*	*		
	a13-1	*						*		*			
Intellectual Skills	**b1-1**	*				*	*	*		*		*	
	b2-1	*			*	*	*	*		*		*	
	b7-1	*			*		*	*		*		*	
	b8-1	*					*		*		*		
Professional Skills	**c1-1**	*	*		*		*	*	*	*	*	*	
	c5-1	*	*		*		*		*	*	*		
	c6-1	*			*	*		*	*	*	*	*	
General Skills	**d3-1**	*	*		*		*	*	*	*	*	*	
	d3-2	*	*		*		*	*	*	*	*	*	
	d4-1	*	*		*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**60**	**60%**	**16th**
Mid-Term Examination **(Written)**	**10**	**10%**	**8th**
Term work **(Tutorial and report assessment)**	**10**	**10%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**5**	**5%**	**8th**
End of term laboratory examination (*Lab*)	**5**	**5%**	**15th**
Oral Examination	**10**	**10%**	**15th**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

References

1-JOHN O. ATTIA, "Electronics and Circuit Analysis using MATLAB", CRC Press., Boca Raton London New York Washington, D.C., 1999

2- Etter, D.M. ``Engineering Problem Solving using MATLAB'' Prentice Hall, 1993.

3-Burrus, C.S. ``Teaching Filter Design using MATLAB'', ICASSP, Vol. 1, pp. 20 - 23, 1993.

4-Kirlin, R.L. and Hedstrom, B.A. ``A Computer-Oriented Random Processes Course for a Mix of Graduates and Undergraduates'' ICASSP, Vol. 1, pp. 24 - 27, 1993.

5-Ogata, K. ``Solving Control Engineering Problems with MATLAB'' Prentice Hall, 1994.

6-Attia, J.O. ``Teaching Communication Theory Using MATLAB'' 1995 Engineering and Architecture Symposium, Prairie View A&MUniversity, Prairie View, Texas, pp. 435-440, Jan. 30 - 31, 1995.

7-Attia, J.O. ``Enhancing Electrical Engineering Education Using MATLAB,'' Proc. of ASEE/GSW Conference, Beaumount, Texas, pp. 209 - 215, 1995.

8-Johnson, D.E., Johnson, J.R. and Hilburn, J.L., ``Electric Circuit Analysis'' Second Edition, 1992.

9-Using SIMULINK, The MathWorks www.mathworks.com , Inc.2004

10-V.F. Pires and J.F.A. Silva: "Teaching Nonlinear Modelling, Simulation and Control of Electronic Power Converters Using MATLAB/SIMULINK", IEEE Transactions on Education; Vol.45, No.3, August 2002; pp. 253 – 256.

11-B. Baha: "Modelling of resonant switchedmode converters using SIMULINK", IEE Proceedings, Electric Power Applications, Vol.145, No.3, May 1998, pp. 159 -163.

12-B. Baha: "Simulation of Switched-Mode Power Electronic Circuits", IEE InternationalConference on Simulation, 1998, pp. 209 – 214

13-A.N. Melendez, J.D. Gandoy, C.M. Penalver and A. Lago: "A New Complete Non-Linear Simulation Model of A Buck DC-DC Converter", IEEE-ISIE'99, 1999, pp. 257–261.

14-Arun Rajagopalan and Gregory Washington , "SIMULINK® TUTORIAL", The Intelligent Structures and Systems Laboratory Department of Mechanical Engineering The Ohio-State UniversityColumbus OH 43210, 2002

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Course coordinator	**Head of the Department**
Prof.Shaban Mabrouk Osheba	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 2nd ELEC.

Course Specification

A-Basic Information

Title: *Electrical Machine (1)* ***Code Symbol:*** *ELE221*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*2*	*8*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	25%	25%	12.5%	12.5%	25%	100%

B-Professional Information

2- Course Aims:

This course integrates the basic principles of Electrical Machine

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of electrical machines.
- To understand the theories of DC machines and transformers
- To understand the construction and connection of DC machines and transformers
- To understand the different types and applications of DC machines and transformers

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A15, A19	B5,B13	C14	D5

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4) Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a-4-1)Explain the basic mathematics, science and technologies relevant to transformers and dc machines. a-4-2)Illustrate the fundamental concepts, principles and theories of transformers and d-c machines.

	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a-15-1)Explain principles of operation and performance specifications of transformers and d-c machines.
	A19- Define diverse applications of electrical equipment.	a19-1) Illustrate different Applications of electrical transformers and d-c machines.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1)Solve problems in transformers and d-c machines. b5-2)Select the appropriate mathematical tools for the solution of problems in transformers and d-c machines .
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Apply the correct model to use in the analysis of transformers and d-c machines. b13-2)Summarizing and select the appropriate techniques to solve problems in transformers and machines b13-3)assessing the mathematical tools/models for the solution of problems in transformers and d-c machines.
Professional skills	C14) Test and examine components, equipment and systems of electrical power and machines.	c14-1) Test, diagnose and troubleshoot faults in machines
General skills	D5) Lead and motivate individuals.	d5-1) Developing creativity, particularly in design and performance of equipment and circuits. d5-2)learning effectively for continuing professional development and in a wider context throughout his career

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Transformers construction, applications and rating	1-2
2nd	- Single phase transformers, ideal transformer , transformer reactances and equivalent circuit , phasor diagram , losses , no load and sc test , efficiency , voltage regulation and per unit system	3-5
3rd	Auto transformers , parallel operation	6
4th	Three phase transformers , type of connections ,parallel operation .	7
5th	Direct current machines construction , applications and magnetic circuits.	9
6th	Armature windings ,e.m.f equation , power and torque, Armature reaction and commutation.	10
7th	Dc generator characteristics , parallel operation	11
8th	Dc motor , torque equation, motor characteristics, speed control	13-14
9th	Losses and efficiency of dc generator and motor.	15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	Tut.	
WEEKS-1,2	Transformers construction, applications and rating	8	4	a4-1, a4-2, a15-1, a19-1, b5-1,b5-2
WEEK-3	Single phase transformers, ideal transformer	4	2	a4-1, a4-2, a15-1, b5-1,b5-2,c14-1
WEEK-4	transformer reactances and equivalent circuit ,	4	2	a4-1, a4-2, a15-1, b13-1,b13-2,b13-3
WEEK-5	phasor diagram , losses , no load and sc test, efficiency , voltage regulation and per unit system	4	2	a4-1, a4-2, a15-1, b13-1,b13-2,b13-3, c14-1 , d5-1,d5-2
WEEK-6	Auto transformers , parallel operation	4	2	a4-1, a4-2, a15-1,
WEEK-7	Three phase transformers, type of connections, parallel operation .	4	2	a4-1, a4-2, a15-1, b13-1,b13-2,b13-3, c14-1, d5-1,d5-2
WEEK-8	Midterm written examination			
WEEK-9	Direct current machines construction , applications and magnetic circuits.	4	2	a4-1, a4-2, a15-1, b5-1,b5-2
WEEK-10	Armature windings, e.m.f equation , power and torque.	4	2	a4-1, a4-2, a15-1, b5-1,b5-2
WEEK-11	Armature reaction and commutation	4	2	a4-1,a4-2,a15-1, b13-1,b13-2, b13-3
WEEK-12	Dc generator characteristics , parallel operation	4	2	a4-1, a4-2, a15-1, b5-1,b5-2,c14-1, d5-1,d5-2
WEEK-13	Dc motor , torque equation	4	2	a4-1, a4-2, a15-1, b5-1,b5-2
WEEK-14	motor characteristics, speed control	4	2	a4-1, a4-2, a15-1, b5-1,b5-2,c14-1, d5-1,d5-2
WEEK-15	Losses and efficiency of dc generator and motor.	4	2	a4-1, a4-2, a15-1, b5-1,b5-2, c14-1, d5-1, d5-2

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
Week-1&2	Exp-1: Transformer Characteristics: Noload test and short circuit test.	2	a4-1, a4-2, a15-1,b5-2
WEEK-3&4	Exp-2: Load test and back-to-back test for single-phase transformer.	2	a4-2, a15-1,b5-2
WEEK-5&6	Exp-3: Noload characteristics of DC generators.	2	a4-2, a15-1,b5-2

WEEK-7&8	Exp-4: External characteristics of separately-excited DC generator. External characteristics of shunt-excited DC generator.	2	a4-2, a15-1,b5-2
WEEK-9&10	Exp-5: DC series generators.	2	a4-2, a15-1
WEEK-11&12	Exp-6: Compound excited DC generator.	2	a4-2, a15-1,a19-1
WEEK-13&14	Exp-7: Characteristics of separately excited DC motor.	2	a4-2, a15-1,a19-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Tests
Knowledge & understanding	**a4-1**	*	*	*	*	*	*	*	*	*	*			*
	a4-2	*	*	*	*	*	*	*	*	*	*			*
	a15-1	*	*	*	*	*		*	*					*
	a19-1	*	*	*	*	*	*			*	*			*
Intellectual Skills	**b5-1**	*	*	*	*	*		*		*	*		*	*
	b5-2	*	*	*	*	*		*		*	*		*	*
	b13-1	*		*	*	*	*	*		*	*			*
	b13-2	*		*	*	*	*	*		*	*			*
	b13-3	*		*	*	*	*	*		*	*			*
Professional Skills	**c14-1**	*	*		*	*		*			*			*
General Skills	**d5-1**		*	*	*	*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Examine	Oral Examine	Tutorial Assessment	Project	Model	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exams	Monitoring
Knowledge & Understanding	a4-1	*	*	*	*			*		*	*	*	
	a4-2	*	*	*	*			*		*	*	*	
	a15-1	*		*			*	*	*	*	*		
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*	*		
	b5-2	*		*	*	*	*	*		*	*	*	
	b13-1	*		*			*	*		*	*	*	
	b13-2	*		*			*	*		*	*		
	b13-3	*		*			*	*		*	*		
Professional Skills	c14-1		*				*			*	*		
General Skills	d5-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	120	60%	16th
Mid-Term Examination **(Written)**	20	10%	8th
Term work **(Tutorial and report assessment)**	20	10%	Weekly
Mid term laboratory assessment (*Oral*)	10	5%	8th
End of term laboratory examination (*Lab*)	10	5%	15th
Oral Examination	20	10%	15th
Total	200	100%	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1-P.S.Bimbhra"Electrical machinery " Khanna Publishers Delhi,1990
2-Theodore Wildi "Electrical Machines Drives and Power Systems", second edition, 1991
3-Fitzgerald, A. E., Charles Kingsley, Stephen D. U., " Electric Machimery'", Fifth Edition, Publisher, Mc-Graw-Hill Book Company, 1992.
4-Sen, P. C., " Principles of Electric Machines and Power Electronics", Second Edition, (Book) John Wiley & Sons, Inc. 1997.
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Course coordinator **Head of the Department**

of. Dr Anwar Abd El-Latif **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 2nd Elec.

Course Specification

A- Basic Information

Title: ***Digital Electronics*** ***Code Symbol:*** ***ELE222***
Element of program: ***minor*** ***Date of specification approval:*** ***2011***
Department offering the course: ***Electrical Eng. Dept.*** ***By Law2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*2*	*8*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	25%	25%	12.5%	12.5%	12.5%	100%

B- Professional Information

2- Course Aims:

This course integrates the basic principles of Digital Electronics.

3- Course Objectives:

To learn the following topics:

- Number systems
- Logic gates and their applications
- Digital circuit simplification and design
- Arithmetic Logic Unit
- Decoders, Multiplexers, ROMs, PLAs, and PALs
- Flip flops and their applications
- Sequential logic circuits, analysis and design
- Registers and Counters
- Memories and Interfacing

4- Relationship between the course and the program

Field	National Academic Reference Standard (NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A20	B15	C13, C15	D1, D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Explain number systems.
	A20) Classify logic circuits.	a20-1)Illustrate logic gates and their applications, digital circuit design and simplification, arithmetic logic unit, flip-flops and their applications, registers and counters, memories, analog interfacing
Intellectual skills	B15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creative computer controlled systems.	b15-1)Demonstrate Digital Electronics b15-2) Illustrate Digital circuit design and simplification.
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering.	c13-1)Design and perform a simple digital electronic circuit as well as analyze results related to electrical power engineering.
	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creative computer controlled systems.	c15-1) Helps the power system engineer to keep abreast of rapid developments in the field.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Gain experience to solve any problem in Digital Electronics.
	D4) Demonstrate efficient IT capabilities.	d4-1)Analysis the designed circuits at different operating modes using a required software programming such as pspise, MATLAB/SIMULINK, ORCAD.

6- Course Topics.

Topic No.	General Topics	Weeks
1	Introduction and Number systems	1
2	Logic gates and their applications	2-3
3	Digital circuit design methods and simplification	4-5
4	Arithmetic logic unit	6-7
5	Communication and computer devices: MUX, DeMUX, PAL, PLA and ROM	9-10
6	Flip-Flop types and analysis of sequential circuits	11-12
7	Sequential design, Registers and Counters	13-14
8	Memories and Interfacing	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	**Tut.**	
WEEK-1	BINARY SYSTEMS: Digital Computers & Digital Systems, Binary Numbers, Number Base Conversions, Octal & Hexadecimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic.	4	2	a19.1
WEEK-2-3	BOOLEAN ALGEBRA AND LOGIC GATES: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theory and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic Gates, Integrated Circuits.	8	4	a20-1,b15-1, b15-2, c15-1, d1-1
WEEK-4-5	SIMPLIFICATION OF BOOLEAN FUNCTIONS: The Map Method, 2-, 3-, 4-, and 5-Variable Maps, Product-of-Sums and Sum-of-Products Simplifications, NAND and NOR Implementations, Other Two-Level Implementations, Don't-Care Conditions.	8	4	a20-1,b15-1, b15-2, c15-1, d1-1
WEEK-6	COMBINATIONAL LOGIC: Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, Multilevel NAND Circuits, Multilevel NOR Circuits, Exclusive-OR Functions.	4	2	a20-1,b15-1, b 15-2, c13-1, c15-1,d1-1, d4-1
WEEK-7	MSI COMPONENTS: Binary Adders and Subtractors, Magnitude Comparators, Decoders and Encoders, Multiplexers.	4	2	a20-1,b15-1, b15-2, c13-1, c15-1,d1-1, d4-1
Week-8	MIDTERM WRITTEN EXAMINATION			
WEEK-9	Programmable logic devices: ROMs, PALs and PLAs.	4	2	a20-1,b15-1, b15-2, c13-1, c15-1,d1-1, d4-1
WEEK-10-11	SYNCHRONOUS SEQUENTIAL LOGIC: Flip-Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, Flip-Flop Excitation Tables, Design Procedure,	8	4	a20-1,b15-1, b15-2, c13-1, c15-1,d1-1, d4-1
WEEK-12-13	Design of Counters, Registers and Shift Registers	8	4	a20-1,b15-1, b15-2, c13-1, c15-1,d1-1, d4-1
WEEK-14	*Memories and Interfacing*	*4*	2	*a20-1,b15-1, b15-2, c13-1, c15-1,d1-1, d4-1*
WEEK-15	Revision	4	2	

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1: Logic Inverter. 1- The operation and characteristics of the discrete component and integrated circuit logic inverters.	2	a1-1,a20-1, c13-1
WEEK-3&4	Exp-2: Diode logic gates. 1- Operation of diode AND and OR gates.	2	a20-1,b15-1, b15-2,c13-1
WEEK-5&6	Exp-3: TTL logic gates. 1-The operation of any of the three basic logic functions.	2	a20-1,b15-1, b15-2,c13-1
WEEK-7&8	Exp-4: Applying NAND and NOR gates.	2	b15-2,c15-1
WEEK-9&10	Exp-5: Full-Adder and full-subtractor.	2	c15-1, d1-1
WEEK-11&12	Exp-6: Set-reset flip-flops.	2	c15-1, d1-1
WEEK-13&14	Exp-7: JK flip-flops.	2	c15-1, d1-1

8- *Teaching and Learning Methods:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modeling	Lab. Experiments
Knowledge & understanding	**a1-1**	*	*	*	*	*	*	*		*	*			*
	a20-1	*			*	*								*
Intellectual Skills	**b15-1**	*	*		*	*		*	*	*	*	*	*	*
	b15-2	*	*		*	*		*	*	*	*	*	*	*
Professional Skills	**c13-1**	*		*	*	*		*	*		*		*	*
	c15-1	*	*	*	*	*		*	*		*		*	*
General Skills	**d1-1**	*	*	*	*	*	*	*	*	*	*	*		*
	d4-1		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of office hours for those students.
	Give them specific tasks to promote their understanding.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take part in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	**Monitoring**
Knowledge& Understanding	**a1-1**	*	*	*			*	*	*	*	*	*	
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
Intellectual Skills	**b15-1**	*	*	*	*	*	*	*	*	*	*		
	b15-2	*	*	*	*	*	*	*	*	*	*		
Professional Skills	**c13-1**	*	*	*	*	*	*	*		*	*		
	c15-1	*					*	*	*		*		
General Skills	**d1-1**	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**120**	**60**	**16th**
End of term laboratory examination (*Lab*)	**20**	**10**	**16th**
Mid term written Examination (*Term Work*)	**20**	**10**	**8th**
Tutorial and report assessment (*Term Work*)	**20**	**10**	**weakly**
laboratory assessment (*Term Work*)	**20**	**10**	**weakly**
Total	**200**	**100%**	

11- Facilities required for teaching and learning:

A. laboratory Usage:

Students are scheduled to prepare and conduct some laboratory experiments related to logic circuit components and design of combinational and sequential circuits.

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentations.

12- List of references:

1. **M. Morris Mano. " Digital Design", 3rd Edition (or Newer) / Prentice Hall**
2. **Albert Paul Malvino,"Digital Computer Electronics", 3rd Edition Macmillan/McGraw – Hill.**

****

Course coordinator	**Head of the Department**
Dr. Assim Abdul-Fattah Nabawi	**Prof. Gamal Abdel-Whab Morsi**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 2nd ELEC.

Course Specification

A-Basic Information

Title: ***Theory of Electromagnetic Fields*** ***Code Symbol:*** ***ELE223***
Element of program: ***Major/ minor*** ***Date of specification approval:*** ***2012***
Department offering the course: ***Electrical Eng. Dept.*** ***Bylaw*** ***2012***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*-*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	50%	50%	---	---	-	---	100%

B-Professional Information

2- Course Aims:

This course aims to make graduates aware of the basic principles of static and time varying electric and magnetic fields. The course supplies graduates with sufficient methods and rules for calculating the intensity of electric and magnetic fields as well as potential for conventional models. This course put the graduate in a good starting point to start a post graduate research in electrical machines and transformers or power generation, transmission and distribution.

3- Course Objectives:

- Demonstration of the knowledge and understanding of theory of electromagnetic fields.
- Evaluation of electric field intensity and potential near conventional charge distributions.
- Evaluation of magnetic field intensity near conventional circuit elements.
- Definition and determination of resistance, capacitance and inductance in terms of field theory.
- Describe the nature of conductors, dielectrics, and semi – conductors.
- Determination of time varying fields in the light of Maxwell's equations.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A3, A8, A15	B2, B6,B13	C1	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) Demonstrate understanding of concepts and theories of mathematics and science, appropriate to electrical engineering.	a1-1) Demonstrate understanding of concepts and theories of mathematics and science, appropriate to conductors, and dielectrics
	A3) Demonstrate characteristics of engineering materials related to electrical engineering.	a3-1) Demonstrate characteristics of conducting and insulating materials related to electrical machines and power systems.
	A8) Explain current engineering technologies as related to electrical engineering.	a8-1)Explain the current engineering technologies related to field theory.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1) Explain principles of electrical machines and transformers.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Assign, formulate and solve problems of circuit parameters assessment (resistance, inductance and capacitance).
	B6) Investigate the failure of components, systems, and processes.	b6-1) Investigate the failure of conductors and dielectrics.
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering	b13-1) Identify and formulate engineering problems to solve problems in the electromagnetic fields.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Apply knowledge of mathematics to solve engineering electromagnetic field problems
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) communicate with a team work to solve field problems.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Vector Analysis	1
2nd	Coulomb's Law and Electric Field Intensity	2
3rd	Electric Flux Density, Gauss's Law and Divergence	3
4th	Work, Energy and Potential	4-5
5th	Conductors and resistance	6-7
Mid term written Examination1 (*Term Work*)		8

6th	Dielectrics and capacitance	9-10
7th	Poisson's and Laplace's Equations	11
8th	The Steady Magnetic Field and Curl	12
9th	Magnetic Forces, Torque, Magnetic Materials and Inductance	13
10th	Time - Varying Fields and Maxwell's Equations	14
Last term written Examination2 (*Term Work*)		15

7- *Course Topics/hours/ILOS*

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	• The objectives of the course • Definition of field. • Why this course is important? Requirements of the course. • Vector Analysis.	4	2	2	c1-1
WEEK-2	• Coulomb's Law and Electric Field Intensity	4	2	2	b13-1, c1-1
WEEK-3	• Electric Flux Density, Gauss's Law and Divergence	4	2	2	b13-1, c1-1, a8-1
WEEKS-4-5	• Work, Energy, Potential and Gradient	4	2	2	b13-1, c1-1
WEEKS-6-7	• Conductors and resistance	4	2	2	a1-1, a3-1,b2-1, b6-1, c1-1,d1-1
WEEK-8	**Mid term written Examination1 (*Term Work*)**				
WEEKS-9-10	• Dielectrics and capacitance	4	2	2	a1-1, a3-1, b2-1, b6-1,c1-1
WEEK-11	• Poisson's and Laplace's Equations.	4	2	2	c1-1
WEEK-12	• The Steady Magnetic Field and Curl	4	2	2	c1-1
WEEK-13	• Magnetic Forces, Torque, Magnetic Materials and Inductance.	4	2	2	a1-1, a3-1, b2-1, c1-1
WEEK-14	• Time - Varying Fields, Maxwell's Equations, and Displacement Current	4	2	2	a1-1, a8-1, a15-1, c1-1, d1-1
WEEK-15	**Last term written Examination2 (*Term Work*)**				

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	*		*	*	*	*							
	a3-1	*		*	*	*	*							
	a8-1								*					
	a15-1	*		*	*	*	*							
Intellectual Skills	**b2-1**	*		*	*	*	*							
	b6-1	*		*	*	*	*							
	b13-1	*		*	*	*	*							
Professional Skills	**c1-1**	*		*	*	*	*							
General Skills	**d1-1**	*		*	*	*	*		*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & understanding	**a1-1**	*			*	*	*	*		*			
	a3-1	*			*	*	*	*		*			
	a8-1	*			*	*	*	*		*			
	a15-1	*			*	*	*	*		*			
Intellectual Skills	**b2-1**	*			*	*	*	*		*			
	b6-1	*			*	*	*	*		*			
	b13-1	*			*	*	*	*		*			
Professional Skills	**c1-1**	*			*	*	*	*		*			
General Skills	**d1-1**						*			*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**70**	**70%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**10%**	**15th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Library Usage: Students should be encouraged to use library technical resources in the preparation of reports.

12- List of references:

1-William H. Hayt, Jr and John A. Buck: Engineering Electromagnetics, McGraw - Hill International Education, New York, 6th edition, 2001.
2- Raymond A. Serway: Physics for Scientists & Engineers, SaundersCollege Publishing, 1996.
3- Course notes.

Course coordinator **Head of the Department**

Prof. Sabir A. Eldhemy **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 2nd ELEC.

Course Specification

A-Basic Information

Title: ***Object Oriented Programming*** ***Code Symbol:*** ***ELE224***
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*----*	*2*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
25%	----	------	-----	50%	25%	----	100%

B-Professional Information

2- Course Aims:

Knowing the basic construction of Object Oriented Programming, and using the Visual Basic Programming as an Example for designing a computer program.

3- Course Objectives:

- To learn basic structure of Object Oriented Program (OOP).
- To analyze problems and find the appropriate algorithm for Electrical and Electronic Engineering problems.
- To provide students with a good knowledge to design and implement computer programming using OOP for solving Electrical Engineering problems.
- Develop the skills of marketing programs.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2, A5, A9,A13	B1, B2, B7, B8	C1,C5,C6	D3, D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT).	a2-1)Demonstrate understanding the basics of object oriented programming to solve problems related to electrical engineering.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1) Illustrate Methodologies of solving engineering problems, data collection and interpretation.
	A9) Discuss Topics related to humanitarian interests and moral issues.	a9-1)Explain marketing programs.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose analytical and computer methods appropriate for electrical power and machines engineering.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.	b1-1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Select appropriate solutions for engineering problems based on analytical thinking.
	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1) Design computer programs for solving electrical circuit problems.
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1)Gain the awareness of the importance of computer application to electric circuit analysis, dynamic simulation, and data analysis.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve Electrical engineering problems.
	C5)Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results related to Electrical Engineering.
	C6)Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
	D3) Communicate effectively	d3-1) Communicate effectively to analysis of more complex systems that can be treated by pencil and paper. d3-2) Abble to assign fairly complex design problems that otherwise would have been unrealistic without the help of such software.
General skills	D4)Demonstrate efficient IT capabilities.	d4-1)Reinforcement of student understanding of theoretical principles by means of enhanced graphical aids and interactive simulations.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to object Oriented Programming.	1
2nd	Introduction to Visual Basic (Visual Basic Concepts, How windows work, interactive development, project explorer window, form design, and code editor window).	2
3rd	Toolbox, Programming Fundamental (code writing mechanics, code editor window, code basics, variables, constants, and data types).	3
4th	Control Structures (Decision structures, loop structures).	4-5
5th	Loop structures (Examples related to electrical engineering problems).	6-7
6th	Arrays (Examples related to electrical engineering problems).	9
7th	Input data from a file and write data to file (Examples related to electrical engineering problems)	10
8th	Applications related to electrical engineering problems and others related to social environmental.	11-12
9th	Marketing a programs	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Lab.	
WEEK-1	Introduction to object Oriented Programming.	4	2	2	a2-1, c6-1
WEEK-2	Introduction to Visual Basic (Visual Basic Concepts, How windows work, interactive development, project explorer window, form design, and code editor window).	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1 ,c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-3	Toolbox, Programming Fundamental (code writing mechanics, code editor window, code basics, variables, constants, and data types).	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-4	Control Structures (Decision structures, loop structures).	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-5	Loop structures. (Examples related to electrical engineering problems)	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-6	Arrays. (Examples related to electrical engineering problems)	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-7	Input data from a file and write data to file (Examples related to electrical engineering problems)	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-8	Midterm written examination				
WEEK-9	Arrays. (Examples related to electrical engineering problems)	4	2	2	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEK-10	Input data from a file and write data to file (Examples related to electrical engineering problems)	4	2	2	a2-1,a13-1,b2-1, b7-1, b8-1, c1-1, d3-1, d3-2,d4-1
WEEKS-11,12	Applications related to electrical engineering problems and others related to social environmental.	8	4	4	a2-1,a5-1, a13-1, b1-1, b2-1,b7-1, b8-1, c1-1,c5-1, d3-1, d3-2,d4-1
WEEKS-13,15	Marketing a programs	12	6	6	a2-1,a5-1,a9-1,a13-1, b1-1, b2-1, b7-1, b8-1, c1-1, c5-1, d3-1, d3-2,

					d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a2-1	*		*		*	*			*	*			*
	a5-1	*	*	*		*	*	*	*		*		*	*
	a9-1	*		*			*	*			*			
	a13-1	*	*	*				*		*	*		*	
Intellectual Skills	b1-1	*	*	*		*	*	*		*	*		*	*
	b2-1	*	*	*		*	*	*		*	*	*	*	
	b7-1	*		*		*	*	*		*	*			
	b8-1	*	*	*		*	*	*	*	*	*			*
Professional Skills	c1-1	*	*	*		*	*	*	*	*	*		*	
	c5-1	*		*		*	*	*	*	*	*		*	*
	c6-1	*	*	*		*	*	*	*	*	*		*	*
General Skills	d3-1	*	*	*		*	*	*	*	*	*	*		
	d3-2	*	*	*		*	*	*	*	*	*	*		
	d4-1		*	*		*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Examine	Oral Examine	Tutorial Assessment	Project	Model	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exams	Monitoring
Knowledge & Understanding	a2-1	*	*					*		*	*	*	
	a5-1	*	*		*	*	*	*		*	*		
	a9-1	*	*				*			*			
	a13-1	*						*		*			
Intellectual Skills	b1-1	*				*	*	*		*		*	
	b2-1	*			*	*	*	*		*		*	
	b7-1	*			*		*	*		*		*	
	b8-1	*					*		*		*		
Professional Skills	c1-1	*	*		*		*	*	*	*	*	*	
	c5-1	*	*		*		*		*	*	*		
	c6-1	*			*	*		*	*	*	*	*	
General Skills	d3-1	*	*		*		*	*	*	*	*	*	
	d3-2	*	*		*		*	*	*	*	*	*	
	d4-1	*	*		*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	60	60%	16th
Mid-Term Examination (Written)	10	10%	8th
Term work (Tutorial and report assessment)	10	10%	Weekly
Mid term laboratory assessment (*Oral*)	5	5%	8th
End of term laboratory examination (*Lab*)	5	5%	15th

Oral Examination	**10**	**10%**	**15th**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

References

1-Carlotta B.Eaton, "Exploring Microsoft Visual Basic 6.0", Copyright by Prentice-Hall, Inc., A Simon & Schuster Company, Upper Saddle River, New Jersy, USA, 1999

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Course coordinator Head of the Department

Prof.Dr.Ashraf Salah El Din Zein El Din Prof.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3rd year**

Course Specification

A-Basic Information

Title: ***Mathematics(4)*** ***Code Symbol:BES311***
Element of program: ***Major*** ***Date of specification approval: 2011***
Department offering the course:Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
------	100%	----	------	-------	------	-------	100%

B-Professional Information

2- Course Aims:

To provide a sound foundation in more advanced areas of mathematics of most relevance to engineering.

3- Course Objectives:

- To understand numerical solving of mathematical problems
- To test the best numerical method
- To use the computer in numerical solutions

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A5	B1,B2	C1,C7	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) **Demonstrate** understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Demostrate understanding of Partial Differential Equations (PDE), Numerical methods for solving (PDE and ODE), Complex Variables and its application in

		Electricity and Approximate methods for solving equations.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies of solving engineering problems, data collection and interpretation
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Develop Problem solving skills.
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1Apply numerical and analytical methods skills for solving engineering problems.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Apply knowledge of mathematicsin solving real application in power system such as Integration of building systems, Construction documents preparation and Construction cost analysis and control
	C7) Apply numerical modeling methods to engineering problems	c7-1) Apply numerical modeling methods related to electrical engineering problems
General skills	D3) Communicate effectively.	d3-1)Mastering communication skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Orthogonal Functions	1
2nd	Sturm-Liouville Problem (S-L)	2
3rd	Partial Differential Equations in Engineering	3
4th	Separation of variable	4
5th	Non-homogenous PDE	5
6th	The method of characteristics	6
7th	The transmission line	7
8th	Solution of systems of linear algebraic equations by iterations.	9
9th	Solution of systems of non-linear algebraic equations by iterations.	10
10th	Numerical methods for solving ODE	11
11th	Numerical methods for solving PDE	12
12th	Trigonometric polynomial approximations equations	13
13th	Complex analysis- contour integration, conformal mapping	14
14th	Perturbation methods	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	Orthogonal Functions	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-2	Sturm-Liouville Problem (S-L)	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1

WEEK-3	Partial Differential Equations in Engineering	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-4	Separation of variable	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-5	Non-homogenous PDE	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-6	The method of characteristics	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-7	The transmission line	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-8	Midterm of first Term (written examination)				
WEEK-9	Solution of systems of linear algebraic equations by iterations.	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-10	Solution of systems of non-linear algebraic equations by iterations.	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-11	Numerical methods for solving ODE	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-12	Numerical methods for solving PDE	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-13	Trigonometric polynomial approximations equations	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-14	Complex analysis- contour integration, conformal mapping	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1
WEEK-15	Perturbation methods	4	2	2	a1-1, a5-1,b1-1, b2-1, c1-1,c7-1,d3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a1-1**	*	*	*	*	*	*			*	*			
	a5-1	*	*	*	*	*	*				*		*	
Intellectual Skills	**b1-1**	*	*	*	*	*	*			*	*		*	
	b2-1	*	*	*	*	*	*			*	*	*	*	
Professional Skills	**c1-1**	*	*	*	*	*	*			*	*		*	
	c7-1	*	*		*	*				*			*	
General Skills	**d3-1**	*	*	*	*	*	*			*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.

	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	Monitoring
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*		*	
	a5-1	*	*	*		*	*	*		*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b2-1	*		*		*	*	*		*		*	
Professional Skills	**c1-1**	*	*	*			*	*	*	*		*	
	c7-1	*		*		*	*		*	*			
General Skills	**d3-1**	*	*	*			*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination (Written)	**15**	**15%**	**8th**
Term work (Tutorial and report assessment)	**15**	**15%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

Thomas and Finney, "Calculus and Analytic Geometry", Addison-Westey Publishing Company, USA, 1984.

****

Course coordinator **Head of the Department**

Dr. Islam Mohammad El-Desoky Prof. Dr. Gamal Ibrahim Mohamed

Electrical Eng. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3rd ELEC.**

Course Specification

A-Basic Information

Title: *Electrical PowerEngineering(2)* ***Code Symbol:*** *ELE311*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*-*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
		20%	40%	20%		20%	100%

B-Professional Information

2- Course Aims:

This course integrates the basic principles of power systems analysis illustrated through the simplest system structure.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the characteristics of different types of transmission line and transmission network.
- Studying the performance of power system using power circle diagram.
- Representation of power networkusing per unit calculation and admittance matrix.
- Recognize the fundamentals of power system economics.
- Understand the basics of reactive power control of power systems
- Studying different methods for improving the power factor.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)

Course Contents

	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A15, A17	B13, B14, B16	C1, C17	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A15) Explain Principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1) Explain the characteristics of long transmission line a15-2) Explain the methods of representation of power system network
	A17) Explain Basic electrical power system theory	a17-1) Demonstrate Understanding the principals of reactive power compensation and power factor improvement a17-2) Demonstrate Understanding the economic operation of electrical power systems
Intellectual skills	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Formulate the mathematical models for transmission lines and network equations b13-2) Represent the power system in per unit b13-3) Formulate the problem of economic dispatch
	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines	b14-1) Analyze system performance under different operating conditions and short circuits
	B16) Analyze the performance of electric power generation, control and distribution systems	b16-1) Analyze the economic operation of power systems b16-2) Analyze the performance of system with reactive power compensators
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems	c1-1) Use admittance matrix to solve and analyze power system performance
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Apply modern control strategy for reactive power and power factor improvement c17-2)Evaluate the efficiency of DC transmission system
General skills	D9) Refer to relevant literatures	d9-1) Refer to new concepts of FACTS

6- Course Topics.

Topic No.	General Topics	Weeks
1	Steady State Performance of long Transmission Lines	1-2
2	Power Circle Diagrams	3-4
3	Representation of Power Systems	5-6
4	Network Equations and Solutions	7,9
5	Economic Operation of Power Systems	10-11
6	Control of Voltage and Reactive Power	12-13
7	Short circuit calculations	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Steady State Performance of Transmission Lines	5	3	2	a15-1, b13-1
WEEK-2	Long transmission lines	5	3	2	a15-1, b13-1
WEEK-3	Power Circle Diagrams	5	3	2	a15-1, b13-1, b13-3
WEEK-4	Power Circle Diagrams	5	3	2	a15-1, b13-1, b13-3
WEEK-5	Representation of Power Systems	5	3	2	a15-2, b13-1
WEEK-6	Per unit calculations	5	3	2	b13-2, b14-1
WEEK-7	Network Equations and Solutions	5	3	2	a15-2 , b13-1, b14-1,c1-1
WEEK-8	Midterm written examination				
WEEK-9	Network Equations and Solutions	5	3	2	a15-2, b13-1, b14-1 ,c1-1
WEEK-10	Economic Operation of Power Systems	5	3	2	a17-2 , b16-1
WEEK-11	Loss formula	5	3	2	a17-2 , b16-1
WEEK-12	Control of Voltage and Reactive Power	5	3	2	a17-1 , b16-2 , c17-1
WEEK-13	Power factor improvement	5	3	2	a17-1 , b16-2 , c17-1
WEEK-14	Power Transmission by DC Systems	5	3	2	c17
WEEK-15	Power Transmission by DC Systems	5	3	2	c17

8- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a15-1**	*		*	*	*								
	a15-2	*		*	*	*								
	a17-1	*		*	*	*								
	a17-2	*		*	*	*								
Intellectual Skills	**b13-1**	*		*	*	*								
	b13-2	*		*	*	*								
	b13-3	*		*	*	*								
	b14-1	*		*	*	*								
	b16-1	*		*	*	*								
	b16-2	*		*	*	*								
Professional Skills	**c1-1**	*		*	*	*								
	c17-1	*		*	*	*								
	c17-2	*		*	*	*								
General Skills	**d9-1**		*	*										

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & understanding	**a15-1**	*			*								
	a15-2	*			*								
	a17-1	*			*		*						
	a17-2	*			*								
Intellectual Skills	**b13-1**	*			*								
	b13-2	*			*								
	b13-3	*			*								
	b14-1	*			*								
	b16-1	*			*								
	b16-2	*			*								
Professional Skills	**c1-1**	*			*								
	c17-1	*			*								
	c17-2	*			*								
General Skills	**d9-1**						*						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**85**	**68**	**16th**
End of term laboratory examination (*Lab*)	**-**	**-**	**-**
Mid term written Examination (*Term Work*)	**20**	**16**	**8th**
Tutorial and report assessment (*Term Work*)	**20**	**16**	**Weekly**
laboratory assessment (*Term Work*)	**-**	**-**	**-**
Total	**125**	**100%**	

11- Facilities required for teaching and learning:

11-1Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports. At least one report should involve a significant component of library research to encourage this component of study.

12- List of references:

1-I.J. Nagrath, D.P. Kothari, "Modern Power System ANALYSIS", Tata Mc Graw Hill publishing Company limited 1969.
2- W.D. Stevenson, "Elements of Power System Analysis", Mc Graw Hill Book Company 1972 .

Course Coordinator	Head of the Department
Dr./Soher Mohamed Allam	Prof.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 3rd Year

Course Specification

A-Basic Information

Title: *Electrical Machine (2)*
Code Symbol: *ELE312*
Element of program: *Major/ minor*
Date of specification approval: *2011*
Department offering the course: *Electrical Eng. Dept.*
By law 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*----*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	----	16.66%	33.33%	16.66%	33.33%	100%

B-Professional Information

2- Course Aims:

This course is concerned with the construction, analysis, equivalent circuits and performance behavior of AC machines.

3- Course Objectives:

- Understand the operation and characteristics of three-phase induction motor
- To understand the operation and characteristics of synchronous generator
- To understand the operation and characteristics of synchronous motor

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A15, A19	B5,B13	C14	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4) Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a-4-1)Illustrate theory of electromechanical energy conversion. a4-2) Explain the concepts of fundamental torque equation and rotating and oscillating fields. a4-3) Explain fundamental characteristics of various types of ac machines. a4-4) Show the concept of the equivalent circuit. a4-5) Illustrate Construction and design issues associated with electrical machines.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a-15-1)Explain principles of operation of electrical a-c generators and a-c motors.
	A19- Define diverse applications of electrical equipment.	a19-1) List different Applications of induction and synchronous machines.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1)Appreciate the complexity of design of electromechanical devices. b5-2)Derive equations describing operation of ac machines. b5-3)Formulate relevant equivalent circuits. b5-4)Compare and contrast the operation of different types of ac machines.
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Identify different types of ac electrical machines. b13-2)Analyze simple problems related to operation of ac machines.
Professional skills	C14) Test and examine components, equipment and systems of electrical power and machines.	c14-1) Tackle problems of analysis of performance. c14-2)Explain the shape of characteristics of actual ac machines. c14-3) Apply equivalent circuits to performance prediction. c14-4)Interpret results and correlate them with theoretical predictions. c14-5)Perform simple tests on ac machines.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1)Work in a small team to conduct an experiment.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to rotating machines: Underlying concepts and features of rotating machines; fundamental torque equation; rotating field principle; air-gap mmf and permeance; 3-phase windings; winding factors.	1-2
2nd	Synchronous machines: voltage regulation; load angle; synchronous machine on infinite busbars; effects of saturation; salient-pole machine; synchronising; synchronous motor; V curves; power factor correction.	3-6
3rd	Polyphase induction motors: Basic theory and construction of squirrel-cage and wound-rotor motors; equivalent circuit; measurement of equivalent circuit parameters; analysis of machine equations; speed/torque curves; circle diagram; starting performance; speed control; single-phase induction motor; deep bar effect in squirrel-cage induction motor.	7,9-11
4th	Single-phase ac motors: Outline of shaded-pole, universal, permanent magnet, and reluctance machines with applications.	12-14
5th	AC series motor construction and analysis.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEKS-1,2	Introduction to rotating machines: Underlying concepts and features of rotating machines; fundamental torque equation; rotating field principle; air-gap mmf and permeance; 3-phase windings; winding factors.	12	8	4	a4-1,a4-2,a4-3,a4-4, a4-5,a15-1,a19-1,b5-1, b5-2,b5-3,b5-4,b13-1, b13-2, c14-1,c14-2, c14-3,c14-4,c14-5,d1-1
WEEKS-3-6	Synchronous machines: voltage regulation; load angle; synchronous machine on infinite busbars; effects of saturation; salient-pole machine; synchronising; synchronous motor; V curves; power factor correction.	24	16	8	a4-1,a4-2,a4-3,a4-4, a4-5,a15-1,a19-1,b5-1, b5-2,b5-3,b5-4,b13-1, b13-2, c14-1,c14-2, c14-3,c14-4,c14-5,d1-1
WEEK-7	Polyphase induction motors: Basic theory and construction of squirrel-cage and wound-rotor motors;	6	4	2	a4-1,a4-2,a4-3,a4-4, a4-5,a15-1,a19-1,b5-1, b5-2,b5-3,b5-4,b13-1, b13-2, c14-1,c14-2, c14-3,c14-4,c14-5,d1-1
WEEK-8	Midterm written examination				
WEEKS-9-12	Polyphase induction motors : equivalent circuit; measurement of equivalent circuit parameters; analysis of machine equations; speed/torque curves; circle diagram; starting performance; speed control; single-phase induction motor; deep bar effect in squirrel-cage induction motor.	24	16	8	a4-1,a4-2,a4-3,a4-4, a4-5,a15-1,a19-1,b5-1, b5-2,b5-3,b5-4,b13-1, b13-2, c14-1,c14-2, c14-3,c14-4,c14-5,d1-1
WEEKS-13-14	Single-phase ac motors: Outline of shaded-pole, universal, permanent magnet, and reluctance machines with applications.	12	8	4	a4-1,a4-2,a4-3,a4-4, a4-5,a15-1,a19-1,b5-1, b5-2,b5-3,b5-4,b13-1, b13-2, c14-1,c14-2, c14-3, c14-4,c14-5,d1-1
WEEK-15	AC series motor construction and analysis.	6	4	2	a4-1,a4-2,a4-3,a4-4, a4-5,a15-1,a19-1,b5-1, b5-2,b5-3,b5-4,b13-1, b13-2, c14-1,c14-2,c14-3, c14-4, c14-5,d1-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a4-1	*	*	*	*	*	*	*	*	*	*			
	a4-2	*	*	*	*	*	*	*	*	*	*			
	a4-3	*	*	*	*	*	*	*	*	*	*			
	a4-4	*	*	*	*	*	*	*	*	*	*			
	a4-5	*	*	*	*	*	*	*	*	*	*			
	a15-1	*	*	*	*	*		*	*					
	a19-1	*	*	*	*	*	*			*	*			
Intellectual Skills	b5-1	*	*	*	*	*		*		*	*		*	
	b5-2	*	*	*	*	*		*		*	*		*	
	b5-3	*	*	*	*	*		*		*	*		*	
	b5-4	*	*	*	*	*		*		*	*		*	
	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
Professional Skills	c14-1	*	*		*	*		*			*			
	c14-2	*	*		*	*		*			*			
	c14-3	*	*		*	*		*			*			
	c14-4	*	*		*	*		*			*			
	c14-5	*	*		*	*		*			*			
General Skills	D1-1	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment
10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Examine	Oral Examine	Tutorial Assessment	Project	Model	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exams	Monitoring
		Assessment Methods											
Knowledge & Understanding	a4-1	*	*	*	*			*		*		*	
	a4-2	*	*	*	*			*		*		*	
	a4-3	*	*	*	*			*		*		*	
	a4-4	*	*	*	*			*		*		*	
	a4-5	*	*	*	*			*		*		*	
	a15-1	*		*			*	*	*	*			
	a19-1												
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*			
	b5-2	*	*	*	*	*	*	*		*			
	b5-3	*	*	*	*	*	*	*		*			
	b5-4	*	*	*	*	*	*	*		*			
	b13-1	*		*			*	*		*		*	
	b13-2	*		*			*	*		*			
Professional Skills	c14-1		*				*			*			
	c14-2		*				*			*			
	c14-3		*				*			*			
	c14-4		*				*			*			
	c14-5		*				*			*			
General Skills	d1-1	*	*	*		*	*	*	*				

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	100	66.66%	16th
Mid-Term Examination **(Written)**	20	13.33%	8th
Term work **(Tutorial and report assessment)**	30	20%	Weekly
Total	150	100%	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Sarma M S, Electric Machines, Steady-state Theory and Dynamic Performance, Publisher: West Publishing Company, 1994.

2-A E Fitzgerald, Charles Kingsley, Stephen D Umans, Electric Machinery, Fifth Edition, Publisher: Mc-Graw-Hill Book Company, 1992.

3-Charles I Hubert, Electric Machines, Theory, Operation, Application, Adjustment and Control, Publisher: Macmillan Publishing Company, 1991.

4-Sen, P. C., " Principles of Electric Machines and Power Electronics", Second Edition, (Book) John Wilely & Sons, Inc. 1977.

5-Fitzgerald, A. E., Kingsley, C. and Kusko, A. " Electric Machinery" Third Edition, (Book) McGraw-Hill, Inc, N.Y. 1971.

6-Slemon, R., and Straughen A. " Electric Machines", (Book) Addison-Wesley Publishing Company, Inc. 1980.

7-Guru, B. S., and Hiziruglu, H., " Electric Machinery and Transformers", Second Edition, (Book) Harcourt Brace & Company, 1988.

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Course coordinator	Head of the Department
Prof. Dr Fathi El-Sayed Abdel Kader	Prof.Dr. Gamal Abdel-Wahab Morsy
Prpf.Dr.Mostafa El-Sayed El-Shebini	

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: *Automatic Control Systems* ***Code Symbol:*** *ELE313*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	-----	66.66%	---	16.66%	16.66%	100%

B-Professional Information

2- Course Aims:

This course introduces the student to develop a deep understanding of conventional and modern control techniques. This involves modeling, representation and analysis of various dynamical systems. The course deals with modeling, block diagram representation and examining the transient response of dynamical systems when subjected to a variety of input signals. The course also introduce the students to the feedback philosophy, factors that affect steady state and transient stability using various techniques. Controller design and compensation will also be considered. The students are also introduced to the representation of dynamical systems in state space..

3- Course Objectives:

- To understand the classical approaches for modeling linear feedback control system.
- To understand the different methods used for analyzing the performance of the open and closed loop control systems, such as stability, error criteria, etc.
- To design the control components by using time and frequency domains, such as root locus, Bode plot and polar plot.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A5	B1,B8,B13,B14	C6,C17	D1,D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Explain theory and principals of the modeling of dynamic systems. a1-2)Illustrate different theories of system stability.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1)Demonstrate understanding the open and closed loop systems. a5-2)Explain transient and steady state performance of systems.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Design controllers to improve the dynamic characteristics of the systems
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1) Develop techniques to design control systems
	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Solve the control problems of multi-input multi-output systems. b13-2)Evaluate the performance of transient performance of systems in open and closed loop conditions
	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.	b14-1)Analyze and assess system performance in frequency domain, s-domain and state space .
Professional skills	C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1) Apply techniques to examine system stability in both open and closed loop systems. c6-2)Use different tools to build control systems
	C17-Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Build a simple control system to control specific variable.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Collaborate effectively within Group working
	D3) Communicate effectively.	d3-1Gain experience to analyze the performance of dynamical systems equipped with controllers.
	D4) Demonstrate efficient IT capabilities.	d4-1)Use IT in the design of control systems .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	SYSTEM REPRESENTATION: Transfer function-Definitions- Types of control systems- Block diagram and signal flow graph representation	1
2nd	SYSTEM MODELING Electrical systems- Mechanical Systems- Electromechanical systems- Mechanical and Electrical system Analogy .	2
3rd	System Response Input Signals- First order system response- Second order system response.	3
4th	Steady state error analysis, Root Locus Analysis	4
5th	FREQUENCY RESPONSE ANALYSIS Frequency response methods- Bode Plot- Bode Plot of various system types Nyquist Plot –Phase margin- gain Margin - Stability analysis	5-7
6th	Compensation Lag compensation – Lead Compensation – Lead/Lag Compensation	9-10
7th	NONLINEAR CONTROL Type of nonlinearities-describing function – ON/OFF nonlinearity Saturation nonlinearity-Dead Zone nonlinearity– Hysterics nonlinearity	11-12
8th	CONTROL SYSTEM ANALYSIS IN STATE SPACE System representation- state space format- Eigen values analysis- Partial fraction- digitalization	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	SYSTEM REPRESENTATION: Transfer function-Definitions- Types of control systems- Block diagram and signal flow graph representation	6	4	2	a1-1,a1-2,a5-1
WEEK-2	SYSTEM MODELING Electrical systems- Mechanical Systems- Electromechanical systems- Mechanical and Electrical system Analogy .	6	4	2	a1-1,a1-2,b1-1, b8-1, d1-1, d3-1, d4-1
WEEK-3	System Response Input Signals- First order system response- Second order system response.	6	4	2	a5-1,b13-1,b13-2, d1-1, d3-1,d4-1
WEEK-4	Steady state error analysis, Root Locus Analysis.	6	4	2	a5-1, b14-1, c6-1, d1-1, d3-1,d4-1
WEEKS-5-7	FREQUENCY RESPONSE ANALYSIS Frequency response methods- Bode Plot- Bode Plot of various system types Nyquist Plot –Phase margin- gain Margin - Stability analysis	18	12	6	a1-1,a1-2,a5-1, c6-1, d1-1, d3-1, d4-1
WEEK-8	Midterm written examination				

WEEKS-9-10	Compensation Lag compensation– Lead Compensation – Lead/Lag Compensation	12	8	4	a1-1,a1-2,a5-1, b8-1, c6-2, d1-1, d3-1,d4-1
WEEKS-11-12	NONLINEAR CONTROL Type of nonlinearities-describing function – ON/OFF nonlinearity Saturation nonlinearity-Dead Zone nonlinearity– Hysterics nonlinearity	12	8	4	a1-1,a1-2,a5-1, b13-1,b13-2, b13-3, d1-1,d3-1, d4-1
WEEKS-13-15	CONTROL SYSTEM ANALYSIS IN STATE SPACE System representation- state space format- Eigen values analysis- Partial fraction- digitalization	18	12	6	a1-1,a1-2,a5-1, b14-1, c17-1,d1-1, d3-1,d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			
	a1-2	*	*	*	*	*	*	*		*	*			
	a5-1	*	*	*	*	*	*	*	*		*		*	
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	
	b8-1	*	*	*	*	*	*	*	*	*	*			
	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
	b14-1	*		*	*	*	*				*			
Professional Skills	c6-1	*	*	*	*	*	*	*	*	*	*		*	
	c6-2	*	*	*	*	*	*	*	*	*	*		*	
	c17-1	*	*	*	*	*		*		*	*	*	*	
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modeling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	Monitoring
		Assessment Methods											
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*		*	
	a1-2	*	*	*			*	*	*	*		*	
	a5-1	*	*	*	*	*	*	*		*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b8-1	*		*			*		*				
	b13-1	*		*			*	*		*			
	b13-2	*		*			*	*		*			
	b14-1	*	*	*			*	*		*			
Professional Skills	**c6-1**	*		*	*	*		*	*	*		*	
	c6-2	*		*	*	*		*	*	*		*	
	c17-1	*		*	*		*						
General Skills	**d1-1**	*	*	*		*	*	*	*				
	d3-1	*	*	*	*		*	*	*	*		*	
	d4-1	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**100**	**66.67%**	**16th**
Mid term laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab*)	**-**	**-**	**-**
Mid term written Examination1 (*Term Work*)	**20**	**13.33%**	**8th**
Mid term written Examination 2 (*Term Work*)	**20**	**13.33%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**6.67%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-K. Ogata, ”Modern Control Engineering”, Printice Hall, 1990
2-R. Dorf. and R., Modern_Control_Systems , Bisop 11th_Edition, 2004
3-B.C. Kuo, “Automatic Control Systems”, Printice Hall, 1995

Course coordinator	Head of the Department
Prof. Dr. Housien Abdel-Azim Yasin	**Prof.Dr. Gamal Abdel-Wahab Morsy**
Prof. Dr. Gamal Abel-Wahab Morsy	

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: *Power Electronics* ***Code Symbol:*** *ELE314*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	-----	66.66%	---	16.66%	16.66%	100%

B-Professional Information

2- Course Aims:

The course aims at development of the student's skills to deal with electronic circuits of high power. This includes building, operating and using power converters in useful applications. Also, using mathematics to predict performance of power converter systems and their drawbacks on the supply and other equipment is an essential aim of this course.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of power electronics.
- Build and use power converters for conditioning the mains to satisfy load requirements.
- Realizing of the different types of converter.
- Evaluation of the suitable converters for various power system.
- Analysis of different power electronic converter problems and their drawbacks on the supply .

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A8, A19	B13	C13, C17	D6

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4) Understanding Principle of design including elements design, process and/or a system related to the Electrical power Engineering.	a4-1) Describe the power electronic devices, their characteristics and operation control.
	A8) Recognize current engineering technologies as related to the electrical power engineering	a8-1) Identify the different types of converter. a8-2) Identify the the converters for conditioning the mains to satisfy load requirements.
	A19) Diverse Applications of electrical equipment	a19-1) Define the operation of converter application systems.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Select the suitable power converter for different system configurations based on solving nonlinear circuits encountered in the topics of power electronic engineering course.
Professional skills	C13- Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1)Design and control the power converters c13-2) Analyze the performance of load and source under various operating conditions
	C17-Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Apply modern techniques, skills and power electronic tools to electrical power and machines engineering systems.
General skills	D6- Effectively manage tasks, time, and resources.	d6-1) Effectively manage resources to build the converter system.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Power electronic devices	1-3
2nd	A.C. voltage controllers.	4-6
3rd	Controlled rectifiers.	7-10
4th	DC-to-DC converters.	11-12
5th	Frequency converters	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Power Semiconductor Devices. Comparison of Power Semiconductor Devices	6	4	2	-	a4-1
WEEK-2	Thyristor Ratings The Single-Phase Half-wave Rectifier Behavior	6	4	2	-	a4-1,a8-1
WEEK-3	Some Features of Converter Circuits Some Basic Definitions	6	4	2	-	a8-1,a8-2
WEEK-4	AC VOLTAGE CONTROLLERS Introduction Control Methods.	6	4	2	-	a8-1, a8-2, c13-1, c13-2, d6-1
WEEK-5	Integral Cycle Control Contactors.	6	4	2	-	a8-1, a8-2, a19-1, b2-1 c13-1,c13-2
WEEK-6	phase Control The Differential A.C. Controller Three-Phase A.C. Controller Circuits	6	4	2	-	a8-1, a8-2, a19-1, b2-1,c13-1, c13-2, c17-1
WEEK-7	CONTROLLED RECTIFIERS Introduction. Centre-Tap Rectifiers Single-phase Three-phase	6	4	2	-	a8-1,a8-2, c13-1,c13-2
WEEK-8	Midterm written examination					
WEEK-9	Bridge Rectifiers Single-phase Three-phase	6	4	2	-	a8-1, a8-2, c13-1,c13-2
WEEK-10	Effect of The Supply Inductance The Dual-Converter Terminal Characteristics of AC-to-DC Converters	6	4	2	-	a8-1, a8-2, a19-1, b2-1, c13-1,c13-2
WEEK-11	Speed Control of DC Motors Speed Control of Wound Rotor Induction Motors	6	4	2	-	a19-1,b13-1, c17-1,d6-1
WEEK-12	DC-TO-DC CONVERTERS Introduction. Applications Principle of Operation	6	4	2	-	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2
WEEK-13	Thyristor Choppers	6	4	2	-	a8-1,a8-2
WEEK-14	FREQUENCY CONVERTERS Cycloconverters. The Synchroconverter	6	4	2	-	a8-1, a8-2, a19-1, b13-1, c17-1,d6-1
WEEK-15	The D.C. Link Inverters. The Push-Bull Inverter. The Inverter Output Waveform and Voltage Control.	6	4	2	-	a8-1,a8-2, b13-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a4-1**	*			*	*								
	a8-1	*			*	*								
	a8-2	*			*	*								
	a19-1	*			*	*				*	*			
Intellectual Skills	**b13-1**	*			*	*								
Professional Skills	**c13-1**	*			*	*								
	c13-2	*			*	*								
	c17-1	*			*	*					*			
General Skills	**d6-1**	*			*	*				*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a4-1**	*											
	a8-1	*			*								
	a8-2	*			*								
	a19-1	*			*								
Intellectual Skills	**b13-1**	*			*		*						
Professional Skills	**c13-1**	*			*								
	c13-2	*			*								
	c17-1	*			*		*						
General Skills	**D6-1**						*						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**100**	**66.67%**	**16th**
Mid term laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab*)	**-**	**-**	**-**
Mid term written Examination1 (*Term Work*)	**20**	**13.33%**	**8th**
Mid term written Examination 2 (*Term Work*)	**20**	**13.33%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**6.67%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory

Power Electronics Lab. is used to execute all experimental related to power electronics course.

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

12.1- Course notes

12.2- Essential books (text books)

1- M.H. Rashid. "Power Electronics" third edition, pearson, Prentice-Hall, 2004 .

12.3- Recommended books

1- S.B. Dewan, and A.Straughen. "Power semiconductor circuits" Jhn Wiley & sons, 1984

2- T.M. Mohan, et al. "Power Electronis. Converters appli -cations and design. 1989 .

12.4- Periodicals, web sites, … etc

Course coordinator **Head of the Department**

Prof. Dr. Abd-El Salam El-BasmyProf.Dr. Gamal Abdel-Wahab Morsy
Prof.Dr.Azza Mohamed Ezat Lashine

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st and 2nd Term**
Minoufiya University **Academic level: 3rd year**

Course Specification

A-Basic Information

Title: *Electrical Testing(1)* ***Code Symbol:****ELE305*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: Electrical Engineering Dept. ***By law 2006***

Lecture	Tutorial	Laboratory	Total
-----	----	6	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
----	-------	16.66%	33.33%	-------	33.33%	16.66%	100%

B-Professional Information

2- Course Aims:

The aim of this course is to provide the students with the preliminary practical experience in all electric engineering fields.

3- Course Objectives:

- To be familiar with eclectic machines.
- Toget the basics of power system operation.
- To get the basics of power electronics.
- To get the basics of control theory.
- To get the basics of High Voltage Engineering.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4,A15	B5	C13,C14,C15	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4)Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a4-1) Explain basics of eclectic machines. a4-2)Explain basics of electric power systems a4-3) Explain the basics of power electronics. a4-3) Illustrate the basics of control theory. a4-5)Illustrate the basics of High voltage Eng.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems	a15-1) Get the basics operation of electric machines, power system, power electronics equipments, automatic control systems operation and high voltage tests.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1)Prepare technical and operational specifications of electric components
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power and machines systems.	c13-1)Design and performs three-phase I.M. test, single-phase I.M. and synchronous macjines. c13.2)Modelling of D.C. power Network., perform experiment of control of reactive power and perform solar photovoltaic power generation.
	C14) Test and examine components, equipment and systems of electrical power and machines.	c14-1)Test and examin simple rectifiers, simple phase control circuits, the Unijunction transistor trigger circuit and full-wave phase control of either a-c and d-c load. c14-2)Test of breakdown in non-uniform fields of Corona discharge, liquid dielectric test, and high voltage measurements.
	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	c15-1)Design and performs of addition, multiplaction and integration using operational amplifiers. C15-2)Test and examin the characteristics of first and second order system. C15-3)Test and examin D-C servo system.
General skills	D3) Communicate effectively.	d3-1 communication and team work

6- Course Topics.

Topic No.	General Topics	Weeks
1st	**Electric Machines:** • Three-phase Induction Motor characteristics and effect of rotor resistance. • Single-phase Induction Motor performance. • Synchronous Machines operation and regulation.	30
2nd	**Electrical Power System:** • Reactive power control using DC network analyzer. • Double busbar basic system. • Network solution node elimination by matrix partitioning. • Solar photovoltaic power generator.	30
3rd	**Automatic Control:** • Operational amplifiers applications. • Design and performs different control systems. • Study steady-state error. • Investigate the stability of linear closed-loop system. • DC servo motor.	30
4th	**Power Electronics.** • Design and performs of Half-Wave rectifier, a Full-Wave rectifier, and single-phase control circuits. • Examine the characteristics of unijunction transistor trigger circuit. • Study the operation of full-wave phase control of both ac and dc loads.	30

7- Course Topics/hours/ILOS

Teaching of the Electrical Testing (1) course is distributed for four laboratories through a complete educational year. For each laboratory, seven experiments are prepaired and accomplished where each experiment is repeated for four weeks. Each student class is divided into two groups for the four laboratories.

7-1 Experiments of the Electrical Machine Laboratory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1:Study the Three-phase Induction Motor characteristics on either no-load, locked rotor and on load.	3	a4-1, a15-1, c13-1, d13-1
WEEK-5-8	Exp-2:Study and perform three-phase induction motor effect of rotor resistance on torque/speed characteristics.	3	a4-1, a15-1, c13-1, d13-1
WEEK-9-12	Exp-3:Study the Single-phase Induction Motor performance using different values of capacitors.	3	a4-1, a15-1, c13-1, d13-1
WEEK-13-16	Exp-4:Study Synchronous Machines on either no-load test or load test.	3	a4-1, a15-1, c13-1, d13-1

WEEK-17-20	Exp-5:Study Synchronous Machines voltage regulation.	3	a4-1, a15-1, c13-1, d13-1
WEEK-21-24	Exp-6:Study Synchronous Machines parallel operation.	3	a4-1, a15-1, c13-1, d13-1
WEEK-25-28	Exp-7:Study Synchronous Machines motor operation.	3	a4-1, a15-1, c13-1, d13-1
WEEK-29-30	Exp-8: Revision.	3	a4-1, a15-1, c13-1, d13-1

7-2 Experimentsof the Control Laboratory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1: Design and perform Addition and subtraction using operational amplifiers experiment.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-5-8	Exp-2: Design and perform integration using operational amplifiers experiment.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-9-12	Exp-3:Design and perform first order system for unit step input.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-13-16	Exp-4:Design and perform second order system for unit step input.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-17-20	Exp-5: Study state error evaluation subjected to different input signals.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-21-24	Exp-6: Frequency response method: stability investigation of linear closed loop system and frequency response.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-25-28	Exp-7: Dc servo system.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-29-30	Exp-8: Revision.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1

7-3 Experimentsof the Power Electronic Laboratory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1:Examine the characteristics of unijunction transistor trigger circuit.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-5-8	Exp-2: Full wave phase control of an AC load.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-9-12	Exp-3: Full wave phase control of a DC load.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-13-16	Exp-4:Chopper circuit: Learning of the poster chopper that increases a low input voltage to high output voltage.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-17-20	Exp-5:Square-wave inverter for converting dc power into ac power.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-21-24	Exp-6:PMW wave inverter.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-25-28	Exp-7:AC phase control: 1- Single-phase ac power controller by SCR. 2- Single phase cyclo converter by SCR.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1
WEEK-29-30	Exp-8: Revision.	3	a4-3, a5-1, a15-1, c14-1, c15-1, d13-1

7-4 Experimentsof the Power System Laboratory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1: Modeling of DC power network on DC network analyzer.	3	a4-2, a15-1, c13-2,d13-1
WEEK-5-8	Exp-2: Double busbar basic system. 1- Operating a switching station with two busbars with different voltages. 2- Double busbar system with load. 3- Busbar coupling.	3	a4-2, a15-1, c13-2,d13-1
WEEK-9-12	Exp-3: Reactive power compensation. Demonstrating the manual operation on the control of reactive power at various inductive loads.	3	a4-2, a15-1, c13-2,d13-1
WEEK-13-16	Exp-4: Reactive power controller at various inductive loads and at different sensitivity.	3	a4-2, a15-1, c13-2,d13-1
WEEK-17-20	Exp-5: Potential distribution over a string of suspension insulators and improving it using a guard ring.	3	a4-2, a15-1, c13-2,d13-1
WEEK-21-24	Exp-6: Solar photovoltaic power generator.	3	a4-2, a15-1, c13-2,d13-1

WEEK-25-28	Exp-7: Network solution node elimination by matrix partitioning and solve the network using the reduced matrix.	3	a4-2, a15-1, c13-2,d13-1
WEEK-29-30	Exp-8: Revision.	3	a4-2, a15-1, c13-2,d13-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Search and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a4-1**		*	*		*	*		*	*	*			*
	a4-2		*	*		*	*		*	*	*			*
	a4-3		*	*		*	*		*	*	*			*
	a4-4		*	*		*	*		*	*	*			*
	a4-5		*	*		*	*		*	*	*			*
	a15-1		*	*		*			*					*
Intellectual Skills	**b5-1**		*	*		*				*	*		*	*
Professional Skills	**c13-1**			*		*			*		*		*	*
	c13-2			*		*			*		*		*	*
	c14-1			*		*					*			*
	c14-2			*		*					*			*
	c15-1		*	*		*			*		*		*	*
	c15-2		*	*		*			*		*		*	*
	c15-3		*	*		*			*		*		*	*
General Skills	**d3-1**		*	*		*	*		*	*	*	*		*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	Monitoring
Knowledge & Understanding	a4-1	*	*	*	*			*		*	*	*	
	a4-2	*	*	*	*			*		*	*	*	
	a4-3	*	*	*	*			*		*	*	*	
	a4-4	*	*	*	*			*		*	*	*	
	a4-5	*	*	*	*			*		*	*	*	
	a15-1	*		*			*	*	*	*			
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*	*		
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		
	c13-2	*	*	*	*	*	*	*		*	*		
	c14-1		*				*			*	*		
	c14-2		*				*			*	*		
	c15-1	*					*	*	*		*		
	c15-2	*					*	*	*		*		
	c15-3	*					*	*	*		*		
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**50**	**33.33%**	**30th**
Oral and Laboratory Examination of First Term	**25**	**16.66%**	**8th**
Term work (Tutorial and report assessment)	**50**	**33.33%**	**Weekly**
Oral and Laboratory Examination of Second Term	**25**	**16.66%**	**30th**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

Laboratory of Electrical Machines, Laboratory of Electrical Power Systems, Laboratory of Automatic Control, Laboratory of power Electronics, Laboratory of High Voltage Engineering are used to perform the required experimental.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

Electrical Engineering Department Laboratory book.

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Course coordinator	Head of the Department
Prof.Dr.Mostafa El-sayed El-Shebini	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: *High Voltage Engineering* ***Code Symbol:*** *ELE323*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*1*	*2*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	---	16.66%	33.33%	---	16.66%	16.66%	100%

B-Professional Information

2- Course Aims:

The aims of this course are to provide the student, upon completing the Electrical Engineering Program, with the basic knowledge and skills of high voltage engineering. This course will also provide students with the high voltage phenomena concerning breakdown mechanism (in gas, liquid and solid) and high voltage generation and measurements (DC, AC and impulse types). Also basic knowledge of the overvoltage phenomena and overvoltage protection will be attained.

3- Course Objectives:

- Understand theory and mechanism of high voltage phenomena.
- Understand the breakdown mechanisms in gases, liquid and solid insulators.
- Identify high voltage generation and measurements (DC, AC and impulse voltages).
- Demonstrate overvoltage Phenomenon and Insulation Coordination in Electric Power Systems.
- Evaluate lines and equipment protection against overvoltage.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A8	B5, B13	C1, C5	D6

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) Demonstrate concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1)Explain breakdown mechanism in gases, liquid and solid dielectrics.
	A8) Explain current engineering technologies as related to the electrical power engineering	a8-1) Identify principles of high voltage generation and measurement concepts. a8-2) Recognize the different sources of overvoltage transients and methods for the mitigation.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1) Deduce the transient values of overvoltage on H.V. transmission lines.
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Compute the breakdown voltage for different types of insulators.
Professional skills	C1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems	c-1-1) Select a proper insulated material for particular application.
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results	c5-1) Perform breakdowns tests on different insulators under different factors. c5-2) Measure the high voltages using different techniques.
General skills	D6) Effectively manage tasks, time, and resources.	d6-1) Apply the principles of breakdown tests in industry. d6-2) Apply the high voltage generation and measurement principles in the field. d6-3) Build different circuits to generate the different types of high voltages.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Conduction and Breakdown in Gases	1-4
2nd	Conduction & Breakdown in Liquid Dielectrics	5
3rd	Breakdown in Solid Dielectrics	6-7
4th	Applications of Insulating Materials	7
5th	Generation and Measurement of High Voltages and Currents	9-13
7th	Overvoltage Phenomenon in Electric Power Systems	14-15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
		Lec.	Tut.	
WEEK-1	**Introduction** **Conduction and Breakdown in Gases**	3	1	a1-1
WEEK-2	**Conduction and Breakdown in Gases Cont.:** Collision and Ionization Processes, Townsend's Current Growth Equation,	3	1	a1-1, b13-1, c5-1 & d6-1
WEEK-3	**Conduction and Breakdown in Gases Cont.:** Breakdown in Electronegative Gases, time Lags for Breakdown, streamer theory of breakdown in gases, Paschen's Law.	3	1	a1-1, b13-1, c5-1 & d6-1
WEEK-4	**Conduction and Breakdown in Gases Cont.:** Breakdown in non-Uniform fields and corona discharges, post-breakdown phenomena and applications, practical Considerations in using gases for insulation purposes, vacuum insulation.	3	1	a1-1, b13-1, c5-1 & d6-1
WEEK-5	**Conduction & Breakdown in Liquid Dielectrics:** Liquids as insulators, conduction and breakdown in pure and commercial Liquids.	3	1	a1-1, b13-1,c5-1 & d6-1
WEEK-6	**Breakdown in Solid Dielectrics:** Intrinsic, electromechanical and breakdowns, breakdown of solid dielectrics in practice, breakdown in composite dielectrics.	3	1	a1-1, b13-1, c5-1 & d6-1
WEEK-7	**Breakdown in Solid Dielectrics Cont.:** Solid dielectrics used in practice. **Applications of Insulating Materials:** Applications in Circuit Breakers, Cables, Power Capacitors and Electronic Equipment.	3	1	a1-1, b13-1 & c1-1
WEEK-8				
WEEK-9	**Generation of High Voltages and Currents** Generation of High DC and AC Voltages.	3	1	a8-1, d6-2 & d6-3
WEEK-10	**Generation of High Voltages and Currents Cont.:** Generation of High AC voltages and impulse currents and voltages, tripping and control of impulse generators.	3	1	a8-1, d6-2 & d6-3
WEEK-11	**Measurement of High Voltages and Currents:** Measurement of High DC, AC and impulse Voltages,	3	1	a8-1, c5-2 & d6-2
WEEK-12	**Measurement of High Voltages and Currents Cont.:** Measurement of High DC, AC and Impulse voltages Cont.,	3	1	a8-1, c5-2 & d6-2
WEEK-13	**Measurement of High Voltages and Currents Cont.:** Measurement of High DC, AC and Impulse Currents Cont.,	3	1	a8-1, c5-2 & d6-2
WEEK-14	**Overvoltage Phenomenon and Insulation Coordination in Electric Power Systems:** National causes for overvoltage, Lightning Phenomenon.	3	1	a8-2 & b5-1
WEEK-15	**Overvoltage Phenomenon in Electric Power Systems Cont.:** Overvoltage due to switching surges, system faults and other abnormal conditions.	3	1	a8-2 & b5-1

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1: Gas Breakdown Test: Studying the factor that affect the breakdown voltage of gases.	2	a1-1,b13-1, c5-1, d6-1
WEEK-3&4	Exp-2: Tests of Breakdown in Non-Uniform Fields and Corona Discharges: 1. Studying the corona phenomenon 2. Studying the factors that affects the corona inception voltage.	2	a1-1,b13-1, c5-1, d6-1
WEEK-5&6	Exp-3: Liquid Dielectric Test: 1. Determination of breakdown voltage of insulating transformer oil 2. Determination of the oil constants k and n.	2	a1-1,b13-1, c5-1, d6-1
WEEK-7&8	Exp-4: High Voltage Measurements: Using high voltage divider.	2	a8-1, c5-2, d6-2
WEEK-9&10	Exp-5: High Voltage Measurements: Using sphere gap system.	2	a8-1, c5-2, d6-2
WEEK-11&12	Exp-6: Measurement of Critical Flashover Voltage-Time Characteristics.	2	a1-1, a8-1, b13-1,c5-1, c5-2, d6-1 d6-2
WEEK-13&14	Exp-7: Evaluation of Overvoltage Protection using series Spark Gap-Surge Arrester.	2	a1-1, a8-1, b13-1,c5-1, c5-2, d6-1 d6-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Laboratory**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	*		*		*									
	a8-1	*		*		*									
	a8-2	*		*											
Intellectual Skills	**b5-1**	*		*	*										
	b13-1	*		*	*	*									
Professional Skills	**c1-1**	*		*							*	*			
	c5-1	*		*		*									
	c5-2	*		*		*					*	*			
General Skills	**d6-1**					*									
	d6-2					*									
	d6-3				*										

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	*		*									
	a8-1	*		*									
	a8-2	*											
Intellectual Skills	**b5-1**	*			*								
	b13-1	*		*	*								
Professional Skills	**c1-1**	*					*						
	c5-1	*	*	*									
	c5-2	*	*	*			*						
General Skills	**d6-1**			*			*			*			
	d6-2			*			*			*			
	d6-3	*			*								

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**90**	**60%**	**16th**
Mid term laboratory assessment (*Oral*)	**15**	**10%**	**8th**
End of term laboratory examination (*Lab*)	**15**	**10%**	**16th**
Mid term written Examination1 (*Term Work*)	**6**	**4%**	**8th**
Mid term written Examination 2 (*Term Work*)	**9**	**6%**	**12th**
Tutorial and report assessment (*Term Work*)	**15**	**10%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Students are expected to carry out the following tests:

- Breakdown tests on gas insulation under different voltage types.

- Corona tests under different voltage types.
- Breakdown tests on liquid insulator under AC voltage under different rates of voltage rise.
- Measurement all types of high voltages (AC, DC and impulse voltages).

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports.

12- List of references:

1-M.S. Naidu, "High Voltage Engineering", 3rd edition, McGraw-Hill, New Delhi, 2004.
2-E. Kuffel, W.S. Zaengl and J. Kuffel, "High Voltage Engineering, Fundamental", 2nd edition, Butterworth-Heinemann, 2000.
3-Hugh M. Ryan, "High Voltage Engineering and Testing", 2nd edition, 2001.
4-Michael Gamlin, "Impulse current testing", available online at:
5- http://www.haefely.com/pdf/Impulse-Current-testing-according-IEC.pdf

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Course coordinator	Head of the Department
Prof. Mohamed Izzularab **Dr. Nehmdoh Sabiha**	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: *Computer Engineering* ***Code Symbol:*** *ELE324*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*1*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-----	------	40%	--------	60%	----	-----	100%

B-Professional Information

2- Course Aims:

This course introduces the student to the concept of computer architecture, data representation and instruction codes.

3- Course Objectives:

1-concept of program storing.
2-combinational and sequential circuits .
3-Input/output ports and interface

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2	B3, B15	C1	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT)	a2-1)Explain concept of program storing. a2-2)Explain combinational and sequential circuits a2-3)Explain Input/output ports and interface
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1) Think in a creative and innovative way in problem solving and design using treat Algorithms
	B15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	b15-1) Define system structure
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Build a suitable computer interface
General skills	D4) Demonstrate efficient IT capabilities.	d4-1)Give oral presentations using a variety of visual aids.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to Computer circuits	1-2
2nd	(Design of logic circuits for different functions.	3-6
3rd	Using SSI, and MSI. Synchronous and Asynchronous sequential circuits. Design and analysis of finite state sequential circuits.)	7,9-10
4th	Defining computers, their development, their generations	11-12
5th	Digital computer structure: ALU, Control Unit,Memory Unit (different types and functions), Input/Output units and their interfacing, connections and synchronization. Memory Organization. Interrupting: Levels, Masking, Service subroutines and linkage with operating systems	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1,2	Introduction to Computer circuits	10	4	4	2	a2-1, a2-2, a2-3
WEEKS-3-6	(Design of logic circuits for different functions.	20	8	8	4	a2-1,a2-2,a2-3,b3-1, b15-1, c1-1 , d4-1
WEEK-7	Using SSI, and MSI.	5	2	2	1	a2-1, a2-2, a2-3,b3-1, b15-1, c1-1 , d4-1
WEEK-8	Midterm written examination					

WEEKS-9,10	Synchronous and Asynchronous sequential circuits. Design and analysis of finite state sequential circuits.)	10	4	4	2	a2-1, a2-2, a2-3,b3-1, b15-1, c1-1, d4-1
WEEKS-11-12	Defining computers, their development, their generations	10	4	4	2	a2-1, a2-2, a2-3,b3-1, b15-1, c1-1, d4-1
WEEK-13	Digital computer structure: ALU, Control Unit, Memory Unit (different types and functions), Input / Output units and their interfacing, connections and synchronization.	5	2	2	1	a2-1, a2-2, a2-3,b3-1, b15-1, c1-1, d4-1
WEEK-14	Memory Organization.	5	2	2	1	a2-1, a2-2, a2-3,b3-1, b15-1, c1-1, d4-1
WEEK-15	Interrupting: Levels, Masking, Service subroutines and linkage with operating systems	5	2	2	1	a2-1, a2-2, a2-3,b3-1, b15-1, c1-1, d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a2-1**	*		*	*	*	*			*	*			*
	a2-2	*		*	*	*	*			*	*			*
Intellectual Skills	**b3-1**	*	*	*	*	*	*	*		*	*	*	*	*
	b15-1	*	*		*	*		*	*	*	*	*	*	*
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
General Skills	**d4-1**		*	*	*	*	*	*	*	*	*	*	*	*

<u>9- Teaching and Learning Methods for Low Capacity and Outstanding Students:</u>

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a2-1**	*	*	*				*		*	*	*	
	a2-2	*	*	*				*		*	*	*	
Intellectual Skills	**b3-1**	*	*	*	*	*	*	*	*	*	*		
	b15-1	*	*	*	*	*	*	*	*	*	*		
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*	*	*	
General Skills	**d4-1**	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**85**	**68%**	**16th**
Mid-Term Examination **(Written)**	**10**	**8%**	**8th**
Term work **(Tutorial and report assessment)**	**10**	**8%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**5**	**4%**	**8th**
End of term laboratory examination (*Lab*)	**5**	**4%**	**16th**
Oral Examination	**10**	**8%**	**15th**
Total	**125**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- M.Morris Mano, "Digital Design", Prentice Hall, 2002

****

Course coordinator **Head of the Department**

Prof. Ibrahim Zakria MorsiProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: ***Writing Technical Reports*** ***Code Symbol:*** ***ELE325***
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*-*	*-*	*2*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
50%	25%	-----	-----	25%	----	-----	100%

B-Professional Information

2- Course Aims:

This course introduces the student to the concept of problem definitions and how to write technical reports.

3- Course Objectives:

Having successfully completed this course, the student will be able to demonstrate knowledge and understanding of:

- Define technical problems
- Parts of the technical reports .

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A6, A10	B9,B11,B13	C12, C16	D1, D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A6) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1) Define technical problems, and write a technical reports.
	A10) Write report with technical language.	a10-1)Explain parts of the technical reports
Intellectual skills	B9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1)Identify links between various operational parts in an engineering system.
	B11) Analyze results of numerical models and assess their limitations.	b11-1) Description of results using technical reports.
	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Define different types of problems using technical reports.
Professional skills	C12) Prepare and present technical reports.	c12-1) Prepare and present technical reports related to electrical engineering.
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Collaborate effectively within multidisciplinary team.
	D8) Acquire entrepreneurial skills.	d8-1) Acquire entrepreneurial skills in electrical engineering projects.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction	1
2nd	Problem Definition and Analysis - Definition of Objectives	2-3
3rd	Description of Results	4-5
4th	Language of Different Report Elements (Summary – Introduction – Body – Conclusions)	6-7
5th	Applications(1): Description of Results(well known problem)	9-10
6th	Applications(2): Description of Results(un known problem)	11-12
7th	Applications(3): Writing a report about an engineering system operation /or Departmental Lab	13-14
8th	Applications(4): More Reports	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Introduction	2	2	-	-	a6-1
WEEKS-2-3	Problem Definition and Analysis - Definition of Objectives	4	4	-	-	a10-1, b13-1
WEEKS-4-5	Description of Results	4	4	-	-	a6-1,b11-1, d1-1
WEEKS-6-7	Language of Different Report Elements (Summary – Introduction – Body – Conclusions)	4	4	-	-	a10-1,b9-1,c12-1, d1-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Applications(1): Description of Results(well known problem)	4	4	-	-	a10-1,b9-1,c12-1, c16-1,d1-1
WEEKS-11-12	Applications(2): Description of Results(un known problem)	4	4	-	-	a10-1,b9-1,c12-1, c16-1,d1-1,d8-1
WEEKS-13-14	Applications(3): Writing a report about an engineering system operation /or Departmental Lab	4	4	-	-	a10-1,b9-1,c12-1, c16-1,d1-1,d8-1
WEEK-15	Applications(4): More Reports	2	2	-	-	a10-1,b9-1,c12-1, c16-1,d1-1,d8-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a6-1**	*	*	*		*	*			*	*			
	a10-1	*	*	*			*	*		*	*			
Intellectual Skills	**b9-1**	*	*			*	*	*		*	*			
	b11-1	*		*		*	*	*		*		*	*	
	b13-1	*		*		*	*	*		*	*			
Professional Skills	**c12-1**	*	*	*		*	*	*		*	*			
	c16-1	*		*				*		*	*			
General Skills	**d1-1**	*	*	*		*	*	*		*	*	*		
	d8-1							*		*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a6-1**	*					*	*	*	*			
	a10-1	*					*	*	*	*			
Intellectual Skills	**b9-1**	*			*		*	*	*	*		*	
	b11-1	*					*	*		*		*	
	b13-1	*					*	*		*			
Professional Skills	**c12-1**	*			*		*	*	*	*			
	c16-1						*						
General Skills	**d1-1**	*				*	*	*	*				
	d8-1					*							

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**40**	**80%**	**16th**
Mid term laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab*)	**-**	**-**	**-**
Mid term written Examination1 (*Term Work*)	**5**	**10%**	**8th**
Tutorial and report assessment (*Term Work*)	**5**	**10%**	**Weekly**
Total	**50**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to write technical reports using Ms.Words.

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

John Swales, "Writing Scientific English,"(Unit 8: Experimental and Explanatory & Unit 11: Tables and Graphs)", 2002

Course coordinator **Head of the Department**

Dr. Assem Abdel Ftah NabawiProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4th ELEC.

Course Specification

B- Basic Information

Title: *Electrical power system analysis* ***Code Symbol:*** *ELE411*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Disccretionry subjects	Total
			33.33%	50%		16.66%	100%

B- Professional Information

2- Course Aims:

This course aims to make graduates recognize what is the power system transient phenomenon and its effect on overall performance of power system, learn to analyze different faults power system is subjected to.
To study the ultrafast transient phenomena associated with switching or lightning strikes condition study different type of system stability and methods of load flow analysis.

3- Course Objectives:

- Demonstration of the knowledge and understanding of transient phenomena, fault types and load flow solution methods.
- Formulation the power system to study different phenomena.
- Applying the methods and techniques learned in different power system applications in the field such as control system centers, transmission and distribution systems, substations and power stations.
- Analysis of the power system performance using computer software packages.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A13, A19, A23	B13, B14, B16	C1, C2, C7	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A13)Choose Analytical and computer methods appropriate for electrical power and machines engineering	a13-1)Illustrate the methods of symmetrical and unsymmetrical fault analysis.
	A19)Define diverse applications of electrical equipment	a19-1)Explain the concepts of transient, ultrafast transient, and steady state analysis of power system.
	A23)Generalize principles of performing electrical system calculations, including load flow, earthing and equipment sizing	a23-1)Select the way of steady state power system load flow solutions. a23-2)Perform steady state and transient stability calculations.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering	b13-1)Distinguish different power system phenomena . b13-2)formulate the power system to study specific phenomena .
	B14)Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines	b14-1) Deduce the type and location of faults among power system components.
	B16)Analyze the performance of electric power generation, control and distribution systems	b16-1)Analyze the performaance of electric power system under transient conditions.
Professional skills	C1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Apply the mathematical methods to solve the problems of load flow and stability. c1-2)Apply the analytical methods to formulate and identify the fault types and location.
	C2)Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1)Apply the methods and techniques learned in different power system applications in the field such as control system centers, transmission and distribution systems, substations and power stations .
	C7)Apply numerical modeling methods to engineering problems.	c7-1)Apply unmerical methods to model different types of faults c7-2) Apply numerical methods to study the stability problem of power system
General skills	D4)Demonstrate efficient IT capabilities.	d4-1)Use of computer software packages to formulate and analyze different problems

6- Course Topics.

Topic No.	General Topics	Weeks
1	Synchronous generator transient analysis	1
2	Symmetrical a fault analysis	2-3
3	Unsymmetrical fault analysis	4-5
4	Traveling wave properties & Bewley lattice diagram	6
5	Transient over voltage calculations	7
6	Effect of system design on the protection against over voltages	9
7	Methods of load flow calculations, Gauss-Seidel, Newton Raphson, Fast Decupled.	10-12
8	Voltage control	13
9	Power system stability calculations	14-15

8- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Synchronous generator transient analysis	4	4	2	-	a19-1,a23-2 , b13-1,b13-2 , b16-1
WEEK-2	Symmetrical a fault analysis	4	4	2	-	a13-1 , b14-1,c1-2,c7-1
WEEK-3	Symmetrical a fault analysis	4	4	2	-	a13-1 , b14-1,c1-2,c7-1
WEEK-4	Unsymmetrical fault analysis	4	4	2	-	a13-1 , b14-1 , c1-2,c7-1
WEEK-5	Unsymmetrical fault analysis	4	4	2	-	a13-1 , b14-1 , c1-2,c7-1
WEEK-6	Traveling wave properties & Bewley lattice diagram	4	4	2	-	a19-1,b13-1,b13-2,b16-1
WEEK-7	Transient over voltage calculations	4	4	2	-	a19-1,b13-1 , b13-2,b16-1
WEEK-8	Midterm written examination					
WEEK-9	Effect of system design on the protection against over voltages	4	4	2	-	a19-1,b13-1 , b13-2
WEEK-10	Methods of load flow calculations, Gauss-Seidel method	4	4	2	-	a19-1,a23-1 , c1-1,c2-1,d4-1
WEEK-11	Newton Raphson method	4	4	2	-	a19-1,a23-1 , c1-1,c2-1 , d4-1
WEEK-12	Fast Decupled method	4	4	2	-	a19-1,a23-1 , c1-1,c2-1 , d4-1
WEEK-13	Voltage control	4	4	2	-	a19-1,a23-1 , c2-1
WEEK-14	Power system stability calculations	4	4	2	-	a19-1 , a23-2,b16-1,c1-1 , c2-1,c7-2 , d4-1
WEEK-15	Power system stability calculations	4	4	2	-	a19-1,a23-2 , b16-1,c1-1 , c2-1,c7-2 , d4-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a13-1**	*		*	*	*								
	a19-1	*		*	*					*				
	a23-1	*		*	*	*								
	a23-2	*		*	*	*								
Intelectual Skills	**b13-1**	*		*	*	*								
	b13-2	*		*	*	*							*	
	b14-1	*		*	*	*							*	
	b16-1	*		*	*	*							*	
Professional Skills	**c1-1**	*		*	*	*							*	
	c1-2	*		*	*	*								
	c2-1	*		*	*	*								
	c7-1	*		*	*								*	
	c7-2	*		*	*								*	
General Skills	**d4-1**			*				*		*			*	

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & understanding	**a13-1**	*			*								
	a19-1	*			*								
	a23-1	*			*								
	a23-2	*			*								
Intelectual Skills	**b13-1**	*			*								
	b13-2	*			*								
	b14-1	*			*								
	b16-1	*			*								
Professional Skills	**c1-1**	*			*								
	c1-2	*			*						*		
	c2-1	*			*						*		
	c7-1	*			*						*		
	c7-2	*			*						*		
General Skills	**d4-1**				*						*		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.66%**	**16th**
End of term laboratory examination (*Lab*)		**--**	**16th**
Mid term written Examination (*Term Work*)	**25**	**16.66%**	**8th**
Tutorial and report assessment (*Term Work*)	**25**	**16.66%**	**Weekly**
laboratory assessment (*Term Work*)		**--**	**Weekly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

C. Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports and oral presentation.

13- List of references:

1-E.W. Kimbark "Power system stability synchronous machine" Book, 1968. Sohnwiley & Sons
2-Turan Go Nen "Electric power trarsmission system Engineeting (Analysis and Design)" (WILEY), Book, 1988.

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Course coordinator **Head of the Department**

Prof. Abdelmaksoud Taalab **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 1st Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: ***Electric Machine Design*** *Code Symbol:* ***ELE412***
Element of program: ***Major/ minor*** *Date of specification approval:* ***2012***
Department offering the course: ***Electrical Eng. Dept.*** *Bylaw* ***2012***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	-	50%	16.66%	16.66%	16.66%	100%

B-Professional Information

2- Course Aims:

This course aims to make graduates aware of the basic principles of electrical machine design. The course supplies graduates with sufficient information about the design of major conventional electrical machines in the field of electrical engineering. The course discusses the different aspects in designing dc machines, three phase salient and non-salient synchronous machines, three phase induction motors as well as the three phase and single phase transformers. This course will also provide students with the ability to select the suitable material for each part of the machine. The skill of main dimension determination and rating evaluation is also provided. The performance characteristics of various electrical machines and transformers are obtained using the designed parameter. Losses, efficiency and temperature rise are also included for electrical machines and transformers.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of electric machine design.
- Definition of the requirements for designs any machine.
- Determination the main dimensions of electric machine.
- Determination the machine parameter based on the suggested design.
- Analysis the machine performance.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A3,A14	B13,B14	C2, C10,C16	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3) Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1) Demonstrate Characteristics of magnetic materials a3-2) Demonstrate Characteristics of conducting materials a3-3) Demonstrate Characteristics of insulations
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems	a14-1) Distinguish design method of dc machines a14-2) Distinguish design method of synchronous machines a14-3) Distinguish design method of induction machines a14-4) Distinguish design method of transformer
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Assign, formulate and solve problems in dc machine design. b13-2) Assign, formulate and solve problems in synchronous machine design. b13-3) Assign, formulate and solve problems in induction machine design. b13-4) Assign, formulate and solve problems in transformer design.
	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.	b14-1) Analyze design problems and interpret numerical results in various machine designs.
Professional skills	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services	c2-1)Merge the engineering design knowledge, and feedback to improve machine design
	C10) Apply quality assurance procedures and follow codes and standards.	c10-1) Apply codes and standards for wire gauge and main dimensions
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1) Specify and evaluate manufacturing of components of electrical machines.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) communicate with a team work to analyze the merits and demerits of an electrical machine / transformer and write a design sheet.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Design of DC Machine	1-4
2nd	Design of Synchronous Machine	5-8
3rd	Design of Induction Motor	9-12
4th	Design of Transformer	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	• The objectives of the course • Definition of design. • Why this course is important? Requirements of the course. • Construction and winding of dc machines. • Design of magnetic circuit in dc machines • Armature reaction	6	4	2	-	a3-1, a3-2, a3-3 b13-1, b13-2, b13-3, b13-4, c16-1
WEEK-2	• Output equation, Armature design, ventilating ducts, choice of poles, Conductors, Slots, Weight of copper • Design of field system in dc machines	6	4	2	-	a14-1, a14-2, a14-3, a14-4,b13-1, b13-2, b13-3, b13-4, c10-1
WEEK-3	• Design of compensating windingin dc machines. • Design of commutation poles. • Design of commutator and brushes in dc machines	6	4	2	-	b14-1, c2-1,b13-1, b13-2, b13-3, b13-4
WEEK-4	• Losses, Efficiency and Temperature rise in dc machines. • DC- Design Problem	6	4	2	-	c2-1,b13-1, b13-2, b13-3, b13-4, d1-1
WEEK-5	• Construction and winding of synchronous machines. • Design of magnetic circuit in synchronous machines and field system. • Ratings of synchronous machines,Output Equation of Synchronous machines, Salient pole synchronous machines, Skin effect, and, Damper bars.	6	4	2	-	a3-1, a3-2, a3-3, b13-1, b13-2, b13-3, b13-4, c16-1
WEEK-6	• Design of Non-salient pole synchronous machines, Rotor design, and, Choice of rotor slots. • Parameters and Regulation	6	4	2	-	a14-1,a14-2, a14-3, a14-4,b13-1, b13-2, b13-3, b13-4, c10-1
WEEK-7	• Losses, Efficiency and Temperature rise in synchronous machines.	6	4	2	-	b14-1, c2-1,b13-1, b13-2, b13-3, b13-4 c2-1,b13-1, b13-2, b13-

	• Cooling in synchronous machines Synchronous Machine- Design Problem.					3, b13-4
WEEK-8	Midterm written examination					
WEEK-9	• Construction and winding of induction machines, • Main dimensions and stator design of induction machines.	6	4	2	-	a3-1, a3-2, a3-3 b13-1, b13-2, b13-3, b13-4, c16-1
WEEK-10	• Rotor design of induction machines, • Magnetic circuit calculations.	6	4	2	-	a14-1, a14-2, a14-3, a14-4, b13-1, b13-2, b13-3, b13-4, c10-1
WEEK-11	• Leakage reactance, • Losses, efficiency and temperature rise.	6	4	2	-	b14-1, c2-1,b13-1, b13-2, b13-3, b13-4
WEEK-12	• Cooling in induction machines, • An induction machine design problem.	6	4	2	-	c2-1,b13-1,b13-2, b13-3, b13-4,d1-1
WEEK-13	• Transformer construction and principles, • Main dimensions of transformer.	6	4	2	-	a3-1, a3-2, a3-3 b13-1, b13-2, b13-3, b13-4, c16-1
WEEK-14	• Design of transformer winding, • Performance characteristics of designed transformer.	6	4	2	-	a14-1, a14-2,a14-3, a14-4,b13-1, b13-2, b13-3, b13-4, c10-1
WEEK-15	• Transformer cooling, • Transformer design problem.	6	4	2	-	c2-1,b13-1, b13-2, b13-3, b13-4, d1-1

8- *<u>Teaching and Learning Method:</u>*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a3-1**	*		*	*	*								
	a3-2	*		*	*	*								
	a3-3	*		*	*	*								
	a14-1	*	*	*	*	*								
	a14-2	*	*	*	*	*								
	a14-3	*	*	*	*	*								
	a14-4	*	*	*	*	*								
Intellectual Skills	**b13-1**	*		*	*	*								
	b13-2	*		*	*	*								
	b13-3	*		*	*	*								
	b13-4	*		*	*	*								
	b14-1	*		*	*	*	*							
Professional Skills	**c2-1**	*		*	*	*	*							
	c10-1	*		*	*	*			*					
	c16-1	*		*	*	*								
General Skills	**d1-1**	*	*	*		*		*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & understanding	**a3-1**	*			*	*	*	*		*			*
	a3-2	*			*	*	*	*		*			*
	a3-3	*			*	*	*	*		*			*
	a14-1	*			*	*	*	*		*			*
	a14-2	*			*	*	*	*		*			*
	a14-3	*			*	*	*	*		*			*
	a14-4	*			*	*	*	*		*			*
Intellectual Skills	**b13-1**	*			*	*	*	*		*			*
	b13-2	*			*	*	*	*		*			*
	b13-3	*			*	*	*	*		*			*
	b13-4	*			*	*	*	*		*			*
	b14-1	*			*	*	*	*		*			*
Professional Skills	**c2-1**	*			*	*				*			
	c10-1				*		*						
	c16-1				*		*			*			
General Skills	**d1-1**									*	*		

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.6%**	**16th**
Mid term written Examination1 1(*Term Work*)	**20**	**13.33%**	**8th**
Mid term written Examination 2 (*Term Work*)	**20**	**13.33%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**6.66%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1 Library Usage: Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- **M.G.Say" The performance and design of alternating current machines" Sir Isaac** Pitmans and Sons Ltd.,1961.

2- **A.K.Sawhney:A course in electrical machines design"Dhanput Rai-Sons ., Delhi , 1996.**

Recommended books

1- **Balbere Singh" Electrical machine design" Vikas Publishing.House Pvt Ltd, D.Ghaziabad,1982.**

2- **M.V.Deshpande Design and testing of electrical machines"Kitab Mahal Pvt. Ltd. Allahabad**

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Course coordinator **Head of the Department**

Prof. Sabir A. Eldhemy **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th year**

Course Specification

A-Basic Information

Title: *Electrical Testing(2)* ***Code Symbol:*** *ELE415*

Element of program: *Major* ***Date of specification approval:*** *2011*

Department offering the course: Electrical Engineering Dept. ***By law 2006***

Lecture	Tutorial	Laboratory	Total
-----	----	3	3

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
-------	-------	16.66%	33.33%	-------	33.33%	16.66%	100%

B-Professional Information

2- Course Aims:

The aim of this course is to provide the students with the practical experience in all different electric engineering fields(electric machines, power electronics, electric power, and digital control)

3- Course Objectives:

- To Develop skills in advanced eclectic machine testing
- To Develop skills in advanced power system operation testing
- To Develop skills in advanced power electronics testing
- To Develop skills in digital control testing

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4,A15	B5	C17	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4)Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a4-1) Explain basics of eclectic machines a4-2) Explain the basics of power electronics a4-3) Illustrate the basics of control theory.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems	a15-1) Illustrate the basics of power system operation.

Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1)Prepare technical and operational specifications of electric components
Professional skills	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Apply modern techniques to electric power and machines.
General skills	D3) Communicate effectively.	d3-1 communication and team work

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Power System: Short circuit currents, cable tests and earthing measurements.	1-15
2nd	Electrical Machines: single-phase and three-phase induction motor, universal motor.	1-15
3rd	Control System: Closed loop control system, controller type and applications.	1-15
4th	High Voltage Engineering: Testing of the Electrical Insulation, leakage current measurement.	1-15

7- Course Topics/hours/ILOS

Teaching of the Electrical Testing (2) is distributed for four laboratories. For each laboratory, four experiments are prepaired and accomplished. Each experiment is repeated for four weeks. Each student class is divided into two groups for four laboratories.

7-1 Experimentsof the Power System Laboratory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1: Short circuit currents determination in AC power network using DC network analyzer.	3	a4-2, a15-1, c13-2,d13-1
WEEK-5-8	Exp-2: Service tests of cables. 1- Performing the standard cable tests, which are required for checkup during the service time.	3	a4-2, a15-1, c13-2,d13-1
WEEK-9-12	Exp-3: Measurement of earthing resistance. 1- Measurement of earthing resistance using the fall of potential method. 2- Determination of the step and touch voltage.	3	a4-2, a15-1, c13-2,d13-1
WEEK-13-15	Exp-4: Measurement of earthing resistivity using four-electrode method.	3	a4-2, a15-1, c13-2,d13-1

7-2 Experimentsof the Electrical Machine Labortory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1: Speed Control of 3-phase Induction Motor and the Induction Voltage Regulator.	3	a4-1, a15-1, c13-1, d13-1
WEEK-5-8	Exp-2: Induction voltage regulator.	3	a4-1, a15-1, c13-1, d13-1
WEEK-9-12	Exp-3: Universal motor: Mathematical model, dc excitation, dc versus ac excitation.	3	a4-1, a15-1, c13-1, d13-1
WEEK-13-15	Exp-4: Single-phase induction motor: Need of a capacitor in the auxiliary winding circuit, method of reversal of directional of rotation.	3	a4-1, a15-1, c13-1, d13-1

7-3 Experimentsof the Control Labortory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1: Simple analog closed loop control system: 1- Building a simple analog control system. 2- Studying the response under different conditions.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-5-8	Exp-2: Controller types: How the controllers affect the control response and building it in analog control systems.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-9-12	Exp-3: Industrial temperature control.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1
WEEK-13-15	Exp-4: Revision.	3	a4-3, a5-1, a15-1, c15-1, c15-2, c15-3, d13-1

7-4 Experimentsof the High Voltage Labortory

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1-4	Exp-1: Testing of the Electrical Insulation: 1. Measuring the insulation resistance. 2. Computing the absorption and polarization factors for paper, ceramic, and zinc oxide material.	3	a4-5,a15-1, c14-2, d13-1
WEEK-5-8	Exp-2: Testing the Insulation of Electrical Instruments: Examination of the insulation resistance for five equipments (transformer, cable, insulator, HV capacitor, and wire))	3	a4-5,a15-1, c14-2, d13-1
WEEK-9-12	Exp-3: High Voltage Insulator Leakage Current: Studying the effect of the applied voltage and leakage distance on insulator leakage current.	3	a4-5,a15-1, c14-2, d13-1
WEEK-13-15	Exp-4: Modeling of Spark Gap Probabilisticcharacteristics.	3	a4-5,a15-1, c14-2, d13-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a4-1**			*			*	*	*	*	*			*
	a4-2			*			*	*	*	*	*			*
	a4-3			*			*	*	*	*	*			*
	a15-1			*				*	*					*
Intellectual Skills	**b5-1**			*				*		*	*		*	*
Professional Skills	**c17-1**			*				*		*	*	*	*	*
General Skills	**d3-1**			*			*	*	*	*	*	*		*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a4-1**	*	*	*	*			*		*	*	*	
	a4-2	*	*	*	*			*		*	*	*	
	a4-3	*	*	*	*			*		*	*	*	
	a15-1	*		*			*	*	*	*	*		
Intellectual Skills	**b5-1**	*	*	*	*		*	*		*	*		
Professional Skills	**c17-1**	*	*	*	*		*				*		
General Skills	**d3-1**	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**25**	**33.33%**	**16th**
Oral Examination	**25**	**33.33%**	**Weekly**
Term work (Tutorial Laboratory, and report assessment)	**25**	**33.33%**	**Weekly**
Total	**75**	**100%**	

11- Facilities required for teaching and learning:

11-1laboratory Usage:

Laboratory of Electrical Machines, Laboratory of Electrical Power Systems, Laboratory of Automatic Control, Laboratory of power Electronics are used to perform the required experimental.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

Electrical Engineering Department Laboratory book.

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Course coordinator **Head of the Department**

Prof.Dr. Moustafa El-Sayed El-Shebini **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st , 2nd Term
Academic level: 4th year

Course Specification

A-Basic Information

Title: ***Project*** ***Code Symbol:ELE406***

Element of program: ***Minor*** ***Date of specification approval:*** ***2011***

Department offering the course: Basic **Electrical Eng. Dept.** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
-----	6	----	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
33.33%	-----	16.66%	8.33%	33.33%	8.33%	-------	100%

B-Professional Information

2- Course Aims:

To provide experience in conception, planning, management and documentation of an engineering task at the bachelor of electrical engineering level. Hence the project will normally be undertaken in the final year of the study.

The project topic may be of student’s invention, or staff member’s suggestion. Projects will often be of a design, construct and test nature but may also include research and investigation to meet some non standard engineering requirement. Simulation work and software writing may form a significant part of the project. General guidance will be provided by a staff member appointed as supervisor. Also, to make the student able to present and prepare a detailed report.

3- Course Objectives:

- Design and conduct experiments and anayze and interpret data.
- Function on multi-disciplinary teams.
- Identify, formulate, and solve engineering problems.
- Understand professional and ethical responsibility.
- Communicate effectively
- Recognize the need for, and be able to engage in a life long learning.
- Use techniques, skills and engineering tools necessary for engineering practice.
- Use the information technology tools to design, develop, and implement electrical systems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A5,A10, A14	B1	C1,C5,C7,C9,C11,C12,C13, C14,C15,C16,C17	D1, D3,D4,D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies of Solving electrical engineering problems, data collection and interpretation
	A10) Write report with technical language	A10-1) Develop technical reporting skills of a high quality of the project.
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1)Acquire skills in project planning and the estimation of the effort and resources required to undertaken an engineering task at bachelor of engineering level. a14-2)Develop self confidence and responsibility through independent work with a minimum of supervisory guidance. a14-3)Explain the procedures required to bring that project to a successful conclusion.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Simulate, analysis, and solve an electrical engineering task. b1-2)Apply different methods in analysis. b1-3)Carry-out practical work and measurements.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems..	c1-1) Solve Engineering Problems
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c1. Use MATLAB and Simulink for simulation.
	C7) Apply numerical modeling methods to engineering problems	c7-1) Apply numerical modeling methods related to electrical engineering problems
	C9) Demonstrate basic organizational and project management skills.	c9-1)Demonstrate basic organizational and project management skills.
	C11) Exchange knowledge and skills with engineering community and industry.	c11-1)Exchange knowledge and skills with engineering community and industry.
	C12) Prepare and present technical reports	c12-1) Present and prepare a detailed report.

	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power and machines systems.	c13-1)Show improved practical skills.
	C14) Test and examine components, equipment and systems of electrical power and machines.	C14) Test and examine components, equipment and systems of electrical power and machines.
	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Show improved problem solving skills.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1) Cooperation and teamwork.
	D3) Communicate effectively.	d3-1)Mastering communication skills.
	D4) Demonstrate efficient IT capabilities.	d4-1) Demonstrate efficient IT capabilities.
	D8) Acquire entrepreneurial skills.	d8-1) Acquire entrepreneurial skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	A typical project in the bachelor of Electrical Engineering may comprise: • Investigation of the engineering task; • Planning and organization of the resources required to execute the project; • Design, prototype construction, simulation, software writing etc. testing and evolution; and • Documentation of the work and writing of the project report. The main topics are: • Electrical machines. • Power system technology. • Power system digital protection. • Power system analysis. • Control of electrical machines. • Automatic control techniques. • Protective relaying. • Power electronics. • Special electrical machines. • Renewable energy. • Industrial Applications • Mechatronics Applications such as Robotics, Electric Vehicles ----etc.	1-30

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEKS-1,30	A typical project in the bachelor of Electrical Engineering may comprise: • Investigation of the engineering task; • Planning and organization of the resources required to execute the project; • Design, prototype construction, simulation, software writing etc. testing and evolution; and • Documentation of the work and writing of the project report. • The main topics are: • Electrical machines. • Power system technology. • Power system digital protection. • Power system analysis. • Control of electrical machines. • Automatic control techniques. • Protective relaying. • Power electronics. • Special electrical machines. • Renewable energy. • Industrial Applications Mechatronics Applications such as Robotics, Electric Vehicles ----etc.	90	-	3	-	a5-1,a10-1,a14-1,a14-2, a14-3,b1-1,b1-2,b1-3, c1-1,c5-1,c7-1, c9-1,c11-1, c12-1, c13-1,c14-1,c15-1, c16-1,c17-1,d1-1, d3-1,d4-1,d8-1
WEEK-8	**Midterm Term (Oral examination)**					

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a5-1**		*	*	*	*	*	*	*		*		*	
	a10-1		*	*	*		*	*	*	*	*			
	a13-1		*	*	*			*		*	*		*	
	a14-1			*	*	*	*						*	
Intellectual Skills	**b1-1**		*	*	*	*	*	*		*	*		*	
	b2-1		*	*	*	*	*	*		*	*		*	
Professional Skills	**c1-1**		*	*	*	*	*	*	*	*	*		*	
	c5-1			*	*	*	*	*	*	*	*		*	
	c7-1		*		*	*		*	*	*			*	

	c9-1			*				*	*		*			
	c11-1		*	*	*	*		*	*	*	*	*		
	c12-1		*	*	*	*	*	*	*	*	*			
	c13-1			*	*	*		*	*		*		*	
	c14-1		*		*	*		*			*			
	c15-1		*	*	*	*		*	*		*		*	
	c16-1			*				*	*	*	*			
	c17-1		*	*	*	*		*		*	*	*	*	
General Skills	**d1-1**		*	*	*	*	*	*	*	*	*	*		
	d3-1		*	*	*	*	*	*	*	*	*	*	*	
	d4-1		*	*	*	*	*	*	*	*	*	*	*	
	d8-1							*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a5-1**	*	*	*	*	*	*	*		*			
	a10-1	*	*	*			*	*	*	*			
	a13-1	*		*				*		*			
	a14-1	*		*				*		*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b2-1	*		*	*	*	*	*		*		*	
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*		*	
	c5-1	*	*	*	*		*		*	*			

	c7-1	*		*	*	*	*		*	*			
	c9-1	*			*		*			*			
	c11-1	*		*	*		*	*	*	*		*	
	c12-1	*	*	*	*		*	*	*	*			
	c13-1	*	*	*	*	*	*	*		*			
	c14-1		*				*			*			
	c15-1	*					*	*	*				
	c16-1						*						
	c17-1	*		*	*		*						
General Skills	**d1-1**	*	*	*		*	*	*	*				
	d3-1	*	*	*	*		*	*	*	*		*	
	d4-1	*	*	*	*	*	*	*	*	*		*	
	d8-1			*		*							

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination (Oral+ Experimental)	**75**	**50%**	**31th**
Mid-Term Examination (Oral+ Experimental)	**25**	**16.66%**	**8th**
Term work (Tutorial and report assessment)	**50**	**33.33%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

To be selected according to the project topic.

****

Course coordinator — **Head of the Department**

Prof.Dr.Ashraf Salah El Din Zein El Din — **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

***Title:** Electric Drives* ***Code Symbol:** ELE421*
***Element of program:** Minor* ***Date of specification approval:** 2011*
Department offering the course:** Electrical Eng. Dept.* ***By law 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*0*	*6*

Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Disccretionry subjects	Total
---	---	---	33.33%	50%	16.66%	---	100%

B-Professional Information

2- Course Aims:

This course provides students the principles of electrical drive systems and to be able for choosing the correct type of motors and drive of a specific engineering application .

3- Course Objectives:

- Define model and simulate drive system.
- Capability to design modulation strategies for power converters
- Capability design current/voltage regulator
- Capability design appropriate supervisory control algorithms (for example torque controls)
- Capability design speed and position controls using electric drive systems

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A13, A19	B13,B16	C16,C17	D1,D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4) Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a4-1) Demonstrate Principles of design methods and tools for electric drives systems

	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose analytical and computer methods appropriate for electrical engineering systems, with particular reference to digital systems
	A19) Define diverse applications of electrical equipment.	a19-1) Define Simple testing of control devices. a19-2)Select modern control techniques of electrical machines and drives. a19-3) Concepts of various control techniques.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Prepare technical and operational specifications of components of electrical systems b13-2)Design and realize electrical components and systems to meet standard specifications. b13-3)Use mathematical methods, modern techniques, skills and engineering tools b13-4)Identify various control techniques and their applications to electrical machines.
	B16) Analyze the performance of electric power generation, control and distribution systems	b16-1)Ability to understand, analyze and synthesize electrical machine and drive design to meet a given specification. b16-3) Analyze and interpret data and evaluate results to support the engineering design problem.
Professional skills	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1) Design and perform experiments, as well as analyze and interpret experimental results related to computer controlled engineering systems. c16-2)Test and examine components, equipment and systems of using the proper hardware interface. c16-3)Integrate electrical, electronic and mechanical components and equipment with transducers, and actuators in computer controlled systems.
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Use MATLAB and Simulink software for simulation of drive systems.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1)Work in a small team to conduct an experiment. d1-2)Express themselves clearly and concisely.
	D3) Communicate effectively.	d3-1)Function professionally as an individual and within a team. d3-2)Communicate effectively with clear, critical thinking and skills. d3-3)Write technical reports and introduce presentations effectively. d3-4)Use information technology (IT) resources effectively in engineering systems

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction – Dynamics of electrical drives	1
2nd	Traction drives	2
3rd	Selection of motor power rating	3
4th	DC Drives	4
5th	Induction Motor Drives	5
6th	Synchronous Motor Drives	6
7th	Speed Control of DC and AC motors	7 , 9
8th	Indirect and Direct Field Oriented Control	10-11
9th	Electric braking of DC Induction motors	12
10th	DC Induction servo motors	13
11th	DC Induction and Synchronous tachogenerators	14
12th	Linear motors.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Introduction – Dynamics of electrical drives	6	4	2	-	a13-1,b13-3,b13-4, c17-1, d3-2
WEEK-2	Traction drives	6	4	2	-	a4-1,a13-1,a19-1, a19-2,a19-3,b13-1, b13-2,b13-3,b13-4, c16-1, 16-2,c17-1, d3-2,d3-4
WEEK-3	Selection of motor power rating	6	4	2	-	a19-1,a19-2,a19-3, b13-1,b13-3,b16-1, b16-2,c16-3,d1-1, d1-2, d3-1,d3-3
WEEK-4	DC Drives	6	4	2	-	a4-1,a13-1,a19-1, a19-2a19-3,b13-1, b13-2,b13-3,b13-4, c16-1,c16-2,c17-1, d3-2,d3-4
WEEK-5	Induction Motor Drives	6	4	2	-	a4-1,a13-1,a19-1, a19-2,a19-3,b13-1, b13-2,b13-3,b13-4, c16-1,c16-2,c17-1, d3-2,d3-4
WEEK-6	Synchronous Motor Drives	6	4	2	-	a4-1,a13-1,a19-1, a19-2,a19-3,b13-1, b13-2,b13-3,b13-4, c16-1,c16-2,c17-1, d3-2,d3-4
WEEK-7	Speed Control of DC	6	4	2	-	a4-1,a13-1,a19-1, a19-2,a19-3,b13-1, b13-2,b13-3,b13-4, c16-1,c16-2,c17-1, d3-2,d3-4
WEEK-8	Midterm written examination					
WEEK-9	Speed Control of AC motors	6	4	2	-	a4-1,a13-1,a19-1, a19-2,a19-3,b13-1, b13-2,b13-3,b13-4, c16-1, c16-2,c17-1,

						d3-2,d3-4
WEEKS-10-11	Indirect and Direct Field Oriented Control	12	8	4	-	a4-1,a13-1,a19-1, a19-2,a19-3,b13-1, b13-2,b13-3,b13-4, c16-1, c16-2,c17-1, d3-2,d3-4
WEEK-12	Electric braking of DC Induction motors	6	4	2	-	a19-1,a19-2,a19-3, b13-1,b13-3,b16-1, b16-2, c16-3,d1-1,d1-2, d3-1, d3-3
WEEK-13	DC Induction servo motors	6	4	2	-	a19-1,a19-2,a19-3, b13-1,b13-3,b16-1, b16-2,c16-3,d1-1, d1-2, d3-1,d3-3
WEEK-14	DC, Induction and Synchronous tacho-generators	6	4	2	-	a19-1,a19-2,a19-3, b13-1,b13-3,b16-1, b16-2,c16-3,d1-1, d1-2, d3-1,d3-3
WEEK-15	Linear Motors	6	4	2	-	a19-1,a19-2,a19-3, b13-1,b13-3,b16-1, b16-2,c16-3,d1-1, d1-2, d3-1,d3-3

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a4-1	*	*	*	*	*	*	*	*	*	*			
	a13-1	*	*	*	*			*		*	*		*	
	a19-1	*	*	*	*	*	*			*	*			
	a19-2	*	*	*	*	*	*			*	*			
	a19-3	*	*	*	*	*	*			*	*			
Intellectual Skills	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
	b13-3	*		*	*	*	*	*		*	*			
	b13-4	*		*	*	*	*	*		*	*			
	b16-1	*		*	*	*	*	*	*		*			
	b16-2	*		*	*	*	*	*	*		*			
Professional Skills	c16-1	*		*				*	*	*	*			
	c16-2	*		*				*	*	*	*			
	c16-3	*		*				*	*	*	*			
	c17-1	*	*		*	*		*	*	*			*	
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		
	d1-2	*	*	*	*	*	*	*	*	*	*	*		
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d3-2	*	*	*	*	*	*	*	*	*	*	*		
	d3-3	*	*	*	*	*	*	*	*	*	*	*		
	d3-4	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a4-1**	*	*	*	*			*		*		*	
	a13-1	*		*				*		*			
	a19-1	*	*	*			*	*		*			
	a19-2	*	*	*			*	*		*			
	a19-3	*	*	*			*	*		*			
Intellectual Skills	**b13-1**	*		*			*	*		*			
	b13-2	*		*			*	*		*			
	b13-3	*		*			*	*		*			
	b13-4	*		*			*	*		*			
	b16-1	*		*	*	*	*		*	*			
	b16-2	*		*	*	*	*		*	*			
	b16-3	*		*	*	*	*		*	*			
Professional Skills	**c16-1**						*						
	c16-2						*						
	c16-3						*						
	c17-1	*		*	*		*						
General Skills	**d1-1**	*	*	*		*	*	*	*				
	d1-2	*	*	*		*	*	*	*				
	d3-1	*	*	*	*		*	*	*	*		*	
	d3-2	*	*	*	*		*	*	*	*		*	
	d3-3	*	*	*	*		*	*	*	*		*	
	d3-4	*	*	*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (written)	100	66.66%	16th
Mid term laboratory assessment (Oral)	-	-	-
End of term laboratory examination (Lab)	-	-	-
Mid term written Examination1 (Term Work)	15	10%	8th
Mid term written Examination 2 (Term Work)	15	10%	12th
Tutorial and report assessment (Term Work)	20	13.33%	Weekly
Total	150	100%	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Sabry A.Mahmoud, "Principles of Electrical Drives" 2004
2-G.K. Dubey, "Fundamental of Electrical Drives" Narose, 1995
3-P. Vas, Vector Control of A.C. Machines, Clarendon Press, Oxford 1990.
4-D.W. Novotny, T.A. Lipo, "Vector control and dynamics of AC drives", Clarendon press, 1996.
5-Denis O'Kelly, "Performance and Control of Electrical Machines", Publisher: Mc-Graw Hill Book Company, 1991.
6-Dino Zorbas, "Electric Machines, Principles, Applications, and Control Schematics", Publisher: West Publishing Company, 1989.
7-C.V. Jones, "The Unified Theory of Electrical Machines", Butterworth, London, 1967.
8- J.M.D. Murphy & F.G. Turnbull, "Power Electronic Control of AC motors", Pergamon Press, 1988.
9-W. Leonhard, "Control of Electrical Drives", Springer Verlag, 1985.
10-P.C. Krause, "Analysis of Electric Machinery", McGraw Hill, New York, 1987.
11-Sen, P. C., " Principles of Electric Machines and Power Electronics", Second Edition,
(Book) John Wiley & Sons, Inc. 1977.
12-Krause, Wasynczuk, Sudhoff, "Analysis of Electric Machinery and Drive Systems", Second Edition,. IEEE Press / Wiley Inter- Science, ISBN 0- 471- 14326- X.
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Course coordinator   Head of the Department

Prof. Dr.Sabry Abdellatif Mahmoud Prof.Dr. Gamal Abdel-Wahab Morsy
Prof.Dr.Fathi El-Sayed Abdel-Kaer

Electrical Eng. Dept.	**Academic year: 2011-2012**
Faculty of Engineering	**Academic term: 2nd Term**
Minoufiya University	**Academic level: 4th ELEC.**

Course Specification

A-Basic Information

Title: *Power system protection* ***Code Symbol:*** *ELE422*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
3	1	2	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	---	----	33.33%	16.66%	16.66%	16.66%	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the Student, upon completing the Electrical Engineering Program, with the basic knowledge and skills of how to protect the elements of power system. This course will also provide students with the ability to select and design the appropriate protection system among the basic building blocks (overcurrent, differential and distance protection) for the application of system and / or apparatus protection. The skill of setting and coordinating relays for the protection of different power system configurations is also provided. It is also aimed that the student will get acquainted with the applications of various protection techniques for the protection of generator, transformer, busbar.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of power system protection.
- Definition of the requirements of the protection system and how can they be met.
- Realizing of the different types of protective relays.
- Evaluation of the suitable protection schemes for various power system elements.
- Analysis of different power system protection problems and conducting laboratory experimental verifications.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A8, A19	B2	C13	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4)Demonstrate Principle of design including elements design, process and/or a system related to the Electrical power Engineering.	a4-1)Describe the principle of the design of the schemes that are used for power system fault detection. a4-2) Recognize the elements used in the power system protection loop.
	A8)Explain current engineering technologies as related to the electrical power engineering	a8-1) Identify the different type of protective relays a8-2) Identify the protection requirement for each power system apparatus.
	A19) Diverse Applications of electrical equipment	a19-1)Define the operation of overcurrent and differential protection schemes.
Intellectual skills	B2)Select appropriate solutionsfor engineering problems based on analytical thinking.	b2-1) Select the suitable protective scheme for different system configurations based on analysis.
Professional skills	C13)Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1)Design and perform experiments on electromechanical, static and digital relays. c13-2)Analyze the problems concerning system and protective grounding.
General skills	D9) Refer to relevant literatures.	d9-1) Refer to IEEE and IEC standards concerning relay characteristics. d9-2) Refer to power system protection handbook

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Definitions, Methods of fault Detection and requirements of protection system	1-3
2nd	Relays and their characteristics	4-5
3rd	Coordination of overcurrent relays to protect radial and ring distribution feeders	6-7
4th	Differential protection and its application for generator and transformer	9-11
5th	Protective and System grounding	13
6th	Distance protection	14-15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Purpose of protective system. Concept of the ways of fault detection. Descriptionof the function of components used in protection loop	6	3	1	a4-1, a4-2
WEEK-2	Non unit and unit protection schemes. Illustrative example concerning both schemes. Boundary of protection zones with live and dead tank circuit breakers.	6	3	1	a8-1
WEEK-3	Desirable attribute of protection. Quantitative and qualitative definition of dependability, security and reliability. Illustrative example.	6	3	1	a8-2
WEEK-4	Basic relay types. Functions relay types. Relay timing	6	3	1	a8-1
WEEK-5	Application of overcurrent relays on radial feeders. Current graded, Time graded, and Time/Current graded schemes.	6	3	1	a19-1,d9-1
WEEK-6	Application examples of Inverse time overcurrent protection relays. determination of plug and time setting of inverse relays	6	3	1	b2-1, d9-1
WEEK-7	Coordination of overcurrent relays on parallel and ring feeders	6	3	1	b2-1, d9-2
WEEK-8	Midterm written examination				
WEEK-9	Differential protection based on circulating current scheme using single relaying point. Determination of stability and sensitivity. Illustrative examples.	6	3	1	a19-1 , b2-1
WEEK-10	Application of bias. Electromechanical and static comparator characteristics. Application of diff. protection to generators. Assessment of the effect of loading and neutral impedance on the sensitivity of the protection.	6	3	1	b2-1 , c13-1
WEEK-11	Application of different protection to the transformer. Assessment of the effect of winding connection, tap change, no load current and zero sequence current mismatch	6	3	1	c13-1, a8-2
WEEK-12	Inrush current problems identification and treatment for the transformer differential protection	6	3	1	a8-2, b2-1,D9-2
WEEK-13	Recognize the problems concerning system and protective grounding. Auto transformer neutral normal frequency and transient inversions.	6	3	1	c13-2
WEEK-14	Distance protection concept. Phase, earth and sound phase compensations.	6	3	1	c13-1 , d9-2

	Construction of different relay characteristics.				
WEEK-15	Distance protection of parallel lines. Effect of fault impedance. Setting of distance relays for multi-terminal lines. Load ability of distance relays.	6	3	1	a8-1, a8-2 , d9-2

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1: Measurement of accuracy limit current ratio of a current transformer. 1- Using the equivalent circuit.	2	a4-2
WEEK-3&4	Exp-2: Measurement of accuracy limit current ratio of a current transformer. 2- Using the magnetization curve.	2	a4-2
WEEK-5&6	Exp-3: Voltage transformer error measurement.	2	a4-2
WEEK-7&8	Exp-4: Induction motor protection: Overload protection.	2	a19-1, c13-1
WEEK-9&10	Exp-5: Induction motor protection: Overvoltage protection, undervoltage protection and phase loss protection.	2	a19-1, c13-1
WEEK-11&12	Exp-6: Earth fault protection: Source-side down conductor fault, Downed Conductor with Feedback Condition, Downed Energized Conductor and No-loaded system.	2	c13-1, c13-2
WEEK-13&14	Exp-7: Relay testing unit: 1-Testing procedure of three Phase Digital undervoltage, overvoltage and Phase Failure Protection Relay A2662. 2- Operating characteristics evaluation of overvoltage relays.	2	c13-1, d9-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a4-1**	*			*	*								
	a4-2	*			*	*								*
	a8-1	*			*	*								
	a8-2	*			*	*								
	a19-1	*			*	*				*	*			*
Intellectual Skills	**b2-1**	*			*	*								
Professional Skills	**c13-1**	*			*	*								*
	c13-2	*			*									*
General Skills	**d9-1**		*							*	*			*
	d9-2		*							*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a4-1	*											
	a4-2	*		*	*								
	a8-1	*	*		*			*			*	*	
	a8-2	*			*	*							
	a19-1	*		*	*						*		
Intellectual Skills	b2-1	*	*		*	*	*				*		*
Professional Skills	c13-1	*		*	*								
	c13-2	*		*		*					*		
General Skills	d9-1			*			*	*	*	*			
	d9-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	90	60%	16th
Mid term laboratory assessment (*Oral*)	15	10%	8th
End of term laboratory examination (*Lab*)	15	10%	16th
Mid term written Examination1 (*Term Work*)	10	6.66%	8th
Mid term written Examination 2 (*Term Work*)	10	6.66%	12th
Tutorial and report assessment (*Term Work*)	10	6.66%	Weekly
Total	150	100%	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Students are expected to prepare and conduct some laboratory experiments relating to determination of the relay setting and establishment of different relay time - current characteristics. Also to test some protection function and to prepare lab reports.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Power System Relaying.2nd edition book by Stanley H. Horwitz and Arun G Phadke, 1995
2-Coputer Relaying for Power Systems. 2nd edition, by Arun G. Phadki and James S. Thorp, 2009.

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Course coordinator | **Head of the Department**

Prof. Abdelmaksoud Taalab | **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Digital Control* ***Code Symbol:*** *ELE423*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*2*	*7*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	-----	42.85%	42.85%	14.3%	---	100%

B-Professional Information

2- Course Aims:

This course introduces the student to develop a deep understanding of Digital control techniques. The pulse transfer function philosophy is demonstrated and stability test measures are given. The course aims also to teach students how to map s-plan to the z-plan the effects of parameters on the performance of digital control systems

3- Course Objectives:

- To Understand the block diagram representation of Digital control dynamical systems
- To Know steady state and transient characteristics of digital control systems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A14, A15	B1 ,B14	C17	D1,D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Demonstrate block diagram representation of Digital control dynamical systems.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems	a15-1) Explain steady state and transient characteristics of digital control systems
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Design digital controllers to improve the dynamic characteristics of the systems.
	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.	b14-1)Analyze and assess system performance Z-domain and state space.
	C17)Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1) Apply modern techniquesto build a digital control system to control specific variable.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1) Collaborate effectively within group working
	D3) Communicate effectively.	d3-1)Gain experience to analyze the performance of dynamical systems equipped with digital controllers.
	D4) Demonstrate efficient IT capabilities.	d4-1)Use IT in the design of digital control systems .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	INTRODUCTION: Sampling and reconstruction- The ideal sampler- Starred error- Pole-Zero location 0 Data reconstruction	1
2nd	Z- TRANSFORM Discrete time systems- Transformation methodsZ-Transform theories- solution of difference equation – inverse z-Transform.	2
3rd	DISCRETE TIME STATE EQUATION State space representation of discrete systems- Solving the discrete equations. OPEN LOOP DISCRETE SYSTEMS Introduction- Realization between E(z) and E*(s)- Pulse transfer function	3
4th	Steady state gain for constant input- Configuration of the open loop systems-Open loop systems containing digital filters CLOSED LOOP SYSTEMS Introduction- preliminary concepts- derivation procedures	4
5th	TIME RESPONSE CHARACTERISTICS	5-7

	Introduction- system time response- characteristic equation	
6th	Mapping the s-plane- Response characteristics in the z-plane- Mathematical relationship between the s-plane and z-plane – Pole location of the second order systems	9-10
7th	STABILITY ANALYSIS TECHNIQUES Introduction- Stability definition- Characteristic equation- General for m of the characteristic equation- State space approach	11-12
8th	Bilinear transformation- Routh-Hurwitz criterion – Jury stability test- Root Locus	13-15

7-1- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	INTRODUCTION: Sampling and reconstruction- The ideal sampler- Starred error- Pole-Zero location 0 Data reconstruction	7	3	2	a14-1
WEEK-2	Z- TRANSFORM Discrete time systems- Transformation methods Z-Transform theories- solution of difference equation – inverse z-Transform.	7	3	2	a14-1, b14-1, c17-1,d3-1,d4-1
WEEK-3	DISCRETE TIME STATE EQUATION State space representation of discrete systems- Solving the discrete equations. OPEN LOOP DISCRETE SYSTEMS Introduction- Realization between E(z) and E*(s)- Pulse transfer function	7	3	2	a14-1,b1-1, b14-1, c17-1, d3-1,d4-1
WEEK-4	Steady state gain for constant input- Configuration of the open loop systems- Open loop systems containing digital filters CLOSED LOOP SYSTEMS Introduction- preliminary concepts- derivation procedures	7	3	2	a15-1,b14-1, c17-1,d3-1,d4-1
WEEKS-5-7	TIME RESPONSE CHARACTERISTICS Introduction- system time response- characteristic equation	21	9	6	a15-1,d3-1, d4-1
WEEK-8	Midterm written examination				
WEEKS-9-10	Mapping the s-plane- Response characteristics in the z-plane- Mathematical relationship between the s-plane and z-plane – Pole location of the second order systems	14	6	4	a15-1,b14-1, c17-1,d3-1,d4-1
WEEKS-11-12	STABILITY ANALYSIS TECHNIQUES Introduction- Stability definition- Characteristic equation- General for m of the characteristic equation- State space approach	14	6	4	a14-1,b14-1, d1-1, c17-1, d3-1,d4-1
WEEKS-13-15	Bilinear transformation- Routh-Hurwitz criterion – Jury stability test- Root Locus	21	9	6	b14-1,c17-1, d1-1, d3-1,d4-1

7-2 Experimental Topics/hours/ILOS

The experimental work contains seven laboratory experiments where each experiment is repeated for two weeks (as each student class is divided into two groups). The week number fifteen is a revision and discussion.

WEEK NO.	EXPERIMENT AND TOPIC	TOTAL LAB. HRS	COURSE ILOS COVERED (BY NO.)
WEEK-1&2	Exp-1:	2	
WEEK-3&4	Exp-2:	2	
WEEK-5&6	Exp-3:	2	
WEEK-7&8	Exp-4:	2	
WEEK-9&10	Exp-5:	2	
WEEK-11&12	Exp-6:	2	
WEEK-13&14	Exp-7:	2	

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a14-1**	*		*	*	*	*						*	
	a15-1	*	*	*	*	*		*	*					
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	*
	b14-1	*		*	*	*	*				*			*
Professional Skills	**c17-1**	*	*	*	*	*		*		*	*	*	*	*
General Skills	**d1-1**	*	*	*	*	*	*	*	*	*	*	*		*
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modeling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a14-1**	*		*				*		*	*		
	a15-1	*		*			*	*	*	*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b14-1	*	*	*			*	*		*	*		
Professional Skills	**c17-1**	*		*	*		*				*		
General Skills	**d1-1**	*	*	*		*	*	*	*		*		
	d3-1	*	*	*	*		*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**100**	**57.14%**	**16th**
laboratory assessment	**20**	**11.42%**	**weekly**
End of term laboratory examination (*Lab*)	**15**	**8.57%**	**15th**
Mid term written Examination1 1(*Term Work*)	**10**	**5.71%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**5.71%**	**12th**
Tutorial and report assessment (*Term Work*)	**20**	**11.42%**	**Weekly**
Total	**175**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory

Digital Automatic Control Lab. is used to help students for designing digital controller, system analysis, study performance of digital systems.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-K. Ogata, ”Modern Control Engineering”, Printice Hall, 1990
2-R. Dorf. and R., Modern_Control_Systems , Bisop 11th_Edition, 2004
3-B.C. Kuo, “Automatic Control Systems”, Printice Hall, 1995

Course coordinator	**Head of the Department**
Prof. Dr. Shaban Mabrouk Osheba	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Elective Courses

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 2nd Year**

Course Specification

A-Basic Information

Title: ***Heat Engines******Code Symbol:*** ***MPE227A*****Elective Course(1)**
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course:Mechanical Power Engineering ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*1*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
----	10%	20%	60%	10%	-----	-------	100%

B-Professional Information

2- Course Aims:

- This course gives students the A-Basic Information about the mechanisms of heat transfer through different walls. It aims to help the students in calculating the heat rates and the overall heat transfer coefficient. The course also provides them with knowledge about how steam is formed and the processes it undergoes during power generation cycles.

3- Course Objectives:

- To LearnHeat transfer by conduction, convection and radiation
- To Learn Performance of heat exchange devices
- To Learn Cooling of electrical and electronic devices
- To Learn generation and its processes

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1	B1,B5	C1,C5	D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Explain heat transfer by conduction, convection and radiation a1-2)Show performance of heat exchange devices a1-3)Illustrate Cooling of electrical and electronic devices a1-4)Demonstrate Steam generation and its processes
Intellectual skills	B1)Select and appraise appropriate ICT tools to a variety of engineering problems.	b1-1)Obtain Local and average heat transfer coefficients.
	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1)Analyze Heat rates through walls b5-2)Select Thermal loads of electric equipment and how to remove it
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Design of heat exchangers c1-2)Specify properties of pure substances
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1) Evaluate Rate heat exchange devices
	D3) Communicate effectively.	d3-1) Communicate effectively with electrical engineers in practice through learned basics of thermodynamics.
	D4) Demonstrate efficient IT capabilities.	d4-1)Evaluating of any power system and energy conversion processes

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Heat transfer fundamentals, the general differential equation of heat conduction, insulation materials.	1-2
2nd	One dimensional heat conduction through walls (plane, cylindrical, spherical, composite), conduction with inner heat source	3-5
3rd	Thermal convection, the overall heat transfer coefficient, free convection, forced convection	6-7,9
4th	Thermal radiation, radiation between surfaces	10
5th	Heat exchange equipment	11
6th	Cooling of electric motors, generators and electronic devices	12
7th	Properties of a pure substance, steam formation, steam properties, steam processes	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEKS-1-2	Heat transfer fundamentals, the general differential equation of heat conduction, insulation materials.	12	6	4	2	a1-1,d3-1,d4-1
WEEKS-3-5	One dimensional heat conduction through walls (plane, cylindrical, spherical, composite), conduction with inner heat source	18	9	6	3	b5-1,d3-1,d4-1
WEEKS-6-7	Thermal convection, the overall heat transfer coefficient, free convection, forced convection.	12	6	4	2	b1-1,b5-2,d3-1,d4-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Thermal convection, the overall heat transfer coefficient, free convection, forced convection.	6	3	2	1	b5-1,b5-2,d3-1,d4-1
WEEK-10	Thermal radiation, radiation between surfaces.	6	3	2	1	b5-1, ,d3-1,d4-1
WEEK-11	Heat exchange equipment	6	3	2	1	a1-2,c1-1,c5-1,d3-1, d4-1
WEEKS-12	Cooling of electric motors, generators and electronic devices.	6	3	2	1	a1-3, c5-1,d3-1,d4-1
WEEKS-13-15	Properties of a pure substance, steam formation, steam properties, steam processes.	18	9	6	3	a1-4,c1-2,d3-1,d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a1-1**	*	*	*	*	*	*	*		*	*			*
	a1-2	*	*	*	*	*	*	*		*	*			*
	a1-3	*	*	*	*	*	*	*		*	*			*
	a1-4	*	*	*	*	*	*	*		*	*			*
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	*
	b5-1	*	*	*	*	*		*		*	*		*	*
	b5-2	*	*	*	*	*		*		*	*		*	*
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c5-1	*		*	*	*	*	*	*	*	*		*	*
	c5-2	*		*	*	*	*	*	*	*	*		*	*
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	*

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	**Monitoring**
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*	*	*	
	a1-2	*	*	*			*	*	*	*	*	*	
	a1-3	*	*	*			*	*	*	*	*	*	
	a1-4	*	*	*			*	*	*	*	*	*	
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b5-1	*	*	*	*	*	*	*		*	*		
	b5-1	*	*	*	*	*	*	*		*	*		
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*	*	*	
	c1-2	*	*	*	*		*	*	*	*	*	*	
	c5-1	*	*	*	*		*		*	*	*		
General Skills	**d3-1**	*	*	*	*		*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**90**	**60%**	**16th**
Mid-Term Examination (Written)	**15**	**15%**	**8th**
Term work (Tutorial and report assessment)	**30**	**20%**	**Weekly**
Laboratory and oral assessment	**15**	**15%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Necati " Heat transfer" Mc-Grow Hill, 1995
2-Holman, "Heat transfer" Mc-Grow Hill, 2003

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Course coordinator	**Head of the Department**
Prof.Dr.Ali El-Ghalban	Prof. Dr. Shedid Shams El Din

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 2nd Year**

Course Specification

A-Basic Information

Title:* *Hydraulic Machiness ***Code Symbol:* *MPE227B*** **Elective Course(1)**
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course:Mechanical Power Engineering ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*1*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
----	10%	20%	60%	10%	-----	-------	100%

B-Professional Information

2- Course Aims:

- The course provides the students with the basic principles of construction and operation of hydraulic machines such as pumps and turbines. The course enables the student to select the suitable pump for a particular application, and to perform an overall analysis of its performance.

3- Course Objectives:

- To understand the different types of hydraulic machines.
- To know how to calculate the electrical power from these machines using the rules and equations.
- To understand the influences factors to obtain on high efficiency and high performance of hydraulic machines.
- To study the theories of hydraulic machines.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A15	B13,B16	C16	D4,D5,D6

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1)Explain theory of operation and construction of hydraulic machines a15-2) Demonstrate the efficiency of pumps and water turbines
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Calculate the power required by or developed from pumps and turbines
	B16) Analyze the performance of electric power generation, control and distribution systems	b16-1) Analyze the performance ofpumps and turbines specifications .
Professional skills	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1) Specify and evaluate the construction of each hydraulic machine and their operating theory c16-2) Specify and evaluate the operating efficiency of pumps and water turbines
General skills	D4) Demonstrate efficient IT capabilities.	d4-1) Gain the knowledge of solving some problems by using the computer .
	D5) Lead and motivate individuals.	d5-1)Gain experience during the run of experiments in the laboratory . d5-2)Scope for maintenance and necessary repairs. d5-3)Estimating the performance of hydraulic machine
	D6) Effectively manage tasks, time, and resources.	d6-1)Selection of the suitable hydraulic machine for a certain situation.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Study of hydraulic machines: operation and theory	1-2
2nd	Internal construction of hydraulic machines, Work done and power	3-4
3rd	Required calculations of overall efficiency of hydraulic machines	5-6
4th	Study of hydraulic pumps – reciprocating pumps	7,9
5th	Centrifugal pumps – Axial pumps	10-11
6th	Comparison between different pumps	12
7th	Hydraulic turbines – types of water turbines – description, construction and performance of water turbines	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEKS-1-2	Study of hydraulic machines: operation and theory	12	6	4	2	a15-1, b161,d5-1
WEEKS-3-4	Internal construction of hydraulic machines, Work done and power	12	6	4	2	b13-1,d5-1
WEEKS-5-6	Required calculations of overall efficiency of hydraulic machines	12	6	4	2	a15-2,b13-1,d4-1
WEEK-7	Study of hydraulic pumps	6	3	2	1	a15-1, b16-1,c16-1, d5-1,d5-2,d5-3,d6-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Study of reciprocating pumps	6	3	2	1	a15-1,b16-1,c16-1, d5-1,d5-2,d5-3,d6-1
WEEKS-10-11	Centrifugal pumps – Axial pumps	12	6	4	2	a15-1, b16-1,c16-1, d5-1,d5-2,d5-3,d6-1
WEEK-12	Comparison between different pumps	6	3	2	1	a15-1,b13-1,c16-1, d5-3,d6-1
WEEK-13-15	Hydraulic turbines – types of water turbines – description, construction and performance of water turbines	18	9	6	3	a15-1,b13-1,b16-1, c16-1,d5-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a15-1**	*	*	*	*	*		*	*					
	a15-2	*	*	*	*	*		*	*					
Intellectual Skills	**b13-1**	*		*	*	*	*	*		*	*			
	b16-1	*		*	*	*	*	*	*		*			
Professional Skills	**c16-1**	*		*				*	*	*	*			*
General Skills	**d4-1**		*	*	*	*	*	*	*	*	*	*	*	*
	d5-1		*	*	*	*	*	*	*	*	*	*	*	*
	d5-2		*	*	*	*	*	*	*	*	*	*	*	*
	d5-3		*	*	*	*	*	*	*	*	*	*	*	*
	d6-1	*		*				*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	**Monitoring**
Knowledge & Understanding	**a15-1**	*		*			*	*	*	*			
	a15-2	*		*			*	*	*	*			
Intellectual Skills	**b13-1**	*		*			*	*		*			
	b13-2	*		*			*	*		*			
	b16-1	*		*	*	*	*		*	*			
Professional Skills	**c16-1**						*						
General Skills	**d4-1**	*	*	*	*	*	*	*	*	*	*	*	
	d5-1	*	*	*	*	*	*	*	*	*	*	*	
	d5-2	*	*	*	*	*	*	*	*	*	*	*	
	d5-3	*	*	*	*	*	*	*	*	*	*	*	
	d6-1		*	*	*		*						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**90**	**60%**	**16th**
Mid-Term Examination (Written)	**30**	**20%**	**8th**
Experimenal and oral assessment	**30**	**20%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- Anthony Esposito, Fluid Power with Applications, Prentice-hall 1994.

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Course coordinator	**Head of the Department**
Dr. Ashraf Olwi Blabel	Prof. Dr. Shedid Shams El Din

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 3rd Year

Course Specification

A-Basic Information

Title: *Mechanical Power Station* ***Code Symbol:*** *MPE327A* **Elective Course(2)**
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: Mechanical Power Engineering ***Dept.*** ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	2	--	4

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
50%	---	25%	25%	-------	------	-------	100%

B-Professional Information

2- Course Aims:

It is an application course which deals with the operation and analysis of steam and gas power stations. Study of steam properties, boilers, different steam and gas power plants.

3- Course Objectives:

- To understand the different types of thermal machine
- To understand the influences factors to obtain on high efficiency and high performance
- To study the theories of thermal machines.
- To know the A-Basic Information about the operating systems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1,A15	B1,B2,B3,B5	C5,C14	D2,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1)Demostrate steam properties, process and cycles . a1-2) Show types of steam generation . a1-3) Explain steam flow through nozzles . a1-4) Illustrate the nature and scope of gas and steam turbine.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	A15-1) Explain the steam and gas turbine operation . A15-2)Demonstrate installation of steam and gas turbine power plant .
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Select appropriate mathematical and computer-based methods for Analysing of flow through nozzles, steam and gas turbines .
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Select appropriate solutions for solving of practical problems Mechanical Power Station .
	B3) Think in a creative and innovative way in problem solving and design.	b3-1) Creative thinking for solving problems related to Mechanical Power Station b3-2) Decision making .
	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1) Study of steam flow properties and steam generation.
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1)Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments related to steam and gas turbine power plants and also steam generation
	C14) Test and examine components, equipment and systems of electrical power and machines.	c14-1)Identifying, diagnose and troubleshoot faults in Mechanical Power Station
	D2) Work in stressful environment and within constraints.	d2-1) Selecting the steam and gas turbines for certain application . d2-2)Knowing the trouble-shooting of operation.
	D4) Demonstrate efficient IT capabilities.	d4-1) Solving the operation problems using computer programming.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction	1
2nd	Analysis of gas turbine cycles	2-4
3rd	Steam nozzles and types of steam turbines	5
4th	Single stage of impulse turbine	6
5th	Reaction turbine stage	7
6th	A Two-row turbine stage (velocity and pressure stages),	9
7th	Steam generation process	10-11
8th	Steam cycles	12-13
9th	Steam boilers	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Introduction	6	3	2	1	a1-1,a1-2,a1-3,a1-4
WEEKS-2-4	Analysis of gas turbine cycles	12	6	4	2	a15-1,a15-2,b1-1, c5-1, d4-1
WEEK-5	Steam nozzles and types of steam turbines	6	3	2	1	a1-1,a1-2,a1-3,a1-4, b1-1,c5-1, b5-1,d4-1
WEEK-6	Single stage of impulse turbine	6	3	2	1	a1-1,a1-2,a1-3,a1-4, b1-1, b5-1,c5-1
WEEK-7	Reaction turbine stage	6	3	2	1	a1-1,a1-2,a1-3,a1-4, b1-1,b2-1,b3-1,c14-1, d2-1,d2-2,d4-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	A Two-row turbine stage (velocity and pressure stages),	6	3	2	1	a1-1,a1-2,a1-3,a1-4 ,b1-1,b2-1,b3-1,b3-2, b3-2,b5-1,c5-1,c14-1
WEEKS-10-11	Steam generation process	12	6	4	2	a1-1,a1-2,a1-3,a1-4 ,b1-1,b2-1,b3-1,b3-2, b3-2,b5-1,c14-1,d2-1, d2-2, d4-1
WEEKS-12-13	Steam cycles	12	6	4	2	a1-1,a1-2,a1-3,a1-4 ,b1-1,b2-1,b3-1,b3-2, b3-2,b5-1,c5-1,c14-1, d2-1,d2-2, d4-1
WEEKS-14-15	Steam boilers	12	6	4	2	a1-1,a1-2,a1-3,a1-4 ,b1-1,b2-1,b3-1,b3-2, b3-2,b5-1,c5-1,c5-1, c14-1,d2-1,d2-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a1-1**	*	*	*	*	*	*	*		*	*			
	a1-2	*	*	*	*	*	*	*		*	*			
	a1-3	*	*	*	*	*	*	*		*	*			
	a1-4	*	*	*	*	*	*	*		*	*			
	a15-1	*	*	*	*	*		*	*					
	a15-2	*	*	*	*	*		*	*					
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	
	b2-1	*	*	*	*	*	*	*		*	*	*	*	
	b3-1	*	*	*	*	*	*	*		*	*	*	*	
	b3-2	*	*	*	*	*	*	*		*	*	*	*	
	b5-1	*	*	*	*	*		*		*	*		*	
Professional Skills	**c5-1**	*		*	*	*	*	*	*	*	*		*	
	c14-1	*	*		*	*		*			*			
General Skills	**d2-1**	*	*	*			*	*	*	*	*	*		
	d2-2	*	*	*			*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	*	*	*			*	*	*	*		*	
	a1-2	*	*	*			*	*	*	*		*	
	a1-3	*	*	*			*	*	*	*		*	
	a1-4	*	*	*			*	*	*	*		*	
	a15-1	*		*			*	*	*	*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b2-1	*		*	*	*	*	*		*		*	
	b3-1	*	*	*	*	*	*	*	*	*			
	b3-2	*	*	*	*	*	*	*	*	*			
	b5-1	*	*	*	*	*	*	*		*			
Professional Skills	**C5-1**	*	*	*	*		*		*	*			
	c14-1		*				*			*			
General Skills	**d2-1**	*		*				*	*	*			
	d2-2	*		*				*	*	*			
	d4-1	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination (Written)	**15**	**15%**	**8th**
Term work (Tutorial and report assessment)	**15**	**15%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

12-1 Books

1. Zoeb Husain: Steam turbine – Theory and Design "Mc-Graw- Hill 1984.
2. S. L. Dixon "Fluid Mechanics and Thermodynamic of Turbomachinary", 1978
3. Kostyuk and Frolov "Steam and Design Turbines" Mir publishers Moscow, 1988
4. S. M. Yahya "Turbines Compressors and Fans" Tata Mc-Graw-Hill 1989 .

12-2 Periodicals, web sites, … etc

1. ASME, J. Eng. Power.

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Course coordinator	**Head of the Department**
Prof.Dr.Ali El-Ghalban	Prof. Dr. Shedid Shams El Din

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 3rd Year

Course Specification

A-Basic Information

Title: ***Hydraulic Systems*** ***Code Symbol:*** ***MPE327B*****Elective Course(2)**
Element of program: ***Major*** ***Date of specification approval:*** ***2011***
Department offering the course:Mechanical Power Engineering ***Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
50%	---	25%	25%	-------	------	-------	100%

B-Professional Information

2- Course Aims:

This Course is to provide student with information about the different types of hydraulic and pneumatic systems.

3- Course Objectives:

To study Generation, transmission and distribution of the fluid perm.
To know Science and engineering considering the economic aspects.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A15	B5,B9	C2	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Illustrate Science and engineering considering the economic aspects
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1)Explain Generation, transmission and distribution of the fluid perm .

	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1) Assess and evaluate the characteristics of both of hydraulic and pneumatic systems .
	B9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1)Choice the size and number of units of both of hydraulic and pneumatic systems .
Professional skills	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1)Professionally merge the engineering knowledge to keep abreast of rapid developments in fluid power system field .
General skills	D4) Demonstrate efficient IT capabilities.	d4-1)Gain experience to solve and analyze any problems in hydraulic and pneumatic systems .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction of fluid pauper	1
2nd	The source of hydraulic power pumps	2-4
3rd	Hydraulic actuators and hydraulic meters	5-6
4th	Hydraulic Valves	7,9-10
5th	Hydraulic circuit design and analysis	11-13
6th	Maintenance of hydraulic systems	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Introduction of fluid pauper	4	2	2	a1-1,a15-1,b5-1
WEEKS-2-4	The source of hydraulic power pumps	12	6	6	a1-1,a15-1,b5-1
WEEKS-5-6	Hydraulic actuators and hydraulic meters	8	4	4	a1-1,a15-1,b5-1, c2-1, d4-1
WEEK-7	Hydraulic Valves (Part I)	4	2	2	a1-1,a15-1,b5-1, c2-1, d4-1
WEEK-8	Midterm of first Term (written examination)				
WEEKS-9-10	Hydraulic Valves (Part II)	8	4	4	a1-1,a15-1,b5-1, c2-1, d4-1
WEEKS-11-13	Hydraulic circuit design and analysis	12	6	6	b9-1,c2-1
WEEKS-14-15	Maintenance of hydraulic systems	8	4	4	d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			
	a15-1	*	*	*	*	*		*	*					
Intellectual Skills	b5-1	*	*	*	*	*		*		*	*		*	
	b9-1	*	*		*	*	*	*	*	*	*			
Professional Skills	c2-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d4-1		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	**Monitoring**
Knowledge & Understanding	a1-1	*		*			*	*	*	*			
	a15-1	*		*			*	*	*	*			
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*			
	b9-1	*		*	*		*	*	*	*		*	
Professional Skills	c2-1	*		*	*		*	*		*		*	
General Skills	d4-1	*	*	*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination (Written)	**15**	**15%**	**8th**
Term work (Tutorial and report assessment)	**15**	**15%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Sciences, Technology and Engineering.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- Ashby, John G., "power hydraulic", 1989,USA
2- Esposito, A. ," fluid power with application", 2000, USA
3- Keith Mobley, R. "Fluid power dynamics.", 2000, USA

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Course coordinator **Head of the Department**

Dr. Mohamed M. EL-MayitProf. Dr. Shedid Shams El Din

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: *New and renewable energy* ***Code Symbol:*** *ELE321A* **Elective Course(3)**
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	2		4

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	50%	25%	25%	---	---	---	100%

B-Professional Information

2- Course Aims:

The aims of this course are to provide the Student, upon completing the Electrical Engineering Program, with the basic knowledge and skills of how to design and operating renewable energy systems (RESs). This course will also provide students with the ability to assess the generation of these RESs and economy. The skill of installing and coordinating of different RESs configurations are also provided. It is also aimed that the student will get acquainted with the applications of various RES types to accommodate the load energy requirements considering the meteorological data at the installation site

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of operating RESs (solar photovoltaic, solar thermal and wind generators
- Definition of requirements for installing, operation and generation of RESs.
- Evaluation the energy generation and its economy of the study type of RESs.
- Comparison of types RES at different region of Egypt.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A3, A8	B2	C13	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3) Demonstrate Characteristics of engineering materials related to electrical engineering.	a3-1)Show the types and characteristics of renewable energy sources
	A8)Recognize current engineering technologies as related to the electrical power engineering	a8-1) Explain the elements of photovoltaic (PV) and wind energy (WE) systems and their operation characteristics.
Intellectual skills	B2) Select appropriate solutionsfor engineering problems based on analytical thinking.	b2-1) Select appropriate solutions for calculating the output energy and its economy of photovoltaic (PV) and wind energy (WE) systems.
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1) Design and perform experiments to calculate the energy and its economy of photovoltaic and wind energy systems.
General skills	D3) Communicate effectively.	d3-1) gain experience to design the PV system and construct the WE systemin the Lab.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Elements of PV system and its operation characteristics	1
2nd	Solar radiation analysis Elements of power systems and standard voltage	2-3
3rd	Power and energy outputs of PV system	4-5
4th	Design of PV system to accommodate different load types	6-7
5th	Economy of PV system	9-10
6th	Construction of wind energy system and its operation theory	11-12
7th	Wind speed analysis and energy credits	13-14
8	Economical assessment of wind energy.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	**Lab.**	
WEEK-1	Elements of PV system and its operation characteristics	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEKS-2-3	Solar radiation analysis Elements of power systems and standard voltage	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEKS-4-5	Power and energy outputs of PV system	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEKS-6-7	Design of PV system to accommodate different load types	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Economy of PV system	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEKS-11-12	Construction of wind energy system and its operation theory	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEKS-13-14	Wind speed analysis and energy credits	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1
WEEK-15	Economical assessment of wind energy.	6	3	2	2	a3-1,a8-1,b2-1. c13-1,d3-1

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a3-1**	*		*	*	*				*	*		*	
	a8-1	*	*	*	*	*	*	*	*	*	*		*	*
Intellectual Skills	**b2-1**	*	*	*	*	*	*	*		*	*	*	*	
Professional Skills	**c13-1**	*		*	*	*		*	*		*		*	*
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	*	*	*			*	*		*			
	a8-1	*	*	*	*	*	*	*	*	*			
Intellectual Skills	**b2-1**	*		*	*	*	*	*		*		*	
Professional Skills	**c13-1**	*		*	*		*					*	
General Skills	**D3-1**	*	*	*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination(*written*)	**70**	**70%**	**16th**
Mid term laboratory assessment (*Oral*)	**5**	**5%**	**8th**
End of term laboratory examination (*Lab*)	**5**	**5%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**5%**	**8th**
Mid term written Examination 2 (*Term Work*)	**5**	**5%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-M.M.EL Saied, I.S.Taha and J.A.Sabbagh;" Design of solar Themal Systems Scientific Publishing Center" King Abdul-Aziz university, Jeddah ,KSA 1994
2-D.R Mills ;"Solar Thermal Electricity" Solar Energy,ISES,2001,pp557-651
3-Siegfrid Heirer , "Wind Energy Conversion systems" "Johan Wiley and sons publications,UK,1998
****

Course coordinator Head of the Department

Prof. Atef Abd El-Hakim El-ZeftawyProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: *Programmable Logic Controller and its Application* ***Code Symbol:*** *ELE321B* **Elective Course(3)**
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	50%	25%	25%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of Programmable Logic Controller (PLC) and its applications in industry.

3- Course Objectives:

Knowing the basic principles of PLC, I/O interface between PLC and other devices, the advantages of using PLC in industry, how to program the PLC in different languages.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A20	B3, B15	C3,C6,C13	D3,D7

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	**A5) Illustrate** Methodologies of solving engineering problems, data collection and interpretation.	**a5-1)** Illustrate the basic principles of PLC, I/O interface between PLC and other devices, the advantages of using PLC in industry, how to program the PLC in different languages
	A20) Classify logic circuits.	a20-1)Capability of using logic circuit interfaced to an electrical power system and electrical machines
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Design a programmable logic controller programming in different industrial applications.
	B15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in	b13-1)Design a closed loop control system using a Programmable Logic Controller in different industrial applications.
Professional skills	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c1-1)Use a PLC as a controller for controlling industrial systems, and having a practical experience in this field.
General skills	D3) Communicate effectively.	d3-1)Use information technologies effectively
	D7) Search for information and engage in life-long self learning discipline.	d7-1)Collect data, draw, (block diagram, charts, curves) and interpret data

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction.	1
2nd	Relays; Relay Ladder Logic.	2
3rd	Programming/editing using PLC.	3-4
4th	Branch Instructions, Examine ON/OFF, Instructions & truth tables.	5-6
5th	Using Latches and Master Control Relay MCR Instructions.	7
7th	Creating zones with MCR & ZCL Instructions Creating zones with MCR & ZCL Instructions	9
8th	Timers	10-11
9th	Counters	12-13
10th	Sequencers.	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Introduction.	4	2	2	a5-1
WEEK-2	Relays; Relay Ladder Logic.	4	2	2	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEKS-3,4	Programming/editing using PLC.	8	4	4	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEKS-5,6	Branch Instructions, Examine ON/OFF, Instructions & truth tables.	8	4	4	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEK-7	Using Latches and Master Control Relay MCR Instructions.	4	2	2	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEK-8	Midterm written examination				
WEEK-9	Creating zones with MCR & ZCL Instructions Creating zones with MCR & ZCL Instructions	4	2	2	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEKS-10,11	Timers	8	4	4	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEKS-12,13	Counters	8	4	4	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1
WEEKS-14,15	Sequencers.	8	4	4	a5-1, a20-1,b3-1, b13-1, c1-1,d3-1, d7-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a5-1**	*	*	*	*	*	*	*	*		*		*	*
	a20-1	*			*	*								*
Intellectual Skills	**b3-1**	*	*	*	*	*	*	*		*	*	*	*	*
	b13-1	*		*	*	*	*	*		*	*			
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		
	d7-1	*	*	*	*	*	*	*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a5-1**	*	*	*	*	*	*	*		*	*		
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
Intellectual Skills	**b3-1**	*	*	*	*	*	*	*	*	*	*		
	b13-1	*		*			*	*		*		*	
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*	*	*	
General Skills	**d3-1**	*	*	*	*		*	*	*	*	*	*	
	d7-1	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination**(Written)**	**10**	**10%**	**8th**
Term work **(Tutorial and report assessment)**	**5**	**5%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**5**	**5%**	**8th**
End of term laboratory examination (*Lab*)	**5**	**5%**	**16th**
Oral Examination	**5**	**5%**	**15th**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Programmable Logic Controller Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

13-1 Essential books (Text books)

1-Hugh Jack, "Automating Manufacturing Systems with PLCs", 2007

2-E.A.Parr and A.Parr, "Programmable Controllers: An Engineer's guide", Worth-Heinemann, 1993

3-L.J. Technical systems, "An Introduction to Industrial Programmable Controllers", N.Y. Hauppauge, USA, 1991.

4-G.Michel and F.Duncan, "Programmable Logic Controllers: Architecture and Application", John Wiley & Sons, 1990

13-2 Periodicals

1- A.S.ZEIN EL DIN, "High Performance PLC Controlled Stepper Motors in Robot Manipulator", IEEE International Symposium on Industrial Electronics ISIE'96, Warsaw, Poland, pp.974-978, June 17-20, 1996.

2-A.S.ZEIN EL DIN, S.A.MAHMOUD and A.GHAZY, "A Novel Uninterruptible Power Supply (UPS) Controlled by Programmed Logic Controller (PLC)", ICEC's 97, IEEE, Cairo, Egypt, pp.215-219, December 15-18, 1997.

3- A.S.ZEIN EL DIN and A.E.EL-SABBE and S.A.MAHMOUD, "PLC-Based Control of UPS", PEMC'98, 8 th International Power Electronics & Motion Control Conference, EPE, Prague, Czech Republic, pp. 8-1 to 8-6, 8-10 September, 1998.

4- A.S.ZEIN EL DIN, "PLC-Based Speed Control of DC Motor", Engineering Research Journal (ERJ), Minoufiya University, Faculty of Engineering, Shebin El-Kom, Egypt, ISSN 1110-1180, Volume 29, Number 1, pp. 9-19, January 2006 .

5- A.S.ZEIN EL DIN, "Modeling and Implementation of Robot Based Control by using Programmable Logic Controller", International Journal: World Scientific and Engineering Academy and Society (WSEAS) Transactions on POWER SYSTEMS, http://www.wseas.org, Issue 3, Volume 1, pp.651-660, March 2006

6-A.S.ZEIN EL DIN, "Closed Loop PLC Control of Electric Vehicle", 13th International Research/ Expert Conference "Trends in the Development of Machinery and associated Technology", TMT2009, Hammamet, Tunisia, 16-21 October 2009 .

7-Arafa Sayed Mohamed Mansour, Mohamed S. Zaky, Ashraf ZEIN EL DIN and Hussain A.Yassain, "Control of a Movable Robot Using PLC", MEPCON'09, 13 th International Middle East Power Systems Conference, Assiut, Egypt ,December 20-23, 2009.

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Course coordinator	Head of the Department
Prof. Dr. Ashraf Salah El Din Zein El Din	**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

***Title:** Advanced Programming and their Applications* ***Code Symbol:** ELE321C* **Elective Course(3)**
***Element of program:** Major* ***Date of specification approval:** 2011*
Department offering the course:** Electrical Eng. Dept.* ***By law 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*----*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	50%	25%	25%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of programming using C/C++-Language.

3- Course Objectives:

- To learn basic structure of computer program.
- To analyze any problem and find the appropriate algorithm.
- To understand basic elements of C/C++ language

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2,A13	B1,B3,B12	C1,C6	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT)	a2-1)Explain the basic principals of C/C++-language..
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose analytical and computer methods appropriate for solving problems related to electrical power and machines
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Design a software program and/or hardware systems to meet certain demand. b1-2)Assessing the mathematical tools/models for the solution of problems in machines and power systems.
	B3) Think in a creative and innovative way in problem solving and design.	b3-1)Determining the proper model to use in the analysis of machines and power systems.
	B12) Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1) Adopt suitable theoretical and computer-based techniques to use for the analysis of machines and power system problems.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Knowing some facts about the main advantages of using C/C++-language
	C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1)Use computational tools and software packages
General skills	D3) Communicate effectively.	d3-1)Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to C/C++ Language	1
2nd	Constants, Variables and Definitions in C Language	2
3rd	Writing a Program Using C Language	3-4
4th	Mathematical Relations in C Language	5-6
5th	Using Input and Output, Free Input and Output and Formatted Input and Output	7
6th	Loops in C Language, Finite Loop, Infinite Loop and Conditioned Loop	9
7th	Control and Test Commands, Define Function and Using It and Formatting Program	10-11
8th	Vectors and Matrices	12-13
9th	Pointers in C Language, Using Library, Functions, Mathematical Functions, Class, Workshop and Object Oriented Programming	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Introduction to C/C++ Language	4	2	2	a2-1,
WEEK-2	Constants, Variables and Definitions in C Language	4	2	2	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEKS-3,4	Writing a Program Using C Language	8	4	4	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEKS-5,6	Mathematical Relations in C Language	8	4	4	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEK-7	Using Input and Output, Free Input and Output and Formatted Input and Output	4	2	2	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEK-8	Midterm written examination				
WEEK-9	Loops in C Language, Finite Loop, Infinite Loop and Conditioned Loop	4	2	2	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEKS-10,11	Control and Test Commands, Define Function and Using It and Formatting Program	8	4	4	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEKS-12,13	Vectors and Matrices	8	4	4	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1
WEEKS-14,15	Pointers in C Language, Using Library, Functions, Mathematical Functions, Class, Workshop and Object Oriented Programming	8	4	4	a2-1, a13-1,b1-1, b1-2, b3-1,b12-1, c1-1,c6-1,d3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a2-1**	*		*	*	*	*			*	*			*
	a13-1	*	*	*	*			*		*	*		*	
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b12-1	*		*	*		*	*	*	*	*	*		
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	C6-1	*	*	*	*	*	*	*	*	*	*		*	*
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Home Exam***	***Monitoring***
Knowledge&Understanding	**a2-1**	*	*	*				*		*	*	*	
	a13-1	*		*				*		*			
Intellectual Skills	**b1-1**	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
	b3-1	*	*	*	*	*	*	*	*	*	*		
	b12-1	*		*	*		*	*		*			
Professional Skills	**c1-1**	*	*	*	*		*	*	*	*	*	*	
	c6-1	*		*	*	*		*	*	*	*	*	
General Skills	**d3-1**	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**70**	**70%**	**16th**
Mid-Term Examination**(Written)**	**10**	**10%**	**8th**
Term work **(Tutorial and report assessment)**	**5**	**5%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**5**	**5%**	**8th**
End of term laboratory examination (*Lab*)	**5**	**5%**	**16th**
Oral Examination	**5**	**5%**	**15th**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

13-1 Essential books (Text books)

1-Herbert Schildt, "Advanced turbo C", McGraw Hill, USA, 1987.

2-Turbo C, "Manual de reference", Borland International, France, 1988.

3-Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", Second Edition, Prentice Hall, Inc., 1988.

4-Bjarne Stroustrup, "The C++ Programming Language", 3rd Edition, by February 15, 2000

5-Bruce Eckel , "Thinking in C++", 2nd Edition, Volume 1 Completed: January 13, 2000 and Volume 2 Completed: November, 2003

6-Stanley B. Lippman, et al , "C++ Primer " , 4th Edition, Addison-Wesley Professional 2005.

7-Stanley B. Lippman, "C++/Cli Essentials", 4th edition , Addison-Wesley Professional, 20051-Herbert Schildt, "Advanced turbo C", McGraw Hill, USA, 1987.

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Course coordinator **Head of the Department**

Prof. Dr. Ashraf Salah El Din Zein El Din**Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3rd ELEC.**

Course Specification

A-Basic Information

Title: *Switchgear Technology* ***Code Symbol:*** *ELE321D* **Elective Course(3)**
Element of program: *Minor* ***Date of specification approval:*** *2006*
Department offering the course: *Electrical Eng. Dept.* ***By law*** *2006*

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*0*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	50%	25%	25%	---	---	---	100%

B- Professional Information

2- Course Aims:

This course is intended to deeply cover the switchgear technology concerning circuit breaker types, fault current interruption technology, transient recovery voltage impact on the breaker performance and breaker arc modeling.

3- Course Objectives:

The objective of this course is to attain the following points:

- Demonstration of the breaker types, arc extinction, transient recovery voltage.
- Realizing technologies of the high current interruptions considering DC current, inductive and capacitive AC currents.
- Learning about arc creation process concerning DC and AC arcs and factors affecting on their creation.
- Studying dynamic arc modeling with declaring the experimental setups and the model parameter identification.Surveying the arc models in the literature.
- Studying the power system transients due to faults and due to circuit breaker interruptions considering inductive and capacitive interruption.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A8, A15	B5 ,B6	C7 , C11	D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A8) Explain Current engineering technologies as related to electrical engineering.	a8.1)Know the high current interruption technologies. a8.2)Know the arc modeling a8.3) Understand how the arc element is important in the breaker behavior failure or successful interruption.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15.1) Recognize the breaker function and types. a15.2) Understand the power system transients due to faults. a15.3) Understand the transient recovery voltages due to fault currents interruption.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5.1) Integrate the breaker arc interaction with the electric system.
	B6) Investigate the failure of components, systems, and processes.	b6.1) Identify the breaker interruption capability concerning its thermal limiting curves.
Professional skills	C7) Apply numerical modeling methods to engineering problems.	c7.1) Step-by-step numerical solution of the arc model interaction with the power system.
	C11) Exchange knowledge and skills with engineering community and industry.	c11.1) Exchange practical knowledge of the breaker explanation and its installation rules in the network. c11.2) Exchange practical knowledge of the breaker design and testing for HVDC and HVAC lines.
General skills	D8) Acquire entrepreneurial skills.	d8.1) Improving the relevant power engineering skills. d8.2) Acquire practical knowledge for the working-interview in the electrical substation.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	HVAC switchgear performance.	1-5
2nd	Electrical testing of AC switchgear.	6
3rd	AC Medium and low voltage switchgear.	7,9
4th	HVDC switchgear.	10
5th	Arcing models and transient phenomena of switchgears.	11-14
6th	Maintenance routines for switchgears	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	Introduction: Role of switchgear in power systems.	4	2	2	a15.1, c11.1, d8.1
WEEK-2	Switchgear performance: HVAC switchgears.	4	2	2	a8.1, d8.1
WEEK-3	Air circuit breakers.	4	2	2	a15.1, c11.2, d8.1
WEEK-4	Oil circuit breakers.	4	2	2	a15.1, c11.2, d8.1
WEEK-5	Gas Insulated circuit breakers.	4	2	2	a15.1, c11.2, d8.1
WEEK-6	Electrical testing of AC switchgear: short circuit tests-Insulation tests.	4	2	2	c11.2, d8.1
WEEK-7	AC medium voltage switchgears.	4	2	2	a15.1, c11.2, d8.1
WEEK-8	First midterm exam.				
WEEK-9	AC low voltage switchgears.	4	2	2	a15.1, c11.2, d8.1
WEEK-10	HVDC Switchgears.	4	2	2	a15.1, c11.2, d8.1
WEEK-11	Arcing model and its interaction during breaking.	4	2	2	a8.2, a8.3, b5.1, b6.1, c7.1
WEEK-12	Cont: Arcing model and its interaction during breaking.	4	2	2	a8.2, a8.3, b5.1, b6.1, c7.1
WEEK-13	Second midterm exam.				
WEEK-14	Transient phenomena of switchgears.	4	2	2	a15.2,a15.3
WEEK-15	Maintenance routines for switchgears.	4	2	2	d8.1,d8.2

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a8.1**	*												
	a8.2	*												
	a8.3	*												
	a15.1	*												
	a15.2	*			*									
	a15.3	*												
Intellectual Skills	**b5.1**	*			*									
	b6.1	*												
Professional Skills	**c7.1**	*			*									
General Skills	**d8.1**	*												
	d8.2	*												

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Arrange meetings for more discussion and declaration.
	Repeat the explanation based on their request.
	Face-to-face intermediate solving the problems and quizzes during the tutorial scheduled time in order to improve their skills.
For outstanding students	Hand out programmed project assignments.
	Give them some topics searched by the internet and conductpresentation

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a8.1**	*											
	a8.2	*											
	a8.3	*											
	a15.1	*											
	a15.2	*			*								
	a15.3	*											
Intellectual Skills	**b5.1**	*			*								
	b6.1	*											
Professional Skills	**c7.1**	*			*			*					
General Skills	**d8.1**	*								*			
	d8.2	*								*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination(*written*)	**70**	**70%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**10**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Teaching Class:

The teachers are going to use computer for the lecture presentation using power point office program. Hanged digital LCD is required to facilitate the communication with the students.

11-2Library Usage:

The books in the library are obsolete and the recent books are rare. More financial support should be directed to the electronic library to access on the ieeexplore.

12- List of references:

1-IEEE Std C37.20.1,IEEE Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear, 2002.
2-witchgear Committee,IEEE Std C37.100.1 IEEE Standard of Common Requirements for High Voltage Power Switchgear Rated Above 1000 V, 2007.
3-ANSI/IEEEC37.38, An American National Standard IEEE Standard for Gas-Insulated, Metal-Enclosed Disconnecting, Interrupter, and Grounding Switches, 1989.
4-A. I. Rao and J. E. Sunil, "Switchgear and Protection", Tenth addition, India, 1992.
5-J. C. Das "Transients in Electrical Systems: Analysis, Recognition, and Mitigation: Chapter 8", 2010.

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Course coordinator **Head of the Department**

Dr. Nagy I. Elkalashy **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

***Title:** Special Machines* ***Code Symbol:** ELE322A* **Elective Course(4)**
Element of program: *minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
4	2	-----	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

The course aims to understand the theory and analyze the performance of special electric machines.

3- Course Objectives:

To know the importance, usage advantages and disadvantages of special machines .
To define the type of special machine needed for each applications based on the characteristics of each .
Treatment all the problem which may occur in practice and introduce the solution
Distinguish between the conventional and special eclectic machines.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A15	B13,B14	C2,C3,C7,C16	D2

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1)Understanding basic mathematics, science and technologies relevant to special machines. a15-2)Understanding the fundamental concepts, principles and theories of special machines.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering. B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical	b13-1)Use principles and concepts in solving problems in machines and power systems b13-2)Apply appropriate mathematical tools for the solution of problems in machines and power systems. b13-3)Apply the correct model to use in the analysis of machines and power systems b14-1)Summarizing and selecting the appropriate techniques to solve problems in machines and power systems.. b14-2)Assessing the mathematical tools/models for the solution of problems in machines and power systems.
Professional skills	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services. C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs. C7) Apply numerical modeling methods to engineering problems. C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c2-1) Identifying, diagnose and troubleshoot faults in machines c3-1) Create and/or re-design a process, component or system, and carry out specialized engineering designs. c7-1) Apply numerical modeling methods to Machines problems. c16-1) Specify and evaluate manufacturing of components and equipment related to electrical machines.
General skills	D2) Work in stressful environment and within constraints.	d2-1)Developing creativity, particularly in design and performance of equipment and circuits. d2-2)Learning effectively for continuing professional development and in a wider context throughout the career.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Single-phase Induction motor	1-2
2nd	Universal motor	3-4
3rd	Synchronous Reluctance Motor	5-6
4th	Switched Reluctance motor .	7-9
5th	Permanent Magnet machines	10-11
6th	Stepper motors	12-13
7th	Hysteresis motors	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1,2	Single-phase Induction motor	12	8	4	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2
WEEK-3,4	Universal motor	12	8	4	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2
WEEK-5,6	Synchronous Reluctance Motor	12	8	4	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2
WEEK-7	Switched Reluctance motor .	6	4	2	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1,c16-1,d2-1,d2-2
WEEK-8	Midterm written examination				
WEEK-9	Switched Reluctance motor .	6	4	2	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2
WEEK-10,11	Permanent Magnet machines	12	8	4	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2
WEEK-12,13	Stepper motors	12	8	4	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2
WEEK-14,15	Hysteresis motors	12	8	4	a15-1, a15-2, b13-1, b13-2, b13-3,b14-1, b14-2, c2-1, c2-2, c3-1,c7-1, c16-1,d2-1,d2-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a15-1	*	*	*	*	*		*	*					
	a15-2	*	*	*	*	*		*	*					
Intellectual Skills	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
	b13-3	*		*	*	*	*	*		*	*			
	b14-1	*		*	*	*	*				*			
	b14-2	*		*	*	*	*				*			
Professional Skills	c2-1	*	*	*	*	*	*	*	*	*	*		*	
	c3-1	*	*	*	*	*	*	*	*	*	*			
	c7-1	*	*		*	*		*	*	*			*	
	c16-1	*		*				*	*	*	*			
General Skills	d2-2	*	*	*			*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods: Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a15-1**	*					*	*	*	*			
	a15-2	*					*	*	*	*			
Intellectual Skills	**b13-1**	*					*	*		*			
	b13-2	*					*	*		*			
	b13-3	*					*	*		*			
	b14-1	*	*				*	*		*	*		
	b14-2	*	*				*	*		*	*		
Professional Skills	**c2-1**	*			*		*	*		*		*	
	c3-1	*			*		*					*	
	c7-1	*			*	*	*		*	*	*		
	c16-1						*						
General Skills	**d2-2**	*						*	*	*	*		

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**100**	**66.66%**	**16th**
Mid-Term Examination **(Written)**	**20**	**13.33%**	**8th**
Term work **(Tutorial and report assessment)**	**30**	**20%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**---**	**---**	**---**
End of term laboratory examination (*Lab*)	**---**	**---**	**---**
Oral Examination	**---**	**--**	**---**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Machine Laboratory is used to help the students for writing source programs then compiled them and obtain the results.

11.2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

13.1- Essential books (text books)

1- I.J. Nagrath, D.P. Kothari, "Modern Power system Analysis", Tata Mc Graw Hill publishing Company limited 1969 .
2- W.D. Stevenson, "Elements of power system analysis", Mc Graw Hill Book Company 1972 .

13.2 Facilities required for teaching and learning

1- E.V. Armensky "fractional horsepower electrical machines" Mir .P. Mascow 1978.
2-I. Boldea and Al Trica Speed coternational conference of electrical Machines (ICEM) Romania. 1980-1986 .
3- P.P. Acarnley "stepping motors a guide to modern theory and practice" Short Run Press, England 1982 .
4- P.J. lawrenson "Development and application of Reluction motors" Electronics and power system Magazine USA 1965 .
5- A.E. Fitzgerald. K. and S.D.Umans "Electric machinery" M.Graw –hill Book company 1990 .
6- Bodea "Reluctance Synchronous machines and drive". Charen don press, ox ford 1995 7- Takashi Kenjo. "Stepping motors and their microprocessor contrals" charendon press, oxford. 1995
8- J. Hindmarsh "Electric Machines and drives oxford pergamon press, 1985 .
9- B.J Chalmers "Electric Motor hand book" Butterworths, London 1988 .

Course coordinator **Head of the Department**

Prof. Mostafa El-Sayed ElShbiniProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

Title: ***Optimization Methods in Electric Power Systems*** ***Code Symbol:ELE322B*** **Elective Course(4)**
Element of program: ***Minor*** ***Date of specification approval: 2011***
Department offering the course: ***Electrical Eng. Dept.*** ***By law 2006***

Lecture	Tutorial	Laboratory	Total
4	2	-	6

1-Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	**33.33%**	**33.33%**	**16.66%**	**----**	**----**	**---**	100%

B-Professional Information

2- Course Aims:

The aim of this course is to learn the student how to use the different optimization techniques to solve electric power system problems.

3- Course Objectives:

- Understand the concepts and theories of mathematics appropriate to the solve optimization problems of electrical engineering
- Understand the analytical and computer methods used to solve the optimization problems of power systems.
- Understand the principles of performing electrical system calculations, including load flow problem, economic dispatch problem and unit commitment problem.
- Select appropriate mathematical and computer-based methods for modeling and analyzing optimization problems in electric power system.
- Identify and formulate engineering problems to solve problems in the field of electrical power systems.
- Apply modern optimization techniques to solve different optimization problems in electrical power system.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A13, A23	B1, B7, B9, B13	C1, C7, C17	D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)Demonstrate understanding of concepts and theories of mathematics and sciences, appropriate to the electrical engineering.	a-1-1)Explain the concepts and theories of mathematics appropriate to the solve optimization problems of electrical engineering.
	A13)Choose analytical and computer methods appropriate for electrical power and machines engineering.	a-13-1)Illustrate the analytical and computer methods used to solve the optimization problems of power systems.
	A23)Generalize principles of performing electrical system calculations, including load flow, earthling and equipment sizing	a-23-1)Explain the principles of performing electrical system calculations, including load flow problem.
Intellectual skills	B1)Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Select appropriate mathematical and computer-based methods for modeling and analyzing optimization problems in electric power system.
	B7)Solve electrical engineering problems, often on the basis of limited and possibly contradicting information.	b7-1) Solve different electrical engineering optimization problems, often on the basis of limited and possibly contradicting information.
	B9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1)Apply modern optimization techniques to solve different optimization problems in electrical power system.
	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Identify and formulate engineering problems to solve problems in the field of electrical power systems.
Professional skills	C1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1). Apply the knowledge of mathematics to formulate the mathematical techniques such as least square method, conventional optimization techniques such as linear programming method and modern optimization techniques such as genetic technique to solve different optimization problems in electrical power system.
	C7)Apply numerical modeling methods to engineering problems.	c7-1)Apply different numerical optimization methods such as linear programming, quadratic programming andinteger programming to solve different optimization problems in electrical power system.
	C17)Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1) Apply modern optimization techniques to solve different optimization problems in electrical power system.
	D9)Refer to relevant literatures.	d9-1) Refer to optimization techniques of electrical power system handbooks.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Overview of optimization methods	1-2
2nd	Optimal load flow	3-4
3rd	Regression analysis	5-6
4th	Power plant maintenance scheduling with integer programming.	7
5th	Optimal unit commitment problem	9-10
6th	Economic power dispatch problem using linear programming.	11-12
7th	Special optimization methods: cut and bound method.	13
8th	Modern optimization techniques.	14-15

7- Course Topics/hours/ILOS

WEEK NO.	TOPIC	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut./Lab**	
Week-1	Overview of optimization methods: introduction, extreme of functions, objective functions and constraints	6	4	2	a-1-1, b-1-1, b-13-1
Week-2	Overview of optimization methods: Single and multi variables search techniques.	6	4	2	a-1-1, b-1-1, c-1-1
Week-3	Optimal load flow: basis of gradient optimization, economic power dispatch problem.	6	4	2	a-1-1,a-13-1,a-23-1, b-7-1, b-13-1, c-1-1, c-7-1
Week-4	Optimal load flow: Lagrange method and Kuhn-Tucker conditions.	6	4	2	a-1-1, a-23-1, b-7-1, c-1-1, c-7-1
Week-5	Regression analysis: trend analysis, Load forecasting, Methods of Load Forecasting, Extrapolation technique	6	4	2	a-1-1, a-13-1, b-7-1, b-13-1, c-1-1, c-7-1
Week-6	Regression analysis: Methods of Load Forecasting (Scheer's method)	6	4	2	b-7-1, b-13-1, c-1-1, c-7-1
Week-7	Power plant maintenance scheduling with integer programming.	6	4	2	a-1-1, a-13-1, b-7-1, b-13-1, c-1-1, c-7-1
Week-8	Mid-term Exam				
Week-9	Optimal unit commitment problem: What is unit commitment problem, optimization methods used to solve unit commitment problem.	6	4	2	a-1-1, b-1-1, c-1-1
Week-10	Optimal unit commitment problem: Unit Commitment by Dynamic Programming	6	4	2	a-13-1, b-7-1, b-13-1, c-1-1, c-7-1
Week-11	Mathematical programming techniques: linear programming.	6	4	2	a-1-1, a-13-1, c-1-1, c-7-1
Week-12	Economic power dispatch problem using linear programming.	6	4	2	a-13-1, b-7-1, b-13-1, c-1-1, c-7-1
Week-13	Special optimization methods: cut and bound method.	6	4	2	a-13-1, b-7-1, c-1-1, c-7-1
Week-14	Modern optimization techniques: background, history, overview on different modern optimization techniques.	6	4	2	a-13-1, b-1-1, c-1-1, c-17-1
Week-15	Modern optimization techniques: formulation, application to different electrical power system problems.	6	4	2	b-13-1, c-1-1, c-17-1

8- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	*			*	*								
	a13-1	*			*	*		*						
	a23-1	*			*	*								
Intellectual Skills	**b1-1**	*		*		*								
	b7-1	*			*	*								
	b9-1	*		*	*		*	*	*	*		*	*	
	b13-1	*		*	*	*								
Professional Skills	**c1-1**	*			*	*		*					*	
	c7-1	*			*	*								
	c17-1	*				*		*					*	
	d9-1		*											

9- ***Teaching and Learning Methods for Low Capacity and Outstanding Students:***

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a1-1**	*			*		*						
	a13-1	*			*		*				*		
	a23-1	*			*		*						
Intellectual Skills	**b1-1**	*			*		*						
	b7-1	*			*		*						
	b9-1	*			*		*	*	*	*		*	*
	b13-1	*			*		*						
Professional Skills	**c1-1**	*			*		*						
	c7-1	*			*		*						
	c17-1										*		
	d9-1	*			*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination(*written*)	**100**	**66.67%**	**16th**
Mid term written Examination (*Term Work*)	**25**	16.67 %	**8th**
Tutorial and report assessment (*Term Work*)	**25**	16.67 %	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

Lab top and data show

12- List of references:

1. Course notes
2. text books
   1-A. J. Wood, "Application of optimization methods in power system engineering", IEEE Tutorial Course, USA 1976.
   2-M. E. El-Hawary, "Optimal Economic Operation of Electric Power Systems", USA, 1979.
   3-Periodicals, web sites, … etc

Course coordinator **Head of the Department**

Dr. Shaimaa R. Spea **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 1st Term
Academic level: 3rd ELEC.

Course Specification

A-Basic Information

***Title:** Programming in Machine Languages* ***Code Symbol:** ELE322C* **Elective Course(4)**
***Element of program:** Minor* ***Date of specification approval:** 2011*
Department offering the course:** Electrical Eng. Dept.* ***By law 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*----*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of programming using both assembly and machine languages.

3- Course Objectives:

- Knowing the basic principles of programming using both assembly and machine languages.
- Capability to design an assembly program which may be used for obtaining pulses from a computer parallel/series ports for driving power electronic switch which may be used for controlling the speed/current of an electric machines.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2	B1	C1,C2, C6	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT)	a2-1)Explain the basics of machine language programming..
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Design a computer program and/or hardware systems to meet certain demand. b1-2)Assessing the mathematical tools/models for the solution of problems in machines and power systems.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Demonstrate some facts about the main advantages of using an assembly and machine languages.
	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1)Use either an assembly or machine language for obtaining pulses from a computer parallel port to control converter such as DC-DC chopper.
	C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1)Use computational tools and software packages.
General skills	D3) Communicate effectively.	d3-1)Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamentals of computer programming using both an assembly and machine codes. Debug Versus the assembler.	1
2nd	Debug Commands.	2-3
3rd	Addressing Modes.	4
4th	Data movement instructions.	5
5th	Arithmetic instructions.	6-7
6th	Logic instructions.	9
7th	Program control instruction	10
8th	Loops	11
9th	Input/Output computer programming	12
10th	Subroutines	13
11th	Some Examples using both assembly and machine codes	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Fundamentals of computer programming using both an assembly and machine codes. Debug Versus the assembler.	6	4	2	a2-1
WEEKS-2,3	Debug Commands.	12	8	4	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-4	Addressing Modes.	6	4	2	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-5	Data movement instructions.	6	4	2	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEKS-6,7	Arithmetic instructions.	12	8	4	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-8	Midterm written examination				
WEEK-9	Logic instructions.	6	4	2	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-10	Program control instruction	8	4	4	a2-1, b1-1, b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-11	Loops	6	4	2	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-12	Input/Output computer programming	6	4	2	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEK-13	Subroutines	6	4	2	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1
WEEKS14,15	Some Examples using both assembly and machine codes	12	8	4	a2-1, b1-1,b1-2, c1-1, d2-1, c6-1, d3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a2-1**	*		*	*	*	*			*	*			
Intellectual Skills	**b1-1**	*	*	*	*	*	*	*		*	*		*	
	b1-2	*	*	*	*	*	*	*		*	*		*	
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	c2-1	*	*	*	*	*	*	*	*	*	*		*	
	c6-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Home Exam***	***Monitoring***
Knowledge&Understanding	**a2-1**	*						*		*	*	*	
Intellectual Skills	**b1-1**	*				*	*	*		*		*	
	b1-2	*				*	*	*		*		*	
Professional Skills	**c1-1**	*			*		*	*	*	*	*	*	
	c2-1	*			*		*	*		*		*	
	c6-1	*			*	*		*	*	*	*	*	
General Skills	**d3-1**	*			*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**100**	**66.66%**	**16th**
Mid-Term Examination (Written)	**20**	**13.33%**	**8th**
Term work (Tutorial and report assessment)	**30**	**20%**	**Weekly**
Mid term laboratory assessment (*Oral*)	**---**	**---**	**---**
End of term laboratory examination (*Lab*)	**---**	**---**	**---**
Oral Examination	**---**	**--**	**---**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

12-1laboratory Usage:

Computer Laboratory is used to help the students for writing source programs using either an assembly or machine languages then compiled them and obtain the results.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

13-1 Essential books (Text books)

1-Russell Rector and George Alexy, "The 8086 Book", publish by Osborne/McGraw-Hill, USA, 1980.

2-Robert Lafore, "Assembly Language Prime for the IBM PC & XT", A.Plume/Waite Book, New American Library, New York and Scarborough, Ontario.

3-Barry B.Brey, "The INTEL Microprocessors 8086/8088, 80186, 80286, 80386, 80486 and Pentium architecture, programming and interfacing", Maxwell Macmillan international editions, 1995

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Course coordinator **Head of the Department**

Prof.Dr. Ibrahim Zakria Morsi**Prof.Dr. Gamal Abdel-Wahab Morsy**
Prof. Dr. Ashraf Salah El Din Zein El Din

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4thELEC.

Course Specification

A-Basic Information

Title:*Modern Analysis of Electrical Machines* ***Code Symbol:*** *ELE413A* **Elective Course(5)**
Element of program: *Minor* ***Date of specification approval:****2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

This course presents basics of the generalized machine theory as well as modeling of the conventional electrical machines. The course contains the matrix analysis of transformers, and the two axis representation of direct current machines, induction machines and synchronous machines. The deduced equivalent circuits and mathematical models are necessary to the analysis of electrical machines during both transient, and steady state operations.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of electrical machine analysis.
- Definition of the requirements for the analysis of any machine.
- Determination of the machine parameter required for electrical machine analysis.
- Obtaining a transient equivalent circuit for the transient analysis of electrical machines.
- Analyzing and calculating the starting inrush magnetizing current in transformers.
- Analyzing and calculating the starting current in induction motors.
- Analyzing and calculating the short circuit current in synchronous machines.
- Analyzing and calculating the temperature rise in electrical machines and transformers to see whether insulation could withstand overloading or not.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A5, A13, A18	B1, B2, B6	C1, C17	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) Demonstrate understanding of concepts and theories of mathematics and science, appropriate to electrical engineering.	a1-1) Demonstrate understanding the application of Laplace transform in transient analysis of electrical machines and transformers.
	A5) Illustrate methodologies of solving engineering problems, data collection and interpretation.	a5-1) Illustrate the methods of solving some problems occurring in electrical machines and transformers.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose the matrix analysis technique for the analysis of electrical machines and transformers.
	A18) Apply theories and techniques for calculating short circuit, motor starting, and voltage drop.	a18-1 Apply theories and techniques for calculating the starting inrush magnetizing current of transformers. a18-2) Apply theories and techniques for calculating the starting current of induction machines. a18-3) Apply theories and techniques for calculating the short circuit current of synchronous machines.
Intellectual skills	B1) Select appropriate mathematical and computer – based methods for modeling and analyzing problems.	b1-1)Select the appropriate computer programming to get the mathematical solution of the obtained model. b1-2) select the appropriate method of torque calculation.
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Select the appropriate solution (from many solutions) for the problems based on analytical thinking.
	B6) Investigate the failure of components, systems and processes.	b6-1)Investigate the failure of connecting transformers to their supplies at no load. b6-2)Investigate the failure of voltage building up in dc generators. b6-3)Investigate the failure of starting the induction motors. b6-4) Investigate the failure of insulations due to temperature rise.
Professional skills	C1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Apply the matrix technique and Laplace transform allover the course.
	C17) Apply modern techniques, skills and engineering tools to electrical power and machine engineering systems.	c17-1)Apply the computer programming (MATLAB) to solve problems which are not possible to be solved by hand.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1)Communicate with a team work to analyze certain problems occurring in electrical machines and transformers and write a report.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Inductances and Coupled Circuits	1
2nd	Single phase transformers	2
3rd	Transients in Transformers	3
4th	Linear Transformation and Two Axis representation of Different Electrical Machines	4
5th	DC and single phase commutator machines	5,6
6th	Transient Analysis of Induction machines	7
Term Examination No.1 (Mid Term)		8
7th	Transient Analysis of Synchronous machines	9,10
8th	The Basic Torque Expressions	11
9th	Application of matrix techniques to Performance of Electrical Machines	12,13
10th	Heat transients of electrical machines and transformers.	14
Term Examination No. 2		15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	• The objectives of the course • Definition of machine analysis. • Why this course is important? • Requirements of the course. • Inductances and Coupled Circuits	6	4	2	a1-1, a5-2, a13-1, c1-1
WEEK-2	• Single phase transformers	6	4	2	a13-1, c1-1
WEEK-3	• Transients in Transformers	6	4	2	a13-1,a18-1, b1-1, b2-1, b6-1, d1-1
WEEK-4	• Linear Transformation, and Two Axis representation of Different Electrical Machines	6	4	2	a18-1, b1-1, b2-1, c1-1
WEEKS-5,6	• DC and single phase commutator machines	6	4	2	b1-1, b2-1, b6-1, b6-2, c1-1
WEEK-7	• Transient Analysis of Induction machines	6	4	2	a18-2, b1-1, b2-1, b6-1, b6-3, c1-1, c17-1, d1-1
WEEK-8	• Term Examination No.1 (Mid term)				
WEEKS-9,10	• Transient Analysis of Synchronous machines	6	4	2	a18-3, b1-1, b2-1, b6-1, b6-3, c1-1, c17-1, d1-1
WEEK-11	• The Basic Torque Expressions	6	4	2	b1-2, c1-1
WEEKS-12, 13	• Application of matrix techniques to Performance of Electrical Machines.	6	4	2	b1-1, b1-2, b2-1, c1-1, c17-1, d1-1
WEEK-14	• Heat transients of electrical machines and transformers.	6	4	2	b6-4, d1-1
WEEK-15	• Term Examination No. 2				

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	*		*			*							
	a5-1	*		*			*							
	a13-1	*		*			*							
	a18-1	*		*	*	*	*							
	a18-2	*		*	*	*	*							
	a18-3	*		*	*	*	*							
Intellectual Skills	**b1-1**	*		*			*							
	b1-2	*		*			*							
	b2-1	*		*	*	*	*							
	b6-1	*		*	*	*	*							
	b6-2	*		*	*	*	*							
	b6-3	*		*	*	*	*							
	b6-4	*		*	*	*	*							
Professional Skills	**c1-1**	*		*	*	*	*							
	c17-1	*		*	*	*	*		*					
General Skills	**d1-1**	*		*		*	*	*	*	*	*			

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & understanding	a1-1	*			*	*	*			*			
	a5-1	*			*	*	*			*			
	a13-1	*			*	*	*			*			
	a18-1	*			*	*	*	*		*			
	a18-2	*			*	*	*	*		*			
	a18-3	*			*	*	*	*		*			
	b1-1	*			*	*	*			*			
Intellectual Skills	b1-2	*			*	*	*			*			
	b2-1	*			*	*	*			*			
	b6-1	*			*	*	*			*			
	b6-2	*			*	*	*			*			
	b6-3	*			*	*	*			*			
Professional Skills	b6-4	*			*	*		*		*			
	c1-1	*			*	*	*			*			
	c17-1				*		*			*			
General Skills	d1-1									*	*		

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.6%**	**16th**
Term written Examination1 (*Term Work*)	**20**	**13.33%**	**8th**
Term written Examination 2 (*Term Work*)	**20**	**13.33%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**6.66%**	**Weekly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

12-1 Computer Lab.:
It is used to help students for computing and graph transient performance of electrical machines.

12-2 Library Usage:
Students should be encouraged to use library technical resources in the preparation of reports.

13- List of references:

1- Course notes (updated yearly).
2- Dr P. S. Bimbhra "Generalized Theory of Electrical Machines" 5th edition, 2nd reprint, Khanna Publishers, Delhi, India, 1997
3- N. N. Hancock, "Matrix Analysis of Electrical Machinery" 2nd edition, Pergamon Press Lid., Toronto, Canada, 1974
4- Periodicals, web sites, … etc

Course coordinator **Head of the Department**

Prof. Sabir A. Eldhemy **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Analysis of Faulted Power Systems* ***Code Symbol:*** *ELE413B* **Elective Course(5)**
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law*** *2011*

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*0*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

This course is intended to deeply cover the various methods for analyzing the behavior of power systems during normal and abnormal operations in particularly during faults. Various methods are used starting from simple mathematical representation to general purpose software packages such as Matlab and ATP/EMTP.

3- Course Objectives:

The objective of this course is to attain the following points:

- Demonstration of the fault causes, its characteristics and importance to analyze faulted power system.
- Power system network calculation using computer.
- Realizing of the computer programs used for network transient analysis.
- Fault feature extraction using digital signal processing.
- Mathematical modeling for transient study of power system elements such as line and transformer.

4- Relationship between the course and the program

Field	National Academic Reference Standard (NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A5, A13, A18	B1, B6 , B13	C6, C7, C16	D5

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	**A5)** Illustrate Methodologies of solving engineering problems, data collection and interpretation	**a1.1)**Explain power system behavior during normal and abnormal operation.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	**a13.1)** Recognize transient behavior with the aid of computer-based simulation.
	A18) Apply theories and techniques for calculating short circuit, motor starting, and voltage drop.	**a18.1)**Illustrate mathematical models of power system elements for transient study.
Intellectual skills	**B1)** Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	**b1.1)** Analyze the performance of power system elements including lines, transformers, …etc.
	B6) Investigate the failure of components, systems, and processes.	**b6.1)** Analyze the faulted power system using programs such as EMTP and Matlab.
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	**b13.1)** Emphasize effects of the faulty conditions on protection and breaker equipment performance
Professional skills	**C6)** Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	**c6.1)** Deeply analyze some selected faulty cases simulated using ATP/EMTP.
	C7) Apply numerical modeling methods to engineering problems.	**c7.1)** Extract fault features using Digital signal processing.
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	**c16.1)** Build models for some selected power elements and analyze their performance.
General skills	**D5)** Lead and motivate individuals.	**d5.1)** Able to use the most known packages for power system simulation programs. **d5.2)** Improve the engineering profession and thinking.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	An introduction: Fault causes, characteristics, and IEEE-standard problems.	1-3
2nd	Matrix computation-based analytical solutions and EMTP representation.	4-6
3rd	Digital signal processing for fault feature extraction.	7
4th	Sequence parameter estimation for power elements.	9-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	An introduction: Fault causes and characteristics.	6	4	2	a1.1, d5.2
WEEK-2	Cont. An introduction: Fault causes and characteristics.	6	4	2	a1.1, d5.2
WEEK-3	The seven Types of Power Problems: IEEE white paper.	6	4	2	a1.1, d5.2
WEEK-4	Analytical solution for steady state power system operation.	6	4	2	a1.1, c16.1
WEEK-5	Matrix computation-based analytical solution for faulted power systems.	6	4	2	a18.1, b1.1, b13.1, d5.2
WEEK-6	Electromagnetic transient program (EMTP): Introduction and transient examples.	6	4	2	a13.1, b1.1, b13.1, c6.1, d5.1
WEEK-7	Digital signal processing for fault feature extraction: Introduction and Algorithms.	6	4	2	c7.1, d5.2
WEEK-8	First midterm exam.				
WEEK-9	Role of symmetrical components solutions for power system fault analysis.	6	4	2	a1.1, a18.1, c6.1
WEEK-10	Line parameters calculation: Introduction to Carson equations. Computation of inductive sequence parameters for overhead transmission lines.	6	4	2	a18.1, b1.1, c16.1
WEEK-11	Cont. Computation of inductive sequence parameters for overhead transmission lines.	6	4	2	a18.1, b1.1, c16.1
WEEK-12	Computation of capacitive sequence parameters for overhead transmission lines.	6	4	2	a18.1, b1.1, c16.1
WEEK-13	Second midterm exam.				
WEEK-14	Computation of sequence parameters for underground cables: An introduction.	6	4	2	a18.1, b1.1, c16.1
WEEK-15	Computation of sequence parameters for electrical machines and power transformers	6	4	2	a18.1, b1.1, c16.1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a1.1	*		*										
	a13.1	*			*	*	*							
	a18.1	*			*	*							*	
Intellectual Skills	b1.1	*			*	*								
	b6.1	*						*			*			
	b13.1	*												
Professional Skills	c6.1	*						*						
	c7.1	*			*	*	*	*			*			
	c16.1	*			*	*							*	
General Skills	d5.1	*									*			
	d5.2	*						*			*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Arrange meetings for more discussion and declaration.
	Repeat the explanation based on their request.
	Face-to-face intermediate solving the problems and quizzes during the tutorial scheduled time in order to improve their skills.
For outstanding students	Hand out programmed project assignments.
	Give them some topics searched by the internet and conduct presentation

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1.1	*								*			
	a13.1				*			*			*		
	a18.1	*			*								
Intellectual Skills	b1.1	*			*					*			
	b6.1										*		
	b13.1	*								*			
Professional Skills	c6.1									*	*		
	c7.1	*			*			*			*		
	c16.1	*			*								
General Skills	d5.1						*						*
	d5.2	*								*			*

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.7%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**15**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**15**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**20**	**13.3%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Teaching Class:

The teachers are going to use computer for the lecture presentation using power point office program. Also, the teachers will teach new software such as ATP/EMTP and ETAP. So, hanged digital LCD is required to facilitate the communication with the students.

Furthermore, students are expected to use computers to conduct some out-of-class assignments. Computers will be used to prepare engineering graphs for reports, and to run some simulation cases for power systems using ATP/EMTP and ETAP programs.

11.2Library Usage:

The books in the library are obsolete and the recent books are rare. More financial support should be directed to the electronic library to access on the ieeexplore. Also, it is required to buy several versions of the recent books such as: **1-** Naser Tleis “Power Systems Modelling and Fault Analysis: Theory and Practice” Elsevier Ltd. **2-**Paul M. Anderson, “Analysis of Faulted Power Systems”, IEEE PRESS Power System Engineering Series.

12- List of references:

1-Naser Tleis “Power Systems Modelling and Fault Analysis: Theory and Practice” Elsevier Ltd. 2008.
2-Ismail Kaiskci "Short circuits in Power Systems: A practical guide to IEC 60 909" Wiley-VCH Verlag GmbH & Co. KGaA, 2002.
3-Paul M. Anderson, “Analysis of Faulted Power Systems”, IEEE PRESS Power System Engineering Series, 1995.
4-Stagg and El-Abiad, “Computer Methods in Power System Analysis”, McGrow-Hill Ltd, 1968.
5-Power System Relaying Committee, WG -I16 “Understanding Microprocessor-Based Technology Applied to Relaying” Pages 21-23, Feb. 2004.

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Course coordinator **Head of the Department**

Dr. Tamer A. Kawady **Prof.Dr. Gamal Abdel-Wahab Morsy**
Dr. Nagy I. Elkalashy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4rd ELEC.

Course Specification

A-Basic Information

Title: *Data Base Systems* ***Code Symbol:*** *ELE413C* **Elective Course(5)**
Element of program: *minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*0*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of Database.

3- Course Objectives:

- Design methods and tools for engineering systems
- To Understand Software engineering and theoretical issues in Computer Science
- To develop skills in Information technology

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2,A13	B8,B13	C17	D1,D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2)Demonstrate understanding of Basics of information and communication technology (ICT) .	a2-1)Explain methods and tools for engineering systems using software engineering and theoretical issues in Computer Science a2-2)Apply Information technology to solve engineering problems.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1)Choose FoxPro software for storing data base related for electrical power and machines engineering.
Intellectual skills	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1)Select and apply appropriate computer based methods, mathematical and scientific principles in analyzing general systems b8-2)Write computer programs and use professional packages to solve engineering problems.
	B13)Identify and formulate engineering problems and apply their knowledge of mathematics, sciences and engineering tools along with creativity skills to solve problems in the field of electrical and computer engineering.	b13-1)Identify and formulate engineering problems and apply their knowledge of mathematics, sciences and engineering tools along with creativity skills to solve problems in the field of electrical and computer engineering.
Professional skills	C17)Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1) Build suitable software and test engineering systems using proper hardware interface. c17-2)Apply modern techniques, skills and engineering tools using proper software.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1) Function professionally as individual and within a team.
	D3) Communicate effectively.	d3-1)Communicate effectively with clear, critical thinking and skills.
	D4) Demonstrate efficient IT capabilities.	d4-1)Use information technology (IT) resources effectively in engineering systems. d4-2)Write technical reports and introduce presentations effectively.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to Database Management System.	1
2nd	Management Information System (MIS).	2
3rd	Introduction to Data Modes.	3
4th	Introduction to FoxPro.	4
5th	Working with Database.	5
6th	Sorting and Indexing.	6
7th	Working with Reports.	7
8th	FoxPro Programming.	9
9th	Designing Screens.	10-11
10th	Performing Queries	12-13
11th	Case studies	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Introduction to Database Management System.	6	4	2	a2-1, a2-2
WEEK-2	Management Information System (MIS).	6	4	2	a2-1,a2-2,b8-1, b8-2,b13-1, c17-1, c17-2 , d4-1,d4-2
WEEK-3	Introduction to Data Modes.	6	4	2	a2-1, a2-2
WEEK-4	Introduction to FoxPro.	6	4	2	a2-1, a2-2
WEEK-5	Working with Database.	6	4	2	a2-1,a2-2,a13-1, b8-1,b8-2,b13-1, c17-1, c17-2,d1-1, d3-1,d4-1,d4-2
WEEK-6	Sorting and Indexing.	6	4	2	a2-1,a2-2,a13-1, b8-1,b8-2,b13-1, c17-1, c17-2,d1-1, d3-1,d4-1,d4-2
WEEK-7	Working with Reports.	6	4	2	b8-1,b8-2,b13-1, c17-1, c17-2,d1-1, d3-1,d4-1,d4-2
WEEK-8	Midterm written examination				
WEEK-9	FoxPro Programming.	6	4	2	a2-1,a2-2,a13-1, b8-1,b8-2,b13-1, c17-1, c17-2,d1-1, d3-1,d4-1,d4-2
WEEKS-10-11	Designing Screens.	12	8	4	a2-1,a2-2,a13-1, c17-1,c17-2, d3-1, d4-1,d4-2
WEEKS-12-13	Performing Queries	12	8	4	a2-1,a2-2,a13-1, b8-1,b8-2,b13-1, c17-1, c17-2,d1-1, d3-1,d4-1,d4-2
WEEKS-14-15	Case studies	12	8	4	a2-1,a2-2,a13-1, b8-1,b8-2,b13-1, c17-1, c17-2,d1-1, d3-1,d4-1,d4-2

1- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a2-1	*		*	*	*	*			*	*			
	a2-2	*		*	*	*	*			*	*			
	a13-1	*	*	*	*			*		*	*		*	
Intellectual Skills	b8-1	*	*	*	*	*	*	*	*	*	*			
	b8-2	*	*	*	*	*	*	*	*	*	*			
	b13-1	*		*	*	*	*	*		*	*			
Professional Skills	c17-1	*	*	*	*	*		*		*	*	*	*	
	c17-2	*	*	*	*	*		*		*	*	*	*	
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	
	d4-2		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a2-1	*		*				*		*		*	
	a2-2	*		*				*		*		*	
	a13-1	*		*				*		*			
Intellectual Skills	b8-1	*		*			*		*				
	b8-2	*		*			*		*				
	b13-1	*		*			*	*		*			
Professional Skills	c17-1	*		*	*		*						
	C17-2	*		*	*		*						
General Skills	d1-1	*		*		*	*	*	*				
	d3-1	*		*	*		*	*	*	*		*	
	d4-1	*		*	*	*	*	*	*	*		*	
	d4-2	*		*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.7%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**15**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**15**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**20**	**13.3%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1- D.S.Sherawat Sanjay Sharma, "Introduction to Databases", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009
2-Amit Gupta, "Database Management System", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009
3-Ashutosh Kumar Dubey, "Database Management Concepts", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2010

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Course coordinator **Head of the Department**

Prof.Dr. Shaban Mabrouk OshebaProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 1st Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: ***Power System Planning*** ***Code Symbol:*** ***ELE413D*** **Elective Course(5)**
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

This course gives the student a deep understanding of power system planning. This involves forecasting load demands and choosing generating stations and substations type, site, rating and layout. Stand-by generators, bus-bar arrangements and site of current limiting reactors are also considered. The course also introduces the students to the automated transmission expansion techniques. The course gives the students good idea about choosing generation and transmission voltages and their effects on power losses and costs.

3- Course Objectives:

- Demonstration of the knowledge and understanding of Load forecasting
- Study Generating station and substations type, rating, site, and layout
- Understanding of Bus-bar arrangements and generation and transmission voltages

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A13, A14	B7, B13	C1, C17	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A13)Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Explain the concepts of planning and methods of Load forecasting
	A14)Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Identify different types of Generating station and substations, rating, site, and layout a14-2) Distinguish Bus-bar arrangements and generation and transmission voltages
Intellectual skills	B7)Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1) Forecast load demands using different techniques b7-2) Decide the generating station type, site, size and number of units as will as the size and number of stand-by units. b7-3) Choose substation site and layout
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Formulate the problem of load forecasting b13-2) Formulate the problem of selecting generator type and determination of number of units and its size
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Selecting suitable numerical methods for load forecasting
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1) Apply modern techniques and computre based methods for forecasting and planning of the power system
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Gain experience to work with the group to discuss problems and put the desired planning for generating stations and substations

6- Course Topics.

Topic No.	General Topics	Weeks
1	Introduction	1
2	Load Forecasting	2-3
3	Electric Energy Generation	4-9
4	Substation and Bus_BAR Arrangements	10-11
5	Automated Transmission Expansion	12-13
6	Plant Ordering	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	Introduction	6	4	2	a13-1 , a14-1
WEEK-2	Load Forecasting Extrapolation Technique	6	4	2	a13-1 , b7-1, b13-1 , c1-1
WEEK-3	End-Use method	6	4	2	c17-1 , c1-1
WEEK-4	Electric Energy Generation Main features of thermal, nuclear and hydro-electric generating stations	6	4	2	a14-1
WEEK-5	Site selection, size, number of units and stand-by considerations	6	4	2	b7-2 , b13-2
WEEK-6	Non-conventional generating plants(wind, solar, diesel, tidal……etc)	6	4	2	a14-1
WEEK-7	Generation and transmission voltages and their effects	6	4	2	a14-2
WEEK-8	Midterm written examination				
WEEK-9	Conductor materials	6	4	2	a14-2
WEEK-10	Substation & Bus_Bar Arrangements Substation construction, site selection and layout	6	4	2	a14-2 , b7-3
WEEK-11	Bus-bar arrangements and current limiting reactors	6	4	2	a14-2 , b7-3
WEEK-12	Automated Transmission Expansion Tellegen's theorem and adjoint circuit	6	4	2	b13-1, b13-2 , c1-1 , c17-1
WEEK-13	Automated network design	6	4	2	c1-1 , c17-1
WEEK-14	Plant Ordering Plant operation limitations	6	4	2	a14-1 , b7-2 ,c17-1
WEEK-15	Spare capacity	6	4	2	c1-1 , c17-1

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a13-1**	*												
	a14-1	*												
	a14-2	*												
Intelectual Skills	**b7-1**	*			*	*								
	b7-2	*			*	*								
	b7-3	*			*	*								
	b13-1	*			*	*							*	
	b13-2	*			*	*							*	
Professional Skills	**c1-1**	*			*	*	*							
	c17-1	*			*	*								
General Skills	**d1-1**		*	*										

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & understanding	**a13-1**	x											
	a14-1	x											
	a14-2	x			x								
Intelectual Skills	**b7-1**	x			x								
	b7-2	x			x								
	b7-3	x			x								
	b13-1	x			x								
	b13-2	x			x								
Professional Skills	**c1-1**	x			x								
	c17-1	x			x								
General Skills	**d1-1**						x			x			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**100**	**66.6%**	**16th**
End of term laboratory examination (*Lab*)	**-**	**-**	**----**
Mid term written Examination (*Term Work*)	**30**	**20%**	**8th**
Tutorial and report assessment (*Term Work*)	**20**	**13.33%**	**Weekly**
laboratory assessment (*Term Work*)	**-**	**-**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports and oral presentation.

12- List of references:

1-S.K. AGRAWALA, "Fundamentals of Power system", 1990
2-SOULIVAN, ”Power System Planning”, 1990

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Course coordinator **Head of the Department**

Prof. Gamal Abdel-Wahab Morsy **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4rd ELEC.

Course Specification

A-Basic Information

Title: *Digital Signal Processing* ***Code Symbol:*** *ELE413E* **Elective Course(5)**
Element of program: *minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*0*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of Digital Signal Processing (DSP) and its applications in industry.

3- Course Objectives:

- To understand basics of DSP
- To understand analysis of continuous time system
- To apply Fourier analysis & discrete time signals
- To understand and apply Fourier transform & impulse response

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4	B13,B14	C17	D1,D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4)Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering	a4-1) Explain the basic principles of DSP, Discrete Fourier Transform, Digital Filters.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering. machines.	b13-1)Assessing the mathematical tools/models for the solution of problems in machines and power systems. b13-2)Solve problems in machines and power systems by using DSP as a tool.
	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and	b14-1)Adopt suitable theoretical and computer-based techniques to use for the analysis of machines and power system problems
Professional skills	C17)Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1) Apply modern techniquesto build suitable software and test engineering systems using proper hardware interface. c17-2)Apply modern techniques, skills and engineering tools using proper software.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1) Function professionally as individual and within a team.
	D3) Communicate effectively.	d3-1)Communicate effectively with clear, critical thinking and skills.
	D4) Demonstrate efficient IT capabilities.	d4-1)Use information technology (IT) resources effectively in engineering systems. d4-2)Write technical reports and introduce presentations effectively.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to Digital Signal Processing(DSP)	1
2nd	Time Domain Representation of Signals and Systems	2
3rd	Transform-Domain Representation of signals (DTFT)	3
4th	Transform-Domain Representation of signals z-Transform.	4
5th	Transform-Domain Representation of signals : Discrete Fourier Transform(DFT).	5

Course Contents

6th	Transform-Domain Representation of signals : Fast Fourier Transform(FFT) Algorithms.	6
7th	Transform-Domain Representation of LTI Systems.	7
8th	Digital Processing of Continuous-time Signals	9
9th	Digital Filter Structure.	10
10th	Digital Filter Design: Finite Impulse Response (FIR) Filters	11
11th	Digital Filter Design: IIR Filters	12
12th	Applications of Digital Signal Processing.	13
13th	MATLAB Programs	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Introduction to Digital Signal Processing(DSP)	6	4	2	a4-1, b13-1,c17-1, d4-1
WEEK-2	Time Domain Representation of Signals and Systems	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-3	Transform-Domain Representation of signals (DTFT)	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-4	Transform-Domain Representation of signals z-Transform.	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-5	Transform-Domain Representation of signals : Discrete Fourier Transform(DFT).	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-6	Transform-Domain Representation of signals : Fast Fourier Transform(FFT) Algorithms.	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-7	Transform-Domain Representation of LTI Systems.	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-8	Midterm written examination				
WEEK-9	Digital Processing of Continuous-time Signals	6	4	2	a4-1, b13-1,c17-1, d1-1,d4-1
WEEK-10	Digital Filter Structure.	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-11	Digital Filter Design: Finite Impulse Response (FIR) Filters	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-12	Digital Filter Design: IIR Filters	6	4	2	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-13	Applications of Digital Signal Processing.	6	4	2	a4-1,b13-1,b14-1, c17-1,d1-1, d3-1, d4-1
WEEKS-14-15	MATLAB Programs	12	8	4	a4-1,b13-1,b14-1, c17-1,d1-1, d3-1, d4-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a4-1**	*	*	*	*	*	*	*	*	*	*			
Intellectual Skills	**b13-1**	*		*	*	*	*	*		*	*			
	b14-1	*		*	*	*	*				*			
Professional Skills	**c17-1**	*	*	*	*	*		*		*	*	*	*	
General Skills	**d1-1**	*	*	*	*	*	*	*	*	*	*	*		
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a4-1	*	*		*			*		*	*	*	
Intellectual Skills	b13-1	*					*	*		*			
	b14-1	*	*				*	*		*	*		
Professional Skills	c17-1	*			*		*				*		
General Skills	d1-1	*	*			*	*	*	*		*		
	d3-1	*	*		*		*	*	*	*	*	*	
	d4-1	*	*		*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	100	66.7%	16th
Midterm laboratory assessment (*Oral*)	-	-	-
End of term laboratory examination (*Lab.*)	-	-	-
Midterm written Examination 1 (*Term Work*)	15	10%	8th
Midterm written Examination 2 (*Term Work*)	15	10%	13th
Tutorial and report assessment (*Term Work*)	20	13.3%	Weekly
Total	150	100%	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1-1- Sanjay Sharma, "Digital Signal Processing", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009.**

Course coordinator **Head of the Department**

Prof.Dr. Ashraf Salah El Din Zein El DinProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4rd ELEC.**

Course Specification

A-Basic Information

Title: ***Electrical MachineDynamic*** ***Code Symbol:ELE414A*** **Elective Course(6)**
Element of program:minor ***Date of specification approval: 2011***
Department offering the course: Electrical Eng. Dept. ***By law 2006***

Lecture	Tutorial	Laboratory	Total
4	2	0	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

The aims of this course are to provide the Student, to develop a deep understanding of the analysis, simulation, and performance of various electrical machines in transient state using generalized machine theory, which includes various transformed models. The course will deal with the application of various motors in real engineering situations. Linearization of machine equations, small-displacement stability, and eigenvalues are also included in this course. An in-depth coverage of the non-invasive schemes with the description of various kind of fault signatures with particular emphasis on induction motors is considered.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the importance of dynamic analysis of electrical machines.
- Define the operation of electrical machines; including dc, synchronous, induction, and brushless dc machines.
- Derive the voltage and torque equations of a wide range of electrical machines.
- Analyze the static and dynamic characteristics of a wide range of electrical machines.
- Apply state-space and other modeling techniques to predict the dynamic response of the system to changes in load condition.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A15, A19	B1	C17	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4) Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering	a4-1)Explain the static and dynamic characteristics of a wide range of electrical machines; including dc, synchronous, induction, and brushless dc machines.
	A15)Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1) Appreciate how the dynamic characteristics of electrical machines and their loads can influence their performance.
	A19)Define diverse Applications of electrical equipment	a19-1) Define the operation of electrical machines; including dc, synchronous, induction, and brushless dc machines.
Intellectual skills	B1)Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Derive the voltage and torque equations of a wide range of electrical machines. b-1-2 Deduce equivalent circuits and transfer functions for a machine and its load
Professional skills	C17)Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c171) Analyze the static and dynamic characteristics of a wide range of electrical machines. c17-2)Apply state-space and other modeling techniques to predict the dynamic response of the system to changes in load condition
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1)Cooperation and teamwork

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Basic Principles for Electric Machine Analysis	1-3
2nd	Dynamics Analysis of DC Machines	4-6
3rd	Induction Machine Dynamics During Starting and Braking	7-9
4th	Reference frame theory	10-11
5th	Dynamic Analysis of Symmetrical Induction Machines	12-13
6th	Dynamic Analysis of Synchronous Machines	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	Basic Principles for Electric Machine Analysis: Introduction, Magnetically Coupled Circuits	6	4	2	a4-1, b1-2, c17-1
WEEK-2	Electromagnetic Torque. Solved Examples.	6	4	2	b1-1, a4-1
WEEK-3	Winding Inductances and voltage equations of Synchronous and Induction machines. Introduction to the Modeling of Electrical Machines.	6	4	2	a4-1,c17-2 c17-1.
WEEK-4	Dynamics Analysis of a Separately Excited DC Motor. Methods of Solution. Block Diagram of the Separately Excited DC Motor.	6	4	2	a15-1,a19-1, b1-1, c17-1, c17.2
WEEK-5	Dynamics Analysis of a Separately Excited DC generator, Methods of Solution, Block Diagram. Solved Examples.	6	4	2	a15-1,a19-1,b1-1, c17-1, c17-2
WEEK-6	Dynamics of compound DC motor. Dynamics of a DC generator-motor set. Dynamics of cross-field machines. Solved Examples.	6	4	2	a15-1,a19-1,b1-1, c17-1, c17-2
WEEK-7	Induction Machine Dynamics During Starting, Braking. Rotor Energy Loss. Accelerating, braking and reversing Times.	6	4	2	a4-1, a15-1
WEEK-8	Midterm written examination				
WEEK-9	Rotor Resistance for Optimum Times. Accelerating Time. Solved Examples.	6	4	2	a4-1, a15-1
WEEK-10	Introduction to Reference frame theory. Three-phase to two-phase transformation.	6	4	2	a4-1, c17-1

	Equations of transformation.				
WEEK-11	Stationary circuit variables transformed to the arbitrary reference frame. Commonly used reference frames. Transformation between reference frames.	6	4	2	a4-1, c17.1
WEEK-12	Dynamic Analysis of Symmetrical Induction Machines: Voltage Equations in Machine Variables. Torque Equation in Machine Variables.	6	4	2	a15-1,a-19-1,b-1-1, c17.1, c17.2
WEEK-13	Transformation of Rotor Circuits. Torque Equation in Arbitrary Reference Frame. Commonly used reference frames. Per-Unit System.	6	4	2	a15-1,a-19-1,b1-1, c17-1,c17-2
WEEK-14	Dynamic Analysis of Synchronous Machines: Voltage Equations rotor reference frame variables.	6	4	2	a15-1,a19-1,b1-1, c17-1,c17-2
WEEK-15	Torque Equation. Rotor Angle. Dynamic equation.	6	4	2	a15-1,a19-1,b1-1, c17-1,c17-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a4-1**	*			*	*								
	a15-1	*			*	*								
	a19-1	*			*	*								
Intelectual Skills	**b1-1**	*			*	*								
	b1-2	*			*	*								
Professional Skills	**c17-1**	*			*	*							*	
	c17-2	*			*								*	
General Skills	**d1-1**			*						*	*			
	d1-2			*						*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a4-1**	*											
	a15-1	*	*		*								
	a19-1	*			*	*		*				*	
Intellectual Skills	**b1-1**	*	*		*								
	b1-2	*	*		*	*	*				*		*
Professional Skills	**c17-1**	*			*								
	c17-2	*				*		*			*		
General Skills	**d1-1**						*		*	*			
	d1-2						*		*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.7%**	**16^{th}**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**15**	**10%**	**8^{th}**
Midterm written Examination 2 (*Term Work*)	**15**	**10%**	**13^{th}**
Tutorial and report assessment (*Term Work*)	**20**	**13.3%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1-P. C. Krause, " Analysis of Electric Machinery", McGraw-Hill, Inc.,1986, USA.
2-M. Ong, "Dynamic Simulation of Electric Machinery", Prentice Hall.
3-N. N. Handcock, "Matrix Analysis of Electrical Machinery", Pergamon Press.
4-Fitzgerald, A. E., Kingsley, C. and Kusko, A. " Electric Machinery" Third Edition, (Book) McGraw-Hill, Inc, N.Y. 1971.
5-Slemon, R., and Straughen A. " Electric Machines", (Book) Addison-Wesley Publishing Company, Inc. 1980.
6-Sen, P. C., " Principles of Electric Machines and Power Electronics", Second Edition, (Book) John Wiley & Sons, Inc. 1977.
7-Guru, B. S., and Hiziruglu, H., " Electric Machinery and Transformers", Second Edition, (Book) Harcourt Brace & Company, 1988.
8-K. A. Ahmed, A. M. Osheiba, and M. A. Rahman, " Dynamic Performance of a 3-phase Induction Motor Fed from a Single-phase Supply", IEEE, IAS, Annual Meeting, 1-5 October 1989, San Diego, CA, pp. 137-146, part-I, USA.
9-M. Osheiba, and K. A. Ahmed, " Experimental Verification for the Dynamic Behaviour of Asymmetrically Connected Induction Machines", Journal of the Elektrotechnicky Casopis, Rocnik 40, C.2, 1989, pp. 97-109, Bratislava.
10-Consoli, and T. A. Lipo, " Orthogonal Axis Modes for Asymmetrically Connected Induction Machines", IEEE Trans. on Power Apparatus and Systems, Vol. PAS-101, no. 12, December 1989, pp. 4518-4526.

11-R. M. Tallam, T. G. Habetler, and R. G. Harley, " Transient model for induction machines with stator winding turn faults", IEEE Trans. IAS, vol. 38, pp. 632-637, May/June 2002.
12-S. M. A. Cruz, and A. J. M. Cardoso, " Diagnosis of stator inter-turn short circuits in DTC induction motor drives", IEEE Trans. IAS, vol. 40, no. 5, pp. 632-637, Sept./Oct. 2004.

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Course coordinator **Head of the Department**

Dr. Haitham Zaki Azazi **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Economic Operation of Electric Power System* ***Code Symbol:****ELE414B* **Elective Course(6)**
Element of program: ***Major******Date of specification approval:****2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

The aim of this course is to learn the student the basic concepts and fundamental analysis of the economic operation of electrical power system.

3- Course Objectives:

- Understand the basics of economic operation of electrical power system for conventional and non-conventional generation units.
- Understand the different economical factors and their effect on the economic operation of electrical power system.
- Understand the impact of reactive power control on the economic operation of electrical power system
- Understand the difference between unit commitment problem and economic power dispatch problem.
- Realize the analytical approaches used to solve the economic operation of power systems problems.
- Apply the different analytical approaches to solve the economic operation of power systems problems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A13, A15	B2, B9,B10	C1	D2, D6, D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A13)Chooseanalytical and computer methods appropriate for electrical power and machines engineering.	a13-1)Choose analytical approaches used to solve the different economic operation problems of power systems problems such asunit commitment problem and economic power dispatch problem .
	A15)Explain Principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1)Explain the basics of economic operation of electrical power system for conventional and non-conventional generation units. a15-2)Explain the different economical factors and their effect on the economic operation of electrical power system. a15-3)Illustrate the impact of reactive power control on the economic operation of electrical power system.
Intellectual skills	B2)Select appropriate solutions for engineering problems based on analytical thinking.	b2-1)Select the appropriate solutions for different economic operation problems based on analytical thinking.
	B9)Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1)Choose the suitable generation units to be committed to supply a load on the basis of cost, reliability, and environmental impact.
	B10)Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1)Choose between the different generation technologies available to supply a load on the basis of cost.
Professional skills	C1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c-1-1)Apply the knowledge of mathematics to formulate and solve the cost function for conventional and non-conventional generation units. c-1-2)Apply the knowledge of mathematics to formulate and solve the economic power dispatch problem. c-1-3)Apply the knowledge of mathematics to formulate and solve the unit commitment problem. c-1-4)Apply the knowledge of mathematics to compute the suitable size of the capacitor banks for the economical purposes of electrical operation.
General skills	D2)Work in stressful environment and within constraints.	d2-1)Choose the most economical generation units to operate in case of disturbance situations considering the different system constraints.
	D6)Effectively manage tasks, time, and resources.	d6-1)Choose the most economical generation technologies and generation units to be operated to supply a load considering the available time and resources.
	D9)Refer to relevant literatures.	d9-1) Refer to electrical power system generation, operation and economics handbooks.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Economic operation of different types of electrical power generation units	1-3
2nd	Effects of load profile and load management on generation unit costs	4-5
3rd	Impact of reactive power control on the economy of power generation	6-7
4th	Unit commitment	9-11
5th	Economic power dispatch problem	12-13
6th	Hydrothermal coordination	14-15

7- Course Topics/hours/ILOS

WEEK NO.	TOPIC	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut./Lab**	
Week-1	• **THE OBJECTIVES OF THE COURSE** • Course contents • Why economic operation of power system is important?	6	4	2	a13-1, a15-1, a15-2, a15-3
Week-2	Economic operation of different types of electrical power generation units: Electric power system components, types of generation units, advantage and disadvantage of different generation units, compute energy output from different generation units.	6	4	2	a15-1, b10-1
Week-3	Economic operation of different types of electrical power generation units: Costs of traditional power plants(capital costs, operation costs), Costs of new power generation technologies (capital costs, operation costs)	6	4	2	a15-1, b10-1, c1-1
Week-4	Effects of load profile and load management on generation unit costs: study of different economical load factors and station factors	6	4	2	a15-2
Week-5	Effects of load profile and load management on generation unit costs: study of the Effects of load profile and load management on generation costs and tariffs.	6	4	2	a15-2, c1-1
Week-6	Impact of reactive power control on the economy of power generation: what is power factor?, Cause of Low Power Factor and its disadvantages, Effect of low power factor on the economics of power system, How to improve power factor?	6	4	2	a15-3
Week-7	Impact of reactive power control on the economy of power generation: power factor improvement, estimated size and cost of capacitor banks, saving of costs due to power factor improvement.	6	4	2	a13-1, a15-3, b2-1, c1-4
Week-8	Mid-term Exam	----	----	---	Assessment
Week-9	Unit commitment: definition of unit commitment problem, formulation of the unit commitment problem, constraints in unit commitment problem.	6	4	2	b9-1, c1-3, d6-1
Week-10	Unit commitment: spinning reserve, thermal unit constraints, hydro constraints, difference between unit commitment and economic power dispatch problem .	6	4	2	b9-1, d6-1

Week-11	Unit commitment: different methods used to solve unit commitment problem.	6	4	2	a13-1, b2-1, b9-1, c1-3
Week-12	Economic power dispatch problem(thermal units): definition, mathematical formulation and constraints.	6	4	2	c1-2
Week-13	Economic power dispatch problem: methods of solutions	6	4	2	a13-1, b2-1, c1-2, d2-1
Week-14	Hydrothermal coordination: hydroelectric plant models, long-range hydro scheduling.	6	4	2	b2-1, d-2-1
Week-15	Hydrothermal coordination: short- range hydro scheduling, pumped-storage hydro plants.	6	4	2	b2-1, d2-1

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a13-1**	*			*	*								
	a15-1	*		*		*								
	a15-2	*		*		*								
	a15-3	*		*		*								
Intellectual Skills	**b2-1**	*			*	*								
	b9-1	*			*	*								
	b10-1	*			*	*								
Professional Skills	**c1-1**	*			*	*								
	c1-2	*			*	*								
	c1-3	*			*	*								
	c1-4	*			*	*								
General Skills	**d2-1**	*		*	*	*								
	d6-1	*		*	*	*								
	d9-1		*											

9- *Teaching and Learning Methods for Low Capacity and Outstanding Students:*

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a13-1**	*	*										
	a15-1	*	*							*			
	a15-2	*	*							*			
	a15-3	*	*							*			
Intellectual Skills	**b2-1**	*	*										
	b9-1	*			*		*						
	b10-1	*			*		*						
Professional Skills	**c1-1**	*			*		*						
	c1-2	*			*		*						
	c1-3	*			*		*						
	c1-4	*			*		*						
General Skills	**d2-1**	*			*		*			*			
	d6-1	*			*		*			*			
	d9-1												

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.67%**	**16th**
Mid term written Examination (*Term Work*)	**30**	**20%**	**8th**
Tutorial and report assessment (*Term Work*)	**20**	**13.33%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

Lab top and data show

12- List of references:

1. A. J. Wood and B.F. Woollenberg, " Power Generation, Operation and Control " Second edition, John Wiley &Sons, Inc., 1996.
2. J.J. Grainger and W.D. Stevenson, " Power System Analysis" McGraw-Hill, Inc. 1994.
3. Periodicals, web sites, … etc

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Course coordinator **Head of the Department**

Dr. Shaimaa R. Spea **Prof.Dr. Gamal Abdel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 1st Term
Academic level: 4rd ELEC.

Course Specification

A-Basic Information

Title: *Computer Control* ***Code Symbol:*** *ELE414C Electice Course(6)*
Element of program: *minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*2*	*0*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
16.66%	33.33%	33.33%	16.66%	----	----	---	100%

B-Professional Information

2- Course Aims:

- This course is designed to give students of Electrical Engineering information of the newly available processors and their applications.

3- Course Objectives:

Knowing and understanding structure and theory of operation of microprocessors as a basic unit in computer or control systems.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2	B12	C1	D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT) .	a2-1)Demonstrate understanding structure and theory of operation of microprocessors as a basic unit in computer or control systems.
Intellectual skills	B12)Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1)Illustrate functions of microprocessors
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Describe and define function and requirements to solve a particular practical problem by suggesting the appropriate processor, or it may even be solved using basic circuits less complex than a processor.
General skills	D3) Communicate effectively.	d3-1)Communicate effectively with clear, critical thinking and skills.
	D4) Demonstrate efficient IT capabilities.	d4-1)Use information technology (IT) resources effectively in engineering systems. d4-2) Logic thinking concerning the use of elementary basic digital circuits, and the skill of comprising more complex circuits from these basic circuits, as the needs arise. d4-3)Write technical reports and introduce presentations effectively.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	An over view of new available processors: Microprocessors, Microcontrollers, Digital Signal Processors (DSP), Application Specific Integrated Circuits (ASICs).	1-2
2nd	Processors architectures: Addressing, Instruction set, Internal organization, data unit, buses, interrupt. Units, timing and registers… etc.	3-4
3rd	A brief analysis of the most used types and families of architectures in Complex Instruction set computer (CISC) and Reduced Instruction set Computer (RISC) processors, INTEL series, and Motorola series…. Etc.	5-6
4th	I/O interface adapters and memory: Software and Debugging aids (debugging tools, text editors and assemblers, linkers, …. etc.	7,9
5th	Design of interface circuits using combinational logic.	10-11
6th	Dedicated and general purpose computing systems. Off-line and on-line systems, speed, complexity, size considerations in application fields.	12-13
7^{th}	Advantages and disadvantages of using processors in digital control systems.	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEKS-1-2	An over view of new available processors: Microprocessors, Microcontrollers, Digital Signal Processors (DSP), Application Specific Integrated Circuits (ASICs).	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEKS-3-4	Processors architectures: Addressing, Instruction set, Internal organization, data unit, buses, interrupt. Units, timing and registers… etc.	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEK-5-6	A brief analysis of the most used types and families of architectures in Complex Instruction set computer (CISC) and Reduced Instruction set Computer (RISC) processors, INTEL series, and Motorola series…. Etc.	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEK-7	I/O interface adapters and memory: Software and Debugging aids (debugging tools)	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEK-8	Midterm written examination				
WEEK-9	Software and Debugging aids (text editors and assemblers, linkers, …. etc.)	6	4	2	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEKS-10-11	Design of interface circuits using combinational logic.	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEKS-12-13	Dedicated and general purpose computing systems. Off-line and on-line systems, speed, complexity, size considerations in application fields.	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3
WEEKS-14-15	Advantages and disadvantages of using processors in digital control systems.	12	8	4	a2-1, b12-1,c1-1, d3-1,d4-1,d4-2, d4-3

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a2-1	*		*	*	*	*			*	*			
Intellectual Skills	b12-1	*	*	*	*	*	*	*		*	*	*	*	
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	
	d4-2		*	*	*	*	*	*	*	*	*	*	*	
	d4-3		*	*	*	*	*	*	*	*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a2-1**	*						*		*	*	*	
Intellectual Skills	**b12-1**	*			*		*	*		*			
Professional Skills	**c1-1**	*			*		*	*	*	*	*	*	
General Skills	**d3-1**	*			*		*					*	
	d4-1	*			*		*			*	*	*	
	d4-2	*			*		*			*	*	*	
	d4-3	*			*		*			*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.7%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**15**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**15**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**20**	**13.3%**	**Weekly**
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to write either machine language program, and assembly language program using DEBUG command.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1- Microprocessors and interfacing: Douglas V. Hall., 1998
3- Digital logic and computer design, M. Mano., 2002
4-Digital circuits and logic design, Samuel C. Lee, 2003
5-Barry B.Brey, "The INTEL Microprocessors", Prentice-Hall, Inc.Fifth Edition, 2000

Periodicals, web sites, … etc
- IEEE, IEE, Electronics Letters, ….etc.
- Websites of Major component manufacturers like: Motorola, Intel, National Semiconductors, IBM, etc.

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Course coordinator **Head of the Department**

Prof.Dr. Ibrahim Zakria MorsiProf.Dr. Gamal Abdel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: ***Power Electronics Technology*** ***Code Symbol:*** ***ELE424A Electice Course(7)***
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*-*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B- Professional Information

2- Course Aims:

This course integrates the basic principles of power electronic engineering. Providing in depth knowledge related to the subject of power electronic devices and their detailed protection circuits. Providing skills related to power factor improvement for AC-DC converters. Also, give the students skills for analysis of switching mode converters.

3- Course Objectives:

- Integrates the basic principles of power electronic engineering .
- Know and use power electronic devices and their detailed protection circuits.
- Realizing of the different types of switching mode converters.
- Analysis of different converter types for power factor improvement in AC-DC converters and its afect on the supply .

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A4, A8 A19	B2	C13,C17	D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4)Understanding Principle of design including elements design, process and/or a system related to the Electrical power Engineering.	a4-1)Get familiar with power semiconductor switches and their gate drive and protection circuits.
	A8)Recognize current engineering technologies as related to the electrical power engineering	a8-1)Explain controlled rectifiers and their applications. a8-2)Study switching mode converters
	A19)Diverse Applications of electrical equipment	a19-1)Illustrate circuit power factor and how to improve it
Intellectual skills	B2)Select appropriate solutionsfor engineering problems based on analytical thinking.	b2-1)Construct gate drive and protection circuits b2-2) Think in creative how to improve circuit power factor.
Professional skills	C13)Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1) Design and build gate drive and protection circuits suitable to power semiconductor switches c13-2) Design and buildto improve supply power factor which is one of the drawbacks of using power converters.
	C17)Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Apply modern techniques, skills and power electronic tools to electrical power and machines engineering systems.
General skills	D6)Effectively manage tasks, time, and resources.	d6-1) Effectively manage resources to build the converter system.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Power semiconductor switches	1-5
2nd	Controlled rectifiers	6-7, 9
3rd	Switching mode regulators	10-13
4th	Gate drive and protection circuits	14-15

8- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Power Semiconductor diodes.	4	2	2	a4-1
WEEK-2	Recovery of Trapped energy with a diode	4	2	2	a4-1
WEEK-3	Power Transistors Characteristics and protection	4	2	2	a4-1
WEEK-4	Power Transistor Limits.	4	2	2	a4-1
WEEK-5	Thyristors in Series and Parallel Thyristor Protection.	4	2	2	a4-1
WEEK-6	Power factor improvement using extinction angle control	4	2	2	a8-1,a19-1,b2-2, c13-2
WEEK-7	Power factor improvement using symmetrical angle control	4	2	2	a8-1,a19-1, b2-2,c13-2
WEEK-8	Midterm written examination				
WEEK-9	Single-phase series converters	4	2	2	a8-1,a19-1, b2-2&c13-2,d6-1
WEEK-10	Switching mode regulators Buck Regulator	4	2	2	a8-2, c17-1,d6-1
WEEK-11	Boost regulator	4	2	2	a8-2, c17-1,d6-1
WEEK-12	Buck-Boost regulator	4	2	2	a8-2, c17-1,d6-1
WEEK-13	Diode Rectifier Fed Boost Converter	4	2	2	a8-1,a8-2, c17-1,d6-1
WEEK-14	Gate Drive Circuits MOSFET gate drive BJT base drive	4	2	2	a4-1, b2-1, c13-1
WEEK-15	Isolation of gate and base drives Thyristor firing circuits	4	2	2	a4-1, b2-1, c13-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a4-1**	*			*	*								
	a8-1	*			*	*								
	a8-2	*			*	*								
	a19-1	*			*	*				*	*			
Intelectual Skills	**b2-1**	*			*	*								
	b2-2	*			*	*								
Professional Skills	**c13-1**	*			*	*								
	c13-2	*			*	*								
	c17-1	*			*	*					*			
General Skills	**d6-1**	*			*	*				*	*			

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

11- Assessment
11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a4-1**	x											
	a8-1	x			x								
	a8-2	x			x								
	a19-1	x			x								
Intellectual Skills	**b2-1**	x			x		x						
	b2-2	x			x		x						

Professional Skills	**c13-1**	**x**			**x**								
	c13-2	**x**			**x**								
	c17-1	**x**			**x**		**x**						
General Skills	**D6-1**						**x**						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**70**	**70%**	**16th**
Mid term laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab*)	**-**	**-**	**-**
Mid term written Examination1 (*Term Work*)	**15**	**15%**	**8th**
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory

Power Electronics Lab. is used to execute all experimental related to power electronics technology course.

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1- Muhammad H . Rashid"Power Electronics Circuits, Devices , And applications" second Edition , prentice –Hall , Inc., Englewood Cliffs.

2- Dewan,S.B., and A. Straughen, m"Power Semiconductor Circuitrs", New York :Jon Wiely @ Sons ., Inc.,1984.

Course coordinator **Head of the Department**

Prof. Dr. Abd-El Salam El-BasmyProf.Dr. Gamal Abdel-Wahab Morsy
Prof.Dr.Azza Mohamed Ezat Lashine

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 1st Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: ***Control of Electrical Power Systems*** ***Code Symbol:*** ***ELE424B Electice Course(7)***
Element of program: ***Minor*** ***Date of specification approval:*** ***2011***
Department offering the course: ***Electrical Eng. Dept.*** ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*-*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course introduces the student to develop a deep understanding of power system control. This involves modeling of synchronous generators, exciter, turbine and speed governor. Also, the course aimed to teach students how the control loops of the synchronous generating units at power stations designed and operate to assess its stabilization with the public grid.

3- Course Objectives:

- Understanding the concepts of power system control.
- Demonstration of the knowledge of modeling of synchronous generators, exciter, turbine and speed governor.
- Design of control systems for synchronous generators .
- Analysis of the system performance under controlled and uncontrolled system.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A19	B13, B16	C3, C7, C15, C17	D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A19) Define diverse applications of electrical equipment	a19-1)Demonstrate Understanding the concepts of control of synchronous generator, exciter, turbine and speed governor. a19-2)Explain the Exciter/AVR control loop (voltage reactive power control). a19-3)Define the Governor control loop (automatic load frequency control- ALFC).
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering	b13-1)Formulate the problem of system stability and controllers b13-2)Be familiar to deal with generating power stations control and stability
	B16. Analyze the performance of electric power generation, control and distribution systems	b16-1)Analyze the performance of power system with Exciter /AVR b16-2) Analyze the performance of power system with Governor control loop.
Professional skills	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1) Design the AVR control loop to maintain the terminal voltage within desired limits. c3-2) Design the ALFC loop to maintain the speed deviation within desired level.
	C7) Apply numerical modeling methods to engineering problems	c7-1) Apply numerical methods for modeling synchronous generators with exciters and governors.
	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems	c15-1) Integrate electrical and mechanical components in feedback loop and transducers.
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems	c17-1) Apply modern computational techniques in design process of the control system.
General skills	D8)Acquire entrepreneurial skills.	d3-1) Gain experience in the field of control design and operation of generating units in electric power stations.

6- Course Topics.

Topic No.	General Topics	Weeks
1	INTRODUCTION	1
2	SYSTEM MODEL REPRESENTATION - General machine equations - Blondel transformation - Derivation of voltage and current relations - Power expression and equation of motion - Steady-state machine models - Linearization and phasor diagram - Active and reactive power relations with respect to input mechanical torque and field current.	2-6
3	BASIC GENERATOR CONTROL LOOPS - The automatic voltage regulator (AVR)control loop - Exciter types and modeling - Dynamic and static performance of AVR loop - The automatic load frequency control (ALFC) loop - Mathematical model of speed governing system and turbines - Dynamic and static performance of ALFC loop	7-11
4	POWER FREQUENCY CONTROL OF MULTI-CONTROL AREA SYSTEMS - Block diagram of load frequency control of two area system - Uncontrolled case: dynamic and static response - Control of two area system.	12-13
5	THE GENERATION AND ABSORPATION OF REACTIVE POWER - Relation between voltage, power and reactive power at node - Methods of voltage control	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.		
WEEK-1	Introduction	4	2	2		a19-1 , a19-2 , a19-3 , b13-2
WEEK-2	System Model Representation - General machine equations - Blondel transformation	4	2	2		b13-1 , b13-2
WEEK-3	- Derivation of voltage and current relations - Power expression and equation of motion	4	2	2		b13-1 , b13-2
WEEK-4	- Steady-state machine models	4	2	2		b13-1 , b13-2
WEEK-5	- Linearization and phasor diagram	4	2	2		b13-1 , b13-2
WEEK-6	- Active and reactive power relations with respect to input mechanical torque and field current.	4	2	2		b13-1 , b13-2
WEEK-7	Basic Generator Control Loops - The automatic voltage regulator (AVR) control loop	4	2	2		b13-1 , b13-2
WEEK-8	Midterm written examination					
WEEK-9	- Exciter types and modeling - Dynamic and static performance of AVR loop	4	2	2		a19-2 , b13-1, b13-2
WEEK-10	- The automatic load frequency control (ALFC) loop	4	2	2		a19-3, b13-1, b13-2 , c3-1
WEEK-11	- Mathematical model of speed governing system and turbines - Dynamic and static performance of ALFC loop	4	2	2		b13-1 , b13-2 b16-2 ,c3-2 c7-1
WEEK-12	Power Frequency Control of Multi-Control Area Systems - Block diagram of load frequency control of two area system	4	2	2		b16-1 , b16-2
WEEK-13	- Uncontrolled case: dynamic and static response - Control of two area system.	4	2	2		b16-1 , b16-2, c7-1
WEEK-14	The Generation And Absorption of Reactive Power	4	2	2		b16-1, b16-2, c7-1
WEEK-15	- Relation between voltage, power and reactive power at node	4	2	2		b16-1 , b16-2

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a19-1**	*		*					*					
	a19-2	*		*										
	a19-3	*		*										
Intellectual Skills	**b13-1**	*		*	*	*							*	
	b13-2	*		*										
	b16-1	*		*	*	*								
	b16-2	*		*	*	*								
Professional Skills	**c3-1**	*		*	*	*							*	
	c3-2	*		*	*	*							*	
	c7-1	*		*	*	*							*	
	c15-1	*		*	*	*		*						
	c17-1	*		*	*	*		*					*	
General Skills	**d8-1**	*		*					*					

9-Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & understanding	**a19-1**	*											
	a19-2	*			*								
	a19-3	*			*								
Intellectual Skills	**b13-1**	*			*								
	b13-2	*			*								
	b16-1	*			*								
	b16-2	*			*								
Professional Skills	**c3-1**	*			*								
	c3-2	*			*								
	c7-1	*			*								
	c15-1	*			*								
	c17-1	*			*								
General Skills	**d8-1**									*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70**	**16th**
End of term laboratory examination (*Lab*)	**-**	**-**	**--**
Mid term written Examination (*Term Work*)	**15**	**15**	**8th**
Tutorial and report assessment (*Term Work*)	**15**	**15**	**Weekly**
laboratory assessment (*Term Work*)	**-**	**-**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation.

12- List of references:

1-O.I. ELGERD, "Electric Energy Systems Theory, An Introduction" , 1990

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Course coordinator **Head of the Department**

Prof. Dr. Gamal Abel-Wahab Morsy Prof.Dr. Gamal Abdel-Wahab Morsy

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Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Applications of Protection Systems* ***Code Symbol:*** *ELE424C Elective course(7)*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law*** *2006*

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*0*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is intended to deeply cover the applications of real protection systems in the field including generators, transformers, motors, lines… etc. Practical skills are covered such as selecting and designing the appropriate protection systems. This helps to expand the student knowledge about the protection engineering.

3- Course Objectives:

The objective of this course is to attain the following points:

- Widely demonstrating protections of different electrical equipment such as generator, transformer, line … etc.
- Providing practical skills in the power system protection.
- Realizing recent protection trends applied for protection improvement.

4- Relationship between the course and the program

Field	National Academic Reference Standard (NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A8 , A15	B3, B5 , B13	C2, C3, C12, C16	D8 , D9

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	**A4)** Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	**a4.1)** Get the basic knowledge about designing the protection schemes for power systems.
	A8) Explain Current engineering technologies as related to electrical engineering.	**a8.1)** Get the basic knowledge about the international standards for protection engineering.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	**a15.1)**Explain the normal and abnormal circumstances of power system elements. **a15.2)**Review the most common failures of power system elements.
Intellectual skills	**B3)** Think in a creative and innovative way in problem solving and design.	**b3.1)** Deduce the related setting steps for the selected relays of each power system element.
	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	**b5.1)** Analyze the normal and abnormal circumstances of power system including generators, transformers, motors, lines …etc.
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	**b13.1)** Calculate the proper settings of the selected protection elements for each power system element.
Professional skills	**C2)** Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	**c2.1)** Visualize and discuss the transient behavior of the power system elements.
	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	**c3.1)** Design the proper protection profile for power system elements.
	C12) Prepare and present technical reports.	**c12.1)** Document results and prepare technical reports for selecting protective elements
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	**c16.1)** Build economical concept for profiling protection systems.
General skills	**D8)** Acquire entrepreneurial skills.	**d8.1)** Acquire the engineering profession and thinking.
	D9) Refer to relevant literatures.	**d9.1)** Successfully work the protection systems design using the international standards.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Generator, transformer and motor protection.	2-7
2nd	Busbar, transmission and distribution system protection.	9-12
3rd	SCADA applications for improving relaying.	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	General Introduction: Course aims, Importance of Standards.	4	2	2	a4.1, a8.1, a15.1, a15.2, d9.1
WEEK-2	Generator Protection 1: Definition of the associated protection problems.	4	2	2	a4.1, a8.1, a15.1, a15.2, b5.1, c2.1
WEEK-3	Generator Protection 2: Protection methods (A).	4	2	2	b3.1, b13.1, c3.1
WEEK-4	Generator Protection 3: Protection methods (B).	4	2	2	b3.1, b13.1, c3.1, c12.1
WEEK-5	Transformer Protection 1: Definition of the associated protection problems.	4	2	2	a4.1, a8.1, a15.1, a15.2, b5.1, c2.1
WEEK-6	Transformer Protection 2: Protection methods.	4	2	2	b3.1, b13.1, c3.1, c12.1
WEEK-7	Motor Protection problems and protection methods.	4	2	2	b3.1, b13.1, c3.1, c12.1
WEEK-8	First midterm exam.				
WEEK-9	Busbar Protection problems and protection methods.	4	2	2	a4.1, a15.1, b5.1
WEEK-10	Transmission System Protection 1: Problems definition and solutions.	4	2	2	a4.1, a15.1, b5.1, c2.1
WEEK-11	Transmission System Protection 2: Communication-based relaying.	4	2	2	b3.1, b13.1, c3.1
WEEK-12	Protection of Distribution Systems: Problems definition an protection methods	4	2	2	a4.1, a15.1, b5.1
WEEK-13	Second midterm exam.				
WEEK-14	Modern communication systems and SCADA for improving the performance of relaying systems.	4	2	2	c3.1, d8.1
WEEK-15	Recent trends for relaying concepts, methods and tools.	4	2	2	c3.1, d8.1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a4.1**	*		*										
	a8.1	*		*										
	a15.1	*		*										
	a15.2	*		*										
Intellectual Skills	**b3.1**	*			*	*								
	b5.1	*			*	*								
	b13.1	*			*	*	*							
Professional Skills	**c2.1**	*			*	*								
	c3.1	*			*	*								
	c12.1	*			*	*								
	c16.1	*			*	*								
General Skills	**d8.1**	*									*	*		
	d9.1	*						*						

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Arrange meetings for more discussion and declaration.
	Face-to-face intermediate solving the problems and quizzes during the tutorial scheduled time in order to improve their skills.
For outstanding students	Hand out practical project assignments.
	Give them some topics searched by the internet and conduct presentation

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a4.1**	*											
	a8.1	*											
	a15.1	*											
	a15.2	*											
Intellectual Skills	**b3.1**	*			*								
	b5.1	*			*					*			
	b13.1	*			*		*						
Professional Skills	**c2.1**	*			*								
	c3.1	*			*								
	c12.1	*			*								
	c16.1	*			*								
General Skills	**d8.1**						*						
	d9.1									*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**10**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**10**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Teaching Class:

The teachers are going to use computer for the lecture presentation using power point office program. Also, the teachers will teach new software such as ETAP. So, hanged digital LCD is required to facilitate the communication with the students.

11-2Library Usage:

The books in the library are extremely obsolete and the recent books are rare. More financial support should be directed to the electronic library to access on the ieeexplore. Also, it is required to buy several versions of the recent books such as: **1-** Stanley H. Horowitz and Arun G. Phadke, "Power System Relaying", Research Studies Press (RSP) Limited, John Wiley & Sons, 3rd edition, 2008. **2-**J. Lewis Blackburn and Thoma J. Domain “Protective Relaying: Principles and Applications”, CRS Press, Taylor & Francis Group, 3rd edition, 2009.

12- List of references:

1-Stanley H. Horowitz and Arun G. Phadke, "Power System Relaying", Research Studies Press (RSP) Limited, John Wiley & Sons, 3rd edition, 2008,

2-J. Lewis Blackburn and Thoma J. Domain “Protective Relaying: Principles and Applications”, CRS Press, Taylor & Francis Group, 3rd edition, 2009.

3-IEEE standards for Generators, Transformers … etc.www.ieeexplore.ieee.org

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Course coordinator	Head of the Department
Dr. Tamer A. Kawady	**Prof. Dr. Gamal Abel-Wahab Morsy**
Dr. Nagy I. Elkalashy	

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title:** Protection Transducers and Grounding* ***Code Symbol:** ELE424D **Elective course(7)
***Element of program:** Minor* ***Date of specification approval:** 2011*
***Department offering the course:** Electrical Eng. Dept.* ***By law** 2006*

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*0*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is intended to deeply cover the protective transducers and grounding principles. Also, this course will provide the student by transient study of the current transformer (CT) and voltage transformer (VT) as well as by transients in grounding system. The student will get practical knowledge on the network and safety grounding.

3- Course Objectives:

The objective of this course is to attain the following points:

- Demonstration of the construction, operation, equivalent circuit and transient behavior of the current and voltage transformers.
- Realizing errors in the current and voltage transformers.
- Realizing the ground methods of the network.
- Learning about grounding resistance and its measuring.
- Studying the important factors affecting on the grounding resistance value.
- Learning the methods for reducing the grounding resistance.

4- Relationship between the course and the programme

Field	National Academic Reference Standard (NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A6, A21, A23	B2, B5, B13	C2 , C8	D8

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	**A6)** Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	**a6.1)**Explain the methods for reducing the hazards in the substation considering the safety grounding. **a6.2)**Demonstrate understanding the transient behaviors of protective transducers and of grounding system.
	A21) Distinguish basic power system design concepts for underground, cable tray, grounding, and lighting systems.	**a21.1)**Recognize the design principles of the grounding.
	A23) Generalize principles of performing electrical system calculations, including load flow, earthing and equipment sizing.	**a23.1)**Explain the measuring rules of earth resistivity and the grounding electrode resistance.
Intellectual skills	**B2)** Select appropriate solutions for engineering problems based on analytical thinking.	**b2.1)** Select appropriate solution for safety against transients either transients in the CT or in the grounding.
	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	**b5.1)** Evaluate the characteristics of current and voltage transformers.
	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	**b13.1)** Identify the soil resistivity to overcome the high grounding resistance.
Professional skills	**C2)** Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	**c2.1)** Design the suitable grounding system with reducing the corrosion.
	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	**c8.1)** Apply safe grounding systems at the substation. **c8.2)** Design suitable grounding system for reducing step, touch and transfer voltages.
General skills	**D8)**Acquire entrepreneurial skills.	**d8.1)** Improving the relevant power engineering skills. **d8.2)** Acquire practical knowledge related to the safety.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Current Transformer.	1-3
2nd	Voltage Transformer.	4-5
3rd	Grounding principles.	6-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	- Current transformers in power systems - Characteristics of current transformers	4	2	2	a6.1, b2.1, b5.1, d8.1
WEEK-2	- Current transformers types. - Current transformer equivalent circuit.	4	2	2	a6.1, b2.1, b5.1, d8.1
WEEK-3	- Testing of current transformers. - Voltage transformers in power systems.	4	2	2	a6.1, b2.1, b5.1, d8.1
WEEK-4	- Characteristics of voltage transformers - Voltage transformers types.	4	2	2	a6.1, b5.1, d8.1
WEEK-5	- Voltage transformer equivalent circuit. - Testing of voltage transformers.	4	2	2	a6.1, b5.1, d8.1
WEEK-6	- Grounding methods for network applications: Advantages and disadvantages.	4	2	2	a6.2, a21.1
WEEK-7	- Grounding for electrical safety. - Touch voltage and step voltage.	4	2	2	a6.1, a6.2, b2.1, c8.1, c8.2, d8.2
WEEK-8	First midterm exam.				
WEEK-9	- Calculating ground electrode resistance. - Earth resistance measurements.	4	2	2	a6.2, a23.1, c8.2, d8.1
WEEK-10	- Construction of grounding systems - Types of grounding systems.	4	2	2	a21.1, c8.1
WEEK-11	- Grounding rode selection. - Design parameters of grounding grid.	4	2	2	c8.1, d8.1, d8.2
WEEK-12	- Artificial methods for reducing ground resistivity. - Electrical corrosion.	4	2	2	a21.1, b13.1, c2.1,
WEEK-13	Second midterm exam.				
WEEK-14	- Lightning protection grounding.	4	2	2	b2.1, d8.2
WEEK-15	- Electromagnetic interference.	4	2	2	d8.1

8- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a6.1**	*		*										
	a6.2	*		*										
	a21.1	*			*									
	a23.1	*			*									
Intellectual Skills	**b2.1**	*												
	b5.1	*			*									
	b13.1	*			*									
Professional Skills	**c2.1**	*												
	c8.1	*												
	c8.2	*			*									
General Skills	**d8.1**	*												
	d8.2	x												

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Arrange meetings for more discussion and declaration.
	Repeat the explanation based on their request.
	Face-to-face intermediate solving the problems and quizzes during the tutorial scheduled time in order to improve their skills.
For outstanding students	Hand out programmed project assignments.
	Give them some topics searched by the internet and conduct presentation

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a6.1**	*											
	a6.2	*											
	a21.1	*			*								
	a23.1	*			*								
Intellectual Skills	**b2.1**	*											
	b5.1	*			*								
	b13.1	*			*								
Professional Skills	**c2.1**	*											
	c8.1	*											
	c8.2	*			*								
General Skills	**d8.1**	*											
	d8.2	*											

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**10**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**10**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Teaching Class:

The teachers are going to use computer for the lecture presentation using power point office program. Hanged digital LCD is required to facilitate the communication with the students.

11-2Library Usage:

The books in the library are obsolete and the recent books are rare. More financial support should be directed to the electronic library to buy new books and to access on the ieeexplore.

12- List of references:

1-Stanley H. Horowitz and Arun G. Phadke, "Power System Relaying", Research Studies Press (RSP) Limited, John Wiley & Sons, 3rd edition, 2008,

2-J. Lewis Blackburn and Thoma J. Domain "Protective Relaying: Principles and Applications", CRS Press, Taylor & Francis Group, 3rd edition, 2009.

3-J. C. Das "Transients in Electrical Systems: Analysis, Recognition, and Mitigation: Chapter 21 Transients in grounding systems", 2010.

4-IEEE Std 14, IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems, 2007.

5-ANSI/IEEE Std 81,An American National Standard, IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System, 1983.

6-IEEE Std 80, IEEE Guide for Safety in AC Substation Grounding, 2000.

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Course coordinator **Head of the Department**

Dr. Nagy I. Elkalashy **Prof. Dr. Gamal Abel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th year

Course Specification

A-Basic Information

Title: *Expert Systems* ***Code Symbol:*** *ELE424E* *Elective course(7)*

Element of program: *Major* ***Date of specification approval:*** *2011*

Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	2	----	4

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of Expert Systems.

3- Course Objectives:

- To build small to medium-sized Expert Systems.
- To thereby better understand the managerial issues surrounding expert systems including: appropriate tasks for the technology, expert systems' roles in operations and strategy, their strengths and limitations, and managing expert system projects

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2,A5,A11	B4,B8	C2,C17	D1, D3, D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2) Demonstrate understanding of Basics of information and communication technology (ICT) .	a2-1)Explain the scope of Expert Systems a2-2)Demonstrate Understanding how expert systems relate to other computer areas. a2-3)Illustrate ways in which knowledge can be represented in a computer.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies with techniques used in the field of knowledge of engineering.

	A11) Recognise Professional ethics and impacts of engineering solutions on society and environment.	a11-1) Recognise the relationship between a knowledge base and an inference engine and how this relationship is used to produce expert systems. a11-2)Explain expert system given an existing system shell.
Intellectual skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	B4-1) Appreciate the subtleties related to different approaches to AI B4-2-)Appreciate the subtleties related to different AI techniques.
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1) Decide the suitability of AI techniques for a problem/ domain. b8-2) Analyze and design a KBS for a problem. b8-3)How to abstract from particular solutions to general ones.
Professional skills	C2)Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1) Select an appropriate expert system development tool for a given task
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1) Apply and implement simple algorithms for problem solving and knowledge representation techniques in developing simple intelligent systems applications related to electrical power and machines engineering . c17-2)Design fuzzy decision models related to electrical power and machines engineering .
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1)Work effectively within a group to analyze, design and implement computer graphics program.
	D3) Communicate effectively.	d3-1) Develop communication skills
	D4)Demonstrate efficient IT capabilities	d4-1)Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Overview, introduction to rule-based expert system	1-2
2nd	Rule-based expert system.	3-5
3rd	Other expert system paradigms	6-7
4th	Building expert systems	9-10
5th	Machine learning and data-base mining	11-12
6th	Current trends, projects	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEKS-1-2	**Overview, introduction to rule-based expert system:** Background, general Introduction Forward and backward chaining, conflict resolution. Uses: Structured selection, configuration diagnosis and business rules.	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-3,5	**Rule-based expert system:** Uncertainty, Fuzzy logic and belief nets Expert system shells.	12	6	6	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-6-7	**Other expert system paradigms** PIEs example (Pan and Tenenbaum) Case-based reasoning and helps desks. Recommendor systems (CDNOw case study)	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEK-8	Midterm written examination				
WEEKS-9,10	**Building expert systems:** CLUES example system Building expert systems Discussion of shells Knowledge Management.	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-11-12	**Machine learning and data-base mining:** Data Mining Decision Trees, Neural Networks Text Mining, Web mining	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-13,15	**Current trends, projects:** Current trends in AI. Presentation and discussion of projects.	12	6	6	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a2-1**	*		*	*	*	*			*	*			
	a2-2	*		*	*	*	*			*	*			
	a2-3	*		*	*	*	*			*	*			
	a5-1	*	*	*	*	*	*	*			*		*	
	a11-1	*		*			*	*		*	*			
	a11-2	*		*			*	*		*	*			
Intellectual Skills	**b4-1**	*	*	*	*	*	*	*		*	*	*		
	b4-2	*	*	*	*	*	*	*		*	*	*		
	b8-1	*	*	*	*	*	*	*		*	*			
	b8-2	*	*	*	*	*	*	*		*	*			

	b8-3	*	*	*	*	*	*	*		*	*			
Professional Skills	**c2-1**	*	*	*	*	*	*	*		*	*		*	
	c17-1	*	*	*	*	*		*		*	*	*	*	
General Skills	**d1-1**	*	*	*	*	*	*	*		*	*	*		
	d3-1	*	*	*	*	*	*	*		*	*	*		
	d4-2		*	*	*	*	*	*		*	*	*	*	

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge& Understanding	**a2-1**	*		*				*		*		*	
	a2-2	*		*				*		*		*	
	a2-3	*		*				*		*		*	
	a5-1	*		*	*	*	*	*		*			
	a11-1	*			*					*		*	
	a11-2	*			*					*		*	
Intellectual Skills	**b4-1**	*		*	*	*	*	*	*	*			
	b4-2	*		*	*	*	*	*	*	*			
	b8-1	*		*			*		*				
	b8-2	*		*			*		*				
	b8-3	*		*			*		*				
Professional	**c2-1**	*		*	*		*	*	*	*		*	

Skills	**c17-1**	*		*	*		*						
	c17-2	*		*	*		*						
General Skills	**d1-1**	*		*		*	*	*	*				
	d3-1	*		*	*		*	*	*	*		*	
	d4-1	*		*	*	*	*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**10**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**10**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for writing program using Prolog language.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-A.J.Gonzalez and D.D.Dankel, "The Engineering of Knowledge-based Systems", Prentice Hall, 1993.
2-Kevin Knight ,"Introduction to Expert Systems", McGraw Hill, 1999.
3- Russell, S & Norvig, P "Artificial Intelligence: A modern approach", Prentice Hall 2005
4-Elaine Rich and Kevin Knight ,"Artificial Intelligence" McGraw Hill, 1991.
5-Ivan Bratko, "Prolog: programming for artificial intelligent", Addison Wesley, 2001

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Course coordinator **Head of the Department**

Prof. Dr. Ashraf Salah El Din Zein El Din**Prof. Dr. Gamal Abel-Wahab Morsy**

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Control of Electrical Machines* ***Code Symbol:*** *ELE425A Elective course(8)*
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*0*	*4*

Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

To develop an understanding of the analysis, performance and control of electrical machines and drives in both steady-state and transient states. Equip the students with modeling skills for handling problems associated with control of electrical machines. Give the students in electrical engineering an ability to design and control electric drive system. Apply various control techniques to electrical machines. Select an adequate machine control system for application tasks.

3- Course Objectives:

- To develop an analysis, performance and control of electrical drive systems in both transient and dynamic states.
- To equip the students with modeling skills for handling problems associated with control of electric drive systems.
- To give the students in electrical engineering an ability to design and control of an electric drive system.
- To apply various control techniques to electrical machines.
- To write the specifications of ac machines as per requirement.
- To select an adequate machine control system for application tasks.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A4, A13, A19	B13,B16	C16,C17	D1,D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4) Demonstrate Principles of design including elements design, process and/or a system related to electrical power engineering.	a4-1)Demonstrate understanding of construction and design issues associated with control of electrical machines.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose Analysis, simulation, performance and control of electrical machines and drives.
	A19) Define diverse applications of electrical equipment.	a19-1) Define Simple testing of control devices. a19-2)Select modern control techniques of electrical machines and drives. a19-3) Concepts of various control techniques.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Appreciate the complexity of design of control devices. b13-2)Identify various control techniques and their applications to electrical machines. b13-3)Formulate relevant transfer function and block diagrams for different types of electrical machines.
	B16) Analyze the performance of electric power generation, control and distribution systems	b16-1)Ability to understand, analyze and synthesize electrical machine and drive design to meet a given specification. b16-2)Compare and contrast the operation of different types of electrical machines under control. b16-3)Analyze simple problems related to control of electrical machines.
Professional skills	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1)Simulate different electrical machine drives. c16-2)Design different drives.
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	c17-1)Use MATLAB and Simulink for simulation of drive systems.
General skills	D1)Collaborate effectively within multidisciplinary team.	d1-1)Work in a small team to conduct an experiment. d1-2)Express themselves clearly and concisely.
	D3) Communicate effectively.	d3-1)Ability to share ideas and communicate with others. d3-2)Show improved problem solving skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction: General circuit model of the electrical machine, Mathematical description of the mechanical system, Graphical symbols, Transfer functions and block diagrams.	1-2
2nd	Control of DC Machine: Control of DC motor in the armature control range, Control of DC motor in the field-weakening region, Combined armature and field control, Closed loop control. Current control of DC machine, Speed and position control of DC machine.	3-5
3rd	Control of Induction Machine: Scalar control, Vector or field – oriented control, Sensorless vector control, Direct torque and flux control (DTC).	6-9
4th	Control of Synchronous Machine with Permanent Magnet Excitation: Current vector control with maximum torque/ampere, Field weakening control, Vector control with stator flux orientation, Feedback signal processing, and Square wave mode field weakening control.	10-11
5th	Control of Reluctance Synchronous Machine: Current vector control of synchronous reluctance motor drive, Constant d-axis current control, Fast torque response control, Maximum torque/ampere control, Maximum power factor control.	12-13
6th	Control of Wound-Field Synchronous Machines: Brush and brushless dc excitation, Load-commutated inverter (LCI) drive, Control of LCI drive with constant angle, Delay angle control, Control with machine terminal voltage signals, Vector control with voltage-fed inverter.	14
7th	Modern control strategies for electric machines: Fuzzy logic control, Sliding mode control, Neural networks, Genetic Algorithms.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	
WEEK-1	Introduction: General circuit model of the electrical machine, Mathematical description of the mechanical system	4	2	2	a13-1,b13-1, b13-2,b13-3, c16-1,c16-2
WEEK-2	Graphical symbols, Transfer functions and block diagrams.	4	2	2	a4-1, b13-1, b13-2, b13-3, c17-1
WEEK-3	Control of DC Machine: Control of DC motor in the armature control range , Control of DC motor in the field-weakening region	4	2	2	a19-1,a19-2, a19-3,c17-1, d1-1,d1-2
WEEK-4	Combined armature and field control, Closed loop control. Current control of DC machine	4	2	2	a19-1,a19-2, a19-3,c17-1, d1-1,d1-2
WEEK-5	Speed and position control of DC machine.	4	2	2	a19-1,a19-2, a19-3, c17-1, d3-1,d3-2
WEEK-6	Control of Induction Machine: Scalar control,	4	2	2	a19-1,a19-2,a19-3, c17-1,d1-1

WEEK-7	Vector or field – oriented control	4	2	2	a19-1,a19-2, a19-3,c17-1,d1
WEEK-8	Midterm written examination				
WEEK-9	Sensorless vector control, Direct torque and flux control (DTC).	4	2	2	a19-1,a19-2, a19-3,c17-1, d1-1,d1-2
WEEK-10	Control of Synchronous Machine with Permanent Magnet Excitation: Current vector control with maximum torque/ampere,	4	2	2	a19-1,a19-2, a19-3,c17-1, d1-1,d1-2
WEEK-11	Field weakening control, Vector control with stator flux orientation, Feedback signal processing, and Square wave mode field weakening control.	4	2	2	a19-1,a19-2, a19-3,c17-1, d1-1,d1-2
WEEK-12	Control of Reluctance Synchronous Machine: Current vector control of synchronous reluctance motor drive, Constant d-axis current control	4	2	2	a19-1,a19-2, a19-3,c17-1, d1-1,d1-2
WEEK-13	Fast torque response control, Maximum torque/ampere control, Maximum power factor control.	4	2	2	a19-1,a19-2, a19-3,c17-1, d3-1, d3-2
WEEK-14	Control of Wound-Field Synchronous Machines: Brush and brushless dc excitation, Load-commutated inverter (LCI) drive, Control of LCI drive with constant angle, Delay angle control, Control with machine terminal voltage signals, Vector control with voltage-fed inverter.	4	2	2	a19-1,a19-2, a19-3,c17-1,d3-1,d3-2
WEEK-15	Modern control strategies for electric machines: Fuzzy logic control, Sliding mode control, Neural networks, Genetic Algorithms	4	2	2	a19-1,a19-2, a19-3,c17-1, d3-1,d3-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a4-1	*	*	*	*	*	*	*	*	*	*			
	a13-1	*	*	*	*			*		*	*		*	
	a19-1	*	*	*	*	*	*			*	*			
	a19-2	*	*	*	*	*	*			*	*			
	a19-3	*	*	*	*	*	*			*	*			
Intellectual Skills	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
	b13-3	*		*	*	*	*	*		*	*			
	b16-1	*		*	*	*	*	*	*		*			
	b16-2	*		*	*	*	*	*	*		*			
	b16-3	*		*	*	*	*	*	*		*			
Professional Skills	c16-1	*		*				*	*	*	*			
	c16-2	*		*				*	*	*	*			
	c17-1	*	*		*	*		*	*	*			*	
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		
	d1-2	*	*	*	*	*	*	*	*	*	*	*		
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d3-2	*	*	*	*	*	*	*	*	*	*	*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
		Assessment Methods											
Knowledge & Understanding	**a4-1**	*		*	*			*		*		*	
	a13-1	*		*				*		*			
	a19-1	*		*			*	*		*			
	a19-2	*		*			*	*		*			
	a19-3	*		*			*	*		*			
Intellectual Skills	**b13-1**	*		*			*	*		*			
	b13-2	*		*			*	*		*			
	b13-3	*		*			*	*		*			
	b16-1	*		*	*	*	*		*	*			
	b16-2	*		*	*	*	*		*	*			
	b16-3	*		*	*	*	*		*	*			
Professional Skills	**c16-1**						*						
	c16-2						*						
	c17-1	*		*	*		*						
General Skills	**d1-1**	*		*		*	*	*	*				
	d1-2	*		*		*	*	*	*				
	d3-1	*		*	*		*	*	*	*		*	
	d3-2	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (written)	**70**	**70%**	**16th**
Mid term laboratory assessment (Oral)	**-**	**-**	**-**
End of term laboratory examination (Lab)	**-**	**-**	**-**
Mid term written Examination1 (Term Work)	**10**	**10%**	**8th**
Mid term written Examination 2 (Term Work)	**10**	**10%**	**12th**
Tutorial and report assessment (Term Work)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Computer Usage:

Students are expected to use computers to prepare reports and conduct some out-of-class assignments. Computers will be used to analyze data, prepare engineering graphs for reports, and perform analytic studies of electrical motor and generator performances. Knowledge of word-processing, spreadsheet, and mathematical analysis software (viz., Mathcad, Matlab, Simulink, etc.) is required.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation the reports. At least one oral report should involve a significant component of library research to encourage this component of study.

12- List of references:

1.P. Vas, Vector Control of A.C. Machines, Clarendon Press, Oxford 1990.
2. D.W. Novotny, T.A. Lipo, "Vector control and dynamics of AC drives", Clarendon press, 1996.
3. Denis O'Kelly, Performance and Control of Electrical Machines, Publisher: Mc-Graw Hill Book Company, 1991.
4. Dino Zorbas, Electric Machines, Principles, Applications, and Control Schematics, Publisher: West Publishing Company, 1989.
5. C.V. Jones, The Unified Theory of Electrical Machines, Butterworth, London, 1967.
6. J.M.D. Murphy & F.G. Turnbull, Power Electronic Control of AC motors, Pergamon Press, 1988.
7. W. Leonhard, Control of Electrical Drives, Springer Verlag, 1985.
8. P.C. Krause, Analysis of Electric Machinery, McGraw Hill, New York, 1987.
9. Sen, P. C., " Principles of Electric Machines and Power Electronics", Second Edition, (Book) John Wiley & Sons, Inc. 1977.

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Course coordinator Head of the Department

Dr. Hady El-Sayed El GendiProf. Dr. Gamal Abel-Wahab Morsy

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2010-2011
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Power systems stability* ***Code Symbol:****ELE425B* ***Elective course(8)***
Element of program:*Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*-*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Disccretionry subjects	Total
---	---	25%	75%	---	---	---	100%

B- Professional Information

2- Course Aims:

This course introduces the student to assess power system stability. Different load models and simplified criteria are devised. Effect of control systems on transient and dynamic stability is also included.

3- Course Objectives:

- Demonstration of the knowledge and understanding of the stability problem in power system.
- Definition of the dynamic, transient stability and stability margin.
- Modeling of system components.
- Analysis the dynamical systems.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A17, A18, A23	B13, B14	C1, C2	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A17)Explain Basic electrical power system theory	a17-1)Explain the dynamic and transient stability problem a17-2)Demonstrate the main Characteristics of Basic Elements of Electrical Systems
	A18)Apply Theories and techniques for calculating short circuit, motor starting, and voltage drop	a18-1)Apply mathematical criteria for identifying the stability state of the system.
	A23)Generalize principles of performing electrical system calculations, including load flow, earthing and equipment sizing	a23-1)Explain the dynamic model of system components.
Intellectual skills	B13)Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1)Formulate the problem of dynamic and transient stability
	B14)Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.	b14-1)Analyze the system response for dynamic and transient disturbances b14-2)Analyze the effects of Governor and Excitation Control
Professional skills	C1)Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Apply mathematical and numerical methods to formulate and analyze the system performance.
	C2)Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1)Define stability margin
General skills	D4)Demonstrate efficient IT capabilities.	d4-1)Use of computer software packages to formulate and analyze different problems

6- Course Topics.

Topic No.	General Topics	Weeks
1	General characteristics of modern power systems.	1
2	Introduction to the power system stability problems.	2
3	Synchronous machine representation in stability studies.	3
4	Power system loads. Voltage dependence of loads, static load models. Dynamic load models.	4-5
5	Small signal stability of power systems.	6-7
6	Transient stability of power systems.	9-11
7	Voltage stability of power systems, power- voltage relationship, V-Q curves	12-13
8	Stability of induction motors.	14
9	Methods of improving power system stability	15

8- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	General characteristics of modern power systems.	4	2	2	a17-1, a17-2
WEEK-2	Introduction to the power system stability problems.	4	2	2	a17-1, a17-2, b14-1
WEEK-3	Synchronous machine representation in stability studies.	4	2	2	a17-1, a17-2, b14-1
WEEKS-4-5	Power system loads. Voltage dependence of loads, static load models. Dynamic load models.	4	2	2	a17-1, a17-2, b14-1
WEEKS-6-7	Small signal stability of power systems.	4	2	2	a17-1, a17-2, b14-1
WEEK-8	Midterm written examination				
WEEKS-9-11	Transient stability of power systems.	4	2	2	a18-1, c2-1
WEEKS-12-13	Voltage stability of power systems, power- voltage relationship, V-Q curves	4	2	2	a18-1, b13-1, b14-1, c1-1
WEEK-14	Stability of induction motors.	4	2	2	a18-1, b13-1, b14-1, c1-1
WEEK-15	Methods of improving power system stability	4	2	2	a23-1, b13-1, c1-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a17-1**	*		*										
	a17-2	*		*										
	a18-1	*			*	*								
	a23-1	*		*	*	*							*	
Intelectual Skills	**b13-1**	*		*	*	*							*	
	b14-1	*			*	*							*	
	b14-2	*			*	*							*	
Professional Skills	**c1-1**	*			*	*							*	
	c2-1	*		*	*	*								
General Skills	**d4-1**				*	*							*	

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	**a17-1**	*					*						
	a17-2	*					*						
	a18-1	*			*								
	a23-1	*			*								
Intellectual Skills	**b13-1**	*			*								
	b14-1	*			*								
	b14-2	*			*								
Professional Skills	**c1-1**	*			*								
	c2-1	*			*								
General Skills	**d4-1**				*								

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term laboratory examination (*Lab*)		**--**	**16th**
Mid term written Examination (*Term Work*)	**15**	**15%**	**8th**
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**Weekly**
laboratory assessment (*Term Work*)		**--**	**Weekly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

12-1Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports and oral presentation.

13- List of references:

1-Kundw, "Power System Stability and Control", 1994
2-T.V. Cutsem , "Voltage Stability of eletric Power systems".
3-M.Z.El-Sadek, "Power System Voltage Stability and Power Quality",

Weddy, McGrow Hill

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Course coordinator **Head of the Department**

Prof. Hassan Shaban Mohamed **Prof. Dr. Gamal Abel-Wahab Morsy**

Electrical Eng. Dept.	**Academic year: 2011-2012**
Faculty of Engineering	**Academic term: 2nd Term**
Minoufiya University	**Academic level: 4th ELEC.**

Course Specification

A-Basic Information

Title:* Insulation Coordination** ***Code Symbol:*ELE425C** ***Elective course(8)

***Element of program:*Minor** ***Date of specification approval:* 2011**

Department offering the course:* Electrical Eng. Dept.** ***By law 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*-*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

The aims of this course are to provide the student, upon completing the Electrical Engineering Program, with the basic knowledge and concepts of insulation coordination. This course will also provide students with the ability to compute the length of transmission lines insulations and design substation shielding system.Select a station class arrester and establish the arrester protective characteristics through certain testsare also provided.Select the basic impulse levels of the station equipment and clearances is attained in this course.

3- Course Objectives:

- Understand insulation coordination principles.
- Identify characteristics of insulation strength.
- Understand switching overvoltage for transmission lines and substation.
- Demonstrate different types of lightning flashes and their impact.
- Apply substation shielding using shield wires and masts.
- Model metal oxide surge arrester.
- Understand the principle of station lightning insulation coordination.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A1, A5 , A8	B5	C2, C6	D1, D6

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1) Demonstrate Concepts and theories of mathematics and sciences, appropriate to electrical engineering.	a1-1) Define the insulation coordination and understand its philosophy and role. a1-2) Demonstrate causes and characteristic of overvoltage. a1-3) Identify the different insulation types and their strengths.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1)Realize the lightning stroke mechanism and the stages in the development of the upward channel.
	A8) Explain Current engineering technologies as related to electrical engineering.	a8-1)Recognize the general characteristics of the metal oxide surge arrester.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1) Estimate the critical flashovers for switching impulse as well as lightning impulse and calculate the ph-ph and ph-Gnd switching surge flashover rate. b5-2) Calculate the phase-ground and phase-phase basic switching levels and clearances for transmission lines and substations under several conditions b5-3) Estimate the ground flash density in flashes/km2-year, the number of strokes/100 km-year to a line and the number of strokes/year to mast. b5-4) Calculate the discharge voltage and current of the arrester. b5-5) Estimate the surge voltage within the gas-insulated system
Professional skills	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1) Design the line for appropriate switching surge flashover. c2-2) Establish the substation shielding. c2-3) Evaluate the maximum separation distance between the arrester bus connection and the protected equipment.
	C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1) Utilize Electromagnetic Transient Analysis packages.
General skills	D1)Collaborate effectively within multidisciplinary team	d1-1) Work in teamwork.
	D6) Effectively manage tasks, time, and resources	d6-1) Use specialized books and related internet websites to prepare reports.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Insulation Strength	1-4
2nd	Phase-Ground and Phase-Phase Switching Overvoltage, Transmission Lines	5-7
4th	Switching Overvoltage, Substations	9
5th	The lightning Flash	10-11
6th	Shielding of Substations	12
7th	Metal Oxide Surge Arresters and Station Lightning Insulation Coordination	13-15

7- Course Topics/hours/ILOSStation Lightning Insulation Coordination

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	**Introduction**: Insulation coordination concepts, overvoltage causes and protection.	4	2	2	a1-1 , a1-2, d1-1, d6-1
WEEK-2	**Specifying the Insulation Strength**: definitions of apparatus strength, the basic impulse level and the basic switching level.	4	2	2	a1-3, d1-1, d6-1
WEEK-3	**Insulation Strength Characteristics**: Switching impulse strength of towers and post insulators, deterministic design of transmission lines.	4	2	2	a1-3 , c2-1, d1-1, d6-1
WEEK-4	**Insulation Strength Characteristics Cont.**: Lightning impulse (LI) strength of wood, porcelain and fiberglass, effects of tail on critical flashover, LI flashover mechanism.	4	2	2	a5-1 , b5-1
WEEK-5	**Phase-Ground Switching Overvoltages, Transmission Lines**: The concept- using histogram and continuous distribution of switching overvoltage.	4	2	2	b5-2
WEEK-6	**Phase-Ground Switching Overvoltage ,Transmission Lines Cont.**: Sensitive analysis and estimating of switching surge flashover rate, effect of wind on insulator strings, factors of design.	4	2	2	b5-1, b5-2 , c2-1
WEEK-7	**Phase-Phase Switching Overvoltage Transmission Lines**: Phase-phase insulation strength and switching overvoltage, calculation of the phase-phase switching surge flashover rate for internal and external insulations, simplifying the stress from two variables to one variable.	4	2	2	b5-1, b5-2, c2-1
WEEK-8	Midterm written examination				
WEEK-9	**Switching Overvoltage, Substations**: Phase-ground and Phase-phase insulation coordination.	4	2	2	a1-1 , d1-1, d6-1
WEEK-10	**The lightning Flash**: The stroke mechanism, types of lightning flashes, parameters of the flash, Berger's data, the search for the crest current distribution, negative upward flashes, positive flashes, multiple strokes.	4	2	2	a5-1 , b5-3
WEEK-11	**The lightning Flash Cont.**:Lightning incidence, geometric model of last step of the lightning stroke, striking distance equations, number of flashes to the ground wire.	4	2	2	b5-3

WEEK-12	**<u>Shielding of Substations</u>**: Basis of design, striking distance equations, shielded using shield wires, shielded using masts.	4	2	2		c2-2 , d1-1, d6-1
WEEK-13	**<u>Metal Oxide Surge Arresters</u>**:General Chs., durability/capability tests, Protective Chs., determining the arrester rating.	4	2	2		a8-1
WEEK-14	**<u>Metal Oxide Surge Arresters cont.</u>**:Calculating the discharge voltage and current for lightning impulses, distribution systems, IEC standards: capability tests- protective characteristics and arrester ratings selection.	4	2	2		b5-4, c2-3, c6-1,d1-1, d6-1
WEEK-15	**<u>Station Lightning Insulation Coordination</u>**: Crest voltage at equipment, insulation strength and its selection, standard basic impulse levels, application of simplified method, gas-insulated station.	4	2	2		a1-1, b5-5

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	*		*										
	a1-2	*								*	*			
	a1-3	*								*	*			
	a5-1	*		*										
	a8-1	*		*										
Intelectual Skills	**b5-1**	*		*	*	*								
	b5-2	*		*	*	*								
	b5-3	*		*	*	*								
	b5-4	*		*	*	*								
	b5-5	*		*	*	*								
Professional Skills	**c2-1**	*		*	*	*								
	c2-2	*		*	*	*								
	c2-3	*		*	*	*								
	c6-1	*		*	*	*								
General Skills	**d1-1**		*							*	*			
	d6-1		*							*	*			

<u>*9- Teaching and Learning Methods for Low Capacity and Outstanding Students:*</u>

For low capacity students	Assign a portion of the office hours for those students.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	*											
	a1-2	*					*						
	a1-3	*					*						
	a5-1	*											
	a8-1	*											
Intellectual Skills	b5-1	*			*								
	b5-2	*			*								
	b5-3	*			*								
	b5-4	*			*								
	b5-5	*			*								
Professional Skills	c2-1	*											
	c2-2	*											
	c2-3	*											
	c6-1	*											
General Skills	D1-1				*		*						
	D6-1				*		*						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
Mid term laboratory assessment (*Oral*)	-	-	-
End of term laboratory examination (*Lab*)	-	-	-
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laptop, data show and white board.

11-2ATP/EMTP and MATLAB packages.

12- List of references:

1-A. R. Hileman, “Insulation Coordination for Power Systems”, USA, 1999.

2-E. Kuffel, W.S. Zaengl and J. Kuffel, “High Voltage Engineering Fundamentals”, Butterworth-Heinemann , 2000.

3-IEEE Std IEEE Standard for Insulation Co-ordination Definitions, Principles and Rules, 2010.

Course coordinator **Head of Department**

Prof. Dr. Mohamed IzzularabProf. Dr. Gamal Abel-Wahab Morsy

Dr. Nehmdoh Sabiha

Electrical Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic term: 2nd Term
Academic level: 4th ELEC.

Course Specification

A-Basic Information

Title: *Static Relays and Computer Applications to Protection.* ***Code Symbol:*** *ELE425D* ***Elective course(8)***
Element of program: *Minor* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law*** *2011*

Lecture	Tutorial	Laboratory	Total
2	2	0	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is intended to cover firstly the fundamental knowledge of static relays considering their benefits and advantages over the conventional electromechanical ones. Some details about their construction and function building are also given. Second, the course introduces deeply the art on "digital protection" including construction, signal processing, DFT and FFT transforms, microprocessor system construction, Programming and function building ... etc. Under the condition of the student progress in Matlab programming, miscellaneous algorithms is to be implemented for fault detections and fault locations considering digital recorder fault data.

3- Course Objectives:

The objective of this course is to attain the following points:

- Differences between electromagnetic, static and digital relays concerning the construction, protection function implementation and benefits.
- Digital extraction of the fault features.
- Comparing between different signal processing algorithms for the digital protection applications.
- Digital fault location algorithms.

4- Relationship between the course and the program

Field	National Academic Reference Standard (NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving.	A8, A13	B3, B12	C7, C17	D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	**A8)** Explain Current engineering technologies as related to electrical engineering.	**a8.1)** Explain relaying in the form of device and the corresponding types.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	**a13.1)** Recognize Digital Signal Processing applications for power system protection.
Intellectual skills	**B3)** Think in a creative and innovative way in problem solving and design.	**b3.1)** Design and implement Signal Processing techniques for phasor extraction.
	B12) Create systematic and methodic approaches when dealing with new and advancing technology.	**b12.1)** Design and implement a numerical calculation of the fault location.
Professional skills	**C7)** Apply numerical modeling methods to engineering problems.	**c7.1)** Numerical implementation of protection functions for digital relays.
	C17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.	**c17.1)** Program algorithms for fault feature extraction.
General skills	**D8)** Acquire entrepreneurial skills.	**d8.1)** Acquire protection engineering profession and thinking.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Relays construction and comparison.	1-6
2nd	Digital signal processing for fault feature extraction.	7-11
3rd	Digital signal fault location.	12,14
4th	Recent trends for numerical relays.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	General Introduction: Course aims, relay generations, development and classifications.	4	2	2	a8.1, d8.1
WEEK-2	Electromechanical relays: classifications, constructions, and operation.	4	2	2	a8.1
WEEK-3	Static relays: Basic components and Classifications.	4	2	2	a8.1
WEEK-4	Static relays: protection functions, advantages, disadvantages and limitations.	4	2	2	a8.1
WEEK-5	Numerical relays: Introduction, Characteristics, typical architecture, main modules, benefits and shortcomings.	4	2	2	a8.1, d8.1
WEEK-6	Numerical relays: Basic components (signal conditioning, MOV, filters, ADC, μprocessor, memory, communication ...etc).	4	2	2	a8.1, d8.1

WEEK-7	Signal processing: Digital concepts of fault feature extraction. Two-sample algorithm. Three-sample algorithm. Mann-Morrison. Prodar 70. Peak-based Predictive calculation.	4	2	2	a13.1, b3.1, c7.1, c17.1
WEEK-8	First midterm exam.				
WEEK-9	Signal processing: Introduction on DFT. DFT Basis functions. DFT Analysis and calculation using correlation. Inverse DFT. Polar Nuisances. DFT applications. DFT pitfalls.	4	2	2	a13.1, b3.1, c7.1, c17.1
WEEK-10	Signal processing: Half cycle DFT. Recursive DFT. Symmetrical components Discrete Fourier Transform (SCDFT). Frequency estimation.	4	2	2	a13.1, b3.1, c7.1, c17.1
WEEK-11	Signal processing: Least Square (LSQ) Technique. KALMAN Filter.	4	2	2	a13.1, b3.1, c7.1, c17.1
WEEK-12	Signal processing: Differential Equation Algorithm for single-phase and three-phase transmission system.	4	2	2	a13.1, b3.1, c7.1, c17.1
WEEK-13	Second midterm exam.				
WEEK-14	Signal processing: Digital fault locator.	4	2	2	a13.1, b3.1, c7.1, c17.1
WEEK-15	Recent trends for numerical protection.	4	2	2	a13.1, d8.1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a8.1**	*		*										
	a13.1	*			*									
Intellectual Skills	**b131**	*			*									
	b12.1	*			*		*							
Professional Skills	**c7.1**	*			*									
	c17.1	*			*									
General Skills	**d8.1**	*		*										

<u>9- Teaching and Learning Methods for Low Capacity and Outstanding Students:</u>

For low capacity students	Arrange meetings for more discussion and declaration.
	Repeat the explanation based on their request.
	Face-to-face intermediate solving the problems and quizzes during the tutorial scheduled time in order to improve their skills.
For outstanding students	Hand out programmed project assignments.
	Give them some topics searched by the internet and conduct presentation

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a8.1**	*								*			
	a13.1	*			*								
Intellectual Skills	**b131**	*			*			*					
	b12.1	*			*			*					
Professional Skills	**c7.1**	*			*								
	c17.1	*			*								
General Skills	**d8.1**	*								*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**70**	**70%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**10**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**10**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**
Total	**100**	**100%**	

11- Facilities required for teaching and learning:

12-1Teaching Class:

The teachers are going to use computer for the lecture presentation using power point office program. Also, the teachers will teach new software such as ATP/EMTP and ETAP. So, hanged digital LCD is required to facilitate the communication with the students.

Furthermore, students are expected to use computers to conduct some out-of-class assignments. Computers will be used to prepare engineering graphs for reports, and to run some simulation cases for power systems using Matlab program.

11-2Library Usage:

The books in the library are obsolete and the recent books are rare. More financial support should be directed to the electronic library to access on the ieeexplore. Also, it is required to buy several versions of the recent books such as: **1-** A.G. Phadke and J. S. Thorp "Computer Relaying for Power Systems", A John Wiley and Sons, Ltd., 2009.

12- List of references:

1-A.G. Phadke and J. S. Thorp "Computer Relaying for Power Systems", A John Wiley and Sons, Ltd., 2009,
2-A. Johns and S. Salman, "Digital Protection for Power Systems", 1995.
3-J. B. Gupta "Switchgear and Protection: Chapter 7" 2nd Edition, 2004.
4-Power System Relaying Committee, WG -I16 "Understanding Microprocessor-Based Technology Applied to Relaying" Pages 21-23, Feb. 2004.

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Course coordinator	**Head of the Department**
Dr. Tamer A. Kawady	**Prof. Dr. Gamal Abel-Wahab Morsy**
Dr. Nagy I. Elkalashy	

Electrical Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th year**

Course Specification

A-Basic Information

Title: *Robotics* ***Code Symbol:*** *ELE425E*
Element of program: *Major* ***Date of specification approval:*** *2011*
Department offering the course: *Electrical Eng. Dept.* ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	2	----	4

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
--	--	25%	75%	---	---	---	100%

B-Professional Information

2- Course Aims:

This course is designed to give students of Electrical Engineering a basic knowledge of Robotics, understand the implications of the use of robotics in industry and society, understand the numeros and distinct technical systems used in modern robot design.

3- Course Objectives:

Knowing the basic principles of Robotics constructions (links, joints, sensors, frames), describe and analyze rigid motion. .

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A15	B5,B15	C1,C15	D3, D7

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15.1)Explain principles of operation and performance specifications of a Robot. a15.2)Explainbasic principles of Robotics constructions (links, joints, sensors, frames), describe and analyze rigid motion.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1) Solve forward and Inverse Kinematics equations of a Robot.

	B15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	b15-1)Design a robot, and use sensors for performing robotic tasks.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Access the internet and search for information to obtain knowledge about Robotic performance.
	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	c15-1)Design a robot, anduse sensors for performing robotic tasks.
General skills	D3) Communicate effectively. .	d3-1)Use information technologies effectively
	D7) Search for information and engage in life-long self learning discipline	d7-1) Collect data, draw, (block diagram, charts, curves) and interpret data of a Robot. d7.2) Gain experience about Robotic systems, hardware.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to robotics- What is a robot? A brief History of robotics	1
2nd	Basic parts of a robot (Locomotion system, Power supply system, actuators, sensory devices for feedback, sensor data processing unit and control system)	2-3
3rd	Classification of robots, and justifying the use of robots.	4
4th	Basic kinematics, introduction, reference frames, translation, rotation.	5
5th	Rigid body motion, velocity and acceleration for general rigid motion, relative motion and homogeneous coordinates	6-7
6th	Robot kinematics: DH framework, forward kinematics, link description and connection. Manipulator kinematics.	9-11
7th	Inverse kinematics	12
8th	Robot control architectures	13-14
9th	Robotic Assembly for the 21st Century	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS		COURSE ILOS COVERED (BY NO.)
			Lec.	**Tut.**	
WEEK-1	Introduction to robotics- What is a robot? A brief History of robotics.	4	2	2	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-2,3	Basic parts of a robot (Locomotion system, Power supply system, actuators, sensory devices for feedback, sensor data processing unit and control system)	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEK-4	Classification of robots, and justifying the use of robots.	4	2	2	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEK-5	Basic kinematics, introduction, reference frames, translation, rotation.	4	2	2	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-6,7	Rigid body motion, velocity and acceleration for general rigid motion, relative motion and homogeneous coordinates	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEK-8	Midterm written examination				
WEEKS-9,11	Robot kinematics: DH framework, forward kinematics, link description and connection. Manipulator kinematics.	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEK-12	Inverse kinematics	4	2	2	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEKS-13,14	Robot control architectures	8	4	4	a2-1,a2-2, b5-1, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2
WEEK-15	Robotic Assembly for the 21st Century	4	2	2	a2-1,a2-2, b15-1, c1-1 , c15-1, d3-1, d7-1, d7-2

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Research and Reporting**	**Group Working**	**Discovering**	**Simulation and Modelling**	**Lab. Experiments**
Knowledge & understanding	**a2-1**	*		*	*	*	*			*	*			*
	a2-2	*		*	*	*	*			*	*			*
Intellectual Skills	**B5-1**	*	*	*	*	*		*		*	*		*	*
	B15-1	*	*	*	*	*		*		*	*		*	*
Professional Skills	**c1-1**	*	*	*	*	*	*	*	*	*	*		*	
	C15-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	**d3-1**	*	*	*	*	*	*	*	*	*	*	*		
	D7-1	*	*	*	*	*	*	*	*	*	*			
	D7-2	*	*	*	*	*	*	*	*	*	*			

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	*Tutorial Assessment*	*Project Assessment*	*Modelling*	*Research & Report*	*Quizzes*	*Presentation*	*Discussion*	*Laboratory Test*	*Home Exam*	*Monitoring*
Knowledge& Understanding	**a2-1**	*		*	*	*	*	*		*		*	
	a2-2	*		*	*	*	*	*		*		*	
Intellectual Skills	**B5-1**	*		*	*	*	*	*		*			
	B15-1	*		*	*	*	*	*	*	*			
Professional Skills	**c1-1**	*		*	*		*	*	*	*		*	
	C15-1	*					*	*	*				
General Skills	**d3-1**	*		*	*		*	*	*	*		*	
	D7-1	*		*	*		*	*	*	*		*	
	D7-2	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
Midterm laboratory assessment (*Oral*)	**-**	**-**	**-**
End of term laboratory examination (*Lab.*)	**-**	**-**	**-**
Midterm written Examination 1 (*Term Work*)	**10**	**10%**	**8th**
Midterm written Examination 2 (*Term Work*)	**10**	**10%**	**13th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**Weekly**

Total	**100**	**100%**	

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Robotic Laboratory is used to help the students for study Robot performance.

11-2Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1- SCHILLING, R. J., "Fundamentals of robotics*: Analysis and control*", Prentice Hall (New Jersey), 1990
2- Ming Xie , "Fundamentals of robotics", Imperial College Press, 2003
Singapore-MIT Alliance& Nanyang Technological University, Singapore, 2003
3- Lung-Wen Tsai, "Robot Analysis", Wiley Interscience, 1999
4- Craig, John,"Introduction to Robotics", 3rd edition, Pearson Prentice Hall, 2004

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Course coordinator **Head of the Department**

Prof. Dr. Ashraf Salah El Din Zein El DinProf. Dr. Gamal Abel-Wahab Morsy

Additional Course

Basic Engineering Science. Dept. Academic year: 2011-2012
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: Preparatory**

Course Specification

A-Basic Information

Title: ***Human Rights*** ***Code Symbol:BES000***
Element of program: ***Major*** ***Date of specification approval: 2011***
Department offering the course: Basic Engineering Science***. Dept.*** ***By law 2006***

Lecture	Tutorial	Laboratory	Total
2	---	----	2

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
100%	-----	-----	------	-------	------	-------	100%

B-Professional Information

2- Course Aims:

This course introduces students to the development of universal human rights norms in the international system; efforts to implement these at the national, regional and international levels; and contemporary debates concerning the universal implementation of human rights. The course explores human rights in the context of contemporary challenges to an international system organized on the principle of 'state sovereignty'; and to foreign policy making based on particular conceptions of 'national interest'.

3- Course Objectives:

- To understand the basics concept of human rights.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A9	B4	C8	D1,D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A9) Discuss Topics related to humanitarian interests and moral issues.	a9-1)Explain the development of human rights in the international system, and how this has culminated in current international treaties and covenants. a9-2)Examine international, regional and national mechanisms that have been developed to implement human rights norms. a9-3)Explore the policy dimensions of human rights in terms of contemporary debates concerning their universal implementation.
Intellectual Skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
Practical and Professional Skills	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	c8-1)To provide students with elements of social sciences and humanities studies so that they understand the necessities for professionalism, ethical responsibilities.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Function professionally as an individual and within a team.
	D3) Communicate effectively.	d3-1)Communicate effectively with clear, critical thinking and skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction: The Development of Human Rights	1-2
2nd	Human Rights & International Law	3-4
3rd	The UN System - Non-treaty Based Mechanisms	5-6
4th	The UN System -Treaty Based Mechanisms	7
5th	Regional Implementation of International Human Rights Standards - The Americas	9
6th	Regional Implementation of International Human Rights Standards - Europe&Africa	10
7th	The Role of Non-Government Organizations	11
8th	National Implementation of International Human Rights Standards	12
9th	International War Crimes & Criminal Tribunals	13
10th	Minority Rights and the Right to Self-Determination	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS	COURSE ILOS COVERED (BY NO.)
			Lec.	
WEEKS-1,2	Introduction: The Development of Human Rights	4	4	a9-1
WEEKS-3,4	Human Rights & International Law	4	4	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEKS-5,6	The UN System - Non-treaty Based Mechanisms	4	4	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEK-7	The UN System -Treaty Based Mechanisms	2	2	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEK-8	Midterm of first Term (written examination)			
WEEK-9	Regional Implementation of International Human Rights Standards - The Americas	2	2	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEK-10	Regional Implementation of International Human Rights Standards - Europe&Africa	2	2	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEK-11	The Role of Non-Government Organizations	2	2	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEK-12	National Implementation of International Human Rights Standards	2	2	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEK-13	International War Crimes & Criminal Tribunals	2	2	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1
WEEKS-14-15	Minority Rights and the Right to Self-Determination	4	4	a9-1,a9-2,a9-3,b4-1, c8-1,d1-1,d3-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	**a9-1**	*		*			*				*			
	a9-2	*		*			*				*			
	a9-3	*		*			*				*			
Intellectual Skills	**b4-1**	*		*							*			
Professional Skills	**C8-1**	*	*	*							*	*		
General Skills	**d1-1**	*	*	*		*	*				*	*		
	d3-1	*	*	*		*	*				*	*		
	d7-1	*		*			*					*		

9- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

10- Assessment

10.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	***Tutorial Assessment***	***Project Assessment***	***Modelling***	***Research & Report***	***Quizzes***	***Presentation***	***Discussion***	***Laboratory Test***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a9-1**	*	*							*			
	a9-2	*	*							*			
	a9-3	*	*							*			
Intellectual Skills	**b4-1**	*							*	*		*	
Professional Skills	**C8-1**								*	*			
General Skills	**d1-1**	*	*			*		*	*				
	d3-1	*	*					*	*	*		*	
	d7-1	*	*					*	*	*			

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final-Term Examination	**50**	**100%**	**16th**
Mid-Term Examination (Written)	**----**	**----**	**----**
Term work (Tutorial and report assessment)	**----**	**---**	**----**
Total	**50**	**100%**	

11- Facilities required for teaching and learning:

11-1 Laboratory Usage:

INTERNET Laboratory is used to help the students for searching of all information about Human rights Internationally.

11-2 Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports and oral presentation. At least one oral presentation should involve a significant component of library research to encourage this component of study.

12- List of references:

1-Henry Steiner and Phillip Alston, *International Human Rights in Context: Law, Politics, Morals* (Oxford: Clarendon Press, 1996)
2-Jack Donnelly, *International Human Rights*, 2nd ed. (Westview Press, 1998)
3-R.P. Claude & B.H. *Weston, eds. Human Rights in the World Community*. 2nd ed. (Philadelphia: University of Pennsylvania Press, 1992)
4-Hurst Hannum, *Guide to International Human Rights Practice*, 2nd ed. (University of Pennyslvannia Press, 1992)
Scott Davidson, *Human Rights* (London: Open University Press, 1993)

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Course coordinator	**Head of the Department**
Prof. Dr. Gamal Ibrahim Mohamed	Prof. Dr. Gamal Ibrahim Mohamed

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