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كلية الهندسة بشبين الكوم

توصيف المقررات

برنامج

الهندسة الكهربائية والحاسبات

Course Specification

A-Basic Information

Title:English Language

Code Symbol:GEN001

Element of program:Major

Date of specification approval:2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	2	----	4

1- Course Subject Area:

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

B-Professional Information

2- Course Aims:

This course is designed to provide the knowledge and skills required to read and write proper scientific English. The students are supposed to explore the importance of figurative language, typical English writing errors, and practice effective reading skills and get how to organize written materials.

3- Course Objectives:

- To teach students the fundamental concepts of how to read scientific passages and get the knack of how scientific passages and reports are organized and written.
- To give the students a proper chance to know how scientific statements are written, and what differences are there between fronted and non-fronted scientific statements.
- To expose the students to typical English writing and reading errors and how to get rid of them upon practicing spoken and written English.

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	C4,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 of Introduction to Scientific Statements. a10-2)Demonstrate knowledge and understanding of Dimensions and Properties of engineering subjects
Intellectual skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1)Write and arrange scientific passages about engineering materials. b4-2)Give oral presentations using a variety of visual aids
Professional skills	C4) Practice the neatness and aesthetics in design and approach.	c4-1)Give oral presentations using a variety of visual aids
	C12) Prepare and present technical reports.	c12-1) Read, prepare and write scientific reports.
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 diagrams, charts and curves) and interpret data.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Preview of the English Language First Principles on writing effective sentences using proper grammar rules	1
2nd	Combinations and Reductions The Accuracy and Combinations	2
3rd	Variability, Insisting on the Meanings	3
4th	The Principles of Writing Effective Paragraphs	4
5th	Different Ways for Interviewing Persons	5
6th	Using some Verbs with Similar Meaning	6
7th	Sensitivity and Diplomacy in Requests Rules of Easy Reading	7
8th	Writing and Arranging the Subject Form	9

9th	Reviewing and Editing	10
10th	Introduction to Scientific Statements <i>Be</i> and <i>have</i> in scientific statements Statements requiring the Present Simple <i>Exercises</i>	11
11th	Dimensions and Properties 'Fronted' statements Qualified Statements of Dimensions <i>Exercises</i>	12
12th	Comparisons and Modals Simple statements of comparison Qualified comparative statements A note on modals in scientific English	13
13th	Impersonal Scientific Statements The Passive Form of the statements Use of the passive <i>By</i> and the agent <i>Must, should</i> , and the passive Passives and infinitives Passive and active	14
14th	Technical Readings Four different Engineering topics	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Preview of the English Language First Principles on writing effective sentences using proper grammar rules	4	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	Combinations and Reductions The Accuracy and Combinations	4	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	Variability, Insisting on the Meanings	4	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	The Principles of Writing Effective Paragraphs	4	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	Different Ways for Interviewing Persons	4	2	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c4-1,c12-1, c12-2, d3-1, d3-2, d3-3,d9-1,d9-2
WEEKS-6	Using some Verbs with Similar Meaning	4	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	Sensitivity and Diplomacy in Requests Rules of Easy Reading	4	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 Term (written examination)					
WEEK-9	Writing and Arranging the Subject Form	4	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	Reviewing and Editing	4	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	Introduction to Scientific Statements <i>Be</i> and <i>have</i> in scientific statements Statements requiring the Present Simple <i>Exercises</i>	4	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-12	Dimensions and Properties 'Fronted' statements Qualified Statements of Dimensions <i>Exercises</i>	4	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-13	Comparisons and Modals Simple statements of comparison Qualified comparative statements A note on modals in scientific English	4	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-14	Impersonal Scientific Statements The Passive Form of the statements Use of the passive <i>By</i> and the agent <i>Must, should</i> , and the passive Passives and infinitives Passive and active	4	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-15	Technical Readings Four different Engineering topics	4	2	2	--	a9-1, a10-1, a10-2, b4-1, b4-2, c4-1, 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	c4-1		*	*							*			
	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)		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	*	*				*			*			
	a10-1	*	*	*			*	*	*	*	*		
	a10-2	*	*	*			*	*	*	*	*		
Intellectual Skills	b4-1	*	*	*	*	*	*	*	*	*	*		
	b4-2	*	*	*	*	*	*	*	*	*	*		
Professional Skills	c4-1		*						*	*			
	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

English Laboratory is used to help the students in Listening and pronunciation.

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- Writing Scientific English, A textbook of English as a Foreign Language for students of Physical and Engineering Sciences, John Swales

2-Web sites related to the studied topics

Course coordinator

Head of the Department

Dr. Assim Abdul-Fattah Nabawi

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Introduction to Computer*

Code Symbol: *GEN002*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>-----</i>	<i>3</i>	<i>5</i>

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%	10%	40%	-----	40%	-----	-----	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,A25	B1,B8	C1,C6,C7	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)Computer hardware and software a2.2)Development of computer algorithm, flow charts and programs
	A25)Explain Quality assessment of computer systems.	a25-1)Explain the quality performance of hardware computer.
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) Knowing some facts about some applications using an appropriate high level programming.
General skills	D3) Communicate effectively.	d3-1 Use information technologies effectively
	D4) Demonstrate efficient IT capabilities.	d4-1) Collect data, draw, (block diagram, charts, curves) and interpret data. d4.2) Gain experience about numbering systems, hardware, software and problem solving.

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.	6-7
6th	ALGORITHMS AND FLOW CHARTS Development of algorithms- How problems can be solved- examples	9
7th	PROGRAMMING Introduction to programming – Input output statements- Examples	10-12
8th	Applications of programming	13
9th	Marketing of software Copyright of software	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 Types of computer and their features- classification of computers –computer generation-historical development of computers.	5	2	---	3	a2-1,a2-2, b1-1, c1-1, d3-1
WEEK-2	COMPUTER HARDWARE Hardware components – CPU – input devices(key board, mouse, .etc) – output devices(Printer, scanner,. etc) - Ports- units of measuring computer size	5	2	---	3	a2-1,a2-2, a25-1, b1-1, c1-1, d3-1
WEEK-3	COMPUTER SOFTWARE Classification of software- Operating systems- Application software0 Software generation.	5	2	---	3	a2-1,a2-2, b1-1, c1-1 d3-1
WEEKS-4,5	DOS (Basic differences between command line interface and GUI – DOS commands – Error messages).	5	2	---	3	a2-1,a2-2, b1-1, c1-1 d3-1
WEEKS-6,7	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.	10	4	---	6	a2-1,a2-2
WEEK-8	Midterm written examination					
WEEK-9	ALGORITHMS AND FLOW CHARTS Development of algorithms- How problems can be solved- examples	5	2	---	3	a2-1,a2-2, b1-1, b8-1 c1-1, c6-1, c7-1, d3-1, d4-1, d4-2
WEEKS-10-12	PROGRAMMING Introduction to programming – Input output statements- Examples	10	4	---	6	a2-1,a2-2, b1-1, b8-1 c1-1, c6-1, c7-1, d3-1, d4-1, d4-2
WEEK-13	Applications of programming	5	2	---	3	a2-1,a2-2, b1-1, b8-1 c1-1, c6-1, c7-1, d3-1, d4-1, d4-2
WEEKS-14-15	Marketing of software Copyright of software	10	4	---	6	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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a2-1	*		*	*	*	*			*	*			*
	a2-2	*		*	*	*	*			*	*			*
	a25-1	*												
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b8-1	*	*	*	*	*	*	*	*	*	*			*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c6-1	*	*	*	*	*	*	*	*	*	*		*	*
	c7-1	*	*		*	*		*	*	*			*	*
General Skills	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	*	*	*				*		*	*	*	
	a25-1	*											
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

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?](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.184...)

5- ICDL materials,

Course coordinator

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Human Rights*

Code Symbol: *GEN101*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *General Law Dept., Faculty of Law*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	---	----	<i>2</i>

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	B10	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	B10) Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1)Analyze and interpret data and evaluate results to support the engineering design problem.
Practical and Professional Skills	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	c8-1)Provide students with elements of social sciences and humanities studies so that they understand the necessities for professionalism, ethical responsibilities and the needs to function in multidisciplinary teams.
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.	Tut.	Lab.	
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,b10-1,c8-1,d1-1,d3-1
WEEKS-5,6	The UN System - Non-treaty Based Mechanisms	4	4	-	-	a9-1,a9-2,a9-3,b10-1,c8-1,d1-1,d3-1
WEEK-7	The UN System -Treaty Based Mechanisms	2	2	--	-	a5-1,a5-2,a5-2b1-1,b1-2,c1-1,c7-1,d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Regional Implementation of International Human Rights Standards - The Americas	2	2	--	-	a5-1,a5-2,a5-2b1-1,b1-2,c1-1,c7-1,d3-1
WEEK-10	Regional Implementation of International Human Rights Standards - Europe & Africa	2	2	--	-	a5-1,a5-2,a5-2b1-1,b1-2,c1-1,c7-1,d3-1
WEEK-11	The Role of Non-Government Organizations	2	2	--	-	a5-1,a5-2,a5-2b1-1,b1-2,c1-1,c7-1,d3-1
WEEK-12	National Implementation of International Human Rights Standards	2	2	--	-	a5-1,a5-2,a5-2b1-1,b1-2,c1-1,c7-1,d3-1
WEEK-13	International War Crimes & Criminal Tribunals	2	2	--	-	a5-1,a5-2,a5-2b1-1,b1-2,c1-1,c7-1,d3-1
WEEKS-14-15	Minority Rights and the Right to Self-Determination	4	4	-	-	a9-1,a9-2,a9-3,b10-1,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	b10-1	*		*	*			*	*		*			
Professional Skills	C8-1	*	*	*				*	*	*	*	*		
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		
	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	a9-1	*	*				*			*			
	a9-2	*	*				*			*			
	a9-3	*	*				*			*			
Intellectual Skills	b10-1	*		*	*		*		*	*		*	
Professional Skills	C8-1				*		*		*	*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

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 Pennsylvania Press, 1992)
- Scott Davidson, *Human Rights* (London: Open University Press, 1993)

Course coordinator

Head of the Department

Dr.Mahmoud EL Tahmoni

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Project Management

Code Symbol: GEN102

Element of program: Major

Date of specification approval: 2011

Department offering the course: Production and Mech. Design Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 teach students the fundamental of Project Management
- To develop ability to research the management of manufacturing processes and make a presentation.

3- Course Objectives:

- Apply knowledge of project management..
- Decision making and solving 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	A6,A7,A16	B9,B10	C9,C10	D1,D2,D5,D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A6) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1) Explain constraints of resources and project managements.
	A7) Remember Business and management principles relevant to engineering.	a7-1) Apply knowledge of project management.. a7-2) Decision making and solving problems.
	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) Select of quantitative and quantitative aspects of managements, decision making.
	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	C9) Demonstrate basic organizational and project management skills.	c9-1) Apply professional and ethical responsibility. c9-2) Use techniques, skills, and tools in engineering practice.
	C10) Apply quality assurance procedures and follow codes and standards.	c10-1) Apply quality assurance procedures and follow codes and standards.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Develop skills in team work.
	D2) Work in stressful environment and within constraints.	d2-1) Work in stressful environment and within constraints.
	D5) Lead and motivate individuals.	d5-1) Lead and motivate individuals.
	D8) Acquire entrepreneurial skills.	d8-1) Develop skills for project management.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to management	1
2 nd	Quantitative and quantitative aspects of managements, decision making.	2-4
3 rd	Man power allocation, and basics of project managements	5-7
4 th	Constraints of resources and project managements.	9-11
5 th	An example of software package used to manage projects.	12
6 th	Different applications of project management	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	Introduction to management	2	2	--	--	a7-1
WEEKS-2-4	Quantitative and quantitative aspects of managements, decision making.	6	6	--	--	a7-1, a7-2, b9-1, b10-1
WEEKS-5-7	Man power allocation, and basics of project managements	6	6	--	--	a6-1, a7-1, a7-2, a16-1, b10-1, c10-1, d1-1, d2-1, d5-1, d4-
WEEK-8	Midterm written examination					
WEEKS-9-11	Constrains of resources and project managements.	6	6	--	--	a6-1, a7-1, a7-2, a16-1, b10-1, c10-1, d1-1, d2-1, d5-1, d4-
WEES-12	An example of software package used to manage projects.	2	2	--	--	a7-1, a7-2, b10-1
WEEKS-13-15	Different applications of project management	6	6	--	--	a6-1, a7-1, a7-2, a16-1, b10-1, c10-1, d1-1, d2-1, d5-1, 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	*	*	*	*	*	*		*	*	*			
	a7-1	*		*						*	*			
	a7-2	*		*						*	*			
	a16-1	*		*		*		*	*		*			
Intellectual Skills	b9-1	*	*		*	*	*	*	*	*	*			
	b10-1	*		*	*			*	*		*			
Professional Skills	c9-1			*				*	*		*			
	c9-2			*				*	*		*			
	c10-1	*		*	*			*	*	*	*	*		
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		*
	d2-1	*	*	*			*	*	*	*	*	*		
	d5-1		*	*	*	*	*	*	*	*	*	*	*	*
	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	*		*			*	*	*	*	*		
	a7-1	*					*						*
	a7-2	*					*						*
	a16-1	*		*			*	*	*	*	*		
Intellectual Skills	b9-1	*		*	*		*	*	*	*		*	
	b10-1	*		*	*		*		*	*		*	*
Professional Skills	c9-1	*		*	*		*	*		*		*	*
	c9-2	*		*	*		*	*		*		*	*
	c10-1	*		*	*		*	*		*		*	*
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d2-1	*		*				*	*	*	*		
	d5-1	*	*	*	*	*	*	*	*	*	*	*	
	d8-1			*		*							

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in project management.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-H.G.Thusen, W.J.Fabrycky and G.I.Thusen, "Engineering Economy", Printice Hall, 1977 .

2-R.K.Signal and et., "Project Management", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana (INDIA), Third edition 2010

Course coordinator

Head of the Department

Dr. Mohamed Hany Azamel

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Presentation skills

Code Symbol: GEN201

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 enables the students to realizing Basics of effective presentations. On completing the course, the students will be able to know the main reasons for bore presentations, positive and negative sides of presentation, the main parts of presentations, audience analysis and types of audience, importance of body language, presentation timing, distinguish between presentation and interview and the main rules for giving good a presentations.

3- Course Objectives:

- Identify the essential components of a presentation and Benefits of a successful presentation
- Recognize audience analysis and control audience behavior.
- Discuss how People Remember, What They Forget
- Selecting Your Subject, Organizing information and timing the presentation
- Organize information in a clear and concise manner.
- Create an attention grabbing introduction.
- Implement techniques for varying vocal tones and body language.
- Develop strategies for handling hecklers, bullies, and other disruptive participants.
- Point out the benefits and pitfalls of various visual aid options and audience seating arrangements.
- Begin implementing goals created during the session.
- Staging the Presentation and setting The Question-and-Answer Session

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,A11,A28	B21	C21	D1,D3,D4,D5, D6,D7

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)Identify the four essential components of a presentation. a9-2)Describe an audience analysis and why it is a needed step in a presentation. a9-3)Create an attention grabbing introduction. a9-4)Implement techniques for varying vocal tones and body language. a9-5)Develop strategies for handling hecklers, bullies, and other disruptive participants. a9-6)Begin implementing goals created during the session.
	A11) Recognize Professional ethics and impacts of engineering solutions on society and environment	a11-1) Organize information in a clear and concise manner. a11-2)Point out the benefits and pitfalls of various visual aid options and audience seating arrangements.
	A28)Modern trends in information technology and its fundamental role in business enterprises	a28-1)Demonstrate understanding how to obtain modern trends in information technology using INTERNET.
Intellectual skills	B21)Innovating solutions based on non-traditional thinking and the use of latest technologies.	b21-1) Identifying and formulate engineering problems into presentation work with attractive and clear.
Professional skills	C21)Conducting user support activities competently.	c21-1) Prepare a presentation with attractive and clear.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Staging the Presentation and setting the Question-and-Answer Session.
	D3) Communicate effectively.	d3-1) Communicate with the audience analysis and control their behaviour.
	D4) Demonstrate efficient IT capabilities.	d4-1)Use information technologies effectively
	D5) Lead and motivate individuals.	d5-1) Recognize audience analysis and control audience behaviour
	D6) Effectively manage tasks, time, and resources	d6-1) Selecting Subject, Organizing information and timing the presentation
	D7) Search for information and engage in life-long self learning discipline.	d7-1) Selecting Your Subject, Organizing information and timing the presentation d7-2)Organize information in a clear and concise manner

6- Course Topics.

Topic No.	General Topics	Weeks
1	The Anatomy of a Successful Presentation and Benefits of a successful presentation	1
2	Audience analysis and controlling audience behavior	2
3	Effective presentations Requirements	3-4
4	Presentation and IT	5
5	How People Remember, What They Forget	6
6	Selecting Subject, Organizing information and timing the presentation	7
7	Preparing the presentation	9-10
8	Staging the Presentation and setting	11
9	The Question-and-Answer Session	12
10	Presentation projects(Training)	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 Anatomy of a Successful Presentation and Benefits of a successful presentation	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1
WEEK-2	Audience analysis and controlling audience behavior	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1
WEEKS-3-4	Effective presentations Requirements	8	4	4	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1
WEEK-5	Presentation and IT	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1
WEEK-6	How People Remember, What They Forget	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1, d1-1,d3-1
WEEK-7	Selecting Subject, Organizing information and timing the presentation	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1,d5-1
WEEK-8	Midterm written examination					
WEEK-9	Preparing the presentation	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1
WEEK-10	Staging the Presentation and setting	4	2	2	--	a9-1,a9-2, a9-3, a9-4, a9-5, a9-6, c21-1
WEEKS-11-12	The Question-and-Answer Session	8	4	4	--	a11-1, a11-2, a28-1, b21-1, c19-1, c21-1, d4-1,d6-1
WEEKS-13-15	Presentation projects(Training)	12	6	6	--	a9-1,a9-2, a9-3, a9-4, a9-5,a9-6, a11-1, a11-2, a28-1, b21-1, c19-1, c21-1, 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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a9-1	*		*			*	*			*			
	a9-2	*		*			*	*			*			
	a9-3	*		*			*	*			*			
	a9-4	*		*			*	*			*			
	a9-5	*		*			*	*			*			
	a9-6	*		*			*	*			*			
	a11-1	*		*			*	*		*	*			
	a11-2	*		*			*	*		*	*			
	a28-1	*	*	*	*	*		*		*				*
Intellectual Skills	b21-1	*	*		*	*	*			*			*	
Professional Skills	c19-1	*			*	*		*					*	*
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		*
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1		*	*	*	*	*	*	*	*	*	*	*	*
	d5-1		*	*	*	*	*	*	*	*	*	*	*	*
	d6-1	*		*				*	*	*	*			
	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	a9-1	*	*				*			*			*
	a9-2	*	*				*			*			*
	a9-3	*	*				*			*			*
	a9-4	*	*				*			*			*
	a9-5	*	*				*			*			*
	a9-6	*	*				*			*			*
	a11-1	*			*				*		*	*	*
	a11-2	*			*				*		*	*	*
	a28-1	*				*	*		*	*			*
Intellectual Skills	b21-1	*	*				*		*			*	*
Professional Skills	c19-1	*		*	*	*		*		*	*		*
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d3-1	*	*	*	*		*	*	*	*	*	*	*
	d4-1	*	*	*	*		*	*	*	*	*	*	
	d5-1	*	*	*	*	*	*	*	*	*	*	*	
	d6-1		*	*	*		*						
	d7-1	*		*	*		*	*	*	*		*	
	d7-2	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for applying different examples related to the course.

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-Suzy Siddons, "Presentation skills Handbook: How to Understand and Reach Your Audience for Maximum Impact and Success", London and Philadelphia, 2008

2-www.businesstrainingworks.com

3-<http://www.christianet.com/businesstraining/index.htm>

Course coordinator

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Foundation of Economics*

Code Symbol: *GEN202*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>--</i>	<i>4</i>

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 is an introductory course in the principles of economics. It seeks to introduce you to the ways in which economists view the world and to teach you to utilize these ways of thinking when you approach economic problems and questions. The course will introduce the basic economic concepts of scarcity, opportunity cost, and supply and demand analysis. The course will focus on a variety of microeconomic and macroeconomic topics including consumer behavior, the theory of the firm, the efficient allocation of resources, national income accounting, unemployment and inflation, monetary and fiscal policy, and international trade.

3- Course Objectives:

- Introduce the method and subject matter of economics to prepare students to take MBA level economics courses.
- Introduce the workings of a market economy in which business firms operate and to demonstrate the effects that various market structures have on the operation of the firm
- Demonstrate how economic analysis can be applied to a variety of personal, societal, and international issues
- Learn how to apply economic theory in order to understand past, current, and future microeconomic and macroeconomic issues
- Develop economic intuition and analytical skills.

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	B3,B10	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A9) Discuss Topics related to humanitarian interests and moral issues.	a9-1) Introduce the method and subject matter of economics to prepare students to take MBA level economics courses. a9-2) Introduce the workings of a market economy in which business firms operate and to demonstrate the effects that various market structures have on the operation of the firm a9-3) Demonstrate how economic analysis can be applied to a variety of personal, societal, and international issues a9-4) Learn how to apply economic theory in order to understand past, current, and future microeconomic and macroeconomic issues
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1) 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. b3-2) Use mathematical methods, modern techniques, skills and engineering tools
	B10) Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1) Incorporate macroeconomic Basics
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) To prepare students for engineering analyses and problem solving using appropriate mathematical and computational methodologies. c1-2) Apply modern techniques, skills and engineering tools using proper software
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Function professionally as an individual and within a team.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	The Market System	1-4
2 nd	Theory of the Firm	5-7
3 rd	Resource Allocation	9-11
4 th	Macroeconomic Basics	12-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1-4	The Market System	16	8	8	--	a9-1, a9-2, a9-3, a9-4, b3-1, b3-2, c1-1, c1-2, d1-1
WEEKS-5-7	Theory of the Firm	12	6	6	--	a9-1, a9-2, a9-3, a9-4, b3-1, b3-2, c1-1, c1-2, d1-1
WEEK-8	Midterm written examination					
WEEKS-9-11	Resource Allocation	12	6	6	--	a9-1, a9-2, a9-3, a9-4, b3-1, b3-2, c1-1, c1-2, d1-1
WEEKS-12-15	Macroeconomic Basics	16	8	8	--	a9-1, a9-2, a9-3, a9-4, b3-1, b3-2, b10-1, c1-1, c1-2, 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. Experiments
Knowledge & understanding	a9-1	*		*			*	*			*			
	a9-2	*		*			*	*			*			
	a9-3	*		*			*	*			*			
	a9-4	*		*			*	*			*			
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
	b10-1	*		*	*			*	*		*			
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
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.

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	*	*				*			*			*
	a9-4	*	*				*			*			*
Intellectual Skills	b3-1	*	*	*	*	*	*	*	*	*	*		*
	b3-2	*	*	*	*	*	*	*	*	*	*		*
	b10-1	*		*	*		*		*	*		*	*
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	*
	c1-2	*	*	*	*		*	*	*	*	*	*	*
General Skills	d1-1	*	*	*		*	*	*	*		*		*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in foundation of economy course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-Boyes and Melvin, "Economics", 3rd edition (1996), Houghton Mifflin Co.

Course coordinator
Dr. Mahmoud El-Motim

Head of the Department
Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Writing Technical Reports

Code Symbol: GEN301

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 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
5 th	Applications(1): Description of Results(well known problem)	9-10
6 th	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

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

Prof.Dr. Gamal Abdel-Wahab Morsy

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: English Oral Communication and Pronunciation

Code Symbol: GEN003

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	2	----	4

1- Course Subject Area:

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

B-Professional Information

2- Course Aims:

This interactive course enables students to join conversations and discussions by focusing on strategies for initiating conversation, responding to the comments and ideas of others, and improving listening skills. Fiction and non-fiction texts and audios from a variety of sources stimulate discussion, sharpen listening, and build vocabulary. Exercises and drills target grammar trouble spots in speaking and common pronunciation errors. Through extensive practice and feedback from the instructor and classmates, students develop confidence in their listening and speaking skills. Language lab practice is available.

3- Course Objectives:

To join conversations and discussions by focusing on strategies for initiating conversations. Conversation and listening activities will provide proper practice in order to help students assimilate elements of clear speech into oral communications.

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	C4, 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
Intellectual skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1)Write and arrange scientific passages about engineering materials. b4-2)Give oral presentations using a variety of visual aids
Professional skills	C4) Practice the neatness and aesthetics in design and approach.	c4-1)Give oral presentations using a variety of visual aids.
	C12) Prepare and present technical reports.	c12-1) Read, prepare and write scientific reports.
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 diagrams, charts and curves) and interpret data.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Oral communication skills in academic context.	1
2nd	Students explore a wide range of verbal content, functions and forms and practice listening and speaking activities that are common in university classesincluding discussions, lectures and informal speeches, and group discussions and presentations	2
3rd	Students develop their English language skills for teamwork, discussions, debates, and other verbal interactions needed to be successful in interviews, small and large group discussions, and informal presentations	3
4th	Academic and professional journals, newspapers, and other selected works provide topics for analysis and discussion and help students expand their vocabulary.	4
5th	Students practice presenting and defending opinions and answering questions.	5
6th	Exercises in stress, rhythm, and intonation build fluency; pronunciation and grammar exercises that help individuals sharpen their skills.	6

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1-2	Oral communication skills in academic context.	8	4	4	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEKS-3-4	Students explore a wide range of verbal content, functions and forms and practice listening and speaking activities that are common in university classes including discussions, lectures and informal speeches, and group discussions and presentations	8	4	4	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEKS-5-6	Students develop their English language skills for teamwork, discussions, debates, and other verbal interactions needed to be successful in interviews, small and large group discussions, and informal presentations	8	4	4	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-7	Academic and professional journals, newspapers, and other selected works provide topics for analysis and discussion and help students expand their vocabulary(Part I)	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-8	Midterm Term (written examination)					
WEEK-9	Academic and professional journals, newspapers, and other selected works provide topics for analysis and discussion and help students expand their vocabulary(Part II)	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEKS-10-12	Students practice presenting and defending opinions and answering questions.	12	6	6	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEKS-13-15	Exercises in stress, rhythm, and intonation build fluency; pronunciation and grammar exercises that help individuals sharpen their skills.	12	6	6	--	a9-1, 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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a9-1	*		*			*	*			*			
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)		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	*	*				*			*			
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

English Laboratory is used to help the students in Listening and pronunciation.

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- **Writing Scientific English**, A textbook of English as a Foreign Language for students of Physical and Engineering Sciences, John Swales, 2007.

2-Web sites related to the studied topics

Course coordinator

Head of the Department

Dr. Assim Abdul-Fattah Nabawi

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title:Advanced Spoken English

Code Symbol:GEN 004

Element of program:Major

Date of specification approval:2011

Department offering the course:Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	2	----	4

1- Course Subject Area:

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

B-Professional Information

2- Course Aims:

- This course will focus on further development of students' writing, reading, speaking, and listening skills, especially those that ensure students' success with the TOEFL PBT/ITP and IBT tests. The students will reinforce and expand their existing language skills, their knowledge of TOEFL-related vocabulary, grammar structures, written rhetorical formats, and test-taking strategies required to succeed in passing the tests.

3- Course Objectives:

- To join conversations and discussions by focusing on strategies for initiating conversations and listening activities thus providing practice in order to help students assimilate elements of clear speech into oral communication.
- Using modern techniques for listening and comprehension, oral communication and pronunciation skills.

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	C4, 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
Intellectual skills	B4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1) Write and arrange scientific passages about engineering materials. b4-2) Give oral presentations using a variety of visual aids
Professional skills	C4) Practice the neatness and aesthetics in design and approach.	c4-1) Give oral presentations using a variety of visual aids.
	C12) Prepare and present technical reports.	c12-1) Read, prepare and write scientific reports.
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 diagrams, charts and curves) and interpret data.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Short conversations <ul style="list-style-type: none"> This syllabus item helps you practice the listening skills you will need for the TOEFL. You listen to a series of short conversations and answer a question about each one Focusing on the interpretation of meaning in listening exercises.. 	1
2nd	Grammar check 1 <ul style="list-style-type: none"> Check your knowledge of adjectives ending in '-ly'. Check your knowledge of adverbs indicating relative position in time. Check your knowledge of the word order of sentences that include adverbs. Practice the use of adverbial phrases with or without inversion. Check your knowledge of balancing connectors. Practice linking words to connect ideas. Practice comparative adjectives and adverbs. Check your knowledge of 'in spite of', 'despite', 'for all' and 'with all.' Practicing fixed prepositional phrases in relative clauses. Practicing phrasal verbs. 	2
3rd	Long conversations <ul style="list-style-type: none"> This syllabus item helps you practice the listening skills you will need for the TOEFL. You listen to a series of long conversations and answer questions about each one. 	3
4th	Texts <ul style="list-style-type: none"> This syllabus item helps you practice the skills you need to complete the reading section of the TOEFL. You read a series of texts and answer questions which practice your general understanding and ability to find specific points in a text. Reading Understanding general points in a text. Reading for detail.	4
5th	Grammar check 2 <ul style="list-style-type: none"> In the TOEFL, you will be expected to understand the different past tenses and to use these 	5

	<p>appropriately in your written and spoken English.</p> <ul style="list-style-type: none"> • Checking your knowledge of the past participle of regular and irregular verbs. • Practicing the use of participles. Practicing describing past habits/customs with 'used to.' Practicing 'used to' and the simple past. Practicing the simple past, past progressive and past perfect. Practicing the simple past and present perfect. • Practicing the simple past passive. Checking your knowledge of the difference between the use of the past perfect and past perfect progressive. 	
6th	<p>Lectures</p> <ul style="list-style-type: none"> • This syllabus item helps you practice the listening skills you will need for the TOEFL. You listen to lectures and answer questions about them. <p>Listening</p> <ul style="list-style-type: none"> • Understanding general points and specific details in a lecture. 	6
7 th	<p>Texts</p> <p>This syllabus item helps you practice the skills you need to complete the reading section of the TOEFL. You read a series of texts and answer questions which practice your general understanding and ability to find specific points in a text.</p> <p>Reading</p> <p>Understanding general points in a text. Reading for detail.</p>	7
8th	<p>Grammar check 3</p> <ul style="list-style-type: none"> • When taking the TOEFL, you will need to understand and use the conditional and future tenses in spoken and written form. • Checking your knowledge of the uses and form of the third conditional. Practicing the first, second and third conditionals. Practicing structures used after the verbs 'wish' and 'regret.' Practicing expressing regret with 'wish', 'if only' and conditional clauses. Practicing introductory clauses and fronting. Checking your knowledge of inversion in conditional sentences. Checking your knowledge of all the conditional forms. Practicing a variety of future tenses. 	8
9th	<p>Pronunciation</p> <ul style="list-style-type: none"> • This syllabus item helps you practice advanced pronunciation and listening skills in preparation for the TOEFL speaking section. It revises intonation, register, sentence stress, connected speech and different word sounds. • Identifying the purpose and feeling of speakers. Identifying the speaker's feelings about accepting a job offer by listening to his intonation. Distinguishing between questions that ask for information and questions asked when the speaker already knows the answer. Practicing identifying the changing syllable stress in nouns and their corresponding adjectives. Practicing word stress. Practicing identifying stressed words within sentences. Focusing on connected speech. Focusing on formal and informal responses. Contrasting the different sounds for words spelled with 's.' Practicing distinguishing between words that contain a diphthong and words that don't. 	9
10th	<p>Writing development</p> <p>This syllabus item gives you practice of the skills you will need for the TOEFL writing section. It gives you practice of responding to written and visual information to write an essay. It also gives you practice of writing opinion essays.</p> <p>Using the information provided to write an article for a university magazine. Using the information provided to write a report about smoking. Using the information provided to write a report about teenagers and work. Using the information provided to write an article about exam stress. Writing a description of a company. Using the information provided to describe a pie chart. Using the information provided to write a report about banning smoking in the workplace. Writing an opinion essay about what makes a good manager. Writing an opinion essay about getting more exercise.</p>	10
11th	<p>Grammar check 4</p> <p>Practicing pronoun reference. Practicing reflexive pronouns and 'each other.' Practicing relative pronouns and their use in defining and non-defining relative clauses. Checking your knowledge of '-ing' forms to indicate purpose. Checking your knowledge of the form and uses of the infinitive. Practicing passive '-ing' forms. Practicing 'have' followed by an object plus infinitive without 'to' or an '-ing' form. Practicing reported speech with infinitives and '-ing' forms. Checking your knowledge of the tense changes in reported speech.</p>	11

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Short conversations <ul style="list-style-type: none"> This syllabus item helps you practice the listening skills you will need for the TOEFL. You listen to a series of short conversations and answer a question about each one Focusing on the interpretation of meaning in listening exercises.. 	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-2	Grammar check 1 <ul style="list-style-type: none"> Check your knowledge of adjectives ending in '-ly'. Check your knowledge of adverbs indicating relative position in time. Check your knowledge of the word order of sentences that include adverbs. Practice the use of adverbial phrases with or without inversion. Check your knowledge of balancing connectors. Practice linking words to connect ideas. Practice comparative adjectives and adverbs. Check your knowledge of 'in spite of', 'despite', 'for all' and 'with all.' Practicing fixed prepositional phrases in relative clauses. Practicing phrasal verbs. 	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-3	Long conversations <ul style="list-style-type: none"> This syllabus item helps you practice the listening skills you will need for the TOEFL. You listen to a series of long conversations and answer questions about each one. 	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-4	Texts <ul style="list-style-type: none"> This syllabus item helps you practice the skills you need to complete the reading section of the TOEFL. You read a series of texts and answer questions which practice your general understanding and ability to find specific points in a text. Reading Understanding general points in a text. Reading for detail.	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEKS-5-6	Grammar check 2 <ul style="list-style-type: none"> In the TOEFL, you will be expected to understand the different past tenses and to use these appropriately in your written and 	8	4	4	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2

	<p>spoken English.</p> <ul style="list-style-type: none"> • Checking your knowledge of the past participle of regular and irregular verbs. • Practicing the use of participles. Practicing describing past habits/customs with 'used to.' Practicing 'used to' and the simple past. Practicing the simple past, past progressive and past perfect. Practicing the simple past and present perfect. • Practicing the simple past passive. Checking your knowledge of the difference between the use of the past perfect and past perfect progressive. 					
WEEK-7	<p>Lectures</p> <ul style="list-style-type: none"> • This syllabus item helps you practice the listening skills you will need for the TOEFL. You listen to lectures and answer questions about them. <p>Listening</p> <ul style="list-style-type: none"> • Understanding general points and specific details in a lecture. 	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-8	Midterm Term (written examination)					
WEEK-9	<p>Texts</p> <p>This syllabus item helps you practice the skills you need to complete the reading section of the TOEFL. You read a series of texts and answer questions which practice your general understanding and ability to find specific points in a text.</p> <p>Reading</p> <p>Understanding general points in a text. Reading for detail.</p>	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEK-10	<p>Grammar check 3</p> <ul style="list-style-type: none"> • When taking the TOEFL, you will need to understand and use the conditional and future tenses in spoken and written form. • Checking your knowledge of the uses and form of the third conditional. Practicing the first, second and third conditionals. Practicing structures used after the verbs 'wish' and 'regret.' Practicing expressing regret with 'wish', 'if only' and conditional clauses. Practicing introductory clauses and fronting. Checking your knowledge of 	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2

	inversion in conditional sentences. Checking your knowledge of all the conditional forms. Practicing a variety of future tenses.					
WEEK-11	Pronunciation <ul style="list-style-type: none"> This syllabus item helps you practice advanced pronunciation and listening skills in preparation for the TOEFL speaking section. It revises intonation, register, sentence stress, connected speech and different word sounds. Identifying the purpose and feeling of speakers. Identifying the speaker's feelings about accepting a job offer by listening to his intonation. Distinguishing between questions that ask for information and questions asked when the speaker already knows the answer. Practicing identifying the changing syllable stress in nouns and their corresponding adjectives. Practicing word stress. Practicing identifying stressed words within sentences. Focusing on connected speech. Focusing on formal and informal responses. Contrasting the different sounds for words spelled with 's.' Practicing distinguishing between words that contain a diphthong and words that don't. 	4	2	2	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2
WEEKS-12-13	Writing development This syllabus item gives you practice of the skills you will need for the TOEFL writing section. It gives you practice of responding to written and visual information to write an essay. It also gives you practice of writing opinion essays. Using the information provided to write an article for a university magazine. Using the information provided to write a report about smoking. Using the information provided to write a report about teenagers and work. Using the information provided to write an article about exam stress. Writing a description of a company. Using the information provided to describe a pie chart. Using the information provided to write a report about banning smoking in the workplace. Writing an opinion essay about what makes a	8	4	4	--	a9-1, b4-1,b4-2, c12-1, c12-2, d3-1, d3-2, d3-3, d9-1,d9-2

	good manager. Writing an opinion essay about getting more exercise					
WEEKS-14-15	Grammar check 4 Practicing pronoun reference. Practicing reflexive pronouns and 'each other.' Practicing relative pronouns and their use in defining and non-defining relative clauses. Checking your knowledge of '-ing' forms to indicate purpose. Checking your knowledge of the form and uses of the infinitive. Practicing passive '-ing' forms. Practicing 'have' followed by an object plus infinitive without 'to' or an '-ing' form. Practicing reported speech with infinitives and '-ing' forms. Checking your knowledge of the tense changes in reported speech.	8	4	4	--	a9-1, 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	*		*			*	*			*			
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)		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	*	*				*			*			
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

English Laboratory is used to help the students in Listening and pronunciation.

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- Writing Scientific English, A textbook of English as a Foreign Language for students of Physical and Engineering Sciences, John Swales, 2007.
- 2-Gilbert, Judy B., "CLEAR SPEECH: PRONUNCIATION AND LISTENING COMPREHENSION IN NORTH AMERICAN ENGLISH", (3rd edition), 2005: Cambridge University Press. ISBN: 978-0-521-54354-5
- 3- TOEFL Book.
- 4- Web sites related to the studied topics.

Course coordinator

Head of the Department

Dr. Assim Abdul-Fattah Nabawi

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Moral Philosophy

Code Symbol: GEN103

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 offers the student an introduction to the great texts of East moral philosophy. For as long as people have been thinking, they have been asking themselves three fundamental questions:

What should I do?

Who should I be?

How can we live together?

3- Course Objectives:

Understand the basics concepts of moral philosophy.

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	A11	B2	C4	D1,D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A11) Recognize Professional ethics and impacts of engineering solutions on society and environment	a11-1) Understand the basics concepts of moral philosophy.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Analyze and interpret data and evaluate results to support the engineering design problem.
Professional skills	C4) Practice the neatness and aesthetics in design and approach.	c4-1) Practice the neatness and aesthetics in design and approach.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Develop skills in team work.
	D3) Communicate effectively.	d3-1) Communicate effectively with clear, critical thinking and skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Moral Reasoning	1
2 nd	Sophocles: <i>Antigone</i>	2
3 rd	Plato: <i>The Republic</i>	3-4
4 th	Writing about Philosophy	5
5 th	Aristotle: <i>The Nicomachean Ethics</i>	6-7
6 th	Thomas Hobbes: <i>Leviathan</i> selections	9
7 th	Immanuel Kant <i>Foundations of the Metaphysics of Morals</i> selections	10-11
8 th	John Stuart Mill: <i>Utilitarianism</i>	12
9 th	Friedrich Nietzsche: <i>Beyond Good and Evil</i>	13-14
10 th	Moral Reasoning in and Through Literature Kurt Vonnegut, <i>Harrison Bergeron</i> William Styron, <i>Sophie's Choice</i> Handouts	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 to Moral Reasoning	2	2	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEK-2	Sophocles: <i>Antigone</i>	2	2	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEKS-3-4	Plato: <i>The Republic</i>	4	4	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEK-5	Writing about Philosophy	2	2	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEKS-6-7	Aristotle: <i>The Nicomachean Ethics</i>	4	4	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEK-8	Midterm written examination					
WEEK-9	Thomas Hobbes: <i>Leviathan</i> selections	2	2	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEKS-10-11	Immanuel Kant <i>Foundations of the Metaphysics of Morals</i> selections	4	4	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEK-12	John Stuart Mill: <i>Utilitarianism</i>	4	4	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEKS-13-14	Friedrich Nietzsche: <i>Beyond Good and Evil</i>	4	4	--	--	a11-1,b2-1, c4-1, d1-1,d3-1
WEEK-15	Moral Reasoning in and Through Literature Kurt Vonnegut, <i>Harrison Bergeron</i> William Styron, <i>Sophie's Choice</i> Handouts	2	2	--	--	a11-1,b2-1, c4-1, 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	a11-1	*		*			*	*		*	*			
Intellectual Skills	b2-1	*	*	*	*	*	*	*		*	*	*	*	
Professional Skills	c4-1	*		*	*			*	*	*	*	*		
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		*
	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	a11-1	*			*					*		*	*
Intellectual Skills	b2-1	*		*	*	*	*	*		*		*	*
Professional Skills	c4-1	*	*	*	*		*			*	*	*	*
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d3-1	*	*	*	*		*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in moral philosophy.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1- *Classics of Moral and Political Theory*, 4 th ed., Ed. Michael Morgan, Hackett
Handouts: *Harrison Bergeron*, Kurt Vonnegut.

Course coordinator

Prof.Dr. Zeinab Afifi Shaker

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Accounting

Code Symbol: GEN203

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
1	2	--	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
50%	50%	---	---	---	---	----	100%

B-Professional Information

2- Course Aims:

- Understand fundamental Accounting Terminologies.
- Become intelligent readers of financial statements, value, record and classify business transactions.

3- Course Objectives:

- To Know Accounting: Definition and objectives, Accounting Equation and Business Transactions, Accounting Cycle, Recording Financial Transactions, Income Measurement, Financial Position and Financial Statements and 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	A7	B1	C1	D1,D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A7)Remember Business and management principles relevant to engineering.	a7-1)Explain fundamental Accounting Terminologies a
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Creative thinking. b1-2)Identify Accounting theory and assumptions.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Demonstrate accounting information system. c1-2)Prepare and analyze the financial statements. c1-3) Apply knowledge the accounting practices.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Develop skills in team work.
	D8) Acquire entrepreneurial skills.	d8-1) Develop skills for Accounting.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Accounting: Definition and objectives.	1-2
2 nd	Accounting Equation and Business Transactions.	3-4
3 rd	Accounting Cycle.	5-6
4 th	Recording Financial Transactions.	7,9
5 th	Income Measurement.	10-11
6 th	Financial Position.	12-13
7 th	Financial Statements and Reports.	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	Accounting: Definition and objectives.	6	2	4	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEKS-3-4	Accounting Equation and Business Transactions.	6	2	4	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEKS-5-6	Accounting Cycle.	6	2	4	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEK-7	Recording Financial Transactions (Part I)	3	1	2	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEK-8	Midterm written examination					
WEEK-9	Recording Financial Transactions (Part II)	3	1	2	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEKS-10-11	Income Measurement.	6	2	4	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEKS-12-13	Financial Position.	6	2	4	--	a7-1,b1-1,b1-2,c1-1,c1-2, c1-3,d1-1,d8-1
WEEKS-14-15	Financial Statements and Reports.	6	2	4	--	a7-1,b1-1,b1-2, c1-1,c1-2, c1-3,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	a7-1	*		*						*	*			
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c1-3	*	*	*	*	*	*	*	*	*	*		*	
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	a7-1	*					*						*
Intellectual Skills	b1-1	*		*		*	*	*		*		*	*
	b1-2	*		*		*	*	*		*		*	*
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	*
	c1-2	*	*	*	*		*	*	*	*	*	*	*
	c1-3	*	*	*	*		*	*	*	*	*	*	
General Skills	d1-1	*	*	*		*	*	*	*		*		*

	d8-1			*		*								
--	------	--	--	---	--	---	--	--	--	--	--	--	--	--

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in Accounting.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-Needles, Powers and Cross on, Principals of Accounting, Houghton Mifflin, 2005

Course coordinator

Head of the Department

Dr. Hatem Elsharawy

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Marketing*

Code Symbol: *GEN204*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>--</i>	<i>2</i>

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:

- Examine the character and importance of the marketing process.
- Gives an overview of the entire marketing process and the integration of the elements that makeup a Marketing Plan.

3- Course Objectives:

- Gain an understanding of the basic functional aspects necessary to formulate an integrated Marketing Plan. This includes Consumer Buying Behavior, Environment, Marketing Research, Product Management, Promotion, Channels of Distribution, and Pricing.
- Perform Marketing Research that is targeted towards reading topical articles related to Marketing and referencing their topics to what is being discussed in the class.
- Gain the ability to assemble a comprehensive, conceptual Marketing Plan based on the material learned in this class.
- Explain the practical application of the subject of Marketing, and integrates the information presented in the entire class.

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	A7	B1,B10	C9,C11	D1,D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A7)Remember Business and management principles relevant to engineering.	a7-1)Define and explain the tools available to the marketer (the Marketing Mix and the Promotion Mix) a7-2)Able to segment the markets available for the product selected a7-3)Explain consumer buying behavior and how it affects the buying process a7-4)Access the impact of the environmental issues that affect the success of the marketing plan a7-5)Illustrate the marketing management process and how important it is to the success of the marketing effort a7-6)Demonstrate the fundamental aspects of utilizing Marketing Research as the basis of the marketing effort a7-7)Demonstrate the fundamentals of Promotion and how it is used to communicate with the customer. a7-8)Illustrate the channel of distribution process and how it impacts the success of the marketing process
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Select appropriate mathematical methods, modern techniques, skills and engineering tools
	B10) Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1)Identify the essential aspects of pricing and how it should reflect the value of the product as determined by the customer
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Prepare students for engineering analyses and problem solving using appropriate mathematical and computational methodologies.
	C9) Demonstrate basic organizational and project management skills.	c9-1) Apply professional and ethical responsibility. c9-2)Apply techniques, skills, and tools in engineering practice.
	C11) Exchange knowledge and skills with engineering community and industry.	c11-1) Exchange knowledge and skills with engineering community and industry
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Develop skills in team work.
	D8) Acquire entrepreneurial skills.	d8-1) Develop skills for Marketing.

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6- Course Topics.

Topic No.	General Topics	Weeks
1 st	A Strategic Approach to Marketing	1
2 nd	Product and Service Strategy and Brand Management	2-3
3 rd	Integrated Marketing Communication Strategy and Management	4-5
4 th	Marketing Channel Strategy and Management	6-7
5 th	Pricing Strategy and Management	9-10
6 th	Marketing Strategy Reformulation: The Control Process	11-12
7 th	Comprehensive Marketing Programs	13-14
8 th	Group Marketing Plans	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	A Strategic Approach to Marketing	2	2	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, d1-1,d8-1
WEEKS-2-3	Product and Service Strategy and Brand Management	4	4	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, d1-1,d8-1
WEEKS-4-5	Integrated Marketing Communication Strategy and Management	4	4	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, d1-1,d8-1
WEEKS-6-7	Marketing Channel Strategy and Management	4	4	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, d1-1,d8-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Pricing Strategy and Management	4	4	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, c11-1,d1-1,d8-1
WEEKS-11-12	Marketing Strategy Reformulation: The Control Process	4	4	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, d1-1,d8-1
WEEKS-13-14	Comprehensive Marketing Programs	4	4	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c9-1,c9-2, d1-1,d8-1
WEEK-15	Group Marketing Plans	2	2	--	--	a7-1, a7-2 ,a7-3, a7-4, a7-5, a7-6,a7-7,a7-8,b1-1,b10-1, c11-1,c9-1,c9-2, 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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a7-1	*		*						*	*			
	a7-2	*		*						*	*			
	a7-3	*		*						*	*			
	a7-4	*		*						*	*			
	a7-5	*		*						*	*			
	a7-6	*		*						*	*			
	a7-7	*		*						*	*			
	a7-8	*		*						*	*			
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b10-1	*		*	*			*	*		*			
Professional Skills	c9-1			*				*	*		*			
	c9-2			*				*	*		*			
	c11-1	*	*	*	*	*		*	*	*	*	*		
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	<i>Tutorial Assessment</i>	<i>Project Assessment</i>	<i>Modelling</i>	<i>Research & Report</i>	<i>Quizzes</i>	<i>Presentation</i>	<i>Discussion</i>	<i>Laboratory Test</i>	<i>Home Exam</i>

Knowledge& Understanding	a7-1	*					*						*
	a7-2	*					*						*
	a7-3	*					*						*
	a7-4	*					*						*
	a7-5	*					*						*
	a7-6	*					*						*
	a7-7	*					*						*
	a7-8	*					*						*
Intellectual Skills	b1-1	*		*		*	*	*		*		*	*
	b10-1	*		*	*		*		*	*		*	*
Professional Skills	c9-1	*		*	*		*	*		*		*	*
	c9-2	*		*	*		*	*		*		*	*
	c11-1	*		*	*		*	*	*	*		*	
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d8-1			*		*							

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in Marketing.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-Strategic Marketing Problems; Cases and Comments, Tenth Edition, Kerin, Roger A.; Peterson, Robert A.; Pearson Prentice Hall. ISBN: 0-13-142184-0, © 2004.

Course coordinator

Dr. Amgd Imara

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Engineering Economics

Code Symbol: GEN302

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
1	2	--	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
50%	---	---	50%	---	---	----	100%

B-Professional Information

2- Course Aims:

- To provide students with awareness of tools and skills necessary for participating effectively in building a strong national economy and to meet current and future modern industry needs.

3- Course Objectives:

- Understand basic engineering sciences and technology
- 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.
- Use mathematical methods, modern techniques, skills and engineering tools
- Prepare technical and operational specifications of components of 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,A16	B3,B9,B10	C1,C10	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation.	a5-1) Illustrate 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. a5-2) Use mathematical methods, modern techniques, skills and engineering tools a5-3) Prepare technical and operational specifications of components of electrical systems
	A16) Apply fundamentals of engineering management	a16-1) Apply fundamentals of engineering management
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1) 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. b3-2) Use mathematical methods, modern techniques, skills and engineering tools
	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.	c1-1) Prepare students for engineering analyses and problem solving using appropriate mathematical and computational methodologies. c1-2) Apply modern techniques, skills and engineering tools using proper software
	C10) Apply quality assurance procedures and follow codes and standards.	c10-1) Apply quality assurance procedures and follow codes and standards.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Function professionally as an individual and within a team.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Nature of Economics	1-2
2 nd	Cardinal Unity Analysis.	3-4
3 rd	Demand.	5-6
4 th	Production.	7
5 th	Concept of Cost.	9-10
6 th	Market.	11-12
7 th	Supply	13-14
8 th	Case Study	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	Nature of Economics	6	2	4	--	a5-1, a5-2, a5-3, a16-1, b3-1, b3-2, b9-1, b10-1, c1-1, c1-2, d3-1
WEEKS-3-4	Cardinal Unity Analysis.	6	2	4	--	a5-1, a5-2, a5-3, b3-1, b3-2, c1-1, c1-2, d3-1
WEEKS-5-6	Demand.	6	2	4	--	a5-1, a5-2, a5-3, b3-1, b3-2, c1-1, c1-2, d3-1
WEEK-7	Production.	3	1	2	--	a5-1, a5-2, a5-3, b3-1, b3-2, c1-1, c1-2, d3-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Concept of Cost.	6	2	4	--	a5-1, a5-2, a5-3, b3-1, b3-2, b9-1, b10-1, c1-1, c1-2, d3-1
WEEKS-11-12	Market.	6	2	4	--	a5-1, a5-2, a5-3, b3-1, b3-2, c1-1, c1-2, d3-1
WEEKS-13-14	Supply	6	2	4	--	a5-1, a5-2, a5-3, b3-1, b3-2, c1-1, c1-2, d3-1
WEEK-15	Case Study	3	1	2	--	a5-1, a5-2, a5-3, b3-1, b3-2, b9-1, b10-1, c1-1, c1-2, 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	a5-1	*	*	*	*	*	*	*	*		*		*	*
	a5-2	*	*	*	*	*	*	*	*		*		*	*
	a5-3	*	*	*	*	*	*	*	*		*		*	*
	a16-1	*		*		*		*	*		*			
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
	b9-1	*	*		*	*	*	*	*	*	*			
	b10-1	*		*	*			*	*		*			
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c1-2	*	*	*	*	*	*	*	*	*	*		*	
	c10-1	*		*	*			*	*	*	*	*		
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	a5-1	*	*	*	*	*	*	*		*	*		*
	a5-2	*	*	*	*	*	*	*		*	*		*
	a5-3	*	*	*	*	*	*	*		*	*		*
Intellectual Skills	a16-1	*		*		*		*	*		*		
	b3-1	*	*	*	*	*	*	*	*	*	*		*
	b3-2	*	*	*	*	*	*	*	*	*	*		*
	b9-1	*		*	*		*	*	*	*		*	
	b10-1	*		*	*		*		*	*		*	*
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	*
	c1-2	*	*	*	*		*	*	*	*	*	*	*
	c10-1	*		*	*		*	*		*		*	*
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in Engineering Economy course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-Boyes and Melvin, "Economics", 3rd edition (1996), Houghton Mifflin Co.

2-Smriti Srivastava , "Engineering Economics", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2010

Course coordinator
Prof.Dr. Sobhi Mohamed Ghonim

Head of the Department
Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Mathematics (1)

Code Symbol: BES001

Element of program: Major

Date of specification approval: 2011

Department offering the course: Basic Engineering Science. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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:

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:

- To understand fundamental concepts, definitions and theorems of calculus algebra and geometry
- To understand functions, limits, continuity.
- To know partial fractions, binomial theorem.
- To study translation and rotation of axis, the conic sections, planes and straight lines in space.

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	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) Demonstrate understanding basic mathematics, science and technologies relevant to modern power and machines.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Solving Math problems , including derivatives, differential equations. a5-2) Solving Math problems , including Partial Fraction
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Treating Complex Problems b1-2) Using principles and concepts in solving 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) Solve Engineering Problems
	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	Functions and Elementary Functions .	1-2
2nd	Limits and Continuity .	3-4
3rd	Derivatives and partial derivative	5-6
4th	Application of derivative	7
5th	Matrices	9-10
6th	First Order Normal Differential Equations	11
7th	Higher Order Normal Differential Equations	12
8th	Linear Differential Equations	13
9th	Solve the Differential Equations Using the Series	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	Functions and Elementary Functions .	12	8	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-3,4	Limits and Continuity .	12	8	4	-	a5-1,a5-2,a5-2,b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-5,6	Derivatives and partial derivative	12	8	4	-	a5-1,a5-2,a5-2,b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-7	Transformation and rotation of axes	6	4	2	-	a5-1,a5-2,a5-2,b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-8	Midterm of first Term (written examination)					

WEEKS-9-10	Matrices	12	8	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-11	First Order Normal Differential Equations	18	12	6	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-12	Higher Order Normal Differential Equations	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-13	Linear Differential Equations	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-14-15	Solve the Differential Equations Using the Series	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a5-1	*	*	*	*	*	*	*	*		*		*	*
	a5-2	*	*	*	*	*	*	*	*		*		*	*
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
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	*	*	*	*	*	*	*		*	*		
	a5-2	*	*	*	*	*	*	*		*	*		
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c7-1	*		*	*	*	*		*	*	*		
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-Calculus and Analytic Geometry, Thomas and finney Addison – Westey Publishing Company, U.S.A., 1984
- 2- A Text Book of Practical Mathematics (Two Volume), LB Prasad, Khanna Publishers Delhi – India,1990 .

Course coordinator

Dr. El-Sayed Mohamed Zaki

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Physics(1)*

Code Symbol: *BES002*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Basic Engineering Science. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	----	3	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%	40%	-----	-----	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 of concepts and theories of mathematics and sciences, appropriate to the engineering applications.	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 mechanical properties of matter and acoustic phenomena. a1-4) Recognize the basic principles of the properties of matter, heat, thermodynamics and their engineering applications.
	A3) List characteristics of engineering materials related to the engineering applications.	a3-1) List the origin of elastic properties of material .
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Use mathematical methods to derive expressions the basic laws of the properties of matters, gravity and thermodynamics and their engineering applications. 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) Show the validity of all the used equations using the units and dimensional analysis. b3-2) Discuss scientific problems in field of properties of matters, gravitation, heat and thermodynamics and solve them.
Professional skills	C1) Apply knowledge of mathematics, science, and engineering practice integrally to solve engineering problems.	c1-1) Check the units and dimensions of all studied physical quantities. c1-2) Verify experimentally 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 the physics lab.
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 lab. 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 and kepler's laws	2
3rd	Elastic properties of solid, Hook's law, modulus of elasticity and its types.	3
4th	Fluid mechanics, pressure, fluid statics, Fluid dynamics, Bernoulli's equation and its application.	4-6
5th	Zero law of thermodynamics, Temperature; Thermometers, 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	2	--	3	a1-1, b3-1,c1-1,d3-1
WEEK-2	Gravitation, Newton's law	5	2	--	3	a1-1, ,b2-1,b3-2, c1-2
WEEK-3	Kepler's law, gravitational force.	5	2	--	3	a1-1, ,b2-1,b3-2, c1-2
WEEK-4	Elastic properties of solid, Hook's law, elasticity modulus and its types.	5	2	--	3	a3-1,a1-3 b2-1,b3-2, c1-2,d3-2
WEEK-5	Fluid mechanics, pressure, fluid statics,.	5	2	--	3	a1-2, b3-2,b2-2, c1-4
WEEK-6	Fluid dynamics, Bernoulli's equation and its application.	5	2	--	3	a1-2, b3-2,b2-2, c1-4
WEEK-7	Zero law of thermodynamics, Temperature; Thermometers, Thermal expansion.	5	2	--	3	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	2	--	3	a1-4,b3-2,b2-2, c1-4, d3-2,d3-3,d3-4
WEEK-10	Kinetic theory of gases.	5	2	--	3	a1-3, a1-4,b3-2,b2-2, c1-3 ,d3-1,d3-2,d3-3
WEEK-11	First law of thermodynamics	5	2	--	3	a1-3,a1-4, b2-1,b2-2, c1-3,d3-4,d3-5
WEEK-12	First law of thermodynamics applications	5	2	--	3	a1-3,a1-4, b2-1,b2-2, c1-3,d3-4,d3-5
WEEK-13	Heat engines, Entropy and second law of thermodynamics.	5	2	--	3	a1-3, a1-4, b3-2,b2-2, c1-3,c1-4 ,d3-1, d3-2,d3-3
WEEKS-14-15	Geometrical optics	10	4	--	6	a1-3, a1-4,b3-2,b2-2, c1-4, c1-3,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 Modeling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a 1-2	*	*	*	*	*	*	*		*	*			*
	a1-3	*	*	*	*	*	*	*		*	*			*
	a1-4	*	*	*	*	*	*	*		*	*			*
	a3-1	*		*	*	*				*	*		*	
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
	b2-1	*	*	*	*	*		*		*	*		*	*
	b2-2	*	*	*	*	*		*		*	*		*	*
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	Modeling	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	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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.

Course coordinator

Head of the Department

Dr. Kasim El sayed rady

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: History of Engineering Sciences

Code Symbol: ECE001

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
66.66%	-----	33.33%	-----	-----	-----	-----	100%

B-Professional Information

2- Course Aims:

This course involves the student in over grasping the history and development of engineering sciences. In this course, the student should learn how to trace back the origins of scientific, engineering, and technological thoughts, over the extended struggle of mankind for better and easier surviving with nature.

3- Course Objectives:

- ◆ Mentoring the concept of engineering education and its ramifications as well as the importance of engineering.
- ◆ Understanding and ingestion of science, art, technology and engineering.
- ◆ Illustrating the basics of the technology, types and methods of transmission.
- ◆ Setting out some examples of engineered products like; (aircraft, computer, robots)
- ◆ Identifying the impact of engineering activity on the environment.

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	B3,B12	C2	D1,D3,D6

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) Illustrate the basics of the technology, types and methods of transmission. a8-2) Explain human build up of thoughts trying to use, resemble, and harness natural powers. a8-3) Describe how sciences were initiated and lead to uncovering natural resources and powers.
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1) Observe and think to use water, wind, and fire to help doing jobs. b3-2) Imagination, and how a human started to feel and taste arts and beauty.
	B12) Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1) Select methods of comparison between the characteristics of traditional and modern teaching methodologies.
Professional skills	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1) Acquiring sense of engineering thinking in problem solving. c2-2) Specify Setting the overall limitations and capabilities of powers presented by machines and their development. c2-3) Apply knowledge of cost effectiveness evaluation, and time considerations in planning an engineering project.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Enhancing team-working ability.
	D3) Communicate effectively.	d3-1) Mastering communication skills.
	D6) Effectively manage tasks, time, and resources.	d6-1) Awareness of what engineering sciences and practices can achieve in real world problem solving. d6-2) Gaining general basic rules commanding and controlling the engineering domains.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Identification of Arts, Sciences, Technology and Engineering	1-2
2nd	Civilization development and their relation with natural and human sciences	3-5
3rd	History of Technology in different aspects	6-7
4th	Historical relation between science and technology.	9-10
5th	The relation between engineering development and Environmental development. (social aspects of civilization)	11-13
6th	Examples of development in different engineering activities	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	Identification of Arts, Sciences, Technology and Engineering	4	4	-	-	a8-1,a8-2,a8-3
WEEKS-3,5	Civilization development and their relation with natural and human sciences	6	6	-	-	b3-1,b3-2,c2-1, c2-2, c2-3, d6-1, d6-2
WEEKS-6,7	History of Technology in different aspects	4	4	-	-	a8-1,a8-2,a8-3, c2-1 , c2-2, c2-3
WEEK-8	Midterm of first Term (written examination)					
WEEK-9-10	Historical relation between science and technology.	4	4	-	-	a8-1,a8-2,a8-3, d6-1, d6-2
WEEKS-11-13	The relation between engineering development and Environmental development. (social aspects of civilization)	6	6	-	-	b3-1,b3-2,c2-1, c2-2, c2-3, d6-1, d6-2
WEEKS-14-15	Examples of development in different engineering activities	4	4	-	-	b3-1,b3-2,c2-1, c2-2, c2-3, 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	a8-1	*	*	*	*	*	*	*	*	*	*	*	*	*
	a8-2	*	*	*	*	*	*	*	*	*	*	*	*	*
	a8-3	*	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b3-1	*	*	*	*	*	*	*	*	*	*	*	*	*
	b3-2	*	*	*	*	*	*	*	*	*	*	*	*	*
	b12-1	*		*	*		*	*	*	*	*	*		
Professional Skills	c2-1	*	*	*	*	*	*	*	*	*	*			*
	c2-2	*	*	*	*	*	*	*	*	*	*		*	
	c2-3	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		*
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d6-1	*		*				*	*	*	*			
	d6-2	*		*				*	*	*	*			

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	a8-1	*	*	*	*	*	*	*	*	*	*		
	a8-2	*	*	*	*	*	*	*	*	*	*		
	a8-3	*	*	*	*	*	*	*	*	*	*		
Intellectual Skills	b3-1	*	*	*	*	*	*	*	*	*	*		
	b3-2	*	*	*	*	*	*	*	*	*	*		
	b12-1	*		*	*		*	*		*			
Professional Skills	c2-1	*		*	*		*	*		*		*	
	c2-2	*		*	*		*	*		*		*	
	c2-3	*		*	*		*	*		*		*	
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d3-1	*	*	*	*		*	*	*	*	*	*	
	d6-1		*	*	*		*						
	d6-2		*	*	*		*						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

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.

11-3Lecture teaching methods are used to develop the concepts of the course.

11-4Self reported observations of students and search subjects in major engineering projects and achievements, freely chosen by individual students.

11-5 Seminars and talks by distinguished high ranking engineers commenting on major engineering projects in Egypt.

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.

Course coordinator

Prof.Dr. Mohamed Ali Beshr

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Mathematics(2)*

Code Symbol: *BES003*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Basic Engineering Science. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>----</i>	<i>4</i>

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:

- To understand indefinite integral, methods of integrations and definite integral and its applications.
- To know matrices, vectors, polar cylindrical and spherical coordinates.

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	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) Explain the basic mathematics, science and technologies relevant to modern power and machines.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Demonstrate understanding how to Solve Math problems, including Integrals. a5-2) Demonstrate understanding how to Solve Math problems , including matrices, vectors, polar cylindrical and spherical coordinates.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Solve Complex Problems b1-2) Solve 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) Apply knowledge of mathematics to solve Engineering Problems
	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	Integration (integration by substitution, parts, partial fraction, repeating removing, removing roots, trigonometric substitution)	1-2
2nd	The Definite Integral (properties, higher and lower Riemann sum, fundamental theorem of calculus, improper integrals)	3-4
3rd	Applications on the Integration (area calculation, surface, solids of revolution, first differential equations)	5-6
4th	Approximate Integration (trapezoidal rule, Simpson's rule)	7
5th	Polar, Cylindrical, and spherical coordinate in vector space	9
6th	Equation of second degree General equation of conic section-properties of conic section (Parabola – ellipse – hyperbola)	10-12
7th	Transformation and rotation of axes	13
8th	Equation of two lines – equation of sphere and surface of revolution	14
9th	Equation of planes and straight lines in space	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	Integration (integration by substitution, parts, partial fraction, repeating removing, removing roots, trigonometric substitution)	12	8	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-3,4	The Definite Integral (properties, higher and lower Riemann sum, fundamental theorem of calculus, improper integrals)	12	8	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-5,6	Applications on the Integration (area calculation, surface, solids of revolution, first differential equations)	12	8	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-7	Approximate Integration (trapezoidal rule, Simpson's rule)	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Polar, Cylindrical, and spherical coordinate in vector space	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-10-12	Equation of second degree General equation of conic section-properties of conic section (Parabola – ellipse – hyperbola)	18	12	6	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-13	Transformation and rotation of axes	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-14	Equation of two lines – equation of sphere and surface of revolution	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-15	Equation of planes and straight lines in space	6	4	2	-	a5-1,a5-2,a5-2b1-1, b1-2,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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*	*	*	*	*	*	*
	a5-1	*	*	*	*	*	*	*	*	*	*	*	*	*
	a5-2	*	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b1-1	*	*	*	*	*	*	*	*	*	*	*	*	*
	b1-2	*	*	*	*	*	*	*	*	*	*	*	*	*
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	*	*	*	*	*	*	*		*	*		
	a5-2	*	*	*	*	*	*	*		*	*		
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c7-1	*		*	*	*	*		*	*	*		
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-Calculus and Analytic Geometry, Thomas and finney Addison – Westey Publishing Company, U.S.A., 1984
- 2- A Text Book of Practical Mathematics (Two Volume), LB Prasad, Khanna Publishers Delhi – India,1990 .

Course coordinator

Head of the Department

Dr. El-Sayed Mohamed Zaki

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Chemistry

Code Symbol: BES004

Element of program: Major

Date of specification approval: 2011

Department offering the course: Basic Engineering Science. Dept.

Lecture	Tutorial	Laboratory	Total
2	----	3	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
-----	50%	25%	25%	-----	25%	-----	100%

B-Professional Information

2- Course Aims:

- It is course designed to give the engineering student a basic knowledge of engineering chemistry. It also introduces some of the environmental problems encountered to the student.

3- Course Objectives:

- To understand gas state liquid properties loose properties
- To understand water process building materials
- To study selective chemical process.
- To study pollution and treatment
- To understand dynamic equilibrium in physical and chemical process.

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	B5	C1,C5	D2, 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) Demonstrate understanding the nature and scope of engineering chemistry, the Gaseous state laws, Electrochemistry & Corrosion, Properties of solutions, Hardness of water & Methods of its treatment , Petrochemicals , Some sources & health hazards of air pollution and methods of their compartment , Dynamic equilibrium in physical and chemical processes, Building materials and Polymers.
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes. .	b5-1)Solve The existence of environmental problems . b5-2)Evaluate and analysis of data given . b5-3)Creative thinking and decision making .
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1) Professionally merge the awareness of environmental problems & methods of compartment will help the students convey their knowledge to others.
	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1)Select of the suitable means or treatment method among different alternatives . c5-2)Use of chemical reagents & equipment in the Practical
General skills	D2) Work in stressful environment and within constraints.	d2-1) Work in stressful environment and within constraints.
	D5) Lead and motivate individuals.	d5-1) Lead and motivate individuals.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	The Gaseous State	1-2
2nd	Mass and heat balance in Fuel Combustion	3-4
3rd	Electrochemistry & Corrosion .	5-6
4th	Properties of Solutions & Alloys .	7
5th	Treatment of Water .	9
6th	Air Pollution .	10
7th	Dynamic Equilibrium in Physical & Chemical Processes .	11-12
8 th	Building materials .	13
9 th	Petrochemicals .	14
10th	Polymers .	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	The Gaseous State	8	4	--	4	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEKS-3,4	Mass and heat balance in Fuel Combustion	8	4	--	4	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEKS-5,6	Electrochemistry & Corrosion .	8	4	--	4	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEK-7	Properties of Solutions & Alloys .	4	2	--	2	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Treatment of Water .	4	2	--	2	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEK-10	Air Pollution .	4	2	--	2	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEKS-11-12	Dynamic Equilibrium in Physical & Chemical Processes .	8	4	--	4	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEK-13	Building materials .	4	2	--	2	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEK-14	Petrochemicals .	4	2	--	2	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, d5-1
WEEK-15	Polymers .	4	2	--	2	a1-1,b5-1,b5-2,b5-3, c1-1,c5-1,c5-2,d2-1, 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	*	*	*	*	*	*	*		*	*			*
	b5-1	*	*	*	*	*		*		*	*		*	*
Intellectual Skills	b5-2	*	*	*	*	*		*		*	*		*	*
	b5-3	*	*	*	*	*		*		*	*		*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c5-1	*	*	*	*	*	*	*	*	*	*		*	
	c5-2	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d2-1	*	*	*			*	*	*	*	*	*		
	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)		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	*	*	*			*	*	*	*	*	*	
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*	*		
	b5-2	*	*	*	*	*	*	*		*	*		
	b5-3	*	*	*	*	*	*	*		*	*		
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c5-1	*	*	*	*		*		*	*	*		
	c5-2	*	*	*	*		*		*	*	*		
General Skills	d2-1	*		*				*	*	*	*		
	d5-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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- G. Rashed; "Engineering chemistry for engineering and applied sciences"; ISBN 9-9023-00-977

Course coordinator

Head of the Department

Dr. Reda Abo-Elazem

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Physics(2)

Code Symbol: BES005

Element of program: Major

Date of specification approval: 2011

Department offering the course: Basic Engineering Science. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	----	3	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%	40%	-----	-----	20%	-----	100%

B-Professional Information

2- Course Aims:

- The aim of this course is to provide knowledge and understanding of the basic principles of electricity, electric circuits, magnetism and magnetic materials and experimental observations.
- Knowledge of physics provides a basis for creative careers in many areas of engineering and technology.
- To continuing attempt to understand how things work

3- Course Objectives:

- Develop a good understanding of the basic concepts of electricity and magnetism and their engineering applications.
- Establishing the idea that electricity and magnetism are related phenomena.
- Introduce the basic laws of electricity and magnetism and their engineering applications.
- Give an understanding of the electric field and electric potential associated with some charge distribution.
- Explain the basic idea of the capacitors and electric current and their electric circuit (AC and DC).
- Explain the basic laws of magnetism and the sources of the magnetic field.
- Give an understanding of 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 of concepts and theories of mathematics and sciences, appropriate to electrical engineering applications	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 currents respectively. a1-2) Explain the different applications of the fundamental laws of electricity and magnetism. a1-3) Recognize the DC and AC electric circuits and their components. a1-4) Describe the different types of magnetic materials, capacitors and their engineering applications.
	A3) List characteristics of engineering materials related to the engineering applications.	a3-1) List the origin of magnetic properties of material .
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	b3-1) Identify 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, 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 lab 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 lab. 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
1	Electric charges and coulomb's law	1
2	Electric field intensity	2-3
3	electric flux, Gauss` law its application	4-5
4	Electric potential	6
5	Capacitance and dielectrics	7
6	Electric current , Resistance and Kirchhoff's law	9-10
7	Magnetic force and sources of magnetic field	11-12
8	Faraday's law , magnetic induction and AC circuits	13-14
9	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 charges and coulomb's law	5	3	--	2	a1-1,a1-2,b3-1,b3-2, c1-1,c1-2, d3-1,d3-2
WEEK-2	Electric field intensity	5	3	--	2	a1-2, c1-1, ,d3-2
WEEK-3	Cont. Electric field intensity	5	3	--	2	a1-2, c1-1, ,d3-2
WEEK-4	electric flux, Gauss` law	5	3	--	2	a1-2,a1-1,b3-1,b3-2, c1-2, d3-2
WEEK-5	Gauss` law applications	5	3	--	2	a1-2,a1-1,b3-1,b3-2, c1-2, d3-2
WEEK-6	Electric potential	5	3	--	2	a1-2, a1-3,c1-4, d3-2
WEEK-7	Capacitance and dielectrics	5	3	--	2	a1-2,c1-4, d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Electric current , Resistance	5	3	--	2	a1-2, a1-3,b2-2, c1-4, c1-3,
WEEK-10	Kirchhoff's law	5	3	--	2	a1-2, a1-3,b2-2, c1-4, c1-3,
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,b3-2,b2-1c1-3, d3-5
WEEK-14	AC circuits	5	3	--	2	a1-4,b3-2,b2-1c1-3, 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 Renoring	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	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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"; 2004, 6th edition
- 2- George shortly& Dudley Williams, "Elements of physics", 4 th edition, 1965.
- 3- F. W Sears. M. W. Zemansky and H. D Young, University physics , 6 th edition, 1982.
- 4- Frederick J. Bueche, Introduction to physics for scientists and Engineers , 4 th edition, 1980.
- 5- Douglas C. Giancoli ,Physics for scientists and Engineers with modern physics, 2 nd edition, 2000.

Course coordinator

Head of the Department

Dr. Kasim El sayed rady

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Applied Mechanics*

Code Symbol: *PRE001*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>--</i>	<i>4</i>

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 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) Explain 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 in electrical machines.
Intellectual skills	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Select Newton'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) Help 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	4	-	a1-1,a1-2, b2-1, c1-1, d3-1
WEEK-4	Mass moment of inertia	4	2	2	-	a1-1,a1-2, b2-1, c1-1, d3-1
WEEKS-5-7	Dynamics of particles and particle systems	8	4	4	-	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	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	4	-	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 Renoring	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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

Course coordinator

Dr. Isalm El-Desouki

Head of the Department

Prof. Dr. Shaban Mabrok Osheba

Course Specification

A-Basic Information

Title: Fundamental of Manufacturing Engineering **Code Symbol:** PRE002

Element of program: Major

Date of specification approval: 2011

Department offering the course: Production Engineering and Mechanical Design Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
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 inform 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 process fundamentals of measurement.

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
	A6) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
	A8) Explain current engineering technologies as related to electrical engineering	a8-1) Explain current engineering technologies as related to electrical engineering
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) Specify and evaluate 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)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	2	2	--	--	a3-1,a6-1,a8-1,b3-1, b3-2, c1-1,c8-1,c11-1, c11-2, d2-1
WEEK-2	Fundamentals of Engineering Materials	2	2	--	--	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2
WEEKS-3,4	Casting processes	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)	4	4	--	--	a3-1,a8-1,b3-1,b3-2, c1-1,c8-1,c11-1,c11-2, d2-1
WEEK-7	Welding processes	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	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)	4	4	--	--	a3-1,a6-1, 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)	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	*		*	*	*				*	*		*	
	a6-1	*	*	*	*	*	*		*	*	*			
	a8-1	*	*	*	*	*	*	*	*	*	*		*	*
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b3-2	*	*	*	*	*	*	*		*	*	*	*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c8-1	*	*	*				*	*	*	*	*		
	c11-1	*	*	*	*	*		*	*	*	*	*		
	c11-2	*	*	*	*	*		*	*	*	*	*		
General Skills	D2-1	*	*	*			*	*	*	*	*	*		

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	*	*	*			*	*		*	*		
	a6-1	*		*			*	*	*	*	*		
	a8-1	*	*	*	*	*	*	*	*	*	*		
Intellectual Skills	b3-1	*	*	*	*	*	*	*	*	*	*		
	b3-2	*	*	*	*	*	*	*	*	*	*		
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c8-1				*		*		*	*	*		
	c11-1	*		*	*		*	*	*	*		*	
	c11-2	*		*	*		*	*	*	*		*	
General Skills	d2-1	*		*				*	*	*	*		

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Workshop 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-

ا.د / حسن حسين فهمى وآخرون

1- مدخل فى الهندسة الانتاج

ا.د / احمد سالم الصباغ وآخرون

2- مقدمة فى هندسة الانتاج

مؤسسة الاهرام المصرية

3- سلسلة الاسس التكنولوجية

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

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

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

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

Course coordinator

Head of the Department

Prof.Dr. Sobhi Mohamed Ghonim

Prof. Dr. Shaban Mabrouk Osheba

Prof.Dr. Taha Ali EL- Tawel

Course Specification

A-Basic Information

Title: Discrete Mathematics

Code Symbol: BES101

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
1	2	----	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
-----	100%	-----	-----	----	-----	-----	100%

B-Professional Information

2- Course Aims:

- This course gives a Basic knowledge of Discrete Mathematics and its practical applications.

3- Course Objectives:

- To understand fundamental of Set Theory, Propositional Calculus and formal logic, Methods of Proof, Combinations, Relations, Lattices, Boolean Algebra, Recurrence Relation, Graph Theory, Algebraic Structure, Matrices and Finite State 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,A5	B1	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) Explain fundamentals of discrete mathematics.
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies of solving engineering problems related to sets, Propositional Calculus and formal logic, Methods of Proof . a5-2) Demonstrate understanding of Lattices, Boolean Algebra, Recurrence Relation, Graph Theory, Algebraic Structure, Matrices and Finite State Machine
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Select appropriate mathematical and computer-based methods to solve 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) Solve Engineering Problems
	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	Set Theory	1
2nd	Propositional Calculus and formal logic	2
3rd	Methods of Proof.	3
4th	Combinations.	4
5th	Relations.	5
6th	Lattices.	6
7th	Boolean Algebra.	7
8th	Recurrence Relation.	9
9th	Graph Theory.	10
10th	Algebraic Structure	11
11 th	Matrices	12-13
12th	Finite State Machine.	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	Set Theory	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-2	Propositional Calculus and formal logic	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-3	Methods of Proof.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-4	Combinations.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-5	Relations.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-6	Lattices.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-7	Boolean Algebra.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Recurrence Relation.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-10	Graph Theory.	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-11	Algebraic Structure	3	1	2	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEKS-12-13	Matrices	6	2	4	-	a5-1,a5-2,a5-2,b1-1, c1-1,c7-1,d3-1
WEEK-14-15	Finite State Machine.	6	2	4	-	a5-1,a5-2,a5-2,b1-1, 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	*	*	*	*	*	*	*	*	*	*	*	*	*
	a5-2	*	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b1-1	*	*	*	*	*	*	*	*	*	*	*	*	*
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	*	*	*	*	*	*	*		*	*		
	a5-2	*	*	*	*	*	*	*		*	*		
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c7-1	*		*	*	*	*		*	*	*		
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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. Anjana Gupta , "Discrete Mathematics", S.K.Kataria & Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009

Course coordinator

Head of the Department

Dr. Mohamed Amin

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Energy Conversion

Code Symbol: ECE101

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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:

- 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,A17	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 Hysterises , 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.
	A17) Explain basic electrical power system theory.	a17-1) Explain basics of rotating machines, generation of emf in ac and dc machines.
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) Select appropriate solution to Obtain E.M.F. in alternating current and direct current machines. b13-2) Select appropriate solution obtain production of torque and knowing the Principles of operation in 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) Design and perform experiments of a 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.	Lab.	
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, a17-1, 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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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:

12-1Essential 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.

12-2Recommended books

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

12-3Periodicals, 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..

Course coordinator

Head of the Department

Prof. Dr. Shokri Saad Shokralla

Prof.Dr. Shaban Mabrok Osheba

Course Specification

A-Basic Information

Title: Probability and Statistics

Code Symbol: BES102

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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:

- The course is designed to give students a basic knowledge of Probability and statistics.

3- Course Objectives:

- To understand Theory of probability, and conditionally probability, Distribution Function, and random variables, Discrete and continuous distribution function, Statistical measures, Statistical analysis, Test of hypothesis and Markovian Chains.

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,B7,B11	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) Demonstrate understanding the basic knowledge of Probability and statistics.(analysis).
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Select appropriate mathematical to solve electric circuit problems.
	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1) Solve engineering problems related to theory of probability, and conditionally probability.
	B11) Analyze results of numerical models and assess their limitations.	b11-1) Analyze results of numerical models and assess their limitations.
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 engineering problems.
	C7) Apply numerical modeling methods to engineering problems	c7-1) Apply numerical modelling methods related to electrical engineering problems
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Theory of probability, and conditionally probability.	1-2
2nd	Distribution Function, and random variables.	3-4
3rd	Discrete and continuous distribution function	5-6
4th	Statistical measures.	7,9
5th	Statistical analysis.	10-11
6th	Test of hypothesis and Mrckovian Chains	12-13
7th	Applications	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	Theory of probability, and conditionally probability.	8	4	4	-	a5-1,a5-2,a5-2b1-1, b1-2, b7-1, c1-1, c7-1,d3-1
WEEKS-3-4	Distribution Function, and random variables.	8	4	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-5-6	Discrete and continuous distribution function	8	4	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-7	Statistical measures.	4	2	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1

WEEK-8	Midterm of first Term (written examination)					
WEEK-9	Statistical measures.	4	2	2	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-10-11	Statistical analysis.	8	4	4	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-12-13	Test of hypothesis and Mrckovian Chains	8	4	4	-	a5-1,a5-2,a5-2b1-1, b1-2, b11-1, c1-1, c7-1,d3-1
WEEKS-14-15	Applications	8	4	4	-	a5-1,a5-2,a5-2b1-1, b1-2, b11-1, 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	*	*	*	*	*	*	*		*	*			*
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b7-1	*		*	*	*	*	*		*	*			
	b11-1	*		*	*	*	*	*		*		*	*	
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c7-1	*	*		*	*		*	*	*			*	*
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	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a1-1	*	*	*			*	*	*	*	*	*	
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b7-1	*		*	*		*	*		*		*	
	b11-1	*	*	*			*	*		*	*	*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c7-1	*		*	*	*	*		*	*	*		
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-Seymour Lipschutz, "Probability", McGraw Hill, 1977

Course coordinator

Prof.Dr. Mahmoud Abdel-latif

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Linear Programming*

Code Symbol: *ECE201*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Basic Engineering Science. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>----</i>	<i>4</i>

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 Geometry of linear programming..
- To Know The linear programming problems.

3- Course Objectives:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

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	B7,B9	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) Demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Identify, formulate, and solve engineering problems including linear programming.
Intellectual skills	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1) Solve engineering problems contain multivariable optimization with equality and inequality constraints.
	B9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1) Select appropriate optimum solution for 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) Create a mathematics models and solve problems in engineering applications.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Function professionally as an individual and within a team .
	D4) Demonstrate efficient IT capabilities.	d4-1) Use information technology (IT) resources effectively in engineering systems.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Single variable optimization .	1-2
2nd	Multivariable optimization with equality and inequality constraints.	3-4
3rd	Linear programming simplex method, simplex algorithm	5-6
4th	One dimensional minimization methods	7,9
5th	Unrestricted search, Golden search method	10-11
6th	Interpolation method.	12-13
7th	Unconstrained optimization technique and direct search method.	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	Single variable optimization .	8	4	4	-	a1-1,a5-1,b9-1, c1-1
WEEKS-3-4	Multivariable optimization with equality and inequality constraints.	8	4	4	-	a1-1,a5-1,b7-1, b9-1, c1-1
WEEKS-5-6	Linear programming simplex method, simplex algorithm	8	4	4	-	a1-1,a5-1,b9-1, c1-1
WEEK-7	One dimensional minimization methods (Part I).	4	2	2	-	a1-1,a5-1,b9-1, c1-1, d1-1, d4-1
WEEK-8	Midterm of first Term (written examination)					
WEEK-9	One dimensional minimization methods (Part II).	4	2	2	-	a1-1,a5-1,b9-1, c1-1, d1-1, d4-1
WEEKS-10-11	Unrestricted search, Golden search method	8	4	4	-	a1-1,a5-1,b9-1, c1-1, d1-1, d4-1
WEEKS-12-13	Interpolation method.	8	4	4	-	a1-1,a5-1,b9-1, c1-1, d1-1, d4-1
WEEKS-14-15	Unconstrained optimization technique and direct search method.	8	4	4	-	a1-1,a5-1,b9-1, 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	*	*	*	*	*	*	*		*	*			
	a5-1	*	*	*	*	*	*	*		*	*			
Intellectual Skills	b7-1	*		*	*	*	*	*		*	*			
	b9-1	*	*		*	*	*	*	*	*	*			
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
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 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	Hone Exam	Monitoring
Knowledge & Understanding	a1-1	*	*	*			*	*	*	*	*	*	
	a5-1	*	*	*	*	*	*	*		*	*		
Intellectual Skills	b7-1	*		*	*		*	*		*		*	
	b9-1	*		*	*		*	*	*	*		*	*
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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- D. Bertsimas and J. N. Tsitsiklis, Introduction to linear optimization (Athena Scientific).
- 2- S. J. Wright, Primal-dual interior-point methods (SIAM).
- 3- C. H. Papadimitriou and K. Steiglitz, Combinatorial optimization. Algorithms and complexity (Dover).

Course coordinator

Dr. Islam EL Desoki

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Statistical Methods

Code Symbol: BES103

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
-----	75%	25%	-----	----	-----	-----	100%

B-Professional Information

2- Course Aims:

- The course include probability, randomization, variables, normal distribution, t-distribution, chi-square distribution, F-distribution, confidence intervals, hypotheses testing, and correlation.

3- Course Objectives:

- Develop a basic understanding of statistical terminology
- Evaluate and analyze data for the purpose of making scientific decisions
- Demonstrate a comprehensive understanding of the use of SPSS software to present data, using various graphical methods.

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,B11	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) Explain the basics of statistical terminology a1-2) Discuss the purpose of making scientific decisions
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Demonstrate a comprehensive understanding of the use of SPSS software to present data, using various graphical methods
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Analyze and critique the use of statistical methods in educational research such as journal articles and research presentations given at seminars, workshops and conferences.
	B11) Analyze results of numerical models and assess their limitations.	b11-1) Analyze results of numerical models and assess their limitations using SPSS.
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
	C7) Apply numerical modeling methods to engineering problems	c7-1) Apply modern techniques, skills and engineering tools using proper software
General skills	D3) Communicate effectively.	d3-1) Mastering communication skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Data Analysis/SPSS	1-4
2nd	Statistical Techniques	5-7
3rd	Collecting and Interpreting Data	9-12
4th	Sampling	13-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1-4	Data Analysis/SPSS	16	8	8	-	a5-1,a5-2,a5-2b1-1, b1-2, b11-1, c1-1, c7-1,d3-1
WEEKS-5-7	Statistical Techniques	12	6	6	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEKS-9-12	Collecting and Interpreting Data	16	8	8	-	a5-1,a5-2,a5-2b1-1, b1-2,c1-1,c7-1,d3-1
WEEKS-13-15	Sampling	12	6	6	-	a5-1,a5-2,a5-2b1-1, b1-2,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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a5-1	*	*	*	*	*	*	*	*		*		*	*
	a5-2	*	*	*	*	*	*	*	*		*		*	*
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
	b11-1	*		*	*	*	*	*		*		*	*	
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	*	*	*	*	*	*	*		*	*		
	a5-2	*	*	*	*	*	*	*		*	*		
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
	b11-1	*	*	*			*	*		*	*	*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c7-1	*		*	*	*	*		*	*	*		
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-Gall, M. D., Gall, J.P., & Borg, W. R., (2002). Educational research: An introduction (7th ed.). White Plains, NY: Longman.
- 2-George, D., & Mallery, P. (2006). SPSS for Windows step by step: A simple guide and reference (6th ed.). Boston: Allyn and Bacon.

Course coordinator

Prof. Dr. Mohamed Abdel-latif

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Numerical Calculation

Code Symbol: BES104

Element of program: Major

Date of specification approval: 2011

Department offering the course: Basic Engineering Science. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
-----	75%	25%	-----	----	-----	-----	100%

B-Professional Information

2- Course Aims:

- This course is designed to give the students a basic sciences and mathematics with a thorough understanding of the fundamental knowledge necessary for engineering studies. To prepare students for engineering analysis and problem solving using appropriate mathematical and computational methodologies along with experimental and data analysis techniques.

3- Course Objectives:

- To understand fundamental concepts, definitions and theorems of calculus algebra and geometry such as Number System and Error Analysis, Matrix Inversion and Eigen Values, Curve Fitting and Method of Least Squares, Finite Differences, Interpolation, Numerical Differentiation, Numerical Integration, Ordinary Differential Equation and Numerical Solution of Partial Differential 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,A5	B1	C1,C7	D1, 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 the basics of numerical calculation .
	A5) Illustrate Methodologies of solving engineering problems, data collection and interpretation	a5-1) Illustrate Methodologies of solving Math. problems using numerical calculation techniques..
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Select appropriate numerical calculation techniques for solving math. problems related to electrical power and machines.
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 numerical calculation to solve Engineering Problems.
	C7) Apply numerical modeling methods to engineering problems	c7-1) Apply numerical modeling methods related to electrical engineering problems
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Collaborate effectively within multidisciplinary team.
	D3) Communicate effectively.	d3-1) Mastering communication skills.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Number System and Error Analysis.	1
2nd	Algebraic and Transcendental Equations.	2
3rd	Matrix Inversion and Eigen Values.	3
4th	Curve Fitting and Method of Last Squares.	4
5th	Finite Differences.	5
6th	Interpolation.	6-7
7th	Numerical Differentiation.	9-10
8th	Numerical Integration.	11-12
9th	Ordinary Differential Equation.	13-14
10th	Numerical Solution of Partial Differential Equations.	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Number System and Error Analysis.	4	2	2	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEK-2	Algebraic and Transcendental Equations.	4	2	2	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEK-3	Matrix Inversion and Eigen Values.	4	2	2	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEK-4	Curve Fitting and Method of Last Squares.	4	2	2	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEK-5	Finite Differences.	4	2	2	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEKS-6-7	Numerical Differentiation (Part I).	8	4	4	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEK-8	Midterm of first Term (written examination)					
WEEKS-9-10	Numerical Differentiation (Part II).	8	4	4	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEKS-11-12	Numerical Integration.	8	4	4	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEKS-13-14	Ordinary Differential Equation.	8	4	4	-	a1-1,a5-1,b1-1,c1-1, c7-1, d1-1, d3-1
WEEK-15	Numerical Solution of Partial Differential Equations.	4	2	2	-	a1-1,a5-1,b1-1,c1-1, c7-1, 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	a1-1	*	*	*	*	*	*	*		*	*			*
	a5-1	*	*	*	*	*	*	*	*		*		*	*
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c7-1	*	*		*	*		*	*	*			*	*
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		*
	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	*		*		*	*	*		*		*	
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c7-1	*		*	*	*	*		*	*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d3-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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- Girish Nayyar, "Numerical Methods", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009
- 3-Calculus and Analytic Geometry, Thomas and finney Addison – Westey Publishing Company, U.S.A., 1984
- 2- A Text Book of Practical Mathematics (Two Volume), LB Prasad, Khanna Publishers Delhi – India,1990 .

Course coordinator

Dr. El-Sayed Mohamed Zaki

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *IT Systems*

Code Symbol: *ECE102*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>-----</i>	<i>3</i>	<i>5</i>

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%	10%	50%	30%	-----	100%

B-Professional Information

2- Course Aims:

This course introduces the student to basic knowledge and understanding of IT systems. On course completion, the student should be able to establish an IT system suitable for a specific task and set up necessary software. Student will also gain more about system security and data.

3- Course Objectives:

- To get know computer basics.
- To understand and experience computer hardware & software
- To be knowledgeable about operating systems of computer + Computer programming 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	A2,A25, A27,A28	B18,B22	C18, C19	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 computer basics. a2-2) Discuss topics related to operating systems of computer + Computer programming Languages
	A25) Explain quality assessment of computer systems.	a25-1) Explain quality assessment of computer systems
	A27) Technologies of data, image and graphics representation and organization on computer storage media	a27-1) Explain current technology related to computer hardware and software.
	A28) Modern trends in information technology and its fundamental role in business enterprises	a28-1) Demonstrate understanding how to obtain modern trends in information technology using INTERNET.
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Adopt suitable theoretical and computer-based techniques to use for the analysis of Engineering Problems. b18-2) Design computer algorithms, flow charts and program to solve small engineering problem
	B22) Capability of integrating computer objects running on different system configurations.	b22-1) Capability of building a computer Network.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Access the internet and search for information to obtain knowledge about a specific problem. c19-2) Use computational tools and software packages c19-3) Knowing some facts about some applications using an appropriate high level programming.
General skills	D3) Communicate effectively.	d3-1 Use information technologies effectively
	D4) Demonstrate efficient IT capabilities.	d4-1) Gain an experience for selecting a suitable software for solving problems related to electrical engineering.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	General Concept Types of computer and their features-Business IT systems - Engineering IT systems-requirements for IT systems	1-2
2nd	COMPUTER HARDWARE Hardware components CPU – Power supply – Memory basics – Memory types – Processors –CD types and manufacturing – CD drives assembly – Microprocessor layout- Motherboard .	3-4
3rd	Information Network Basics Network types – Protocols –router- network traffic - Switches – Ethernet networks.	5-6
4th	Internet Basics - Client and servers – IP address- Domain Name- Hierarchy of Networks- NAP-	7,9
5th	Computer viruses History- Early viruses – Types of viruses – protection from viruses –how to protect your computer - Firewalls – function of firewalls	10-12
6th	Information security Computer security – Copyright – Data protection legislation	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	General Concept Types of computer and their features-Business IT systems - Engineering IT systems- requirements for IT systems	10	4	---	6	a2-1,a2-2, b18-1, d3-1,d3-2
WEEKS-3-4	COMPUTER HARDWARE Hardware components CPU – Power supply – Memory basics – Memory types – Processors –CD types and manufacturing – CD drives assembly – Microprocessor layout- Motherboard .	10	4	---	6	a2-1,a2-2, a25-1, b18-1, b18-2, d3-1,d3-2
WEEKS-5-6	Information Network Basics Network types – Protocols –router- network traffic - Switches – Ethernet networks.	10	4	---	6	a2-1,a2-2, b18-1, b18-2, b22-1, d3-1, d3-2
WEEK-7	Internet Basics	5	2	---	3	a2-1,a2-2, a28-1, b18-1, b18-2, c19-1, d3-1,d3-2
WEEK-8	Midterm written examination					
WEEK-9	Client and servers – IP address- Domain Name- Hierarchy of Networks- NAP	5	2	---	3	a27-1,1b18-1,b18-2, c19-2, c19-3,d3-1, d3-2
WEEKS-10-12	Computer viruses History- Early viruses – Types of viruses – protection from viruses –how to protect your computer - Firewalls – function of firewalls	15	6	---	9	a27-1,1b18-1,b18-2, c19-2, c19-3,d3-1, d3-2
WEEKS-13-15	Information security Computer security – Copyright – Data protection legislation	15	6	---	9	a27-1,1b18-1,b18-2, c19-2, c19-3,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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a2-1	*		*	*	*	*			*	*			*
	a2-2	*		*	*	*	*			*	*			*
	a25-1	*												
	a27-1	*	*	*	*	*		*		*				*
	a28-2	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-2	*	*		*	*								*
	b22-1	*								*			*	*
Professional Skills	c19-1	*			*	*		*					*	*
	c19-2	*			*	*		*					*	*
	c19-3	*			*	*		*					*	*
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	a2-1	*	*	*				*		*	*	*	
	a2-2	*	*	*				*		*	*	*	
	a25-1	*											
	a27-1				*				*		*		
	a28-2	*				*	*		*	*			*
Intellectual Skills	b18-1	*		*		*	*	*		*		*	
	b18-2	*		*		*		*	*			*	*
	b22-1	*		*		*		*			*		
Professional Skills	c19-1	*		*	*	*		*		*	*		*
	c19-2	*		*	*	*		*		*	*		*
	c19-3	*		*	*	*		*		*	*		*
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for obtaining modern trends in information technology.

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-Prashant Palvia, and Shailendra Palvia, "Global Information Technology Strategy and Challengers", All Harris, 2007
- 2-David Reed, "A Balanced Introduction to Computer Science", Prentice Hall , ISBN :013046709X, 2004.
- 3-Max Hailperin, Barbara Kaiser, and Karl Knight Paperback, "An Introduction to Computer Science Using Scheme" ISBN0-534-95211-9, 1999
- 5-Robert L. Read , "How to be a Programmer: A Short, Comprehensive, and Personal Summary", 2003
- 6-Introduction to Computers and Programming , [http// citeseerx.ist.psu.edu/viewdoc/ download? doi=10.1.1.184...](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.184...)
- 7- ICDL materials,

Course coordinator

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Electrical Materials*

Code Symbol: *ECE202*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>		<i>4</i>

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 of electrical materials, their classifications and applications. 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) Explain the atomic structure, properties and applications of the electrical materials. a3-2) Demonstrate the high arc current characteristics. a3-3) Explain the requirements of a permanent magnet. a3-4) Demonstrate properties and functions of special purpose materials.
	A21) Distinguish basic power system design concepts for underground, cable tray, grounding, and lighting systems.	a21-1) Explain the 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) Select appropriate solution to 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) Assess and analyze the variation of resistance with temperature of conductors, insulators and semi-conductors.
Professional skills	C7) Apply numerical modeling methods to engineering problems.	c7-1) Specify and evaluate the model the arc. c7-2) Specify and evaluate model the material by FEM package.
	C16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines.	c16-1) Specify and evaluate the process of polarization of a dielectric material.
General skills	D6) Effectively manage tasks, time, and resources.	d6-1) Select a suitable electrical material for any equipment in industry. d6-2) Apply the technique of paper impregnation in industry.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Classification and conducting of electrical materials	1-3
2 nd	High current Arcs	4-5
3 rd	Electrical materials applications	6-13
4 th	Bearings and Lubrication of Electrical Machine	14
5 th	Basics of Earthing	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	<u>Classification of electrical materials:</u> - Classification of electrical engineering materials and inter atomic bonds.	4	2	2		a3-1
WEEK-2	<u>Conducting materials:</u> - Conductivity, resistivity and factors affecting resistivity of electrical conductors. - Classification of conducting materials and superconductivity.	4	2	2		a3-1, b6-1, d6-1
WEEK-3	<u>Conducting materials cont.:</u> - 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
WEEK-4	<u>High current Arcs :</u> - DC arc characteristic equation. - AC static arc characteristics - Energy balance characteristics. - Energy balance theories	4	2	2		a3-2 , c7-1
WEEK-5	<u>High current Arcs cont. :</u> - Cassie / Mayr equations, Arc time constant - Arcing Fault and arc Furnace equations.	4	2	2		a3-2 , c7-1
WEEK-6	<u>Semiconducting materials:</u> - Semi-conductor materials and applications. - Materials used for electronic components.	4	2	2		a3-1, b6-1 , d6-1
WEEK-7	<u>Insulating materials:</u> - 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	<u>Insulating materials cont.:</u> - Ideal insulating material - Classification of insulating materials.	4	2	2		a3-1, b5-1, d6-1, d6-2
WEEK-10	<u>Insulating materials cont.:</u> - Applications: Plastics, natural insulating materials and gaseous materials.	4	2	2		a3-1, b5-1 , d6-1
WEEK-11	<u>Dielectrics Materials:</u> - 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
WEEK-12	<u>Magnetic Materials:</u> - Classification of magnetic materials. - Application and Requirements of permanent magnets.	4	2	2		a3-1, a3-3, b5-2, b5-3 , d6-1
WEEK-13	<u>Special Materials:</u> Fuses, Solders, Lead, Carbon and Bimetals or thermostats.	4	2	2		A3-4 , d6-1
WEEK-14	<u>Bearings and Lubrication of Electrical Machine:</u> - Types of bearings. - Lubrication of electrical equipment.	4	2	2		b5.4
WEEK-15	<u>Basics of Earthing</u>	4	2	2		a21-1

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	*		*						*	*			
	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			*										

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	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

1-Laptop, data show 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.

Course coordinator

Prof. Dr.Shokry Sad Shokralla

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Linear systems*

Code Symbol: *ECE203*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>---</i>	<i>4</i>

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:

After completing the course, the student should be able to: model physical systems, analyze linear feedback systems, synthesize simple PID controllers as well as master pole-assignment and observer-based state feedback design techniques. She/he will comprehend fundamental limitations of control system design..

3- Course Objectives:

- To understand the principles of mathematics necessary to study and understand performance and behavior of electrical and computer components and systems.
- To understand methodologies of designing methods and tools for engineering 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	B14	C6,C12	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) Illustrate model physical systems. a4-2) Explain comprehend fundamental limitations of control system design.
Intellectual skills	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.	b14-1) Analyze linear feedback systems. b14-2) Synthesize simple PID controllers as well as master pole-assignment and observer-based state feedback design techniques.
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) Select and apply appropriate computer based methods, mathematical and scientific principles in analyzing general systems
	C12) Prepare and present technical reports.	c12-1) Prepare technical and operational specifications of components of electrical systems.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Group working
	D3) Communicate effectively.	d3-1) Gain experience to analyze the performance of dynamical systems equipped with controllers.
	D4) Demonstrate efficient IT capabilities.	d4-1) Use an appropriate high level program for solving a mathematical problem using.

6- Course Topics

Topic No.	General Topics	Weeks
1st	Introduction, state space representations	1
2nd	Linear algebra : Linear spaces, basis, norms, inner products, Change of bases, $y = Ax$, eigen values, eigenvectors	2
3rd	Linear algebra : Diagonalization, Jordan forms, symmetric matrices	3
4th	Functions of a square matrix, matrix exponential, Cayley Hamilton Theorem	4
5th	State space solutions : Time Invariant and Time Varying cases, properties of the state transition matrix	5
6th	State space solutions : State-transition matrix, properties	6
7th	Discretization of continuous systems, discrete-time state space solutions	7
8th	Internal Stability: definitions, Uniform exponential stability and asymptotic stability. Time varying and Time Invariant cases	8
9 th	Lyapunov stability theorems: Time varying and time invariant cases	9
10 th	Controllability and Observability, Kalman rank tests, PBH tests, decompositions	10
11 th	Observability : Kalman decomposition, minimal realizations, canonical forms	11
12th	State feedback : Pole placement	12
13 th	estimator design	13
14 th	reduced order observers/BIBO stability	14

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Introduction, state space representations	2	2	---	4	a4-1,a4-2
WEEK-2	Linear algebra : Linear spaces, basis, norms, inner products, Change of bases, $y=Ax$, eigen values, eigenvectors	2	2	---	4	a4-1,a4-2,b14-1, b14-2
WEEK	Linear algebra : Diagonalization, Jordan forms, symmetric matrices	2	2	---	4	a4-1,a4-2,b14-1, b14-2
WEEK-4	Functions of a square matrix, matrix exponential, Cayley Hamilton Theorem	2	2	---	4	a4-1,a4-2,b14-1, b14-2
WEEK-5	State space solutions : Time Invariant and Time Varying cases, properties of the state transition matrix	2	2	---	4	a4-1,a4-2,b14-1, b14-2
WEEK-6	State space solutions : State-transition matrix, properties	2	2	---	4	a4-1,a4-2,b14-1, b14-2
WEEK-7	Discretization of continuous systems, discrete-time state space solutions	2	2	---	4	a4-1,a4-2,b14-1, b14-2
WEEK-8	Midterm written examination					
WEEK-9	Internal Stability: definitions, Uniform exponential stability and asymptotic stability. Time varying and Time Invariant cases	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,d1-1, d3-1,d4-1
WEEK-10	Lyapunov stability theorems: Time varying and time invariant cases	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,d1-1, d3-1,d4-1
WEEK-11	Controllability and Observability, Kalman rank tests, PBH tests, decompositions	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,d1-1, d3-1,d4-1
WEEK-12	Observability : Kalman decomposition, minimal realizations, canonical forms	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,d1-1, d3-1,d4-1
WEEK-13	State feedback : Pole placement	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,d1-1, d3-1,d4-1
WEEK-14	estimator design	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,d1-1, d3-1,d4-1
WEEK-15	reduced order observers/BIBO stability	2	2	---	4	a4-1,a4-2,b14-1, b14-2,c12-1,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	Projects	Site visits	Research and Reporting	Group Working	Discovering	simulation and Modeling	Lab. Experiments
Knowledge & understanding	a4-1	*	*	*	*	*	*	*	*	*	*			
	a4-2	*	*	*	*	*	*	*	*	*	*			
Intellectual Skills	b14-1	*		*	*	*	*				*			*
	b14-2	*		*	*	*	*				*			*
Professional Skills	c6-1	*	*	*	*	*	*	*	*	*	*		*	*
	c12-1	*	*	*	*	*	*	*	*	*	*			*
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	a4-1	*	*	*	*			*		*	*	*	
	a4-2	*	*	*	*			*		*	*	*	
Intellectual Skills	b14-1	*	*	*			*	*		*	*		
	b14-2	*	*	*			*	*		*	*		
Professional Skills	c6-1	*		*	*	*		*	*	*	*	*	
	c12-1	*	*	*	*		*	*	*	*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d3-1	*	*	*	*		*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory Usage

INTERNET Lab. is used for searching about different web. sites deals with newly technology related to the course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1- Linear System Theory, by Wilson J. Rugh, 2nd Edition, Prentice Hall, 1996
- 2- C.T. Chen, Linear Systems Theory and Design. Oxford University Press, 3rd Edition, 1999.
- 3- F. Callier and C. Desoer, Linear System Theory, Springer Verlag, 1991.
- 4- P. Antsaklis and A. Michel, Linear Systems McGrawHill, 1997.
- 5- G. Strang, Linear Algebra and its Applications 3rd edition, 1988 (Linear Algebra Reference)
- 6- Goodwin, Graham C., Graebe, Stefan F., Salgado, Mario E., 'Control system design', Prentice Hall, 2001.

Course coordinator

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Integrated Circuit Engineering

Code Symbol: ECE204

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
---	---	40%	40%	---	10%	10%	100%

B-Professional Information

2- Course Aims:

- Give the basic knowledge of Integrated Circuits (ICs)

3- Course Objectives:

- Design methods and tools for engineering systems
- Demonstrate understanding Frequency Response of Operational Amplifiers
- Illustrate Applications of Operational Amplifiers

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	A24	B5	C5	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1)Distinguish basic integrated circuits design engineering. a24-2) Explain frequency response of operational amplifiers a24-3)Illustrate applications of operational amplifiers
Intellectual skills	B5) Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1)Test, use, troubleshoot and measure the integrated circuits. b5-2)Prepare technical and operational specifications of integrated circuits .
Professional skills	C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1) Design and perform experiments, as well as analyze and interpret experimental results related to IC's. c5-2)Test and examine components, equipment and systems of using the proper hardware interface.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	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 st	Differential and Cascade Amplifiers.	1-2
2 nd	Introduction to Operational Amplifiers.	3-4
3 rd	Negative Feedback in Op-Amps.	5-6
4 th	Frequency Response of an Op-Amps.	7,9
5 th	Application of Op-Amps. (General Applications, Active Filters, Oscillators, Comparators and Converters).	10-13
6 th	Spicalised IC Applications (The 555 IC Timer, Phase-Locked Loops, Voltage Regulators).	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	Differential and Cascade Amplifiers.	8	4	4	--	a24-1
WEEKS-3-4	Introduction to Operational Amplifiers.	8	4	4	--	a24-1,a24-3,b25-1, b25-2
WEEKS-5-6	Negative Feedback in Op-Amps.	8	4	4	--	a24-1,a24-3,b25-1, b25-2
WEEK-7	Frequency Response of an Op-Amps (Part I).	4	2	2	--	a24-2,c25-1,c25-2, d1-1,d4-1
WEEK-8	Midterm written examination					
WEEK-9	Frequency Response of an Op-Amps (Part II).	4	2	2	--	a24-2,c25-1,c25-2, d1-1,d4-1
WEEKS-10-13	Application of Op-Amps. (General Applications, Active Filters, Oscillators, Comparators and Converters).	16	8	8	--	a24-1,a24-3,b25-1, b25-2, c25-1,c25-2, d1-1,d4-1
WEEKS-14-15	Specialized IC Applications (The 555 IC Timer, Phase-Locked Loops, Voltage Regulators).	8	4	4	--	a24-1,a24-3,b25-1, b25-2, c25-1,c25-2, 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	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
	a24-3	*		*	*	*		*		*			*	*
Intellectual Skills	b5-1	*	*	*	*	*		*		*	*		*	*
	b5-2	*	*	*	*	*		*		*	*		*	*
Professional Skills	c5-1	*		*	*	*	*	*	*	*	*		*	*
	c5-2	*		*	*	*	*	*	*	*	*		*	*
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	a24-1	*	*	*	*	*	*	*	*	*	*	*	
	a24-2	*	*	*	*	*	*	*	*	*	*	*	
	a24-3	*	*	*	*	*	*	*	*	*	*	*	
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*	*		
	b5-2	*	*	*	*	*	*	*		*	*		
Professional Skills	c5-1	*	*	*	*		*		*	*	*		
	c5-2	*	*	*	*		*		*	*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

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

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-O.J.B.Gupta, "Linear Integrated Circuits", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2010.

Course coordinator

Head of the Department

Prof. Dr. Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Electrical Drawing*

Code Symbol: *ECE002*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>1</i>	<i>4</i>	<i>--</i>	<i>5</i>

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%	20%	40%	---	---	----	100%

B-Professional Information

2- Course Aims:

- To give the students a comprehensive training for preparing assembly and wiring diagrams of electric machines, electric devices, installations equipments and power systems.

3- Course Objectives:

- To provide students with an understanding of the fundamental knowledge necessary for the practice of, or for advanced study in, electrical engineering, including its scientific principles, rigorous analysis, and creative design..
- Improve ability to design and conduct experiments, as well as to analyze and interpret data

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	B3	C13	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Distinguish design methods and tools for electrical power and machines equipment and systems.
Intellectual skills	B3)Think in a creative and innovative way in problem solving and design.	b3-1-) Think in a creative for design electrical circuits..
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 perform assembly drawing and wiring diagram for electrical apparatus.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improve ability to work in a group.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Both conventional symbols , light and bell circuits , wiring installation in small residences.	1-2
2 nd	Both wiring diagram for measuring instruments and rectification circuits.	3-4
3 rd	Wiring diagram and single line diagram for direct current motor and generator connections.	5-6
4 th	Both assembly drawing and wiring diagram for electrical apparatus	7,9
5 th	Both assembly drawing and wiring diagram for single-phase transformer and field system of an ac generator.	10-11
6 th	Both assembly drawing and wiring diagram for induction motor and salient-pole machine.	12-13
7 th	Protection layout for transformer, direct current machines and alternating current machines.	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	Both conventional symbols , light and bell circuits, wiring installation in small residences.	10	2	8	--	a14-1, b3-1, c13-1, d1-1
WEEKS-3-4	Both wiring diagram for measuring instruments and rectification circuits.	10	2	8	--	a14-1, b3-1, c13-1, d1-1
WEEKS-5-6	Wiring diagram and single line diagram for direct current motor and generator connections.	10	2	8	--	a14-1, b3-1, c13-1, d1-1
WEEK-7	Both assembly drawing and wiring diagram for electrical apparatus (Part-I)	5	1	4	--	a14-1, b3-1, c13-1, d1-1
WEEK-8	Midterm written examination					
WEEK-9	Both assembly drawing and wiring diagram for electrical apparatus (Part-II)	5	1	4	--	a14-1, b3-1, c13-1, d1-1
WEEKS-10-11	Both assembly drawing and wiring diagram for single-phase transformer and field system of an ac generator.	10	2	8	--	a14-1, b3-1, c13-1, d1-1
WEEKS-12-13	Both assembly drawing and wiring diagram for induction motor and salient-pole machine.	10	2	8	--	a14-1, b3-1, c13-1, d1-1
WEEKS-14-15	Protection layout for transformer, direct current machines and alternating current machines.	10	2	8	--	a14-1, b3-1, c13-1, 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	a14-1	*		*	*	*	*						*	
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
Professional Skills	c13-1	*		*	*	*		*	*		*		*	*
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	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge& Understanding	a14-1	*		*				*		*	*		*
Intellectual Skills	b3-1	*	*	*	*	*	*	*	*	*	*		*
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		*
General Skills	d1-1	*	*	*		*	*	*	*		*		*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in electrical drawing course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-Edwin P.Anderson, "Wiring diagrams for light and power", D.B.Taraporevals Sons&Co., Pvtltd, India 1970.
- 2-Surjit Singh," A Text book of Electrical Design and Drawing " Part 1 ,S.K.KATARIA and Sons Publishers of Quality Engineering Books LUDH IANA , DELHI.
- 3-Surjit Singh," A Text book of Electrical Design and Drawing " Part 2 ,S.K.KATARIA and Sons Publishers of Quality Engineering Books LUDH IANA , DELH .
- 4-S.L.Uppal,"Electrical wiring , Estimating and Costing", Book, Khanna Publishers, 2-b , Nath Market , Nai Sarak, DELHI.

Course coordinator

Head of the Department

Prof.Dr. Shokry Sad Shokralla

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Electromagnetic Fields*

Code Symbol: *ECE003*

Element of program: *Major/ minor*

Date of specification approval: *2012*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>-</i>	<i>4</i>

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,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).
	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
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	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Coulomb's Law and Electric Field Intensity 	4	2	2	-	b13-1, c1-1
WEEK-3	<ul style="list-style-type: none"> Electric Flux Density, Gauss's Law and Divergence 	4	2	2	-	b13-1, c1-1, a8-1
WEEKS-4-5	<ul style="list-style-type: none"> Work, Energy, Potential and Gradient 	8	4	4	-	b13-1, c1-1
WEEKS-6-7	<ul style="list-style-type: none"> Conductors and resistance 	8	4	4	-	a1-1, a3-1, b2-1, b6-1, c1-1, d1-1
WEEK-8	Mid term written Examination1 (Term Work)					
WEEKS-9-10	<ul style="list-style-type: none"> Dielectrics and capacitance 	8	4	4	-	a1-1, a3-1, b2-1, b6-1, c1-1
WEEK-11	<ul style="list-style-type: none"> Poisson's and Laplace's Equations. 	4	2	2	-	c1-1
WEEK-12	<ul style="list-style-type: none"> The Steady Magnetic Field and Curl 	4	2	2	-	c1-1
WEEK-13	<ul style="list-style-type: none"> Magnetic Forces, Torque, Magnetic Materials and Inductance. 	4	2	2	-	a1-1, a3-1, b2-1, c1-1
WEEKS-14-15	<ul style="list-style-type: none"> Time - Varying Fields, Maxwell's Equations, and Displacement Current 	8	4	4	-	a1-1, a8-1, a15-1, c1-1, 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	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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, Saunders College Publishing, 1996.
- 3- Course notes.

Course coordinator

Head of the Department

Dr.Hadi El-Sayed El-Gendi

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Electronics*

Code Symbol: *ECE103*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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%	20%	---	20%	20%	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) Explain 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) Assess and evaluate the 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) Design and perform experiments 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) 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 st	Semiconductor materials	1-2
2 nd	Semiconductor P.N junction	3-4
3 rd	Semiconductor diodes, light – emitting diodes, (LED), light dependant disdes (LDD), liquied crystal display (LCD) zenner....etc	5-6
4 th	Diode circuits, rectifiers, clipping, clamping and application in power supplies "D.C supplies".	7,9
5 th	Bipolar Transistors, Unipolar transistors, construction, biasing techniques. Circuits comctions "common base, collector and common emitters	10-11
6 th	Simple applications: Small – signal amplifier and large signal amplifiers	12-13
7 th	Special application: Using transistors as a switch .	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	Semiconductor materials	10	4	--	6	a8-1
WEEKS-3-4	Semiconductor P.N junction	10	4	--	6	a8-1
WEEKS-5-6	Semiconductor diodes, light – emitting diodes, (LED), light dependant diodes (LDD), liquid crystal display (LCD) zener....etc	10	4	--	6	a8-1,b13-1,b13-2, c13-1,c13-2,d1-1, d4-1
WEEK-7	Diode circuits, rectifiers, clipping, clamping.	5	2	--	3	a8-1,b13-1,c13-1, d1-1,d4-1
WEEK-8	Midterm written examination					
WEEK-9	Application in power supplies "D.C supplies".	5	2	--	3	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	10	4	--	6	a8-1,b13-1,b13-2, c13-1,d1-1
WEEKS-12-13	Simple applications: Small – signal amplifier and large signal amplifiers	10	4	--	6	a8-1,b13-1,b13-2, c13-1,d1-1,d4-1
WEEKS-14-15	Special application: Using transistors as a switch .	10	4	--	6	a8-1,b13-1,b13-2, c13-1,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	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1 Laboratory

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

11-2 Library 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. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Circuits(1)*

Code Symbol: *ECE104*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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:

- To know the different dc circuit parameters and components.
- To solve problems in application of the different principles, theorems and laws in dc circuits.
- To help the students better understanding the basic principles correctly and confidently.
- Develop analytical skills in electric circuit analysis.

3- Course Objectives:

- Understand fundamentals, including Ohm's, Kirchoff's and conservation laws.
- Write and solve loop current and node voltage equations for arbitrary DC, AC networks including dependent and independent sources.
- Formulate Norton and Thevenin equivalent circuits at an arbitrary interface set of points for complex networks including dependent and independent sources.
- Apply basic mathematical, scientific, and engineering concepts to technical problem solving.
- Understand the sinusoids, phasors analysis, and powers in ac circuits.
- Understand the series and parallel resonance.
- Study the basics of magnetically coupled 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	A13,A17,A22	B13	C13	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Illustrate methodologies to solve loop current and node voltage equations for arbitrary DC, AC networks including dependent and independent sources. a13-2) Explain how to formulate Norton and Thevenin equivalent circuits at an arbitrary interface set of points for complex networks including dependent and independent sources. a13-3) Apply basic mathematical, scientific, and engineering concepts to technical problem solving.
	A17) Explain basic electrical power system theory.	a17-1) Explain fundamentals, including Ohm's, Kirchoff's and conservation laws. a17-2) Illustrate the sinusoids, phasors analysis, and powers in ac circuits. a17-3) Demonstrate Understanding the series and parallel resonance. a17-4) Explain the basics of magnetically coupled circuits.
	A22) Explain basics of low voltage power systems	a22-1) Explain Series Resistors and Voltage Division, Parallel Resistors and Current Division, Y-Delta Transformations. Nodal Analysis, and Mesh Analysis.
Intellectual skills	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Use basic principles and concepts in solving problems in electric circuits and systems. b13-2) Use the different methods of analysis and network theorems in analysis of electric circuits.
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 perform experiments of dc circuits c13-2) Test and examine of the equivalence of dc network theorems.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) An ability to discuss problems and working effectively as a member in a multi-disciplinary team.
	D4) Demonstrate efficient IT capabilities.	d4-1) An ability to use different sources to obtain knowledge and information required to analyze electric circuits.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	DC Circuits: Systems of Units, Charge and Current, Voltage, Power and Energy, Circuit Elements.	1
2 nd	Ohm's Law, Kirchhoff's Laws, Series Resistors and Voltage Division, Parallel Resistors and Current Division, Wye-Delta Transformations. Nodal Analysis, and Mesh Analysis.	2-3
3 rd	Linearity Property, Superposition, Source Transformation, Thevenin's and Norton's Theorems, and Maximum Power Transfer Theorem.	4-6
4 th	Inductors and capacitors.	7
5 th	AC Circuits: Characteristics of a sinusoid. The phasor concept, Phasor relationships for R, L, and C elements. Impedance and admittance.	9-10
6 th	Effective values of current and voltage. Instantaneous, average and apparent power and power factor. Three-phase Y- and Delta- connections.	11-12
7 th	Parallel and series resonance.	13
8 th	Magnetic circuits and magnetically - coupled circuits.	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	DC Circuits: Systems of Units, Charge and Current, Voltage, Power and Energy, Circuit Elements.	5	2	--	3	a13-3
WEEKS-2-3	Ohm's Law, Kirchhoff's Laws, Series Resistors and Voltage Division, Parallel Resistors and Current Division, Wye-Delta Transformations. Nodal Analysis, and Mesh Analysis.	10	4	--	6	a17-1,a22-1,b13-1, b13-2, c13-1, c13-2, d1-1, d1-4
WEEKS-4-6	Linearity Property, Superposition, Source Transformation, Thevenin's and Norton's Theorems, and Maximum Power Transfer Theorem.	15	6	--	9	a13-1,a13-2,a13-3, b13-1,b13-2,d1-1, d1-4
WEEK-7	Inductors and capacitors.	5	2	--	3	a13-1, b13-1,b13-2
WEEK-8	Midterm written examination					
Weeks-9-10	AC Circuits: Characteristics of a sinusoid. The phasor concept, Phasor relationships for R, L, and C elements. Impedance and admittance.	10	4	--	6	a17-2,b13-1,b13-2, c13-1, c13-2, d1-1, d1-4
Weeks-11-12	Effective values of current and voltage. Instantaneous, average and apparent power and power factor. Three-phase Y- and Delta- connections.	10	4	--	6	a13-1,b13-1,b13-2, c13-1, c13-2, d1-1, d1-4
WEEK-13	Parallel and series resonance.	6	6	--	--	a17-3,b13-1,b13-2, d1-1, d1-4
WEEKS-14-15	Magnetic circuits and magnetically - coupled circuits.	10	4	--	6	a17-4, b13-1,b13-2, c13-1, d1-1, d1-4

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain	Projects	Site visits	Research and	Group	Discovering	simulation and	Lab. Experiments
Knowledge & understanding	a13-1	*	*	*	*			*		*	*		*	
	a13-2	*	*	*	*			*		*	*		*	
	a13-3	*	*	*	*			*		*	*		*	
	a17-1	*	*			*					*			
	a17-2	*	*			*					*			
	a17-3	*	*			*					*			
	a17-4	*	*			*					*			
	a22-1	*	*		*	*			*				*	
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	a13-1	*		*				*		*			*
	a13-2	*		*				*		*			*
	a13-3	*		*				*		*			*
	a17-1	*		*				*					*
	a17-2	*		*				*					*
	a17-3	*		*				*					*
	a17-4	*		*				*					*
	a22-1	*						*					*
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1 Laboratory

Electric Circuit Lab. is used for searching all information about different examples in electric circuit course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-Charles K. Alexander, and Matthew O. Sadiku, "Fundamentals of Electric Circuits", 3rd Edition, McGraw Hill Higher Education.
- 2-Robert L. Boylestad, "Introductory Circuit Analysis", Tenth Edition, (2003), Pearson Education, Inc., Saddle River, New Jersey 07 458.
- 3-Thomas L. Floyd, "Principles of Electric Circuits", Eighth Edition, Pearson Education, Inc., Upper Saddle River, New Jersey, 2007.
- 4-Schaum's Outline Series Theory and Problems of "Electric Circuits", Mc Graw-Hill Box Company, 4th Edition, 2003.

Course coordinator

Prof.Dr.Moustafa El-Sayed El-Shebiny

Head of the Department

Prof.Dr.Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Digital logic

Code Symbol: ECE105

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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:

- Use binary number system representations (signed-magnitude, two's complement, one's complement) and perform addition and subtraction with those representations.
- Analyze and synthesize combinational circuits (derive a Boolean equation from logic circuit diagram or vice-versa, write equations in canonical forms).
- Identify prime implicants, distinguished 1-cells, essential prime implicants, and minimum sums for Karnaugh maps. Minimize logic functions using Karnaugh maps and the Quine-McCluskey algorithm.

3- Course Objectives:

- To apply knowledge to design digital logic circuit.
- To study the characteristics of different digital logic components..

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	B15	C13,C15	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
	A20) Classify logic circuits.	a20-1) Illustrate logic gates and their application, a20-2 Study the characteristics of different digital logic components. a20-3) Apply knowledge to design digital logic circuit.
Intellectual skills	B15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	b15-1) Develop the skills required to follow the signal paths and determine the outputs of digital circuits. b15-2) Select the appropriate mathematical to identify, formulate, and solve digital electronic problems.
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1) Use modern engineering techniques for analysis and design. c13-2) Test, examine, modify and troubleshoot digital circuits.
	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	c15-1) Use of several CAD tools for logic synthesis
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) Improved ability to use the Internet to locate information.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to digital logic design .	1-2
2 nd	Boolean algebra, switching functions, Karnaugh maps.	3-4
3 rd	modular combinational circuit design, flip-flops, latches.	5-6
4 th	programmable logic circuit design.	7,9
5 th	synchronous sequential circuit design.	10-11
6 th	Use of several CAD tools for logic synthesis.	12-13
7 th	State assignment and technology mapping.	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	Introduction to digital logic design.	5	2	--	3	a20-1, a20-2
WEEKS-3-4	Boolean algebra, switching functions, Karnaugh maps.	10	4	--	6	a20-1, a20-2,a20-3, b15-1,b15-2, c13-1, c13-2,d1-1
WEEKS-5-6	modular combinational circuit design, flip-flops, latches.	10	4	--	6	a20-1,a20-2,a20-3, b15-1,b15-2, c13-1, c13-2,d1-1, d4-1
WEEK-7	programmable logic circuit design (Part 1)	5	2	--	3	a20-1, a20-2,a20-3, b15-1,b15-2, c13-1, c13-2,d1-1, d4-1
WEEK-8	Midterm written examination					
WEEKS-9	programmable logic circuit design (Part 2)	5	2	--	3	a20-1, a20-2,a20-3, b15-1,b15-2, c13-1, c13-2,d1-1, d4-1
WEEKS-10-11	synchronous sequential circuit design.	10	4	--	6	a20-1, a20-2,a20-3, b15-1,b15-2, c13-1, c13-2,d1-1, d4-1
WEEKS-12-13	Use of several CAD tools for logic synthesis.	10	4	--	6	a20-1, a20-2,a20-3 , b15-1,b15-2, c13-1, c13-2, c15-1, d1-1, d4-1
WEEKS-14-15	State assignment and technology mapping.	10	4	--	6	a20-1, a20-2,a20-3, b15-1,b15-2, c13-1, c13-2,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	a20-1	*			*	*								*
	a20-2	*			*	*								*
	a20-3	*			*	*								*
Intellectual Skills	b15-1	*	*		*	*		*	*	*	*	*	*	*
	b15-2	*	*		*	*		*	*	*	*	*	*	*
Professional Skills	c13-1	*		*	*	*		*	*		*		*	*
	c13-2	*		*	*	*		*	*		*		*	*
	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 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	a20-1	*	*	*	*	*	*	*	*	*	*	*	*
	a20-2	*	*	*	*	*	*	*	*	*	*	*	*
	a20-3	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b15-1	*	*	*	*	*	*	*	*	*	*	*	*
	b15-2	*	*	*	*	*	*	*	*	*	*	*	*
Professional Skills	c13-1	*	*	*	*	*	*	*	*	*	*	*	*
	c13-2	*	*	*	*	*	*	*	*	*	*	*	*
	c15-1	*	*	*	*	*	*	*	*	*	*	*	*
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*	*
	d4-1	*	*	*	*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Digital Logic Lab. is used to execute all experimental related to the course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-M.Morris Mano, "Digital Design", Prentice Hall, 2002

2- John F. Wakerly, "Digital Design: Principles and Practices", Third Edition Updated, Prentice Hall, 2003.

1Albert paul Malvino,"Digital Computer Electronics" , Macmillan / Mc Graw – Hall, 1987.

Course coordinator

Head of the Department

Prof.Dr.Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Measurements and Transducers*

Code Symbol: *ECE106*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>---</i>	<i>3</i>	<i>5</i>

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%	20%	---	20%	20%	100%

B-Professional Information

2- Course Aims:

- To know measurement principles: (Definitions - Accuracy Statements- Instrument Requirements)
- To know performance criteria: (Definitions -Calibration Principles-Procedures and Adjustments- Selection Criteria-Gages-Transmitters –Transducers)
- To perform laboratory test commonly used in measuring the most elements of electrical engineering systems.
- To become familiar with methods required for experimental evaluations.
- To gain technical experience in interpreting test data and preparing technical reports.

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) Explain 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.
	B6) Investigate the failure of components, systems, and processes.	b6-1)Select a suitable digital meters and oscilloscope for testing electrical components.
Professional skills	C1)Propose and discuss different aspects related to basic electrical measurement components and its design	c1-1) Test and examine electric circuits using electrical measurement instruments.
	C3)Integrate electrical, electronic and mechanical components and equipments with transducers, actuators and controllers in creatively computer controlled system.	c3-1) Specify and evaluate transducers, actuators and controllers in creatively computer controlled system.
	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 AC bridges	7
5th	Oscilloscope (CRO)	9-11
6th	Digital meters , A/D and D/A converters	12-13
7th	Transducers	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 Electrical Measurements Definition and its Fundamentals characteristics	5	2	--	3	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.	5	2	--	3	a3-1,a3-2,a19-1
WEEKS-3-4	DC meters Permanent magnet moving coil (PMMC) meter construction and its dynamic behavior.	10	4	--	6	a3-1,a3-2,a19-1, b1-1, b6-1, c1-1,c5-1
WEEK-5	Direct current Indicating Instruments.	5	2	--	3	a3-1,a3-2,a19-1, b1-1, c1-1,c5-1
WEEK-6	AC meters Moving Iron (MI) meter construction and its dynamic behavior.	5	2	--	3	a3-1,a3-2,a19-1, b1-1, b6-1, c1-1,c5-1
WEEK-7	Electrodynamics instrument construction Electrodynamics instrument for D.C and A.C uses	5	2	--	3	a3-1,a3-2,a19-1, b1-1, b6-1, c1-1,c5-1
WEEK-8	Midterm written examination					
WEEK-9	DC bridges	5	2	--	3	c1-1, c5-1
WEEK-10	AC bridges	5	2	--	3	c1-1, c5-1
WEEK-11	Oscilloscope(CRO), Major Subsystems of CRO	5	2	--	3	b6-1, c3-1, c4-1, c5-1, d4-1
WEEK-12	Measurement techniques utilizing the CRO.	5	2	--	3	b6-1, c3-1, c4-1, c5-1, d4-1
WEEK-13	Digital meters and A/D and D/A converters	5	2	--	3	b6-1, c3-1, c5-1
WEEKS-14-15	Transducers	10	4	--	6	c3-1, c5-1

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	*	*		*				*					
	a3-2	*	*	*	*	*							*	
	a19-1	*	*	*	*	*				*	*		*	
Intellectual Skills	b1-1	*	*		*	*	*		*					
	b6-1	*	*	*	*	*		*	*	*	*		*	*
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	*	*	*	*	*	*				*		*
	b6-1	*	*	*	*	*	*	*	*	*	*		
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	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- E.W.Golding and F.G. Widdis, "Electrical measurements and measuring instruments", Pitman Paperbacks, London 1973.
- 4-A.K.Sawhney, "Electrical and electronic measurements and instrumentation", Dhanput Rai & sons, India, 1990.

Course coordinator

Head of the Department

Prof. Dr. Sabray Mohamed Abd El-Latif

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Microprocessors

Code Symbol: ECE208

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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%	40%	---	----	20%	100%

B-Professional Information

2- Course Aims:

- This course gives a thorough knowledge of programming and interfacing of the Intel family of microprocessors. Intel microprocessors have gained wide and at times exclusive wide application in many areas of electronics, communications, and control systems, particularly in desktop computer systems. To consolidate the material presented in class, students work on assembly-language programming assignments, and a major computer interfacing project.

3- Course Objectives:

- Ability to understand the software architecture and assembly language programming for a 16-bit/32-bits microprocessor.
- Ability to understand the organization of a microcomputer based on a 16 bit microprocessor
- Ability to design and code a program using advanced programming features (data types, addressing modes, control flow, and interrupts) of a 16-bit/32-bits microprocessor
- Ability to understand a memory devices used in memory design of a microcomputer system based on a 16-bit microprocessor and to design a typical memory subsystem .
- Ability to understand the different types of I/O mechanism and use the I/O instructions of a 16-bit / 32-bits microprocessor to communicate with a typical peripheral 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	A24	B18	C15,C19	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) Explain the different types of I/O mechanism and use the I/O instructions of a 16-bit / 32-bits microprocessor to communicate with a typical peripheral devices such as electrical power system or electrical machine.
	A20) Classify logic circuits.	a20-1) Demonstrate understanding the organization of a microcomputer based on a 16 bit microprocessor
	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1) Explain software architecture and assembly language programming for a 16-bit/32-bits microprocessor. a24-2) Explain basics of writing a program using an assembly language (data types, addressing modes, control flow, and interrupts) of a 16-bit/32-bits microprocessor a24-3) Demonstrate understanding a memory devices used in memory design of a microcomputer system based on a 16-bit microprocessor and to design a typical memory subsystem .
	A25) Explain Quality assessment of computer systems.	a25-1) Explain the organization of computer systems.
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Enforce and supplement the student's Low level programming experience
Professional skills	C15) Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	c15-1) Prepare the student for continuing development in follow on topics of advanced digital and microprocessor concepts.
	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Use modern engineering techniques for analysis and design circuits.
General skills	D4) Demonstrate efficient IT capabilities.	d4-1) Improved ability to use the Internet to locate information.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to Microprocessors (Definition, History of Microprocessors, How a microprocessor works?, Comparison between CISC, RISC processors).	1
2nd	Computer Architecture (CPU, data bus, address bus, control bus, Memory, Input/Output , Peripheral Interface Categories)	2-3
3rd	Microprocessor Architecture.(Example: 8086 and Pentium IV)	4-5
4th	Decimal, Binary & Hex numbers.	6
5th	Addressing Modes (Data, Register, Immediate, Direct Data, Base-Plus index, Register Relative , Base Relative-Plus index, Program memory-Addressing Modes).	7
6th	Data Movement Instructions.	9
7th	Arithmetic Instructions.	10
8th	Logic Instructions	11
9th	Program Control Instruction	12
10th	Interrupts	13
11th	Microprocessors and Interfacing	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 to Microprocessors (Definition, History of Microprocessors, How a microprocessor works?, Comparison between CISC, RISC processors).	5	2	--	3	a14-1,a20-1,a24-1,a24-2, a24-3,a25-1,b18-1,c15-1, c19-1,d4-1
WEEKS-2-3	Computer Architecture (CPU, data bus, address bus, control bus, Memory, Input/Output , Peripheral Interface Categories)	10	4	--	6	a14-1,a20-1,a24-1,a24-2, a24-3,a25-1,b18-1,c15-1, c19-1,d4-1
WEEKS-4-5	Microprocessor Architecture.(Example: 8086 and Pentium IV)	10	4	--	6	a14-1,a20-1,a24-1,a24-2, a24-3,a25-1,b18-1,c15-1, c19-1,d4-1
WEEK-6	Decimal, Binary & Hex numbers.	10	4	--	6	b18-1, d4-1
WEEK-7	Addressing Modes (Data, Register, Immediate, Direct Data, Base-Plus index, Register Relative , Base Relative-Plus index, Program memory-Addressing Modes).	5	2	--	3	a24-1, a24-2, a24-3, d4-1
WEEK-8	Midterm written examination					
WEEK-9	Data Movement Instructions.	5	2	--	3	a24-1, a24-2, a24-3, d4-1
WEEK-10	Arithmetic Instructions.	5	2	--	3	a24-1, a24-2, a24-3, d4-1
WEEK-11	Logic Instructions	5	2	--	3	a20-1, a24-1 ,d4-1
WEEK-12	Program Control Instruction	5	2	--	3	a14-1, a20-1,a24-1, a24-2, a24-3, a25-1, b18-1, c15-1,c19-1, d4-1
WEEK-13	Interrupts	5	2	--	3	a24-1, a24-2, a24-3, a24-4,a24-5 ,d4-1

WEEKS-14-15	Microprocessors and Interfacing	10	4	--	6	a14-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, c15-1, c19-1, d4-1
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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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a14-1	*		*	*	*	*						*	
	a20-1	*			*	*								*
	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
	a24-3	*		*	*	*		*		*			*	*
	a25-1	*												
Intellectual Skills	b18-1	*	*		*	*								*
Professional Skills	c15-1	*	*	*	*	*		*	*		*		*	*
	c19-1	*			*	*		*					*	*
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	Laboratory Test	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Home Exam	Monitoring
Knowledge & Understanding	a14-1	*		*				*		*	*		*
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
	a24-1	*	*	*	*	*	*	*	*	*	*	*	*
	a24-2	*	*	*	*	*	*	*	*	*	*	*	*
	a24-3	*	*	*	*	*	*	*	*	*	*	*	*
	a25-1	*											
Intellectual Skills	b18-1	*		*		*		*	*			*	*
Professional Skills	c15-1	*					*	*	*		*		*
	c19-1	*		*	*	*		*		*	*		*

General Skills	d4-1	*		*	*	*		*		*	*		*
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10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Microprocessor Laboratory is used to help the students for implementing experiments related to the course, and Computer Laboratory is used for helping student for writing assembly 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
- 2-David A. Patterson and John L. Hennessy, "Computer Organization & Design: The Hardware/Software Interface", Second Edition, Morgan Kaufmann Publishers, Inc., San Francisco, California, 1998.
- 3-M. Morris Mano, "Computer System Architecture", Third Edition, Prentice-Hall, Inc., 1993.
- 4-Barry B. Brey, "The Intel Microprocessors: Architecture, Programming, and Interfacing", Sixth Edition, Pearson Education, Inc., 2003.

Course coordinator

Head of the Department

Prof. Ibrahim Zakria Morsi
Prof.Dr.Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Electrical Machine (1)

Code Symbol: ECE209

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	---	3	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%	20%	40%	---	20%	----	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, A18,A19	B5,B13	C13,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) Demonstrate understanding basic mathematics, science and technologies relevant to transformers and dc machines. a-4-2) Explain 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) Demonstrate principles of operation and performance specifications of transformers and d-c machines.
	A18) Apply theories and techniques for calculating short circuit, motor starting, and voltage drop.	a18-1) Explain Dc motor torque equation, motor characteristics, speed control.
	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) Use principles and concepts in solving problems in transformers and d-c machines . b5-2) Apply 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) Choose the appropriate techniques to solve problems in transformers and machines b13-3) Identify the mathematical tools/models for the solution of problems in transformers and d-c 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) Develop creativity, particularly in design and performance of equipment and circuits.
	C14) Test and examine components, equipment and systems of electrical power and machines.	c14-1) Diagnose and troubleshoot faults in machines.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Collaborate effectively within multidisciplinary team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Transformers construction, applications and rating	1-2
2nd	- Single phase transformers, ideal transformer , transformer reactance 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- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1,2	Transformers construction, applications and rating	10	4	--	6	a4-1, a4-2, a15-1, a19-1, b5-1,b5-2
WEEK-3	Single phase transformers, ideal transformer	5	2	---	3	a4-1, a4-2, a15-1, b5-1,b5-2,c14-1
WEEK-4	transformer reactance and equivalent circuit ,	5	2	---	3	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	5	2	---	3	a4-1, a4-2, a15-1, b13-1,b13-2,b13-3, c14-1 , d1-1
WEEK-6	Auto transformers , parallel operation	5	2	---	3	a4-1, a4-2, a15-1,
WEEK-7	Three phase transformers, type of connections, parallel operation .	5	2	---	3	a4-1, a4-2, a15-1, b13-1,b13-2,b13-3, c14-1, d1-1
WEEK-8	Midterm written examination					
WEEK-9	Direct current machines construction , applications and magnetic circuits.	5	2	---	3	a4-1, a4-2, a15-1, b5-1,b5-2
WEEK-10	Armature windings, e.m.f equation , power and torque.	5	2	---	3	a4-1, a4-2, a15-1, b5-1,b5-2, c13-1
WEEK-11	Armature reaction and commutation	5	2	---	3	a4-1,a4-2,a15-1, b13-1,b13-2, b13-3
WEEK-12	DC generator characteristics , parallel operation	5	2	---	3	a4-1, a4-2, a15-1, b5-1,b5-2,c14-1 d5-1,d5-2
WEEK-13	DC motor , torque equation	5	2	---	3	a4-1, a4-2, a15-1, a18-1, b5-1,b5-2
WEEK-14	DC motor characteristics, speed control	5	2	---	3	a4-1, a4-2, a15-1, a18-1,b5-1,b5-2,

						c14-1, d1-1
WEEK-15	Losses and efficiency of dc generator and motor.	5	2	---	3	a4-1, a4-2, a15-1, b5-1, b5-2, c14-1, 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	*	*	*	*	*	*	*	*	*	*			
	a15-1	*	*	*	*	*		*	*					
	a18-1	*		*	*	*					*		*	*
	a19-1	*	*	*	*	*	*			*	*			
Intellectual Skills	b5-1	*	*	*	*	*		*		*	*		*	*
	b5-2	*	*	*	*	*		*		*	*		*	*
	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
	b13-3	*		*	*	*	*	*		*	*			
Professional Skills	c13-1	*		*	*	*		*	*		*		*	*
	c14-1	*	*		*	*		*			*			*
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 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	*		*			*	*	*	*			
	a18-1	*		*		*	*	*		*			
	a19-1	*	*	*			*	*		*	*		
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*	*		
	b5-2	*		*	*	*	*	*		*		*	
	b13-1	*		*			*	*		*		*	
	b13-2	*		*			*	*		*			
	b13-3	*		*			*	*		*			
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		*
	c14-1		*				*			*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		*

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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.

11-3 Electrical Machine Laboratory

The Laboratory is used for performing different experiments related to the course (Test of transformer at both no-load and short circuit, obtain the characteristic of dc motor and dc generator .

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 Machinery", 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.

Course coordinator

Head of the Department

Prof. Dr Anwar Abd El-Latif

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: DataBase(1)

Code Symbol: ECE210

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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%	20%	20%	20%	----	100%

B-Professional Information

2- Course Aims:

- This course is designed to give the students a basic idea about the most commonly used database terminology, database management software and the most common databases. Students should have enough knowledge about the basics of relational database elements. Students should also have enough knowledge to use appropriate database management software, computational tools and design relational database packages throughout the phases of the life cycle of system development.

3- Course Objectives:

- To identify the importance of databases(DB) related to business
- To discuss the most commonly used relational DB terminology and data collection, data types and data communications.
- To analyze traditional business systems and define entities, relationship types and important database keys.
- To select and apply linearization tools and define Entity Relationship Models (ERM)
- Distinguish design methods of databases using different M S access and other database software packages
- Propose various databases schemes solutions to business system problems using different computer software packages.
- Use appropriate computational tools and database software packages design packages throughout the phases of the life cycle of the development of the DB system.
- To design relations, forms, QBE, reports and macros and create related relationships. .
- To select a particular ERM model appropriate for a particular business and engineering system.
- Use data base facilities perfectly, enabling data entry, user support activities, loading data, protection, backup and recovery processes.
- To select and use suitable database management software to design a database information systems in a professional way.
- Revise soft ware packages to judge the suitable database management software to design database information systems in a professional way
- To implement and use developed databases systems in a professional way to solve business and 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	A7,A27,A28	B1,B17,B18, B19,B21	C2,C19,C21	D1,D3,D4,D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & understanding	A7) Remember Business and management principles relevant to engineering	a7-1)Identify the importance of databases(DB) related to business a7-2) Discuss the most commonly used relational DB terminology , data collection, data types and data communications
	A27) Recognize: Technologies of data, image and graphics representation and organization on computer storage media.	a27-1)Learn how to build an efficient database. a27-2)Demonstrate understanding of organization and predict storage requirements
	A28) Demonstrate: Modern trends in information technology and its fundamental role in business enterprises	a28-1)Distinguish design methods of databases using different M S access and other software packages.
Intellectual skills	B1 Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Select and apply linearization tools and define Entity Relationship Models (ERM)
	B17)Select the appropriate mathematical tools, computing methods, design techniques for modelling and analyzing computer systems;	b17-1)Select a particular ERM model appropriate for a particular business and engineering system. b17-2)Organize a wide range of problems related to the analysis, design and construction of computer systems
	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1)Select a particular ERM model appropriate for a particular business and engineering system.
	B19) Proposing various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved.	b19-1)Propose various databases schemes solutions to business system problems using different computer software packages.
	B21)Innovating solutions based on non-traditional thinking and the use of latest technologies	b21-1)Design relations, forms, QBE, reports and macros and related relationships.

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, understanding, and feedback to improve design, products and/or services.
	C19)Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development.	c19-1) Use appropriate computational tools and database software packages design packages throughout the phases of the life cycle of the development of the DB system.
	C21) Conducting user support activities competently.	c21-1) Use appropriate computational tools and database software packages design packages throughout the phases of the life cycle of the development of the DB system.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1)Improve ability to group working.
	D3) Communicate effectively.	a3-1)Share ideas and communicate efficiently with others.
	D4) Demonstrate efficient IT capabilities.	d4-1) Ability to use computers, networks and software to support engineering activity, and to enhance personal / team productivity.
	D8) Acquire entrepreneurial skills	d8-1) Revise soft ware packages to judge the suitable database management software to design database information systems in a professional way.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Database Management System,	1
2 nd	Management Information System (MIS) and DBM software	2
3 rd	Relation database	3
4 th	Entities, keys, Sorting and Indexing	4-5
5 th	Types of relationships	6
6 th	Linearization methods (up to 3 rd NF).	7,9
7 th	Design of tables, forms, queries and report	10-11
8 th	Database management software	12
9 th	Design a professional start up user screens	13
10 th	Project : Case studies	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 to Database Management System,	5	2	--	3	a7-1,a7-2,a27-1, a27-2
WEEK-2	Management Information System (MIS) and DBM software	5	2	--	3	a27-1, a27-2,a28, c2-1
WEEK-3	Relation database	5	2	--	3	a27-2, a28
WEEKS-4-5	Entities, keys, Sorting and Indexing	10	4	--	6	b1-1,b17-1,b17-2,b18, b19-1
WEEK-6	Types of relationships	5	2	--	3	b1-1,b17-2, b18, b19-1
WEEK-7	Linearization methods (up to 3 rd NF). (Part I)	5	2	--	3	b17-2, b18, b19-1
WEEK-8	Midterm written examination					
WEEK-9	Linearization methods (up to 3 rd NF). (Part II)	5	2	--	3	b17-2, b18, b19-1
WEEKS-10-11	Design of tables, forms, queries and report	10	4	--	6	b18-1,b19-1,b21-1,c19-1, c21-1
WEEK-12	Database management software	5	2	--	3	b18-1,b19-1,b21-1,c2-1, c19-1, c21-1
WEEK-13	Design a professional start up user screens	5	2	--	3	b18-1,b19-1,b21-1, c19-1, c21-1
WEEKS-14-15	Project : Case studies	10	4	--	6	a27-1,a27-2,a28-1,b1-1, b17-1,b17-2,b18-1,b19-1, b21-1,c2-1,c19-1,c21-1, d1-1, d3-1, d4-1,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	a7-1	*	*	*	*	*		*		*				
	a7-2	*	*	*	*	*		*		*				
	a27-1	*	*	*	*	*		*		*				
	a27-2	*	*	*	*	*		*		*				
	a28-1	*	*	*	*	*		*		*				
Intellectual Skills	b1-1	*	*	*	*	*		*		*				
	b17-1	*	*			*					*			
	b18-1	*		*		*		*	*			*	*	*
	b19-1	*		*		*		*	*			*	*	*
	b21-1	*	*	*	*	*	*			*	*			*
Professional Skills	c2-1	*	*	*	*	*	*	*	*	*	*		*	
	c19-1	*		*		*		*	*			*	*	*
	c21-1	*		*	*	*		*		*	*		*	*
General Skills	d1-1	*					*				*	*		*
	d3-1	*	*	*		*	*	*	*		*			*
	d4-1	*	*	*	*	*	*	*	*	*	*	*		*

	d8-1	*	*	*	*	*	*	*	*	*	*	*	*
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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	a7-1	*		*		*		*					
	a7-2		*		*		*		*				
	a27-1				*				*		*		
	a27-2		*		*		*		*				
	a28-1		*		*		*		*				
Intellectual Skills	b1-1				*				*		*		
	b17-1	*		*		*		*				*	*
	b17-2	*		*		*		*	*			*	*
	b18-1	*		*		*		*	*			*	*
	b19-1	*		*	*	*		*		*	*		*
	b21-1	*		*		*		*	*	*		*	*
Professional Skills	c2-1	*		*	*		*	*		*		*	
	c19-1	*	*	*		*	*	*	*		*		
	c21-1	*	*	*	*	*	*	*	*	*	*	*	*
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*	*
	d3-1	*	*	*	*	*	*	*	*	*	*	*	*
	d4-1	*	*	*	*	*	*	*	*	*	*	*	*
	d8-1	*	*	*	*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

Total	100	100%	
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11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

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

Course coordinator

Prof.Dr. Shaban Mabrouk Osheba

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Electrical Power Systems(1)

Code Symbol: ECE211

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2		3	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:

- Upon completing the Electrical and Computer 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)Demonstrate understanding 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 construction and grading of underground cables.
	A18)Apply Theories and techniques for calculating short circuit, motor starting, and voltage drop	a18-1)Select suitable methods for transmission line representation. a18-2)Demonstrate understanding 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)Demonstrate 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	The elements of transmission lines (T.L.) <ul style="list-style-type: none"> • Inductance of T.L. • Capacitance of T.L. 	1-2
2	Steady state performance of T.L. <ul style="list-style-type: none"> • The T.L. as a lumped circuit. The Short T.L. <ul style="list-style-type: none"> • The medium T.L. nominal T and nominal π • General Four Terminal Network Constant 	3-4
3	Network Equation and Solutions <ul style="list-style-type: none"> • Graphs-Three-Branch-Link • Loop Equations • The incidence loop matrix. • Nodal Equations. 	5-7

	<ul style="list-style-type: none"> • The incidence node matrix, and incidence bus matrix.. • Node elimination by matrix algebra. 	
4	Economic operation of power systems <ul style="list-style-type: none"> • Input-Output curve, heat rate characteristics, Incremental fuel rate,- Increment fuel costs. • Distribution of load between units. 	9-10
5	DC & AC Distribution	11-13
6	Mechanical design of overhead T.L.	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	The elements of transmission lines (T.L.) <ul style="list-style-type: none"> • Inductance of T.L. • Capacitance of T.L. 	10	4	--	6	a15-1, a15-2, a22-1, b13-1, b13-2, d9-1, d9-2
WEEKS-3-4	Steady state performance of T.L. <ul style="list-style-type: none"> • The T.L. as a lumped circuit. The Short T.L. <ul style="list-style-type: none"> • The medium T.L. nominal T and nominal π • General Four Terminal Network Constant 	10	4	--	6	a18-1, a18-2, b13-1, b13-2, b13-3, d9-1, d9-2
WEEKS-5-7	Network Equation and Solutions <ul style="list-style-type: none"> • Graphs-Three-Branch-Link • Loop Equations • The incidence loop matrix. • Nodal Equations. • The incidence node matrix, and incidence bus matrix.. • Node elimination by matrix algebra. 	15	6	--	9	a18-1, a18-2, b13-3, b16-1, b16-2, c16-1, c16-2
WEEK-8	Midterm written examination					
WEEKS-9-10	Economic operation of power systems <ul style="list-style-type: none"> • Input-Output curve, heat rate characteristics, Incremental fuel rate,- Increment fuel costs. • Distribution of load between units. 	10	4	--	6	a15-1, a15-2, b13-1, b13-2, b16-1, b16-2, c16-1, c16-2
WEEKS-11-13	DC & AC Distribution	15	6	--	9	a15-1, a15-2, b13-1, b13-2, b16-1, b16-2
WEEKS-14-15	Mechanical design of overhead T.L.	10	4	--	6	a18-2, c16-1, b13-1, b13-2, c16-1, c16-2, 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	Self learning	Cooperative	Discovering	Modeling	Playing
Knowledge & understanding	a15-1	*	*	*					*	*				
	a15-2	*	*	*					*	*				
	a17-1	*		*	*	*							*	
	a17-2	*	*	*	*	*							*	
	a18-1	*		*	*	*							*	
	a18-2	*		*	*	*								
	a22-1	*	*		*	*			*				*	
Intellectual Skills	b13-1	*		*	*	*							*	
	b13-2	*		*	*	*							*	
	b13-2	*		*	*	*								
	b16-1	*		*	*	*								
	b16-2	*	*	*	*	*								
Professional Skills	c16-1	*		*	*	*							*	
	c16-2	*		*	*	*							*	
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	a15-1	*	*				*		*	*			
	a15-2	*	*				*		*	*			
	a17-1	*	*					*					
	a17-2	*	*										
	a18-1	*	*	*									
	a18-2	*	*										
	a22-1	*						*					*
Intellectual Skills	b13-1	*	*	*	*								
	b13-2	*	*	*	*								
	b13-3	*		*	*								
	b16-1	*			*								
	b16-2	*	*		*								
Professional Skills	c16-1	*			*								
	c16-2	*		*	*								
General Skills	d9-1		*				*			*			
	d9-2		*				*			*			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	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. I.J. Nagrath, D.P. Kothari, "Modern Power System Analysis", Tata Mc Graw Hill publishing Company limited , 1969.
- 2.W. Stevenson," Elements of Power System Analysis", Book USA, 1975
- 3.S. L. Uppa, "Electrical Power", Book, India 1985.
- 4.I. J. Nagrath and D. R. Kothari, "Modern Power System Analysis", Book, USA, 1990.
- 5.A Course in Power Systems, J. B. Gupta

Course coordinator

Head of the Department

Prof. Dr. Abdel-Mohsen Kinawy

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Automatic Control Systems

Code Symbol: ECE301

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

Lecture	Tutorial	Laboratory	Total
2	--	3	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%	20%	40%	---	20%	----	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,B16	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 the open and closed loop systems. a5-2) Demonstrate understanding 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 .
	B16) Analyze the performance of electric power generation, control and distribution systems	b16-1) Use Frequency response methods- Bode Plot of various system types, Nyquist Plot –Phase margin-gain Margin and stability analysis of a system.
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) Group working
	D3) Communicate effectively.	d3-1) Gain 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– Hysteresis 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.	Lab.	
WEEK-1	SYSTEM REPRESENTATION: Transfer function-Definitions- Types of control systems- Block diagram and signal flow graph representation	5	2	--	3	a1-1,a1-2,a5-1
WEEK-2	SYSTEM MODELING Electrical systems- Mechanical Systems- Electromechanical systems- Mechanical and Electrical system Analogy .	5	2	--	3	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.	5	2	--	3	a5-1,b13-1,b13-2, d1-1, d3-1,d4-1
WEEK-4	Steady state error analysis, Root Locus Analysis.	5	2	--	3	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	15	6	--	9	a1-1,a1-2,a5-1, b16-1, c6-1, d1-1, d3-1, d4-1
WEEK-8	Midterm written examination					

WEEKS-9-10	Compensation Lag compensation– Lead Compensation – Lead/Lag Compensation	10	4	--	6	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– Hysteresis nonlinearity	10	4	--	6	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	15	6	--	9	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	*		*	*	*	*				*			*
	b16-1	*		*	*	*	*	*	*		*			
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)		Assessment Methods											
		Written Exam	Oral Exam	Tutorial Assessment	Project Assessment	Modeling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a1-1	*	*	*			*	*	*	*	*	*	
	a1-2	*	*	*			*	*	*	*	*	*	
	a5-1	*	*	*	*	*	*	*		*	*		
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b8-1	*		*			*		*		*		
	b13-1	*		*			*	*		*			
	b13-2	*		*			*	*		*			
	b14-1	*	*	*			*	*		*	*		
	b16-1	*		*	*	*	*		*	*			
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1 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. Housien Abdel-Azim Yasin

Prof.Dr. Shaban Mabrouk Osheba

Prof. Dr. Gamal Abel-Wahab Morsy

Course Specification

A-Basic Information

Title: Programmable Logic Controller and its Application **Code Symbol:** ECE302
Element of program: Major **Date of specification approval:** 2011
Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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%	20%	20%	20%	20%	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	A5,A14,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) Demonstrate understanding 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
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Explain a PLC as a controller of an electrical power and machines equipment.
	A20) Classify logic circuits.	a20-1) Distinguish logic circuit design 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	b15-1) Think in a creative and innovative way for selecting a PLC as a controller of different industrial applications.
Professional skills	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1) Create and/or re-design an industrial system using of PLC .
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
7 th	Creating zones with MCR & ZCL Instructions Creating zones with MCR & ZCL Instructions	9
8 th	Timers	10-11
9 th	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.	Lab.	
WEEK-1	Introduction.	5	2	----	3	a5-1
WEEK-2	Relays; Relay Ladder Logic.	5	2	----	3	a5-1, a20-1, b3-1, b13-1, c1-1, d3-1, d7-1
WEEKS-3,4	Programming/editing using PLC.	10	4	--	6	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.	10	4	--	6	a5-1, a20-1, b3-1, b13-1, c1-1, d3-1, d7-1
WEEK-7	Using Latches and Master Control Relay MCR Instructions.	5	2	----	3	a5-1, a20-1, b3-1, b15-1, 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	5	2	----	3	a5-1, a20-1, b3-1, b15-1, c1-1, d3-1, d7-1
WEEKS-10,11	Timers Industrial Examples	10	4	--	6	a5-1, a14-1, a20-1, b3-1, b15-1, c1-1, d3-1, d7-1
WEEKS-12,13	Counters Industrial Examples	10	4	--	6	a5-1, a20-1, b3-1, a14-1, b15-1, c1-1, d3-1, d7-1
WEEKS-14,15	Sequencers Industrial Examples	10	4	--	6	a5-1, a14-1, a20-1, b3-1, b15-1, 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	*	*	*	*	*	*	*	*		*		*	*
	a14-1	*		*	*	*	*						*	
	a20-1	*			*	*								*
Intellectual Skills	b3-1	*	*	*	*	*	*	*		*	*	*	*	*
	b15-1	*		*	*	*	*	*		*	*			
Professional Skills	c3-1	*	*	*	*	*	*	*	*	*	*			
	c6-1	*	*	*	*	*	*	*	*	*	*		*	*
	c13-1	*		*	*	*		*	*		*		*	
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	*	*	*	*	*	*	*		*	*		
	a14-1	*		*				*		*	*		*
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
Intellectual Skills	b3-1	*	*	*	*	*	*	*	*	*	*		
	b15-1	*		*			*	*		*		*	
Professional Skills	c3-1	*		*	*		*					*	
	c6-1	*		*	*	*		*	*	*	*	*	
	c13-1	*	*	*	*	*	*	*		*	*		*
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	
	d7-1	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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
- 5-Umesh Rathore, "Basic Instrumentation Systems & Programmable Logic Controller", S.K.KATARIA & SONS 2010

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.

Course coordinator

Head of the Department

Prof. Dr. Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Power Electronics (1)

Code Symbol: ECE303

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	-	3	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%	20%	---	20%	20%	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 single phase 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 single phase power converters for conditioning the mains to satisfy load requirements.
- Realizing of the different types of single phase converter.
- Evaluation of the suitable converters for various power system.
- Analysis of different power electronic single phase 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	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) Explain and describe the power electronic devices, their characteristics and operation control.
	A8) Recognize current engineering technologies as related to the electrical power engineering	a8-1) Illustrate the different types of converter. a8-2)) Illustrate the single phase converters for conditioning the mains to satisfy load requirements.
	A19) Diverse Applications of electrical equipment	a19-1) Define the operation of single phase 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 single phase 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 single phase power converters c13-2) Analyze the performance of single phase load and source under various operating conditions
General skills	D6- Effectively manage tasks, time, and resources.	d6-1) Effectively manage resources to build the single phase converter system.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Power electronic devices	1-5
2nd	Single phase A.C. voltage controllers(resistive load).	6-7
3rd	Single phase controlled rectifiers.	9-11
4th	DC-to-DC converters.	12-13
5th	Single-phase DC link inverters	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	Power Semiconductor Devices.	5	2	-	3	a4-1
WEEK-2	Comparison of Power Semiconductor Devices	5	2	-	3	a4-1
WEEK-3	Thyristor Ratings	5	2	-	3	a4-1
WEEK-4	The Single-Phase Half-wave Rectifier Behavior	5	2	-	3	a8-1, a8-2,
WEEK-5	Some Features of Converter Circuits Some Basic Definitions	5	2	-	3	a4-1,a8-1, a8-2,
WEEK-6	AC VOLTAGE CONTROLLER Introduction Control Methods. Integral Cycle Control	5	2	-	3	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2
WEEK-7	Contactors. Phase Control	5	2	-	3	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2
WEEK-8	Midterm written examination					
WEEK-9	CONTROLLED RECTIFIERS Introduction. Centre-Tap Rectifiers Single-phase	5	2	-	3	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2
WEEK-10	Bridge Rectifiers Single-phase	5	2	-	3	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2
WEEK-11	The Dual-Converter Terminal Characteristics of AC-to-DC Converters	5	2	-	3	a19-1,b13-1, d6-1
WEEK-12	DC-TO-DC CONVERTERS Introduction. Applications	5	2	-	3	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2,d6-1
WEEK-13	Principle of Operation	5	2	-	3	a8-1,a8-2
WEEK-14	Single-phase DC link inverters (half bridge).	5	2	-	3	a8-1, a8-2, a19-1, b13-1
WEEK-15	The D.C. Link Inverters (full bridge).	5	2	-	3	a8-1, a8-2, a19-1, 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	*			*	*								
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	*			*								
General Skills	D6-1						*						

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1 Laboratory

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

11-2 Library 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

Prof.Dr.Azza Mohamed Ezat Lashine

Head of the Department

Prof.Dr.Shaban MabrouK Osheba

Course Specification

A-Basic Information

Title: Computer Architecture

Code Symbol: ECE304

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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%	40%	---	----	20%	100%

B-Professional Information

2- Course Aims:

- To teach the students the principles of computer architecture.
- To give an understanding of the principles of operation of computers and peripheral devices.
- To give an overview of the main families of microprocessors and their differences.
- To develop an appreciation of why computers are constructed as they are.
- To study the trade-offs between cost and performance in computer design.
- To provide an introduction to computer processor and memory architectures, and to the design of personal computer systems.
- To provide an understanding of the architectural features of modern high performance computers.

3- Course Objectives:

- Concept of program storing.
- Combinational and sequential circuits .
- 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,A20, A24,A25	B18	C19	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 hardware and software of a computer.
	A20) Classify logic circuits.	a20-1) Explain principles in the fields of logic design.
	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1) Explain the essential facts, concepts, principles and theories relevant to computer science and engineering. a24-2) Illustrate the engineering principles in the field of computer organization and architecture. a24-3) Demonstrate understanding the computer systems, the principles of design specific to computer system engineering including both hardware and software and the relationship between hardware, software engineering and computer science
	A25) Explain Quality assessment of computer systems	a25-1) Explain Quality assessment of computer systems (H/W and S/W).
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Demonstrate a high level of competence in identifying, analysis and solving wide range of computer science and engineering problems with pressing commercial or industrial constraints. b18-2) Select and apply appropriate mathematical tools, scientific principles and computer based methods, computing methods, design techniques and tools in computer engineering discipline, for modeling, simulation and analyzing computer systems at different and appropriate levels of abstraction. b18-3) Evaluate different techniques and strategies for solving computer engineering problems. b18-4) Identify a range of solutions to computer science and engineering problems and critically evaluate and justify proposed design solutions. b18-5) Be creative in solving problems with the aid of computer systems, development designs, and be aware of the context of computer developments.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Use laboratory and field equipments competently and safely. C19-2) Use appropriate specialized computer software, computer-based design support tools, computational tools and packages. C19-3) Apply computer science skills in a commercial or industrial environment.
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 Organization And Architecture, Structure And Function, Why Study Computer Architecture?	1
2nd	Computer Evolution And Performance A Brief History Of Computers, The First Generation: Vacuum Tubes, The Second Generation: Transistors, The Third Generation: Integrated Circuits, Later Generations, Designing For Performance, Microprocessor Speed, Performance Balance, Pentium Evolution.	2
3rd	Top-Level View Of Computer Function And Interconnection Computer Components, Computer Function, Instruction Fetch And Execute, Interrupts, Interconnection Structures, Bus Interconnection, Bus Structure, Multiple-Bus Hierarchies, Elements Of Bus Design, PCI, Bus Structure.	3-5
4th	Cache Memory Computer Memory System Overview, Characteristics Of Memory Systems, The Memory Hierarchy, Cache Memory Principles, Elements Of Cache Design, Cache Size, Mapping Function, Replacement Algorithms, Write Policy, Line Size, Number Of Caches, Pentium 4 Cache Organization.	6-7
5th	Internal Memory Semiconductor Main Memory, Organization, DRAM and SRAM, Dynamic RAM, Static RAM, Types Of ROM, Error Correction, Advanced DRAM Organization, Synchronous DRAM, Ram bus , Cache DRAM	9-10
6th	CPU Structure And Function Processor Organization, Register Organization, User-Visible Registers, Control And Status Registers, Example Microprocessor Register Organizations, Instruction Cycle, Instruction Pipelining, Pipelining Strategy, Pipeline Performance, Dealing With Branches, Intel 80486 Pipelining, The Pentium Processor.	11-12
7th	Input output organization Peripheral Devices Input-Output Interface unit Internal Structure of I/O interface unit Data Transfer Asynchronous Data transfer.	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	Introduction Organization And Architecture, Structure And Function, Why Study Computer Architecture?	5	2	--	3	a24-1, a24-2, a24-3, a25-1
WEEK-2	Computer Evolution And Performance A Brief History Of Computers, The First Generation: Vacuum Tubes, The Second Generation: Transistors, The Third Generation: Integrated Circuits, Later Generations, Designing For Performance, Microprocessor Speed, Performance Balance, Pentium Evolution.	5	2	--	3	a2-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, b18-2, b18-3, b18-4, c19-1, c19-2, c19-3, d4-1

WEEKS-3-5	Top-Level View Of Computer Function And Interconnection Computer Components, Computer Function, Instruction Fetch And Execute, Interrupts, Interconnection Structures, Bus Interconnection, Bus Structure, Multiple-Bus Hierarchies, Elements Of Bus Design, PCI, Bus Structure.	15	6	--	9	a2-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, b18-2, b18-3, b18-4, c19-1, c19-2, c19-3, d4-1
WEEKS-6-7	Cache Memory Computer Memory System Overview, Characteristics Of Memory Systems, The Memory Hierarchy, Cache Memory Principles, Elements Of Cache Design, Cache Size, Mapping Function, Replacement Algorithms, Write Policy, Line Size, Number Of Caches, Pentium 4 Cache Organization.	10	4	--	6	a2-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, b18-2, b18-3, b18-4, c19-1, c19-2, c19-3, d4-1
WEEK-8	Midterm written examination					
WEEKS-9,10	Internal Memory Semiconductor Main Memory, Organization, DRAM and SRAM, Dynamic RAM, Static RAM, Types Of ROM, Error Correction, Advanced DRAM Organization, Synchronous DRAM, Ram bus , Cache DRAM	10	4	--	6	a2-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, b18-2, b18-3, b18-4, c19-1, c19-2, c19-3, d4-1
WEEKS-11-12	CPU Structure And Function Processor Organization, Register Organization, User-Visible Registers, Control And Status Registers, Example Microprocessor Register Organizations, Instruction Cycle, Instruction Pipelining, Pipelining Strategy, Pipeline Performance, Dealing With Branches, Intel 80486 Pipelining, The Pentium Processor.	10	4	--	6	a2-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, b18-2, b18-3, b18-4, c19-1, c19-2, c19-3, d4-1
WEEKS-13-15	Input output organization Peripheral Devices Input-Output Interface unit Internal Structure of I/O interface unit Data Transfer Asynchronous Data transfer.	15	6	--	9	a2-1, a20-1, a24-1, a24-2, a24-3, a25-1, b18-1, b18-2, b18-3, b18-4, c19-1, c19-2, c19-3, 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	Group Working	Discovering	simulation and	Lab. Experiments
Knowledge & understanding	a2-1	*		*	*	*	*			*	*			*
	a20-1	*			*	*								*
	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
	a24-3	*		*	*	*		*		*			*	*
	a25-1	*												
Intellectual Skills	b18-1	*	*		*	*								*
	b18-2	*	*		*	*								*
	b18-3	*	*		*	*								*
	b18-4	*	*		*	*								*
	b18-5	*	*		*	*								*
Professional Skills	c19-1	*			*	*		*					*	*
	c19-2	*			*	*		*					*	*
	c19-3	*			*	*		*					*	*
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	Laboratory Test	Tutorial Assessment	Project Assessment	Modelling	Research & Report	Quizzes	Presentation	Discussion	Home Exam	Monitoring
Knowledge & Understanding	a2-1	*	*	*				*		*	*	*	
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
	a24-1	*	*	*	*	*	*	*	*	*	*	*	*
	a24-2	*	*	*	*	*	*	*	*	*	*	*	*
	a24-3	*	*	*	*	*	*	*	*	*	*	*	*
	a25-1	*											
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b18-2	*		*		*		*	*			*	*
	b18-3	*		*		*		*	*			*	*
	b18-4	*		*		*		*	*			*	*
	b18-5	*		*		*		*	*			*	*
Professional Skills	c19-1	*		*	*	*		*		*	*		*
	c19-2	*		*	*	*		*		*	*		*
	c19-3	*		*	*	*		*		*	*		*
General Skills	d4-1	*		*	*	*		*		*	*		*

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-M.Morris Mano, "Digital Design", Prentice Hall, 2002
- 2-David A. Patterson and John L. Hennessy, "Computer Organization & Design: The Hardware/Software Interface", Second Edition, Morgan Kaufmann Publishers, Inc., San Francisco, California, 1998.
- 3-M. Morris Mano, "Computer System Architecture", Third Edition, Prentice-Hall, Inc., 1993.
- 4-Barry B. Brey, "The Intel Microprocessors: Architecture, Programming, and Interfacing", Sixth Edition, Pearson Education, Inc., 2003.
- 5-Behrouz A. Forouzan, "Data Communication and Networking", Second Edition, McGraw-Hill Companies, Inc., 1998.

Course coordinator

Head of the Department

Prof. Ibrahim Zakria Morsi

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Artificial Intelligence

Code Symbol: ECE402

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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%	12.5%	12.5%	---	----	100%

B-Professional Information

2- Course Aims:

- Design of algorithmic models to solve increasingly complex problems. Enormous successes have been achieved through the modeling of biological and natural intelligence. Know about intelligence system such as expert system, problem solving, and intelligence agents.

3- Course Objectives:

- Knowing knowledge representations.
- Knowing search methodologies.
- Knowing logic in AI.
- Knowing intelligent agents.
- Studying different AI 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	A24	B18	C19,C20	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1) Illustrate methodologies, logic in AI, intelligent agents. a24-2) Discuss topics of different AI applications.
Intellectual skills	b18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Apply appropriate computer based methods, mathematical and scientific principles in analyzing general systems b18-2) Use mathematical methods, modern techniques, skills and engineering tools b18-3) Write computer programs and use professional packages to solve engineering problems.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Build suitable software and test engineering systems using proper hardware interface
	C20) Write computer programs on professional levels achieving acceptable quality measures in software development.	c20-1) Apply modern techniques, skills and engineering tools using proper software
General skills	D4) Demonstrate efficient IT capabilities.	d4-1) Demonstrate efficient IT capabilities

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to AI:- What is AI- Turing test- What about IQ in computer – The requirements of AI - The components of AI system (representation – reasoning – learning)- The condition for reasoning system	1
2 nd	knowledge representation semantic nets - frames	2-3
3 rd	Search:- search spaces – search tree (traveling salesman, tower of Hanoi, describe and match) – goal trees- search methodologies:- generate and test (depth first search – breadth first search) – properties of search methods – Type of human search – Type of Internet search - heuristic evaluation function – identifying optimal paths (A* algorithm – uniform cost search – greedy search)	4-5
4 th	Logic:- definition - why use logic – Tautology – Contradictory – How to define a logic system (syntax – semantic) - soundness – completeness – Decidability Monotonicity - Deductive reasoning - Inductive reasoning	6-7
5 th	Expert System Expert system:- Rule-Based systems - Knowledge base- The database of facts - Inference engine - Rule-based expert systems - Knowledge engineer - Domain expert - Explanation system - Rete Algorithm	9-10
6 th	Digital Image:- sampling – quantization – Image data – digital image operation – image degradation – image enhancement.	11-12
7 th	Intelligent agents :- Properties of agents – agent classifications – agent architectures	13
8 th	Introduction to AI programming and Pattern Recognition	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	Introduction to AI:- What is AI- Turing test- What about IQ in computer – The requirements of AI - The components of AI system (representation – reasoning – learning)- The condition for reasoning system	4	2	2	--	a24-1, a24-2
WEEKS-2-3	knowledge representation semantic nets - frames	8	4	4	--	a24-1,a24-2,b18-1, c19-1, c20-1, d4-1
WEEKS-4-5	Search:-search spaces – search tree (traveling salesman, tower of Hanoi, describe and match) – goal trees- search methodologies:- generate and test (depth first search – breadth first search) – properties of search methods –Type of human search – Type of Internet search - heuristic evaluation function – identifying optimal paths (A* algorithm – uniform cost search – greedy search)	8	4	4	--	a24-1, a24-2,b18-1, b18-2, b18-3,c19-1, c20-1, d4-1
WEEK-6-7	Logic:- definatio - why use logic – Tautology – Contradictory – How to define a logic system (syntax – semantic) - soundness – completeness – Decidability Monotonicity - Deductive reasoning - Inductive reasoning	8	4	4	--	a24-1, a24-2,b18-1, b18-2, b18-3,c19-1, c20-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9-10	Expert System Expert system:- Rule-Based systems - Knowledge base- The database of facts - Inference engine - Rule-based expert systems - Knowledge engineer - Domain expert - Explanation system - Rete Algorithm	8	4	4	--	a24-1, a24-2,b18-1, b18-2, b18-3,c19-1, c20-1, d4-
WEEKS-11-12	Digital Image:- sampling – quantization – Image data – digital image operation – image degradation – image enhancement.	8	4	4	--	a24-1, a24-2,b18-1, b18-2, b18-3,c19-1, c20-1, d4-1
WEEKS-13	Intelligent agents :- Properties of agents – agent classifications – agent architectures	4	2	2	--	a24-1, a24-2,b18-1, b18-2, b18-3,c19-1, c20-1, d4-1
WEEKS-14-15	Introduction to AI programming and Pattern Recognition	8	4	4	-	a24-2, b18-3, c20-1, 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	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-2	*	*		*	*								*
	b18-3	*	*		*	*								*
Professional Skills	c19-1	*			*	*		*					*	*
	c20-1	*			*	*		*					*	*
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	a24-1	*	*	*	*	*	*	*	*	*	*	*	*
	a24-2	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b18-2	*		*		*		*	*			*	*
	b18-3	*		*		*		*	*			*	*
Professional Skills	c19-1	*		*	*	*		*		*	*		*
	c20-1	*		*	*	*		*			*	*	*
General Skills	d4-1	*	*	*	*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in Artificial Intelligence course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-Andries P. Engelbrecht, "Computational Intelligence", John Wiley & Sons, Ltd, 2003
- 2-Pankaj Sharma, "Artificial Intelligence", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009.

Course coordinator

Dr. Hany Mohamed Ibrahim

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Circuits(2)*

Code Symbol: *ECE305*

Element of program: *Major*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Eng. Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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%	40%	20%	---	----	100%

B-Professional Information

2- Course Aims:

- To understand the ac circuit analysis by node and mesh methods.
- To familiarize the ac network theorems including superposition, Thevenin's equivalent, Norton's equivalent, and maximum power transfer.
- To understand the transient analysis of source-free and dc-driven first-order circuits.
- To understand the transient response of second-order series and parallel R-L-C circuits from the characteristic equation.
- To get knowledge about using LaPlace transforms in circuit analysis.
- To use the operational amplifier as an active element in electric circuits.
- To apply the two-port networks and Fourier series in circuit analysis.
- To get knowledge about types of filters and Bode magnitude plots.
- To understand the analogy between electrical and mechanical systems.

3- Course Objectives:

- Understanding the different methods of ac circuit analysis, and ac network theorems.
- Knowing and understanding the transient responses of first and second order circuits.
- Understanding the use of Laplace transform in circuit analysis.
- Understanding the applications of low and high pass filters.
- Understanding and applying the two-port network in circuit analysis.
- Understanding the analogy between electrical and mechanical 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	A13,A17,A22	B13	C7	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Demonstrate understanding the transient responses of first and second order circuits. a13-2) Choose Laplace transform in circuit analysis. a13-3) Demonstrate the analogy between electrical and mechanical systems.
	A17) Explain basic electrical power system theory.	a17-1) Illustrate the different methods of ac circuit analysis, and ac network theorems. a17-2) Demonstrate the applications of low and high pass filters.
	A22) Explain basics of low voltage power systems.	a22-1) Explain and apply the two-port network in circuit analysis.
Intellectual skills	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.	b13-1) Predict the circuit response of first and second order circuits. b13-2) Design of low and high pass filters. b13-3) Interpret circuit characteristics through Bode plot. b13-4) An ability to use the two-port networks in circuit analysis.
Professional skills	C7) Apply numerical modeling methods to engineering problems.	c7-1) Apply numerical modeling method to solve simultaneous equations in multi unknowns using determinants. c7-2) Appreciate and use the equivalence of ac network theorems. c7-3) Design low and high pass filters. c7-4) Predict the circuit response of an R-L, R-C, and R-L-C circuits. c7-5) Analyze electric circuits via two-port formulation c7-6) Conversion from electrical system to mechanical system and vice versa.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) An ability to discuss problems and working effectively as a member in a multi-disciplinary team.
	D4) Demonstrate efficient IT capabilities.	d4-1) An ability to use different sources to obtain knowledge and information required to analyze electric circuits.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	First-Order Circuits: Natural and Step Responses of R-L and R-C Circuits.	1-2
2 nd	Second-Order Circuits: Initial and Final Values of Second-Order R-L-C circuits.	3-4
3 rd	The Laplace Transform	5
4 th	AC Circuit Analysis and AC Network Theorems : Nodal Analysis, Mesh Analysis, Superposition Theorem, Source Transformation, Thevenin's and Norton's Equivalent Circuits, Maximum Power Transfer Theorem.	6-7,9
5 th	Operational Amplifiers: Ideal Op Amp, Inverting Amplifier , Noninverting Amplifier, Summing Amplifier, Difference Amplifier.	10
6 th	The Fourier Series: Trigonometric Fourier Series, Symmetry Considerations Even Symmetry, Odd Symmetry, Average Power and RMS Values.	11
7 th	Two-port Network: General two port networks. Impedance, admittance, hybrid and transmission parameters.	12-13
8 th	Filter Networks: Principles of basic filtering. Basic passive and active filters.	14
9 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.	
WEEKS-1-2	First-Order Circuits: Natural and Step Responses of R-L and R-C Circuits.	10	4	--	6	a17-1, c7-4, b13-1
WEEKS-3-4	Second-Order Circuits: Initial and Final Values of Second-Order R-L-C circuits.	10	4	--	6	a17-1, c7-4, b13-1
WEEK-5	The Laplace Transform	5	2	--	3	a13-2
WEEK-6-7	AC Circuit Analysis and AC Network Theorems : Nodal Analysis, Mesh Analysis, Superposition Theorem, Source Transformation, Thevenin's.	10	4	--	6	a13-1,a17-1,b13-1, c7-1, c7-2, d1-1, d4-1
WEEK-8	Midterm written examination					
Week-9	Norton's Equivalent Circuits, Maximum Power Transfer Theorem	5	2	--	3	a13-1,a17-1,b13-1, c7-1, c7-2, d1-1,d4-1
WEEK-10	Operational Amplifiers: Ideal Op Amp, Inverting Amplifier , Noninverting Amplifier, Summing Amplifier, Difference Amplifier.	5	2	--	3	a13-3, a17-2, c7-3. d1-1,14-1
WEEK-11	The Fourier Series: Trigonometric Fourier Series, Symmetry Considerations Even Symmetry, Odd Symmetry, Average Power and RMS Values.	5	2	--	3	a17-1, c7-1, d1-1, d4-1
WEEKS-12-13	Two-port Network: General two port networks. Impedance, admittance, hybrid and transmission parameters.	10	4	--	6	a13-3, b22-1, c7-5, d1-1,d4-1
WEEK-14	Filter Networks: Principles of basic filtering. Basic passive and active filters.	5	2	--	3	b17-2, c7-3, d1-1, d4-1
WEEK-15	Analogy Between Electrical and Mechanical Systems: Mass, Dashpot, Spring, Applications.	5	2	--	3	a13-1, c7-6, 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 Renoring	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a13-1	*	*	*	*			*		*	*		*	
	a13-2	*	*	*	*			*		*	*		*	
	a13-3	*	*	*	*			*		*	*		*	
	a13-4	*	*	*	*			*		*	*		*	
	a17-1	*	*			*					*			
	a17-2	*	*			*					*			
Intellectual Skills	b13-1	*		*	*	*	*	*		*	*			
	b13-2	*		*	*	*	*	*		*	*			
	b13-3	*		*	*	*	*	*		*	*			
	b13-4	*		*	*	*	*	*		*	*			
Professional Skills	c7-1	*	*		*	*		*	*	*			*	*
	c7-2	*	*		*	*		*	*	*			*	*
	c7-3	*	*		*	*		*	*	*			*	*
	c7-4	*	*		*	*		*	*	*			*	*
	c7-5	*	*		*	*		*	*	*			*	*
	c7-6	*	*		*	*		*	*	*			*	*
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	a13-1	*		*				*		*			*
	a13-2	*		*				*		*			*
	a13-3	*		*				*		*			*
	a13-4	*		*				*		*			*
	a17-1	*		*				*					*
	a17-2	*		*				*					*
Intellectual Skills	b13-1	*		*			*	*		*			*
	b13-2	*		*			*	*		*			*
	b13-3	*		*			*	*		*			*
	b13-4	*		*			*	*		*			*
Professional Skills	c7-1	*		*	*	*	*		*	*	*		*
	c7-2	*		*	*	*	*		*	*	*		*
	c7-3	*		*	*	*	*		*	*	*		*
	c7-4	*		*	*	*	*		*	*	*		*
	c7-5	*		*	*	*	*		*	*	*		*
	c7-6	*		*	*	*	*		*	*	*		*
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d4-1	*	*	*	*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Electric Circuit Lab. is used for searching all information about different examples in electric circuit course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-Charles K. Alexander, and Matthew O. Sadiku, "Fundamentals of Electric Circuits",3rd Edition, McGraw Hill Higher Education.
 - 2-Robert L. Boylestad, “ Introductory Circuit Analysis”, Tenth Edition, (2003), Pearson Education, Inc., Saddle River, New Jersey 07 458.
 - 3-Thomas L.Floyd,"Principles of Electric Circuits",Eighth Edition,Pearson Education, Inc.,Upper Saddle River, New Jersey, 2007
- chaum’s Outline Series Theory and Problems of “Electric Circuits”, Mc Graw-Hill Box Company, 4th Edition, 2003.

Course coordinator

Prof.Dr.Moustafa El-Sayed El-Shebiny

Head of the Department

Prof.Dr.Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: DataBase(2)

Code Symbol: ECE306

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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%	20%	20%	20%	20%	----	100%

B-Professional Information

2- Course Aims:

- This course is designed to give the students a basic idea about management of relational database with multiple entities. Students should have enough knowledge about types of queries, report grouping, SQL and database security. Students should also have enough knowledge to use appropriate database management software, suitable SQL commands, and computational tools and design a complete IT system.

3-Course Objectives:

- To recognize and maintain data structures, explain concurrent access to many users and list security and privacy techniques.
- To identify traditional business systems with multiple entities and define important database keys.
- To select linearization tools and, create relationships and construct Entity Relationship Models (ERM) of multi entities systems
- To compare design methods of databases using different database software packages
- Propose various databases schemes solutions to business system problems using different computer software packages.
- Use appropriate computational tools and database software packages design packages throughout the phases of the life cycle of the development of the DB system.
- To design relations, forms, QBE, reports and macros and create related relationships for multiple entities system. Use data base facilities perfectly, enabling data entry, user support activities, loading data, protection, backup and recovery process.
- To apply a suitable database security management and management system.
- To implement and use developed databases systems in a professional way to solve business and 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	A7,A27,A28	B1, B12,B17, B18,B19,B21	C2,C18, C19,C21	D1,D3,D4,D8

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & understanding	A7) Remember Business and management principles relevant to engineering	a7-1) Compare design methods of databases using different database software packages
	A27) Recognize: Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Define organization and predict storage requirements on computer storage media.
	A28) Demonstrate: Modern trends in information technology and its fundamental role in business enterprises	a28-1) Identify traditional business systems with multiple entities, define important database keys and list security and privacy techniques
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Select and apply linearization tools, create relationships and Entity Relationship Models (ERM) .
	B12) Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1) Create systematic and methodic approaches when dealing with new and advancing technology.
	B17) Select the appropriate mathematical tools, computing methods, design techniques for modelling and analyzing computer systems;	b17-1) Design an ERM model appropriate to a particular business and engineering system.
	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Select a particular ERM model appropriate for a particular business and engineering system.
	B19) Proposing various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved.	b19-1) Design and maintain data structures, construct concurrent access to many users and manage security and privacy techniques
	B21) Innovating solutions based on non-traditional thinking and the use of latest technologies	b21-1) Design relations, forms, QBE, reports and macros and create related relationships for multiple entities system.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19) Use appropriate computational tools and database software packages design packages throughout the phases of the life cycle of the development of the DB system.
	C21) Conducting user support activities competently.	c21) Use data base facilities perfectly, enabling data entry, user support activities, loading data, protection, backup and recovery process.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1) Improved ability to group working.
	D3) Communicate effectively.	a3) Share ideas and communicate efficiently with others.
	D4) Demonstrate efficient IT capabilities.	d4) Ability to use computers, networks and software to support engineering activity, and to enhance personal / team productivity.
	D8) Acquire entrepreneurial skills	d8) Revise software packages to judge the suitable database management software to design database information systems in a professional way.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Database Management System and DBM software	1
2 nd	System modeling and Data flow model(DFM)	2
3 rd	Types of relationships, entities, keys, Sorting and Indexing	3-4
4 th	Linearization techniques and ERM model	5-6
5 th	Design of tables, forms, queries and report	7,9
6 th	Design forms and sub forms and create reports for multiple entities systems	10-11
7 th	Working with macros	12
8 th	Design a professional start up user screens and IT systems	13
9 th	Project : Case studies	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 to Database Management System and DBM software	5	2	--	3	a7-1,a27-1
WEEK-2	System modeling and Data flow model(DFM)	5	2	--	3	a27-1, a28-1, b12-1
WEEKS-3-4	Types of relationships, entities, keys, Sorting and Indexing	10	4	--	6	a27-2, a28-1 ,b1-1,
WEEKS-5-6	Linearization techniques and ERM model	10	4	--	6	b1-1,b17-1, b18-1, b19-1
WEEK-7	Design of tables, forms, queries and report (Part I)	5	2	--	3	b1-1,b17-2, b18-1, b19-1
WEEK-8	Midterm written examination					
WEEK-9	Design of tables, forms, queries and report (Part II)	5	2	--	3	b18-1, b19-1,b21-1, c19-1, c21-1
WEEKS-10-11	Design forms and sub forms and create reports for multiple entities systems	10	4	--	6	b18-1, b19-1,b21-1, c19-1, c21-1
WEEK-12	Working with macros	5	2	--	3	b12-1, b18-1, b19-1,b21-1, c19-1, c21-1
WEEK-13	Design a professional start up user screens and IT systems	5	2	--	3	a27-1, a28-1, b1-1, b12-1, b17-1, b18-1, b19-1, b21-1, c19-1, c21-1,d1-1, d3-1, d4-1, d8-1
WEEKS-14-15	Project : Case studies	10	4	--	6	b12-1, b18-1, b19-1,b21-1, c19-1, c21-1

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	a7-1	*	*	*	*	*		*		*				
	a27-1	*	*	*	*	*		*		*				
	a28-1	*	*	*	*	*		*		*				
Intellectual Skills	b1-1	*	*	*	*	*		*		*				
	b12-1	*		*	*		*	*	*	*	*	*		
	b17-1	*	*			*					*			
	b18-1	*		*		*		*	*			*	*	*
	b19-1	*	*	*	*	*	*			*	*			*
	b21-1	*		*		*		*	*			*	*	*
Professional Skills	c19-1	*		*	*	*		*		*	*		*	*
	c21-1	*					*				*	*		*
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	a7-1	*		*		*		*					
	a27-1				*				*		*		
	a28-1		*		*		*		*				
Intellectual Skills	b1-1				*				*		*		
	b12-1	*		*	*		*	*		*			
	b17-1	*		*		*		*				*	*
	b18-1	*		*		*		*	*			*	*
	b19-1	*		*	*	*		*		*	*		*
	b21-1	*		*		*		*	*	*		*	*
Professional Skills	c19-1	*	*	*		*	*	*	*		*		
	c21-1	*	*	*	*	*	*	*	*	*	*	*	*
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*	*
	d3-1	*	*	*	*	*	*	*	*	*	*	*	*
	d4-1	*	*	*	*	*	*	*	*	*	*	*	*
	d8-1	*	*	*	*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

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
- 4-David Austin, "Simple solutions, essential skills using oracle8", libraries of congress Catalog, 1998.

Course coordinator

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Electrical Machine (2)

Code Symbol: ECE307

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 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, A18, 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) Demonstrate theory of electromechanical energy conversion. a4-2) 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 the principles of operation of electrical a-c generators and a-c motors.
	A18) Apply theories and techniques for calculating short circuit, motor starting, and voltage drop.	a18-1) Apply theories and techniques for calculating motor starting, and voltage drop.
	A19- Define diverse applications of electrical equipment.	a19-1) Illustrate the 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) Specify 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; synchronizing; synchronous motor; V curves; power factor correction.	3-6
3rd	Poly-phase 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.	Lab.	
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, a18-1, 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,a18-1,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,a18-1,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	*	*	*	*	*		*	*					
	a18-1	*		*	*	*					*		*	*
	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)		Assessment Methods											
		Written Examine	Oral Examine	Tutorial Assessment	Project	Model	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exams	Monitoring
Knowledge & Understanding	a4-1	*	*	*	*			*		*	*	*	
	a4-2	*	*	*	*			*		*	*	*	
	a4-3	*	*	*	*			*		*	*	*	
	a4-4	*	*	*	*			*		*	*	*	
	a4-5	*	*	*	*			*		*	*	*	
	a15-1	*		*			*	*	*	*			
	a18-1	*		*		*	*	*		*			
	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-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: McGraw-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 Wiley & 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.

Course coordinator

Prof. Dr Fathi El-Sayed Abdel Kader

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Digital Control

Code Symbol: ECE403

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
---	---	---	40%	40%	20%	----	100%

B-Professional Information

2- Course Aims:

The aim of the course is to give the basic knowledge of digital control and its applications in process control.

3- Course Objectives:

- An ability to apply knowledge to design digital control
- Design of digital Control using State Space Analysis.
- Analytical and computer methods appropriate for engineering systems, with particular reference to digital 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	A13,A14	B1	C13,C20	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose analytical and computer methods appropriate for engineering systems, with particular reference to digital systems. a13-2) Apply knowledge to design digital control.
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Distinguish design of digital Control using State Space Analysis.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1) Identify, formulate, and solve digital control problems. b1-2) Use mathematical methods, modern techniques, skills and engineering tools b1-3) Select computer-based method to write computer programs and use professional packages to solve engineering problems.
Professional skills	C13) Design and perform experiments, as well as analyze and interpret experimental results related to electrical power engineering	c13-1) Prepare the student for continuing development in follow on topics of advanced digital and microprocessor concepts. c13-2) Use modern engineering techniques for analysis and design. c13-3) Design and perform experiments of digital control systems.
	C20) Write computer programs on professional levels achieving acceptable quality measures in software development.	c20-1) Write computer programs on professional levels achieving acceptable quality measures in software development
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) Improved ability to use the Internet to locate information.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Control Systems.	1
2 nd	Sampling and Signal Conversion.	2
3 rd	The Z-Transform.	3
4 th	Transfer Functions, Block Diagrams & Signal Flow Graphs.	4-5
5 th	Transform Design of Digital Controls	6
6 th	State Space Analysis of Sampled Data Systems.	7
7 th	Design of Digital Control using State Space Analysis.	9
8 th	Mechanization of Control Algorithm using Microprocessor.	10
9 th	Analytical Methods for process Control.	11
10 th	Some typical Processes, Control System and Modelling.	12
11 th	Aspects of Modern Control Systems.	13
12 th	Microprocessors and Computers in Process Control.	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 to Control Systems.	4	2	2	--	b1-2
WEEK-2	Sampling and Signal Conversion.	4	2	2	--	a13-1,a13-2,a14-1
WEEK-3	The Z-Transform.	4	2	2	--	a13-1,a13-2,a14-1
WEEK-4-5	Transfer Functions, Block Diagrams & Signal Flow Graphs.	4	2	2	--	a13-1,a13-2,a14-1, b1-2,b1-3
WEEK-6	Transform Design of Digital Controls	4	2	2	--	a13-1,a13-2,a14-1, b1-2,b1-3
WEEK-7	State Space Analysis of Sampled Data Systems.	8	4	4	--	a13-1,a13-2,a14-1, b1-2,b1-3
WEEK-8	Midterm written examination					
WEEK-9	Design of Digital Control using State Space Analysis.	4	2	2	--	a13-1,a13-2,a14-1, b1-1,b1-2,b1-3, c13-1, c13-2,d4-1
WEEK-10	Mechanization of Control Algorithm using Microprocessor.	4	2	2	--	a13-1,a13-2,a14-1, b1-1,b1-2,b1-3,c13-1, c13-2,d4-1
WEEK-11	Analytical Methods for process Control.	4	2	2	--	a13-2,a14-1,b1-1, b1-2,b1-3,c13-1, c13-2 , c20-1, d1-1
WEEK-12	Some typical Processes, Control System and Modelling.	4	2	2	--	a13-2,a14-1,b1-1, b1-2,b1-3,c13-1, c13-2 ,d1-1
WEEK-13	Aspects of Modern Control Systems.	4	2	2	--	a13-2,a14-1,b1-1, b1-2,b1-3,c13-1,c13-2 ,d4-1
WEEKS-14-15	Microprocessors and Computers in Process Control.	8	4	4	--	a13-1,a13-2,a14-1, b1-1,b1-2,b1-3,c13-1, c13-2,c20-1,d1-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentati on and	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Research and	Group Working	Discoverin g	simulation and	Lab. Experime
Knowledge & understanding	a13-1	*	*	*	*			*		*	*		*	
	a13-2	*	*	*	*			*		*	*		*	
	a14-1	*		*	*	*	*						*	
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
	b1-3	*	*	*	*	*	*	*		*	*		*	*
Professional Skills	c13-1	*	*	*	*	*	*	*	*	*	*			
	c13-2	*	*	*	*	*	*	*	*	*	*			
	c13-3	*	*	*	*	*	*	*	*	*	*			
	c20-1	*			*	*		*					*	*
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 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	a13-1	*		*				*		*			
	a13-2	*		*				*		*			
	a14-1	*		*				*		*			
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
	b1-3	*		*		*	*	*		*		*	
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		
	c13-2	*	*	*	*	*	*	*		*	*		
	c14-1		*				*			*	*		
	c20-1	*		*	*	*		*			*	*	
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Digital Control Lab. is used to execute all experimental related to digital control course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-O.N.Pandey, "Digital Control Systems Engineering", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2008.
- 2-Albert Paul Malvino, "Digital Computer Electronics", Tata McGraw-Hill Publishing Company, 1983
- 3-M.Morris Mano, "Digital Design", Prentice Hall, 2002
- 4- John F. Wakerly, "Digital Design: Principles and Practices", Third Edition Updated, Prentice, Hall, 2003.

Course coordinator

Head of the Department

Prof.Dr.Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Digital Filters

Code Symbol: ECE404

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

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
---	---	---	40%	40%	20%	----	100%

B-Professional Information

2- Course Aims:

The aim of the course is to give the theoretical basis for analysis and synthesis of digital filters and basic knowledge about implementation of digital filters in hardware and software

3- Course Objectives:

- To learn synthesize FIR and IIR filters, especially wave digital filters,
- To analyze finite word length effects in digital filters,
- To synthesize digital systems with several sampling frequencies using interpolation and decimation,
- To analyze computational properties of recursive algorithms,
- To use computer programs to solve problems within digital filtering

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,A14,A24	B1	C13,C20	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A8) Explain Current engineering technologies as related to electrical engineering.	a8-1)Apply modern techniques, skills and engineering tools using proper software for solving problems within digital filtering. a8-3)Use mathematical methods, modern techniques, skills and engineering tools related to digital filters.
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Distinguish design digital filter used in different applications for electrical power and machines.
	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1)Learn synthesize FIR and IIR filters, especially wave digital filters, a24-2)Explain digital systems with several sampling frequencies using interpolation and decimation.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1)Analyze finite word length effects in digital filters. b1-2)Analyze computational properties of recursive algorithms.
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.
	C20)Write computer programs on professional levels achieving acceptable quality measures in software development.	c20-1)Write computer programs and use professional packages to solve engineering problems within digital filtering.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Gain experience to solve any problem in Digital Electronic
	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 st	Discrete-time and digital signals and systems	1-2
2 nd	Approximation theory, Butterworth, Chebyshev-I, Chebyshev-II and Cauer-filters	3-5
3 rd	Frequency transformations	6
4 th	Synthesis of Infinite impulse response (IIR).	7
5 th	Finite impulse response (FIR) filters.	9
6 th	Especially wave digital filters	10
7 th	System with several sampling frequencies, decimation and interpolation	11-12
8 th	Finite word lengths effects	13
9 th	Computational properties of recursive DSP algorithms	14
10 th	Implementation of digital filters	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Discrete-time and digital signals and systems	4	2	2	--	a8-1,a8-2,a24-2
WEEKS-2-3	Approximation theory, Butterworth, Chebyshev-I, Chebyshev-II and Cauer-filters	8	4	4	--	a8-1,a8-2,b1-1, b1-2
WEEKS-4-5	Frequency transformations	8	4	4	--	a8-1,a8-2,b1-1, b1-2
WEEKS-6-7	Synthesis of Infinite impulse response (IIR)	8	4	4	--	A14-1,a24-1 ,d1-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9	Finite impulse response (FIR) filters.	4	2	2	--	a14-1,a24-1,b1-1, d1-1, d4-1
WEEK-10	Especially wave digital filters	4	2	2	--	a14-1,a24-1,b1-1, d1-1, d4-1
WEEK-11-12	System with several sampling frequencies, decimation and interpolation	8	4	4	--	a24-2,c13-1,d1-1, d4-1
WEEK-13	Finite word lengths effects	4	2	2	--	b1-1 ,d1-1,d4-1
WEEK-14	Computational properties of recursive DSP algorithms	4	2	2	--	b1-2,c20-1,d1-1, d4-1
WEEK-15	Implementation of digital filters	4	2	2	--	a8-1,a8-2, a14-1, c13-1,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	a8-1	*	*	*	*	*	*	*	*	*	*		*	*
	a8-2	*	*	*	*	*	*	*	*	*	*		*	*
	a14-1	*		*	*	*	*						*	
	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	*
	b1-2	*	*	*	*	*	*	*		*	*		*	*
Professional Skills	c13-1	*	*	*	*	*	*	*	*	*	*			
	c20-1	*			*	*		*					*	*
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 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	*	*	*	*	*	*	*	*	*	*		
	a8-2	*	*	*	*	*	*	*	*	*	*		
	a14-1	*		*				*		*	*		*
	a24-1	*	*	*	*	*	*	*	*	*	*	*	
	a24-2	*	*	*	*	*	*	*	*	*	*	*	
Intellectual Skills	b1-1	*		*		*	*	*		*		*	
	b1-2	*		*		*	*	*		*		*	
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		
	c20-1	*		*	*	*		*			*	*	

General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Digital filter Lab. is used to execute all experimental related to digital filter course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1. L.Wanhammar and H. Johansson: Digital filters, 2011 L. Wanhammar: Tables and Formulas for Analog and Digital Filters.
2. A. V. Oppenheim, R. W. Schafer, and J. R. Buck, "Discrete-Time Signal Processing" , 2nd edition, Prentice Hall, 1999; S.K. Mitra

Course coordinator

Head of the Department

Prof.Dr.Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Electrical Power Systems(2)

Code Symbol: ECE405

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 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 network using 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)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills

Program Academic Standards that the course contribute in achieving	A15, A17, A18,A23	B13, B14	C1, C17	D9
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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 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
	A18) Apply Theories and techniques for calculating short circuit, motor starting, and voltage drop	a18-1) Explain how to select suitable methods for transmission line representation.
	A23) Generalize principles of performing electrical system calculations, including load flow, earthing and equipment sizing.	a23-1) Explain Load flow studies.
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
	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
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 calculating power system stability.
General skills	D9) Refer to relevant literatures	d9-1) Refer to new concepts of FACTS

6- Course Topics.

Topic No.	General Topics	Weeks
1	Representation of power systems <ul style="list-style-type: none">• The one line diagram• The impedance and reactance diagram.• Per unit quantities.• Changing the base of per unit quantities.• Per unit impedance of three winding transformer• Methods of calculation	1-3
2	Load flow studies <ul style="list-style-type: none">• Power system equations• Gauss and Gauss seidal iterative methods using Ybus• Acceleration of convergence	4-6
3	Symmetrical three phase faults on S.M. <ul style="list-style-type: none">• Transients in RL series circuits• Short circuit currents and the reactance of S.M• Internal voltages of loaded machines under transient conditions.• The selection of circuit breakers..	7,10
4	Symmetrical components <ul style="list-style-type: none">• Analysis by S.C.• The symmetrical components of unsymmetrical phases.• The relation between the symmetrical components of the line and phase voltages.• Sequence impedance and sequence networks.• Zero sequence networks.	11-12
5	Unsymmetrical faults on power systems. <ul style="list-style-type: none">• Single line-to ground faults.• Line-to-line fault.• Double line-to-ground fault.	13
6	Power system stability <ul style="list-style-type: none">• Steady state stability limits.• Transient stability review of machines.• The inertia constant.• The swing equation.• Equal-area criteria of stability.	14-15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEKS-1-3	Representation of power systems <ul style="list-style-type: none"> • The one line diagram • The impedance and reactance diagram. • Per unit quantities. • Changing the base of per unit quantities. • Per unit impedance of three winding transformer • Methods of calculation • Load flow studies. 	12	6	6	--	a15-1, a17-1, a17-2, b13-2, c1-1, d9-1
WEEKS-4-6	Load flow studies <ul style="list-style-type: none"> • Power system equations • Gauss and Gauss seidal iterative methods using Ybus • Acceleration of convergence 	12	6	6	--	a15-1, a18-1, a23-1, b13-1, c1-1, d9-1
WEEK-7	Symmetrical three phase faults on S.M. <ul style="list-style-type: none"> • Transients in RL series circuits. 	4	2	2	--	a18-1, b13-1, c1-1
WEEK-8	Midterm written examination					
WEEKS-9-10	<ul style="list-style-type: none"> • Short circuit currents and the reactance of S.M • Internal voltages of loaded machines under transient conditions. The selection of circuit breakers..	8	4	4		a15-1, A18-1, b14-1, c1-1, d9-1
WEEKS-11-12	Symmetrical components <ul style="list-style-type: none"> • Analysis by S.C. • The symmetrical components of unsymmetrical phases. • The relation between the symmetrical components of the line and phase voltages. • Sequence impedance and sequence networks. • Zero sequence networks. 	8	4	4		a15-1, A18-1, b13-1, c1-1, d9-1
WEEK-13	Unsymmetrical faults on power systems. <ul style="list-style-type: none"> • Single line-to ground faults. • Line-to-line fault. • Double line-to-ground fault. 	4	2	2		a15-1, a18-1, b14-1, c1-1
WEEKS-14-15	Power system stability <ul style="list-style-type: none"> • Steady state stability limits. • Transient stability review of machines. • The inertia constant. • The swing equation. • Equal-area criteria of stability. 	8	4	4		a15-1, a18-1, b13-1, 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	a15-1	*		*	*	*								
	a15-2	*		*	*	*								
	a17-1	*		*	*	*								
	a17-2	*		*	*	*								
	a18-1	*		*	*	*					*		*	*
	a23-1	*	*	*	*	*	*	*		*	*		*	
Intellectual Skills	b13-1	*		*	*	*								
	b13-2	*		*	*	*								
	b13-3	*		*	*	*								
	b14-1	*		*	*	*								
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	*			*								
	a18-1	*		*		*	*	*		*			*
	a23-1	*		*			*	*	*	*			
Intellectual Skills	b13-1	*			*								
	b13-2	*			*								
	b13-3	*			*								
	b14-1	*			*								
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	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 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

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Course coordinator

Head of the Department

Prof. Dr. Abdel-Mohsen Kinawy

Prof.Dr. Shaban Mabrouk Osheba

Electrical and Computer Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic level: Level 4

Course Specification

A-Basic Information

Title: Power Electronics (2)

Code Symbol: ECE406

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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:

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

3- Course Objectives:

- Build and use three phase power converters for conditioning the mains to satisfy deferent load requirements.
- Realizing of the different types of three phase converter for inductive load.
- Evaluation of the suitable converters for various power systems.
- Analysis of different power electronic three phase converter problems and their drawbacks on the supply.

4- Relationship between the course and the program

Field	National Academic Reference Standard(NARS)			
	Knowledge &	Intellectual	Professional	General Skills

	Understanding	Skills	Skills	
Program Academic Standards that the course contribute in achieving	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	A8) Recognize current engineering technologies as related to the electrical power engineering	a8-1) Identify the different types of converter. a8-2) Identify the three phase converters for conditioning the mains to satisfy load requirements.
	A19) Diverse Applications of electrical equipment	a19-1) Define the operation of three phase 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 three phase 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 three phase converter system.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	AC voltage controllers (inductive loads). The differential A.C. controller.	1-3
2nd	Three-phase controlled rectifiers. Effect of supply inductance. Speed control of DC motors and induction motors.	4-7,9
3rd	Thyristor choppers.	10-12
4th	Cycloconverters, Synchroconverters, push-bull inverter, and	13-15

	three-phase DC link inverters	
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7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	AC VOLTAGE CONTROLLERS Three-Phase A.C. Controller Circuits.	4	2	2	--	a8-1, a8-2, b13-1 c13-1,c13-2,
WEEK-2	Integral Cycle Control(inductive load) Phase Control(inductive load)	4	2	2	--	a8-1, b13-1 c13-1,c13-2,
WEEK-3	The differential A.C. controller.	4	2	2	--	a8-1, a19-1, b13-1 c13-1,c13-2, c17-1 d6-1
WEEK-4	CONTROLLED RECTIFIERS Introduction. Centre-Tap Rectifiers (three-phase)	4	2	2	--	a8-1, a8-2, b13-1 c13-1,c13-2,
WEEK-5	Bridge Rectifiers(Three-phase)	4	2	2	--	a8-1, a8-2, b13-1 c13-1,c13-2,
WEEK-6	Effect of supply inductance.	4	2	2	--	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2,
WEEK-7	Speed control of DC motors.	4	2	2	--	a19-1, b13-1 c13-1,c13-2, c17-1 d6-1
WEEK-8	Midterm written examination					
WEEK-9	Speed control of induction motors.	4	2	2	--	a19-1, b13-1 c13-1,c13-2, c17-1 d6-1
WEEK-10	Thyristor choppers Turn-off methods.	4	2	2	--	a8-1, b13-1 c13-1, c13-2
WEEK-11	Thyristor choppers using parallel capacitor commutation	4	2	2	--	a8-1, a8-2, b13-1 c13-1,c13-2,
WEEK-12	Thyristor choppers using resonant turn-off.	4	2	2	--	a8-1, a8-2, b13-1 c13-1,c13-2,
WEEK-13	FREQUENCY CONVERTERS Cycloconverters. The Synchro converter	4	2	2	--	a8-1, a8-2, a19-1, b13-1 c13-1,c13-2, c17-1 d6-1

WEEK-14	The D.C. Link Inverters (Three-Phase).	4	2	2	--	a8-1, a8-2, b13-1 c13-1,c13-2,
WEEK-15	The Push-Bull Inverter.	4	2	2	--	a8-1, a19-1, b13-1 c13-1,c13-2,

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
	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
	a8-1	*			*								
	a8-2	*			*								
	a19-1	*			*								
Intellectual	b13-1	*			*		*						

Skills													
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1 Laboratory

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

11-2 Library 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.Azza Mohamed Ezat Lashine

Prof.Dr.Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Data Structure

Code Symbol: ECE107

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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 is designed to give the students a basic idea about the most commonly used data structure techniques and algorithms. Students should have enough knowledge to design and implement various data structure algorithms using an object oriented programming technique.

3- Course Objectives:

- To understand the purposes and methods of the most commonly occurring data structures
- To analyze the data structure needs of particular problems
- To compare the efficiency of various implementations and algorithms
- To design algorithms to solve specific problems
- To select a particular data structure algorithm appropriate for a particular problem in the field.
- To use an object-oriented programming technique and Write computer programs on professional levels achieving acceptable quality measures in software development
- To implement an object-oriented programming technique

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,A27	B1,B2,B7,B8, B12,B17,B19	C2,C6,C20	D1, 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 the purposes and methods of the most commonly occurring data structures
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose a particular data structure algorithm appropriate for a particular problem in the field.
	A27) Recognize Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Identify a particular data structure algorithm appropriate for a particular problem in the field.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.	b1-1) To analyze the data structure needs for modelling and analyzing of particular 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) 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) To select and compare the efficiency of various computer algorithms to a variety of engineering problems
	B12) Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1) Create systematic and methodic approaches when dealing with new and advancing technology.
	B17) Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems.	b17-1) Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems.
	B19) Proposing various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved	b19-1) To implement an object-oriented programming technique to business system problems
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) To implement an object-oriented programming technique and develop the required computer program
	C20) Write computer programs on professional levels achieving acceptable quality measures in software development	c20-1) Write computer programs on professional levels achieving acceptable quality measures in software development
General skills	D1) Collaborate effectively within multidisciplinary team.	D1-1) Collaborate effectively within multidisciplinary team.
	D4) Demonstrate efficient IT capabilities.	d4) Demonstrate efficient IT capabilities

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Data type representation	1-2
2nd	Files structure	3-4
3rd	Data structure representation in storage media memory allocation searching-Sorting.	5-6
4th	Explores efficiency of algorithms, sequential and linked lists,	7-8
5th	Mid Ter Exam	9
6th	Stacks, queues, and trees.	10-11
7th	Hashing, heaps, and searching.	12-13
8th	Sorting, directed graphs, and depth-first algorithms	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	Data type representation	8	4	4	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEKS-3-4	Files structure	8	4	4	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEKS-5-6	Data structure representation in storage media memory allocation searching-Sorting.	8	4	4	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEK-7	Explores efficiency of algorithms, sequential and linked lists (Part I)	4	2	2	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEK8	Mid Term Exam (written)					
WEEK-9	Explores efficiency of algorithms, sequential and linked lists (Part II)	4	2	2	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEKS-10-11	Stacks, queues, and trees.	8	4	4	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEKS-12-13	Hashing, heaps, and searching.	8	4	4	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,d1-1,d4-1
WEEKS-14-15	Sorting, directed graphs, and depth-first algorithms	8	4	4	-	a5-1,a13-1,a27-1,b1-1,b2-1, b7-1,b8-1,b12-1,b19-1, c2-1, c6-1,c20-1,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	a5-1	*	*	*	*	*	*	*		*	*			
	a13-1	*	*	*	*	*	*	*	*		*		*	
	a27-1	*	*	*	*	*		*		*				*
Intellectual Skills	b1-1	*	*	*	*	*	*	*		*	*		*	
	b2-1	*	*	*	*	*	*	*		*	*	*	*	
	b7-1	*		*	*	*	*	*		*	*			
	b8-1	*	*	*	*	*	*	*		*	*		*	
	b12-1	*		*	*		*	*	*	*	*	*		
	b17-1	*	*		*	*		*					*	
	b19-1	*	*	*	*	*	*	*		*	*		*	
Professional Skills	c2-1	*	*	*	*	*	*	*	*	*	*		*	
	c6-1	*	*	*	*	*	*	*	*	*	*		*	
	c20-1	*	*		*	*		*	*	*			*	
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 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		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	*	*	*	*	*	*	*		*	*		*
	a13-1	*	*	*	*	*	*	*		*	*		
	a27-1				*				*		*		
Intellectual Skills	b1-1	*		*		*	*	*		*		*	*
	b2-1	*		*	*	*	*	*		*		*	*
	b7-1	*		*	*		*	*		*		*	
	b8-1	*		*			*		*		*		
	b12-1	*		*	*		*	*		*			
	b17-1	*		*		*		*				*	
	b19-1	*		*		*		*	*			*	
Professional Skills	c2-1	*		*	*		*	*		*		*	
	c6-1	*		*	*	*		*	*	*	*	*	
	c20-1	*		*	*	*		*			*	*	
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d4-1	*	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	9th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-Mark Allen Weiss, "Data Structures & Problem Solving Using Java", Second Edition, Addison-Wesley, 2002
- 2-Mark Allen Weiss, Data Structures & Problem Solving Using Java, Second Edition, Addison-Wesley, 2002

Course coordinator

Program coordinator

Prof. Dr. Shaban Mabrouk Osheba

Prof. Dr. Shaban Mabrouk Osheba

Electrical and Computer Eng. Dept.
Faculty of Engineering
Minoufiya University

Academic year: 2011-2012
Academic level: Level 1

Course Specification

A-Basic Information

Title: Computer Programming(1)

Code Symbol: ECE108

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	-----	3	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%	30%	20%	20%	10%	----	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) Demonstrate understanding basic mathematics, science and technologies relevant to modern power and machines.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Illustrate the application of IT principles and tools as appropriate to the role of machines and power systems.
Intellectual skills	B1) Select appropriate mathematical and computer-based methods for modelling and analyzing problems.	b1-1) Assessing the mathematical tools/models for the solution of problems in machines
	B2) Select appropriate solutions for engineering problems based on analytical thinking.	b2-1) Design a program with high level language for solving any mathematical problem.
	B7) Solve engineering problems, often on the basis of limited and possibly contradicting information.	a7-1) Solve engineering problems with limited information and predict results.
	B8) Select and appraise appropriate ICT tools to a variety of engineering problems.	b8-1) Select 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 an appropriate high level programming to solve engineering problems.
	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 to solve electrical 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	d7-1) Use information technologies effectively

	engineering.	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.	Tut.	Lab.	
WEEK-1	PC Software (Operating Systems, Computer Languages, Language Compilers, Application Programs and Specific Application Programs), and Algorithms.	5	2	--	3	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.	5	2	--	3	a2-1, b1-1, c1-1 , d4-1, d7-1
WEEK-3	Input and Output Statements -Input Operation -Output Operation	5	2	--	3	a2-1, b1-1, c1-1 , d4-1, d7-1
WEEK-4	Flowcharts (Examples in Electrical Engineering)	5	2	--	3	a5-1, b1-1, c5-1 , d4-1, d7-1
WEEK-5	Unconditional Transfer Conditional Transfer (Examples in Electrical Engineering)	5	2	--	3	a5-1, b1-1, c5-1 , d4-1, d7-1
WEEK-6	Closed Loops without using Condition Transfer (Examples in Electrical Engineering)	5	2	--	3	c5-1 , a5-1, a13-1, b7-1, d4-1
WEEK-7	Closed Loops using Condition Transfer (Examples in Electrical Engineering)	5	2	--	3	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)	5	2	--	3	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)	5	2	--	3	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)	5	2	--	3	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)	5	2	--	3	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)	5	2	--	3	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).	5	2	--	3	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).	5	2	--	3	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)		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	*	*	*				*		*	*	*	
	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1 Laboratory 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.

Course coordinator

Head of the Department

Prof. Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: System Analysis

Code Symbol: ECE109

Element of program: Core

Date of specification approval: 2011

Department offering the course: Electrical and computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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
10%	-----	-----	30%	40%	20%	-----	100%

B-Professional Information

2- Course Aims:

- This course is designed to give the students knowledge about basic terminology used in system analysis and design techniques. Types of organizations, fact finding techniques, Data flow modeling, categories of information systems, role of system analyst and business system automation represent important aims of the course. Students should be able to analyze a particular business organization, obtain the data flow model and set the required coding.

3- Course Objectives:

- To know the role of system analyst and categories of information systems.
- To analyze information flows in organizations, and identify organizational problems, opportunities, and objectives.
- To know phases of systems development life cycle approach used to solve business problems.
- To understanding organizational style and its impact on information systems.
- To entity relationship diagram and context data flow diagram(DFD).
- To know organization project initiation.
- To know project feasibility , scheduling , activities and personnel requirements.
- To determine feasibility and managing analysis and design activities.
- To manage systems analysis team members.
- To know information gathering interactive and unobtrusive methods.
- To know prototyping and extreme programming values, principals and activities.

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,A7,A11,A27,A28	B8, B17,B18, B19,B20,B21	C2,C3,C9, C18,C21	D1,D3,D4,D5,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)Entity relationship diagram and context data flow diagram(DFD)
	.A7) Remember Business and management principles relevant to engineering	a7-1)Explain the role of system analyst and categories of information systems
	A11) Recognise Professional ethics and impacts of engineering solutions on society and environment	a11-1)Explain prototyping and extreme programming values, principals and activities
	A27) Recognise Technologies of data, image and graphics representation and organization on computer storage media.	a27-1)Choose analytical information flows in organizations, and identify organizational problems, opportunities, and objectives
	A28) Demonstrate Modern trends in information technology and its fundamental role in business enterprises	a28-1) Demonstrate the role of system analyst and categories of information systems
Intellectual skills	B8) Select and appraise appropriate ICT tools to a variety of engineering problems	b8-1)determine feasibility and managing analysis and design activities to a variety of engineering problem
	B17)Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems.	b17-1) Select the appropriate mathematical tools to solve business problems
	B18)Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1)Select, synthesize, and apply suitable IT tools to computer engineering problems
	B19)Proposing various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved.	b19-1)To know phases of systems development life cycle approach used to solve business problems
	B20)Identifying symptoms in problematic situations.	b20-1)Identifying symptoms in problematic situations.
	B21)Innovating solutions based on non-traditional thinking and the use of latest technologies	b21-1)To understanding organizational style and its impact on information systems
Professional skills	C9) Demonstrate basic organizational and project management skills.	c9-1)To know organization project initiation
	C18) Design and operate computer-based systems specifically designed for business applications	c18-1)To know prototyping and extreme programming values, principals and activities
	C21)Conducting user support activities competently	c19-1)To know information gathering interactive and unobtrusive methods.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1)To manage systems analysis team members.

	D3) Communicate effectively.	d3-1) know organization project initiation , feasibility , scheduling and activities
	D4) Demonstrate efficient IT capabilities	d4-1) To know prototyping and extreme programming values, principals and activities
	D5) Lead and motivate individuals	d5-1) To manage systems analysis team members
	D8) Acquire entrepreneurial skills.	d8-1) To know project feasibility , scheduling , activities and personnel requirements

6- Course Topics.

Topic No.	General Topics	Weeks
1	Role of System Analyst , organizations an IT	1-2
2	Phases of systems development life cycle approach	3-4
3	Organizational Style and Its Impact on Information Systems	5-6
4	Feasibility studies and Feasibility Impact grid	7-8
5	Management analysis and design activities	10-11
6	Information Gathering: Interactive Methods	12
7	Information Gathering: Unobtrusive Methods	13
8	Prototyping and Extreme Programming	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	Role of System Analyst , organizations an IT	10	4	-	6	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1, d3-1,d4-1,d5-1,d8-1
WEEKS -3-4	Phases of systems development life cycle approach	10	4	-	6	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1, d3-1,d4-1,d5-1,d8-1
WEEKS -5-6	Organizational Style and Its Impact on Information Systems	10	4	-	6	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1, d3-1,d4-1,d5-1,d8-1
WEEK-7	Feasibility studies and Feasibility Impact grid	5	2	-	3	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1, d3-1,d4-1,d5-1,d8-1
WEEK-8	Mid Term Exam (written)					
WEEKS-9-10	Management analysis and design activities	10	4	-	6	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1, d3-1,d4-1,d5-1,d8-1
WEEKS-11-12	Information Gathering: Interactive Methods	10	4	-	6	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1, d3-1,d4-1,d5-1,d8-1
WEEK-13	Information Gathering: Unobtrusive Methods	5	2	-	3	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1, b17-1, b18-1,b19-1,b20-1,b21-1, c2-1,c3-1,c9-1,c18-1,c21-1,d1-1,

						d3-1,d4-1,d5-1,d8-1
WEEKS-14-15	Prototyping and Extreme Programming	10	4	-	6	a5-1,a7-1,a11-1,a27-1,a28-1,b8-1,b17-1, b18-1,b19-1,b20-1,b21-1,c2-1,c3-1,c9-1,c18-1,c21-1,d1-1,d3-1,d4-1,d5-1,d8-1

8- Teaching and Learning Method:

Course Intended learning outcomes (ILOs)		Lecture	Presentation	Discussion	Tutorial	Problem solving	Brain	Projects	Site visits	Research and Reporting	Group	Discovering	simulation and	Lab.
Knowledge & understanding	a5-1	*	*	*	*	*	*	*	*		*		*	*
	a7 -1	*		*						*	*			
	a11-1	*		*			*	*		*	*			
	a27-1	*	*	*	*	*		*		*				*
	a28-1	*	*	*	*	*		*		*				*
Intellectual Skills	b8 -1	*	*	*	*	*	*	*	*	*	*			*
	b17-1	*	*		*	*		*					*	
	b18-1	*	*		*	*								*
	b19-1	*	*		*	*		*						*
	b20-1	*		*		*	*			*			*	
	b21-1	*	*		*	*	*			*			*	
Professional Skills	c2-1	*	*	*	*	*	*	*	*	*	*		*	
	c3-1	*	*	*	*	*	*	*	*	*	*			
	c9-1			*				*	*		*			
	c18-1	*			*	*		*					*	
	c21-1	*					*				*	*		
General Skills	d1-1	*	*	*	*	*	*	*	*	*	*	*		
	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*		
	d5-1	*	*	*	*	*	*	*	*	*	*	*		
	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	*	*	*	*	*	*	*		*	*		*
	a7 -1	*					*						*
	a11-1	*			*					*		*	*
	a27-1				*				*		*		
	a28-1	*				*	*		*	*			
Intellectual Skills	b8 -1	*		*			*		*		*		
	b17-1	*		*		*		*	*			*	
	b18-1	*		*		*		*	*			*	*
	b19-1	*		*		*		*	*			*	
	b20-1	*		*	*	*		*	*			*	
	b21-1	*	*				*		*			*	*
Professional Skills	c2-1	*		*	*		*	*		*		*	
	c3-1	*		*	*		*					*	
	c9-1	*	*	*	*	*	*	*		*	*		
	c18-1	*	*	*	*		*	*	*	*	*	*	
	c19-1	*		*	*	*	*		*	*	*		
General Skills	d1-1	*	*	*	*		*	*	*	*	*	*	
	d3-1	*	*	*	*		*	*	*	*	*	*	*
	d4-1	*	*	*	*		*	*	*	*	*	*	*
	d5-1	*	*	*	*		*	*	*	*	*	*	*
	d8-1			*		*							*

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	9th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-" Systems Analysis and Design " Kendall & Kendall, Sixth Edition, 2010

Course coordinator

Prof.Dr. Shaban Mabrouk Osheba

Head of the Department

Prof.Dr.Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Software Engineering

Code Symbol: ECE212

Element of program: Major

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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%	40%	40%	-----	-----	100%

B-Professional Information

2- Course Aims:

- To elaborate on the basic concepts of software engineering and get the students to be more acquainted **with problems associated with** professional & ethical responsibilities, **as well as promoting their knowledge of** both computer-based systems and socio-technical systems. The course is also intended as a means of introducing the students to some important critical system properties such as dependability, availability, reliability, safety and security. Software processes will be introduced, as well as software system models used to design software systems. A glimpse of CASE tools will be offered and project management and its associated problems and issues will be addressed.

3- Course Objectives:

- Knowing Software Design
- Software engineering and theoretical issues in Computer Science.

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	A26	B17,B21	C3,C8,C9 C19,C20	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A26)Discuss Related research and current advances in the field of computer software and hardware.	a26-1) Demonstrate Understanding Software Design a26-2)Explain software engineering and theoretical issues in Computer Science.
Intellectual skills	B17)Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems.	b17-1)Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems.
	B21)Innovating solutions based on non-traditional thinking and the use of latest technologies.	b21-1) Capability of selecting the suitable and modern Software for solving engineering problems.
Professional skills	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1) Create and/or re-design a process, component or system, and carry out specialized engineering designs.
	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	c8-1) Apply safe systems at work and observe the appropriate steps to manage risks.
	C9) Demonstrate basic organizational and project management skills.	c9-1) Demonstrate basic organizational and project management skills.
	C19)Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Knowing some facts about the main purpose of Software Engineering. c19-2)Apply modern techniques, skills and engineering tools using proper software
	C20)Write computer programs on professional levels achieving acceptable quality measures in software development.	c20-1)Build suitable software and test engineering systems using proper hardware interface
General skills	D4) Demonstrate efficient IT capabilities.	d4-1) Use information technologies effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Software Engineering	1
2nd	Software Life Cycle Models	2
3rd	Requirement Engineering	3
4th	Verification and Validation	4
5th	Software Design	5
6th	Software Measurement and Matrices	6
7th	Software Testing	7
8th	Coding	8
9th	Software Maintenance	8
10th	Re-Engineering	10
11th	Software Cost	11
12th	Software Risk	12
13th	Software Reliability	13
14th	Special Topics in Software engineering and programs	14

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Software Engineering	5	2		3	a26-1,a26-2
WEEK-2	Software Life Cycle Models	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d4-1
WEEK-3	Requirement Engineering	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d4-1
WEEK-4	Verification and Validation	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d4-1
WEEK-5	Software Design	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d4-1
WEEK-6	Software Measurement and Matrices	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d4-1
WEEK-7	Software Testing	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-8	Midterm written examination					
WEEK-9	Coding	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-10	Software Maintenance	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-11	Re-Engineering	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-12	Software Cost	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-13	Software Risk	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-14	Software Reliability	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1
WEEK-15	Special Topics in Software engineering and programs	5	2		3	a26-1,a26-2, b17-1, b21-1,c3-1,c8-1,c9-1, c19-1, c19-2, c20-1, d24-1

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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a26-1	*	*	*	*	*		*		*				*
	a26-2	*	*	*	*	*		*		*				*
Intellectual Skills	b17-1													
	b21-1	*	*		*	*	*			*			*	
Professional Skills	c3-1	*	*	*	*	*	*	*	*	*	*			
	c8-1	*	*	*				*	*	*	*	*		
	c19-1	*			*	*		*					*	*
	c20-1	*			*	*		*					*	*
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	a26-1		*				*		*				
	a26-2		*				*		*				
Intellectual Skills	b17-1	*	*		*	*		*					*
	b21-1	*	*				*		*			*	*
Professional Skills	c3-1	*	*	*	*	*	*	*	*	*	*		
	c8-1	*	*	*				*	*	*	*	*	
	c19-1	*		*	*	*		*		*	*		*
	c20-1	*		*	*	*		*			*	*	*
General Skills		d4-1	*	*	*		*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th

11- Facilities required for teaching and learning:

11-1Laboratory Usage:

Computer Laboratory is used to help the students for applying different examples related to the course.

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- Bali Bali, "Software Engineering", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009.

Course coordinator

Head of the Department

Prof. Dr. Shaban Mabrouk Osheba

Prof. Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Computer Programming(2)

Code Symbol: ECE213

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	----	3	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%	30%	20%	20%	10%	----	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 how to solve problems related to electrical engineering using Visual Basic Programming.
	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) Develop the skills of marketing programs.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Develop 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) Use 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) Analysis of more complex systems that can be treated by pencil and paper.
	D3) Communicate effectively	d3-1) - Analysis of more complex systems that can be treated by pencil and paper. d3-2) The instructors' ability 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.

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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
6 th	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
9 th	Marketing a programs	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	Introduction to object Oriented Programming.	5	2	-	3	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).	5	2	-	3	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).	5	2	-	3	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).	5	2	-	3	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)	5	2	-	3	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)	5	2	-	3	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)	5	2	-	3	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)	5	2	-	3	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)	5	2	-	3	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-11,12	Applications related to electrical engineering problems and others related to social environmental.	10	4	-	6	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	15	6	-	9	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	*	*	*	*	*	*	*	*		*		*	*
	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)		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	*	*	*	*	*	*	*		*	*		
	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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 Jersey, USA, 1999

Course coordinator

Head of the Department

Prof.Dr.Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Digital Electronics

Code Symbol: ECE214

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

Lecture	Tutorial	Laboratory	Total
2	--	3	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%	20%	20%	----	20%	20%	100%

B-Professional Information

2- Course Aims:

- This course integrates the basic principles of Digital Electronic

3- Course Objectives:

- To Learn Number systems
- To Learn Logic gates and their application
- To Learn Digital circuit design and simplification.
- To Learn Arithmetic logic unit
- To Learn Flip-flops and their applications
- To To Learn Registers and counters
- To To Learn Memories
- To To Learn Analog 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,C18	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and 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 application, 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 creatively computer controlled systems.	b15-1) Demonstrate Digital Electronic 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 creatively computer controlled systems.	c15-1) Helps the power system engineer to keep abreast of rapid developments in the field
	C18) Design and operate computer-based systems specifically designed for business applications.	c18-1) Design and operate computer-based systems specifically designed for business applications.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Gain experience to solve any problem in Digital Electronic
	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 st	Number systems	1
2 nd	Logic gats and their application	2-3
3 rd	Digital circuit design and simplification.	4-5
4 th	Arithmetic logic unit	6-7
5 th	Flip-flops and their applications	9-10
6 th	Registers and counters	11-12
7 th	Memories	13-14
8th	Analog interfacing	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Number systems	5	2	--	3	A1-1
WEEKS-2-3	Logic gats and their application	10	4	--	6	a20-1,b15-1,b15-2, c15-1, c18-1, d1-1
WEEKS-4-5	Digital circuit design and simplification.	10	4	--	6	a20-1,b15-1,b 15-2, c13-1,c15-1, c18-1, d1-1, d4-1
WEEKS-6-7	Arithmetic logic unit	10	4	--	6	a20-1,b15-1,b15-2, c13-1,c15-1,d1-1, d4-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Flip-flops and their applications	10	4	--	6	a20-1,b15-1,b15-2, c13-1,c15-1, c18-1, d1-1, d4-1
WEEKS-11-12	Registers and counters	10	4	--	6	a20-1,b15-1,b15-2, c13-1,c15-1,d1-1, d4-1
WEEKS-13-14	Memories	10	4	--	6	a20-1,b15-1,b15-2, c13-1,c15-1,d1-1, d4-1
WEEK-15	Analog interfacing	5	2	--	3	a20-1,b15-1,b15-2, c13-1,c15-1, c18-1, 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 Renorting	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a1-1	*	*	*	*	*	*	*		*	*			*
	a20-1	*			*	*								*
Intellectual Skills	b15-1	*	*		*	*		*	*	*	*	*	*	*
	b15-2	*	*		*	*		*	*	*	*	*	*	*
Professional Skills	c13-1	*		*	*	*		*	*		*		*	*
	c15-1	*	*	*	*	*		*	*		*		*	*
	c18-1	*			*	*		*					*	
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 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	*	*	*			*	*	*	*	*	*	
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
Intellectual Skills	b15-1	*	*	*	*	*	*	*	*	*	*	*	
	b15-2	*	*	*	*	*	*	*	*	*	*	*	
Professional Skills	c13-1	*	*	*	*	*	*	*		*	*		
	c15-1	*					*	*	*		*		
	c18-1	*		*	*	*		*			*	*	*
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

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

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1Albert paul Malvino,"Digital Computer Electronics" Third Edition Macmillan /
Mc Graw – Hall.

Course coordinator

Head of the Department

Dr.Assim Abdul Fatah Nabawi

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Operating Systems*

Code Symbol: *ECE308*

Element of program: *Minor*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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:

- Understand the principles of operating systems.
- Understand the computer system and operating system activities.

3- Course Objectives:

- Know and understand the fundamental concepts and functions of operating system. Understand process management, memory management, files access and allocation, disk scheduling, and distributed 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	A27	B18	C19	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & understanding	A27) Recognize Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Recognize the fundamental concepts, principles and theories of computing and computer science covering topics such as operating system
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Solve a wide range of problems related to the analysis, design and construction of computer systems b18-2) Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology. b18-3) Work with and model computer systems at different and appropriate levels of abstraction.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Design, write and debug computer programs in appropriate languages. c19-2) Use appropriate computer-based design support tools c18-3) Appreciate the features of complex computing hardware and software and operate them effectively
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) How to think about transferring data through computer interfacing

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to operating system - Operating system definition – Operating system functions-multiprogramming system – time sharing -multiprocessor	1-2
2 nd	Computer System Structures <ul style="list-style-type: none"> • Computer System Operation. • I/O Structure • Storage Hierarchy. • Hardware Protection. • General System Architecture 	3
3 rd	Operating System Structures <ul style="list-style-type: none"> • Operating System Services (activities for process, memory-files-secondary storage) • System Calls. 	4
4 th	Processes <ul style="list-style-type: none"> • Process Concept. • Process states • Context switch • Threads • Process creation 	5-6

	<ul style="list-style-type: none"> • Process termination • Process cooperation • Deadlock 	
5 th	CPU Scheduling <ul style="list-style-type: none"> • Basic Concepts. • Dispatcher • Scheduling Criteria. • Scheduling Algorithms. • Multilevel queue scheduling • . Multilevel feedback queue scheduling • Algorithm Evaluation. 	7,9
6 th	Memory Management <ul style="list-style-type: none"> • Background. • overlays • Swapping. • Single partition Allocation. • Multi partition allocation • Allocation algorithm • Segmentation. • paging 	10-11
7 th	Files <ul style="list-style-type: none"> • Background. • Access method. • Allocation method 	12
8 th	Disk scheduling <ul style="list-style-type: none"> • FCFS • SSTF • Scan • C-scan • Look • C-Look 	13
9 th	Distributed system <ul style="list-style-type: none"> • Topology • Network Types • Communication (Name Resolution - Routing Strategies - Packet Strategies - Connection Strategies – Contention) 	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	Introduction to operating system - Operating system definition – Operating system functions- multiprogramming system – time sharing -multiprocessor	10	4	--	6	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-3	. Computer System Structures •Computer System Operation. •I/O Structure •Storage Hierarchy. •Hardware Protection. •General System Architecture	5	2	--	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-4	Operating System Structures •Operating System Services (activities for process, memory-files-secondary storage) •System Calls.	5	2	--	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1

WEEK-5-6	Processes <ul style="list-style-type: none"> •Process Concept. •Process states •Context switch •Threads • Process creation • Process termination •Process cooperation •Deadlock. 	5	2	--	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEK-7	CPU Scheduling (Part I) <ul style="list-style-type: none"> •Basic Concepts. •Disputer •Scheduling Criteria. •Scheduling Algorithms. 	5	2	-	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9	CPU Scheduling (Part II) <ul style="list-style-type: none"> •Scheduling Algorithms. •Multilevel queue scheduling •Multilevel feedback queue scheduling •Algorithm Evaluation. 	5	2	--	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-10-11	Memory Management <ul style="list-style-type: none"> •Background. •overlays •Swapping. •Single partition Allocation. •Multi partition allocation •Allocation algorithm •Segmentation. •paging. 	10	4	--	6	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEK-12	Files <ul style="list-style-type: none"> •Background. •Access method. •Allocation method 	5	2	--	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEK-13	Disk scheduling <ul style="list-style-type: none"> •FCFS •SSTF •Scan •C-scan •Look •C-Look. 	5	2	--	3	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS 14-15	Distributed system <ul style="list-style-type: none"> •Topology •Network Types •Communication (Name Resolution - •Routing Strategies - Packet Strategies - Connection Strategies – Contention) 	10	4	--	6	a27-1, b18-1, b18-2, b18-3, c19-1, c19-2, 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 Renoring	Group Working	Discovering	simulation and Modelling	Lab. Experiments
Knowledge & understanding	a27-1	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-1	*	*		*	*								*
	b18-3	*	*		*	*								*
Professional Skills	c19-1	*			*	*		*					*	*
	c19-2	*			*	*		*					*	*
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 & Renort	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge& Understanding	a27-1				*			*		*		
Intellectual Skills	b18-1	*		*		*		*	*		*	*
	b18-2	*		*		*		*	*		*	*
	b18-3	*		*		*		*	*		*	*
Professional Skills	c19-1	*		*	*	*		*		*	*	*
	c19-2	*		*	*	*		*	*	*	*	*
General Skills	d1-1	*	*	*		*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-S. Abraham, Operating system concepts, seven edition, 2005, JOHN WILEY& SONS, Inc.
- 3-MCSE Training Kit Microsoft Windows XP Professional.
- 4-William Stallings, "Operating Systems: Internals and Design Principles", Fourth Edition Prentice Hall, 2001
- 5-Andrew Tanenbaum; Modern Operating Systems (Second Edition); Prentice Hall; 2001.

Course coordinator

Dr. Hany Mohamed Ibrahim

Head of the Department

Prof.Dr. Shaban Mabrouk Osheb

Course Specification

A-Basic Information

Title: Signal Processing

Code Symbol: ECE309

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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
----	---	30%	20%	40%	10%	----	100%

B-Professional Information

2- Course Aims:

At this program's conclusion, Students should be able to:

Analysis of non sinusoidal waveforms, both continuous and discrete time-linear time-invariant systems.

3- Course Objectives:

Knowing the basic principles of Signals and Systems, and recognise technologies of data, image and graphics representation and organization on computer storage media.

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	A27	B18,B21	C19	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & understanding	A27) Recognize Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Recognize Technologies of data, image and graphics representation and organization on computer storage media.
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Select, synthesize, and apply suitable IT tools to computer engineering problems related to signal systems.
	B21) Innovating solutions based on non-traditional thinking and the use of latest technologies	b21-1) Innovating solutions based on non-traditional thinking and the use of latest technologies related to signal systems.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development related to signal systems.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) Demonstrate how to think about transferring data through computer interfacing

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Signals and Systems	1
2 nd	Linear Time-Invariant Systems	2-3
3 rd	Laplace Transform and Continuous-Time LTI Systems	4-5
4 th	The z-Transform and Discrete Time LTI Systems	6-7
5 th	Fourier Analysis of Continuous-Time Signals and Systems	9-10
6 th	State Space Analysis	11-12
7 th	Review of Matrix Theory	13-14
8 th	Properties of Linear Time-Invariant Systems and Various Transformers	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Signals and Systems	5	2	--	3	a27-1,b18-1,c19-1
WEEKS-2-3	Linear Time-Invariant Systems	10	4	--	6	b18-1,b21-1, c19-1, d1-1, d4-1
WEEKS-4-5	Laplace Transform and Continuous-Time LTI Systems	10	4	--	6	b18-1, b21-1, c19-1, d4-1
WEEKS-6-7	The z-Transform and Discrete Time LTI Systems	10	4	--	6	b18-1, b21-1 , c19-1, d1-1
WEEK-8	Midterm written examination					
WEEKS-9-10	Fourier Analysis of Continuous-Time Signals and Systems	10	4	--	6	b18-1, b21-1, c19-1, d4-1
WEEKS-11-12	State Space Analysis	10	4	--	6	b18-1, b21-1, c19-1, d4-1
WEEKS-13-14	Review of Matrix Theory	10	4	--	6	b18-1, b21-1, c19-1, d4-1
WEEK-15	Properties of Linear Time-Invariant Systems and Various Transformers	5	2	--	3	a27-1, b18-1, b21-1, c15-1, c19-1, 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	a27-1	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b21-1	*	*		*	*	*			*			*	
Professional Skills	c19-1	*			*	*		*					*	*
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 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	a27-1				*				*		*		
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b21-1	*	*				*		*			*	*
Professional Skills	c19-1	*		*	*	*		*		*	*		*
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Signal Processing Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-Hwei P.Hsu, "Theory and Problems of Signals and Systems", Schaum's Outline Series, McGraw Hill, 1995

Course coordinator

Head of the Department

Prof.Dr.Ibrahim Zakria Morsi

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Digital Signal Processing

Code Symbol: ECE407

Element of program: minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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
---	---	30%	20%	40%	10%	---	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,A12	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.
	A12) Recognise Contemporary engineering topics.	a12-1) Demonstrate understanding applications of Digital Signal Processing.
Intellectual skills	B13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering. machines.	b13-1) Assess the mathematical tools/models for the solution of problems in machines and power systems.
		b13-2) Use principles and concepts in solving problems in machines and power systems
	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) 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
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.	Lab.	
WEEK-1	Introduction to Digital Signal Processing(DSP)	5	2	--	3	a4-1, b13-1,c17-1, d4-1
WEEK-2	Time Domain Representation of Signals and Systems	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-3	Transform-Domain Representation of signals (DTFT)	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-4	Transform-Domain Representation of signals z-Transform.	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-5	Transform-Domain Representation of signals : Discrete Fourier Transform(DFT).	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-6	Transform-Domain Representation of signals : Fast Fourier Transform(FFT) Algorithms.	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-7	Transform-Domain Representation of LTI Systems.	5	2	--	3	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	5	2	--	3	a4-1, b13-1,c17-1, d1-1,d4-1
WEEK-10	Digital Filter Structure.	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-11	Digital Filter Design: Finite Impulse	5	2	--	3	a4-1,b13-1,b14-1,

	Response (FIR) Filters					c17-1, d3-1,d4-1
WEEK-12	Digital Filter Design: IIR Filters	5	2	--	3	a4-1,b13-1,b14-1, c17-1, d3-1,d4-1
WEEK-13	Applications of Digital Signal Processing.	5	2	--	3	a4-1,a12-1, b13-1, b14-1, c17-1,d1-1, d3-1, d4-1
WEEKS-14-15	MATLAB Programs	10	4	--	6	a4-1, a12-1, 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	*	*	*	*	*	*	*	*	*	*			
	a12-1	*	*	*	*	*				*	*			
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	*	*	*	*			*		*	*	*	
	a12-1	*		*	*		*						
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1 Computer 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

Dr.Fathi Sayed Abdel-Samia

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Computer Network*

Code Symbol: *ECE408*

Element of program: *Minor*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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%	30%	10%	----	100%

B-Professional Information

2- Course Aims:

- Understand the computer networks.
- Understand the networking technologies.
- Understand the up-to-date information on computer networks.

3- Course Objectives:

- Understanding of: Analog and Digital Transmission, Data Transmission Issues, Asynchronous and Synchronous Transmission.
- Understanding the computer networks, the Growth of Networking Technology, Network & Networking Components, Topologies, and Protocols,
- Understanding the Communication Networking Techniques, Circuit, Message, and Packet Switching, Open System Interconnection (OSI), Media Access Control (MAC), Internetworking.

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	A12,A26,A27	B18,B22	C18,C19	D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
	A12) Recognize Contemporary engineering topics.	a12-1) Recognize Contemporary engineering topics related to computer network.
Knowledge & understanding	A26) Discuss Related research and current advances in the field of computer software and hardware.	a26-1) Demonstrate Understanding the Communication Networking Techniques, Circuit, Message, and Packet Switching, Open System Interconnection (OSI), Media Access Control (MAC), Internetworking.
	A27) Recognize Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Recognize of: Analog and Digital Transmission, Data Transmission Issues, Asynchronous and Synchronous Transmission. a27-2) Explain the computer networks, the Growth of Networking Technology, Network & Networking Components, Topologies, and Protocols,
Intellectual Skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Identify digital switching and signaling techniques, digital switching architectures, data transmission, data communications, current of digital communications. b18-2) Capability of integrating computer networks components, architecture, topologies, and protocols.
	B22) Capability of integrating computer objects running on different system configurations.	b22-1) Capability of connecting computer as a LAN network.
Professional Skills	C18) Design and operate computer-based systems specifically designed for business applications.	c18-1) Design a suitable network by put and select the best specification and configuration of LANs. The advantages and disadvantages to all the current available networks. Type of the very common MAC protocols. The internetworking devices and the use and function of each device.
	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Use all up to date digital data transmission techniques, types of networks, topologies and protocols of networks.
General skills	D4) Demonstrate efficient IT capabilities.	d4-1) Able to construct different types of computer networks that is by the knowledge has been collected. d4-2) Able to distinguish between the types of networks components, architecture, topology, and protocols.. d4-3) Able to put and select the best components which are applicable to the network's applications.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Digital Transmission	1
2 nd	Network General Introduction.	2-3
3 rd	The Growth of Networking Technology	4-5
4 th	Network Components.	6-7
5 th	Communication Networking Techniques.	9-10
6 th	Open System Interconnection (OSI).	11-12
7 th	Media Access Control (MAC) Protocol.	13
8 th	Internetworking.	14
9 th	Glossary, Exams. and References	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 to Digital Transmission	5	2	--	3	a26-1,b18-1,c19-1
WEEKS-2-3	Network General Introduction.	10	4	--	6	a26-1,a27-1,b18-1, b18-2, c18-1,d4-1, d4-2, d4-3
WEEKS-4-5	The Growth of Networking Technology	10	4	--	6	a26-1,a27-1,b18-1, b18-2, c18-1, c19-1
WEEKS-6-7	Network Components.	10	4	--	6	a12-1,a26-1,a27-1, b18-1, b18-2, c18-1, d4-1, d4-2, d4-3
WEEK-8	Midterm written examination					
WEEKS-9-10	Communication Networking Techniques.	10	4	--	6	a12-1,a26-1,a27-1, b18-1, b18-2, b22-1, c18-1,d4-1, d4-2, d4-3
WEEKS-11-12	Open System Interconnection (OSI).	10	4	--	6	a12-1,a26-1,a27-1, b18-1, b18-2, c19-1
WEEK-13	Media Access Control (MAC) Protocol.	5	2	--	3	a12-1,a26-1,a27-1, b18-1, b18-2, c19
WEEK-14	Internetworking.	5	2	--	3	a12-1,a26-1,a27-1 ,b18-1, b18-2, b22-1, c18-1
WEEK-15	Glossary, Exams. and References	5	2	--	3	a26-1,a27-1,b18-1, b18-2, c18-1,c19-1, 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	a12-1	*	*	*	*	*				*	*			
	a26-1	*	*	*	*	*		*		*				*
	a27-1	*	*	*	*	*		*		*				*
	a27-2	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-2	*	*		*	*								*
	b22-1	*								*			*	*
Professional Skills	c18-1	*			*	*		*					*	
	c19-1	*			*	*		*					*	*
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	a12-1	*		*	*		*						
	a26-1		*				*		*				
	a27-1				*				*		*		
	a27-2				*				*		*		
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b18-2	*		*		*		*	*			*	*
	b22-1	*		*		*		*		*			
Professional Skills	c18-1	*		*	*	*		*			*	*	*
	c19-1	*		*	*	*		*		*	*		*
General Skills	D4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Network Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

12-1 Essential books (Text books):

- William. Stalling's Books included the topics mentioned above.
- Andrew S. Tanenbaum's Books included the topics mentioned above.

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

- All the Journals, and Magazines, ...etc their title deal with any of the following: Digital Data and Data transmission, Data Communications, Computer Networks, and All web sites which included all the titles mentioned above.

Course coordinator

Dr. Ehab Aziz Khalil

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Computer Interfacing

Code Symbol: ECE409

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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:

- Nowadays computer is widely used not only for documentation purposes but it also could act as measurement, controls and data acquisition. Appropriate with the futuristic technology this course is essential for students who need engineering or programming skill to develop project prior to the computer interfacing. The goal of this course is to introduce hardware and software design techniques and issues for interfacing computers and peripheral devices

3- Course Objectives:

- Knowing the basic principles of Acquire basic knowledge of parallel port and serial port communication for computer interfacing.
- Receive signal from the computer or send signal to the computer.
- Develop computer simulation or graphic for input and output signals.
- Enhance knowledge on Circuit Design for input and output control.
- Develop software or hardware for system accuracy.

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	A12,A20, A24,A26	B18,B21,B22	C1,C4, C15,C20	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
	A12)Recognie Contemporary engineering topics.	a12-1)Recognise Contemporary engineering topics related to computer interfacing.
	A20) Classify logic circuits.	a20-1)Classify logic circuits of computer interfacing units.
	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1)Explain the basic principles of Acquire basic knowledge of parallel port and serial port communication for computer interfacing. a24-2) Illustrate Receive signal from the computer or send signal to the computer. a24-3)Develop computer simulation or graphic for input and output signals. a24-4)Enhance knowledge on Circuit Design for input and output control. a24-5)Develop software or hardware for system accuracy.
	A26)Discuss Related research and current advances in the field of computer software and hardware	a26-1) Discuss Related IEEE Trans. on Computer, Industrial Electronics.
Intellectual skills	B18)Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1)Design a program with an assembly language for controlling an industrial system.
	B21)Innovating solutions based on non-traditional thinking and the use of latest technologies	b21-1) Integrate computer interfaced to a stepper motor via parallel port of computer. b21-2) Integrate computer interfaced to a d-c motor via parallel port of computer.
	B22)Capability of integrating computer objects running on different system configurations.	b22-1)Capability of integrating computer objects running on different system configurations.
Professional skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1)Simulate and appear on-line results of a computer interfaced to control system using a suitable software..
	C4) Practice the neatness and aesthetics in design and approach.	c4-1)Design and perform experiments of computer interfaced to electric system.
	C15)Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.	c15-1)Build a computer interfacing circuit for controlling robots.
	C20)Write computer programs on professional levels achieving acceptable quality measures in software development.	c20-1)Write an effective computer programs for controlling an industrial applications such as robots.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) How to think about transferring data through computer interfacing

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Microprocessor Architecture	1
2 nd	Introduction to I/O Interface, I/O port addressing	2
3 rd	Digital data communication standards –serial communications Devices, RS232	3
4 th	Universal Serial Bus (USB) <ul style="list-style-type: none"> • USB standards • Types and elements of USB transfers • Development procedure for USB applications 	4
5 th	Parallel Communications General Purpose Interface Bus(GPIB) GPIB signals and lines Handshaking and interface management Implementation of a GPIB on a PC	5-6
6 th	Universal Asynchronous Receiver . Transmitter UART(8250)	7
7 th	Digital and Analogue Interfacing -Digital Interfacing <ul style="list-style-type: none"> • Digital I/O ports • Interfacing external signals to digital I/O ports • Optical isolation .-Analogue Interfacing. <ul style="list-style-type: none"> • Revision of A/D and D/A conversion techniques • Analogue I/O cards • Data acquisition and control using a PC 	9-10
8 th	Driving a stepper motor via parallel port of computer.	11-12
9 th	Driving a dc motor via parallel port of computer.	13-14
10 th	Examples of computer interfacing in <ul style="list-style-type: none"> • Robotics • Industrial process control. 	15

7- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Microprocessor Architecture	5	2	--	3	a24-1, a26-1, d4-1
WEEK-2	Introduction to I/O Interface, I/O port addressing	5	2	--	3	a20-1,a24-1, d1-1
WEEK-3	Digital data communication standards – serial communications Devices, RS232	5	2	--	3	a24-1, a24-3
WEEK-4	Universal Serial Bus (USB) <ul style="list-style-type: none"> • USB standards • Types and elements of USB transfers • Development procedure for USB applications 	5	2	--	3	a20-1,a24-1, a24-3, d1-1

WEEKS-5-6	Parallel Communications General Purpose Interface Bus(GPIB) GPIB signals and lines Handshaking and interface management Implementation of a GPIB on a PC	10	4	--	6	a20-1,a24-2, a24-3, d1-1
WEEK-7	Universal Asynchronous Receiver . Transmitter UART(8250)	5	2	--	3	a24-2, a24-3
WEEK-8	Midterm written examination					
WEEKS-9-10	Digital and Analogue Interfacing -Digital Interfacing <ul style="list-style-type: none"> • Digital I/O ports • Interfacing external signals to digital I/O ports • Optical isolation .-Analogue Interfacing. <ul style="list-style-type: none"> • Revision of A/D and D/A conversion techniques • Analogue I/O cards • Data acquisition and control using a PC 	10	4	--	6	a12-1,a20-1, a24-2, a24-3,a24-4 , a26-1, d1-1
WEEKS-11-12	Driving a stepper motor via parallel port of computer.	10	4	--	6	a24-1,a24-3,a24-4, a24-5, a26-1,b18-1, b21-1,b22-1, c1-1, d4-1
WEEKS-13-14	Driving a dc motor via parallel port of computer.	10	4	--	6	a24-1,a24-3,a24-3, a24-4,a24-5,a26-1, b18-1, b21-2, b22-1, c1-1,c4-1,d4-1
WEEK-15	Examples of computer interfacing in <ul style="list-style-type: none"> • Robotics • Industrial process control. 	5	2	--	3	a12-1, a24-2,a24-4, a24-4, a24-5, a26-1, b18-1,b22-1, c1-1, c4-1,c15-1, c20-1, 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	a12-1	*	*	*	*	*				*	*			
	a20-1	*			*	*								*
	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
	a24-3	*		*	*	*		*		*			*	*
	a24-4	*		*	*	*		*		*			*	*
	a24-5	*		*	*	*		*		*			*	*
	a26-1	*	*	*	*	*		*		*				*
	a26-2	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b21-1	*	*		*	*	*			*			*	
	b21-2	*	*		*	*	*			*			*	

	b22-1	*							*			*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*	*	
	c4-1	*		*	*			*	*	*	*	*	
	c15-1	*		*	*	*		*	*		*		*
	c20-1	*		*	*	*		*	*		*		*
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 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	a12-1	*		*	*		*						
	a20-1	*	*	*	*	*	*	*	*	*	*	*	
	a24-1	*	*	*	*	*	*	*	*	*	*	*	*
	a24-2	*	*	*	*	*	*	*	*	*	*	*	*
	a24-3	*	*	*	*	*	*	*	*	*	*	*	*
	a24-4	*	*	*	*	*	*	*	*	*	*	*	*
	a24-5	*	*	*	*	*	*	*	*	*	*	*	*
	a26-1		*				*		*				
	a26-2		*				*		*				
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b21-1	*	*				*		*			*	*
	b21-2	*	*				*		*			*	*
	b22-1	*		*		*		*			*		

Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	*
	c4-1	*	*	*	*		*			*	*	*	
	c15-1	*					*	*	*		*		*
	c20-1	*		*	*	*		*			*	*	*
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-PC Interfacing Communications and Windows Programming, William Buchanan, Addison Wesley, 2006
- 2- Barry B. Brey, "The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, and Pentium Pro Processor Architecture, Programming and Interfacing", Prentice Hall, Fifth Edition, 2000

Course coordinator

Prof.Dr.Ibrahim Zakria Morsi
Prof.Dr.Ashraf Salah El Din Zein El Din

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Electric Drives

Code Symbol: ECE410

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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%	50%	---	--	25%	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, A14,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) Explain methods and tools for electric drives.
	A13) Choose analytical and computer methods appropriate for electrical power and machines engineering.	a13-1) Choose Analytical and computer methods appropriate for electric drives
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Distinguish design methods and tools for controlling electrical motors.
	A19) Define diverse applications of electrical equipment.	a19-1) Define Simple testing of control devices. a19-2) Explain modern control techniques of electrical machines and drives. a19-3) Illustrate 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 –	1
2nd	Dynamics of electrical drives	2-3
3rd	Electric drives traction drives	4-6
4th	DC Drives	7,9
5th	Selection of motor power rating	10-11
6th	Induction Motor Drives	12-13
7th	Synchronous Motor Drives	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.	4	2	2	-	a13-1,b13-3,b13-4,c17-1,d3-2
WEEKS-2-3	Dynamics of electrical drives.	8	4	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
WEEKS-4-6	Electric traction drives	12	6	6	-	a19-1,a14-1,a19-2,a19-3, b13-1, b13-3,b16-1,b16-2, c16-3, d1-1,d1-2,d3-1,d3-3
WEEK-7	Selection of motor power rating (Part I)	4	2	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	Selection of motor power rating (Part II)	4	2	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-10	DC Drives: Controlled converter fed dc motors.	4	2	2	-	a4-1,a13-1,a14-1,a19-1, a19-2,a19-3,b13-1,b13-2, b13-3, b13-4, c16-1,c16-2, c17-1, 3-2,d3-4
WEEK-11	DC Drives: Chopper fed dc series motor.	4	2	2	-	a19-1,a14-1,a19-2,a19-3, b13-1, b13-3,b16-1, b16-2, c16-3, d1-1,d1-2,d3-1,d3-3
WEEKS-12-13	Induction Motor Drives	8	4	4	-	a19-1,a19-2,a19-3, b13-1, b13-3,b16-1, b16-2,c16-3, d1-1,d1-2, d3-1,d3-3
WEEKS-14-15	Synchronous Motor Drives	8	4	4	-	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	*	*	*	*			*		*	*		*	
	a14-1	*		*	*	*	*						*	
	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	*		*				*		*			
	a14-1	*		*				*		*	*		*
	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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-Sabry A.Mahmoud, "Principles of Electrical Drives" 2004
- 2-G.K. Dubey, "Power semiconductor controlled drives" ,Prentice-Hall, 1989
- 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.

Course coordinator
Prof. Dr.Sabry Abdellatif Mahmoud
Dr. Haithem Zaki El-Azazi

Head of the Department
Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Power system protection

Code Symbol: ECE411

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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:

- 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, A6,A8, A19 A21,A23	B2	C13	D2,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.
	A6) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues related to electrical power systems protection.
	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 over-current and differential protection schemes.
	A21) Distinguish basic power system design concepts for underground, cable tray, grounding, and lighting systems.	a21-1) Distinguish basic power system design concepts for underground, cable tray, grounding, and lighting systems.
	A23) Generalize principles of performing electrical system calculations, including load flow, earthing and equipment sizing.	a23-1) Generalize principles of performing electrical system calculations, including load flow, earthing and equipment sizing.
Intellectual skills	B2) Select appropriate solutions for 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 over-current 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- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Purpose of protective system. Concept of the ways of fault detection. Description of the function of components used in protection loop	6	3	1	2	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	2	a8-1
WEEK-3	Desirable attribute of protection. Quantitative and qualitative definition of dependability, security and reliability. Illustrative example.	6	3	1	2	a6-1,a8-2
WEEK-4	Basic relay types. Functions relay types. Relay timing	6	3	1	2	a8-1
WEEK-5	Application of over-current relays on radial feeders. Current graded, Time graded, and Time/Current graded schemes.	6	3	1	2	a19-1,d9-1
WEEK-6	Application examples of Inverse time over-current protection relays. determination of plug and time setting of inverse relays	6	3	1	2	b2-1, d9-1
WEEK-7	Coordination of over-current relays on parallel and ring feeders	6	3	1	2	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	2	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	2	a23-1, 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	2	c13-1, a8-2
WEEK-12	Inrush current problems identification and treatment for the transformer differential protection	6	3	1	2	a8-2, b2-1,D9-2
WEEK-13	Recognize the problems concerning system and protective grounding. Auto transformer neutral normal frequency	6	3	1	2	a21-1, a23-1, c13-2

	and transient inversions.					
WEEK-14	Distance protection concept. Phase, earth and sound phase compensations. Construction of different relay characteristics.	6	3	1	2	c13-1 , d9-2
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	2	a8-1, a8-2 , 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	a4-1	*			*	*								
	a4-2	*			*	*								
	a6-1	*	*	*	*	*	*		*	*	*			
	a8-1	*			*	*								
	a8-2	*			*	*								
	a19-1	*			*	*				*	*			
	a21-1	*		*	*	*	*		*					
	a23-1	*	*	*	*	*	*	*		*	*		*	
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	*			*								
	a6-1	*		*			*	*	*	*	*		
	a8-1	*	*	*	*			*			*	*	
	a8-2	*			*	*							
	a19-1	*		*	*						*		
	a21-1	*		*			*		*	*			
	a23-1	*		*			*	*	*	*			
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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
Total	100	100%	

11- Facilities required for teaching and learning:

11-1 Laboratory 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.

Course coordinator
Dr. Nagy Ibrahim El-Alshi

Head of the Department
Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Multimedia Technology

Code Symbol: ECE310

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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%	30%	10%	----	100%

B-Professional Information

2- Course Aims:

- Give the basic knowledge of Multimedia (System, Technology, & Communication).

3- Course Objectives:

- Analytical and computer methods appropriate for engineering systems, with particular reference to digital systems
- Knowing Software engineering and theoretical issues in Computer Science.
- Knowing a range of programming languages and environments.

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	A27	B18	C19	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & understanding	A27) Recognize Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Choose analytical and computer methods appropriate for engineering systems, with particular reference to digital systems a27-2) Choose software engineering and theoretical issues in Computer Science. a27-3) Select a range of programming languages and environments.
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Select and apply appropriate computer based methods, mathematical and scientific principles in analyzing general systems b18-2) Use mathematical methods, modern techniques, skills and engineering tools b18-3) Write computer programs and use professional packages to solve engineering problems.
Professional skills	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;	c19-1) Build suitable software and test engineering systems using proper hardware interface c19-2) Apply modern techniques, skills and engineering tools using proper software
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improved ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) How to think about transferring data through computer interfacing

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction	1-2
2 nd	Multimedia Building Blocks.	3-4
3 rd	Data Compression.	5-6
4 th	Speech Compression, Synthesis and Images.	7,9
5 th	Communication Protocols.	10-11
6 th	Video Compression.	12-13
7 th	Model Question Papers.	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	Introduction	10	4	--	6	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-3-4	Multimedia Building Blocks.	10	4	--	6	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-5-6	Data Compression.	10	4	--	6	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEK-7	Speech Compression, Synthesis and Images (Part I).	5	2	--	3	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9	Speech Compression, Synthesis and Images (Part II).	5	2	--	3	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-10-11	Communication Protocols.	10	4	--	6	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-12-13	Video Compression.	10	4	--	6	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, d1-1, d4-1
WEEKS-14-15	Model Question Papers.	10	4	--	6	a27-1, a27-2, a27-3, b18-1, b18-2, b18-3, c19-1, c19-2, 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 Renoring	Group Working	Discovering	simulation and Modeling	Lab. Experiments
Knowledge & understanding	a27-1	*	*	*	*	*		*		*				*
	a27-2	*	*	*	*	*		*		*				*
	a27-3	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-1	*	*		*	*								*
	b18-3	*	*		*	*								*
Professional Skills	c19-1	*			*	*		*					*	*
	c19-2	*			*	*		*					*	*
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	a27-1				*				*		*		
	a27-2				*				*		*		
	a27-2				*				*		*		
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b18-2	*		*		*		*	*			*	*
	b18-3	*		*		*		*	*			*	*
Professional Skills	c19-1	*		*	*	*		*		*	*		*
	c19-2	*		*	*	*		*		*	*		*
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1-O.N.Pandey, "Multimedia(System, Technology & Communication)", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2009.

Course coordinator

Head of the Department

Dr. Hany Mohamed Ibrahim

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Neural Network

Code Symbol: ECE311

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Eng. Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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%	12.5%	12.5%	---	----	100%

B-Professional Information

2- Course Aims:

- This course is designed to give students of Electrical and Computer Engineering the basic information of Neural Networks

3- Course Objectives:

- Demonstrate analytical and computer methods appropriate for engineering systems, with particular reference to digital systems
- Design methods and tools for engineering 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	A24	B12,B18	C15,C19,C20	D1,D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge and Understanding	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1) Demonstrate analytical and computer methods appropriate for engineering systems, with particular reference to digital systems a24-2) Explain methods and tools for engineering systems
Intellectual skills	B12) Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1) Create systematic and methodic approaches using the advanced features and capabilities of Neural Solutions.
	b18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Prepare technical and operational specifications of components of electrical systems b18-2) Select and realize electrical components and systems to meet standard specifications. b18-3) Analyze and interpret data and evaluate results to support the engineering design problem. b18-4) Use mathematical methods, modern techniques, skills and engineering tools
Professional skills	C18) Design and operate computer-based systems specifically designed for business applications.	c18-1) Design and operate computer-based systems specifically designed for business applications.
	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development.	c19-1) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development.
	C20) Write computer programs on professional levels achieving acceptable quality measures in software development.	c20-1) Apply modern techniques, skills and engineering tools using proper software.
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.
	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
1 st	Introduction to neural networks <ul style="list-style-type: none"> Terminology Fundamental principles of neural networks Overview of neural network architectures and training When to use and why should you use neural networks 	1
2 nd	Fundamentals of Neuro Solutions <ul style="list-style-type: none"> Overview of breadboards, palettes, families, etc. The Neural Wizard Placing and interconnecting components by hand Special focus on how to use probes, properties, and file components 	2
3 rd	Using Neuro Solutions <ul style="list-style-type: none"> Creating, training, and testing neural networks Using probes to understand the training process and the results What to look for and how to use probes in a network Using and setting the network parameters 	3
4 th	Using NeuroSolutions for Excel <ul style="list-style-type: none"> Preprocessing and analyzing your input data Tagging your data Creating a neural network Training a neural network Testing a neural network Analyzing your results Optimizing neural network parameters / inputs 	4
5 th	Fundamentals of Adaptive Systems and Neural Networks <ul style="list-style-type: none"> Adaptive Systems and Linear Regression Analyzing linear adaptive systems Understanding gradient descent training 	5
6 th	Supervised Learning <ul style="list-style-type: none"> Overview of MLPs (nonlinear extensions to linear adaptive systems) Tips and tricks of the trade: MLP parameters and how to set them Applications of MLPs Genetic optimization of parameters Project 1: Using MLPs for classification 	6
7 th	Unsupervised Learning <ul style="list-style-type: none"> Intro to unsupervised learning Hebbian learning and principal component analysis Competitive learning and clustering (including SOMs) 	7
8 th	Radial basis functions (RBFs) <ul style="list-style-type: none"> Introduction to unsupervised learning What are RBFs and why/when should you use them? How to use RBFs and how to set their parameters Hybrid unsupervised/supervised networks Project 2: Using a hybrid RBF/MLP for classification 	9
9 th	Temporal processing and dynamical systems <ul style="list-style-type: none"> Adaptive signal processing fundamentals Temporal neural networks 	10
10 th	Advanced Genetic Optimization <ul style="list-style-type: none"> Optimizing inputs, learning rates, network size, etc. 	11
11 th	Financial Forecasting using Neural Networks <ul style="list-style-type: none"> Introduction to prediction and the stock market Optimal trading signals 	12-13

	<ul style="list-style-type: none"> Neural network prediction Building a trading system Analyzing and optimizing the trading system 	
12 th	Overview of using the advanced features and capabilities of Neuro Solutions <ul style="list-style-type: none"> Using Macros to automate tasks <ul style="list-style-type: none"> Introduction to macros and the MacroWizard utility Recording a sequence of events Using the MacroWizard editor and debugger Assigning macros to dialog components and toolbar buttons Customizing components using DLLs <ul style="list-style-type: none"> Creating a new processing element activation function Updating the backpropagation plane Creating a new error criteria Creating a new gradient search component Specialized I/O <ul style="list-style-type: none"> Creating a new file translator Reading/Writing data to/from an external source 	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 to neural networks <ul style="list-style-type: none"> Terminology Fundamental principles of neural networks Overview of neural network architectures and training When to use and why should you use neural networks 	4	2	2	--	a24-1, a24-2
WEEK-2	Fundamentals of Neuro Solutions <ul style="list-style-type: none"> Overview of breadboards, palettes, families, etc. The Neural Wizard Placing and interconnecting components by hand Special focus on how to use probes, properties, and file components 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEK-3	Using Neuro Solutions <ul style="list-style-type: none"> Creating, training, and testing neural networks Using probes to understand the training process and the results What to look for and how to use probes in a network Using and setting the network parameters 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEK-4	Using NeuroSolutions for Excel <ul style="list-style-type: none"> Preprocessing and analyzing your input data Tagging your data Creating a neural network Training a neural network Testing a neural network Analyzing your results Optimizing neural network parameters / inputs 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEK-5	Fundamentals of Adaptive Systems and Neural Networks <ul style="list-style-type: none"> Adaptive Systems and Linear Regression Analyzing linear adaptive systems Understanding gradient descent training 	4	2	2	--	a24-1, a24-2, b12-1, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEK-6	Supervised Learning <ul style="list-style-type: none"> Overview of MLPs (nonlinear extensions to linear adaptive systems) 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1,

	<ul style="list-style-type: none"> Tips and tricks of the trade: MLP parameters and how to set them Applications of MLPs Genetic optimization of parameters Project 1: Using MLPs for classification 					d1-1, d3-1, d4-1
WEEK-7	Unsupervised Learning <ul style="list-style-type: none"> Intro to unsupervised learning Hebbian learning and principal component analysis Competitive learning and clustering (including SOMs) 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9	Radial basis functions (RBFs) <ul style="list-style-type: none"> Introduction to unsupervised learning What are RBFs and why/when should you use them? How to use RBFs and how to set their parameters Hybrid unsupervised/supervised networks Project 2: Using a hybrid RBF/MLP for classification 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEKS-10	Temporal processing and dynamical systems <ul style="list-style-type: none"> Adaptive signal processing fundamentals Temporal neural networks 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEK-11	Advanced Genetic Optimization <ul style="list-style-type: none"> Optimizing inputs, learning rates, network size, etc. 	4	2	2	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEKS-12-13	Financial Forecasting using Neural Networks <ul style="list-style-type: none"> Introduction to prediction and the stock market Optimal trading signals Neural network prediction Building a trading system Analyzing and optimizing the trading system 	8	4	4	--	a24-1, a24-2, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, d1-1, d3-1, d4-1
WEEKS-14-15	Overview of using the advanced features and capabilities of Neuro Solutions <ul style="list-style-type: none"> Using Macros to automate tasks <ul style="list-style-type: none"> Introduction to macros and the MacroWizard utility Recording a sequence of events Using the MacroWizard editor and debugger Assigning macros to dialog components and toolbar buttons Customizing components using DLLs <ul style="list-style-type: none"> Creating a new processing element activation function Updating the backpropagation plane Creating a new error criteria Creating a new gradient search component Specialized I/O <ul style="list-style-type: none"> Creating a new file translator Reading/Writing data to/from an external source 	8	4	4	--	a24-1, a24-2, b12-1, b18-1, b18-2, b18-3, b18-4, c18-1, c19-1, c20-1, 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	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
Intellectual Skills	b12-1	*		*	*		*	*	*	*	*	*		
	b18-1	*	*		*	*								*
	b18-2	*	*		*	*								*
	b18-3	*	*		*	*								*
	b18-4	*	*		*	*								*
Professional Skills	c15-1	*	*	*	*	*		*	*		*		*	*
	c19-1	*			*	*		*					*	*
	c20-1	*			*	*		*					*	*
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	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge & Understanding	a24-1	*	*	*	*	*	*	*	*	*	*	*	*
	a24-2	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b12-1	*		*	*		*	*		*			
	b18-1	*		*		*		*	*			*	*
	b18-2	*		*		*		*	*			*	*
	b18-3	*		*		*		*	*			*	*
	b18-4	*		*		*		*	*			*	*
Professional Skills	c15-1	*					*	*	*		*		*
	c19-1	*		*	*	*		*		*	*		*
	c20-1	*		*	*	*		*			*	*	*
General Skills	d1-1	*	*	*		*	*	*	*		*		*
	d3-1	*	*	*	*		*	*	*	*	*	*	*
	d4-1	*	*	*	*	*	*	*	*	*	*	*	*

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Internet Lab. is used for searching all information about different examples in neural networks course.

11-2 Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

1. Andries P. Engelbrecht, "Computational Intelligence", John Wiley & Sons, Ltd, 2003

Course coordinator

Head of the Department

Dr. Hatem Abdel-Ader

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Graphics and Animation*

Code Symbol: *ECE312*

Element of program: *Minor*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>--</i>	<i>3</i>	<i>5</i>

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%	30%	10%	----	100%

B-Professional Information

2- Course Aims:

- Design and implementation of computer graphics, in terms of bitmap representation and manipulation. Understand animation technology fundamentals. Know basics of graphical objects compression.

3- Course Objectives:

- Define computer graphics.
- Understand the problems related to computer graphics.
- Study the main universes of computer graphics.
- Study vector graph and bitmapped graph.
- Learn graphical object compression.
- Study graphical hardware.
- Understand 3D object construction.
- Understand animation.
- Design methods and tools for engineering 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	A27	B18	C3,C19	D1,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge & understanding	A27) Recognize Technologies of data, image and graphics representation and organization on computer storage media.	a27-1) Explain 3D object construction and animation a27-2) Illustrate methods and tools for engineering systems.
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Prepare technical and operational specifications of components of electrical systems b18-2) Select and realize electrical components and systems to meet standard specifications. b18-3) Analyze and interpret data and evaluate results to support the engineering design problem. b18-4) Use mathematical methods, modern techniques, skills and engineering tools.
Professional skills	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1) Create and/or re-design a process, component or system using computer graphics
	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development.	c19-1) Design and perform experiments, as well as analyze and interpret experimental results related to computer controlled engineering systems.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Improve ability to work in a group.
	D4) Demonstrate efficient IT capabilities.	d4-1) Demonstrate how to think about transferring data through computer interfacing

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Computer Graphics	1
2 nd	computer graphics architecture (bitmap -vector) graphic	2-3
3 rd	Graphical objects compression (Run length Encoding – Huffman coding)	4-5
4 th	Graphics Hardware (Display device-color printer-scanner)	6-7
5 th	Output primitives :- drawing line-drawing circle	9
6 th	Curves and Surfaces :- Beizer curve (design curves)	10-11
7 th	Animation	12-13
8 th	Clipping-projection	14
9 th	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	Introduction to Computer Graphics	5	2	--	3	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c3-1, c19-1, d1-1, d4-1
WEEK-2-3	computer graphics architecture (bitmap –vector) graphic	10	4	--	6	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c19-1, d1-1, d4-1
WEEKS-4-5	Graphical objects compression (Run length Encoding – Huffman coding)	10	4	--	6	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c3-1, c19-1, d1-1, d4-1
WEEK-6-7	Graphics Hardware (Display device- color printer-scanner)	10	4	--	6	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c19-1, d1-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9	Output primitives :- drawing line- drawing circle	5	2	--	3	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c3-1, c19-1, d1-1, d4-1
WEEKS-10-11	Curves and Surfaces :-Beizer curve (design curves)	10	4	--	6	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c3-1, c19-1, d1-1, d4-1
WEEKS-12-13	Animation	10	4	--	6	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c19-1, d1-1, d4-1
WEEK-14	Clipping-projection	5	2	--	3	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c19-1, d1-1, d4-1
WEEK-15	Applications	5	2	--	3	a27-1, a27-2, b18-1, b18-2, b18-3, b18-4, c3-1, c19-1, 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 Modeling	Lab. Experiments
Knowledge & understanding	a27-1	*	*	*	*	*		*		*				*
	a27-2	*	*	*	*	*		*		*				*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-1	*	*		*	*								*
	b18-3	*	*		*	*								*
	b18-4	*	*		*	*								*
Professional Skills	c3-1	*	*	*	*	*	*	*	*	*	*			
	c19-1	*			*	*		*					*	*
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 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	a27-1				*			*		*			
	a27-2				*			*		*			
Intellectual Skills	b18-1	*		*		*		*	*		*	*	
	b18-2	*		*		*		*	*		*	*	
	b18-3	*		*		*		*	*		*	*	
	b18-4	*		*		*		*	*		*	*	
Professional Skills	c3-1	*		*	*		*				*		
	c19-1	*		*	*	*		*	*	*		*	
General Skills	d1-1	*	*	*		*	*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-J.S.Dilawari, "Computer Graphics", S.K.Kataria & Sons Publishers of Engineering & Computer Books, New Delhi and Ludhiana(INDIA), 2010
- 2-John Vince "Mathematics for computer graphics" second edition, Springer.
- 3-Luiz Velho,et al, "Mathematical optimization in computer graphics and vision", by Elsevier Inc.2008

Course coordinator

Dr. Hany Mohamed Ibrahim

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Special Machines*

Code Symbol: *ECE313*

Element of program: *minor*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
<i>2</i>	<i>2</i>	<i>-----</i>	<i>4</i>

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:

- 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	A12,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	A12) Recognise Contemporary engineering topics.	a12-1) Recognise Contemporary of special machines such as stepper motors which are parts of moving joints of robot links.
	A15) Explain principles of operation and performance specifications of electrical and electromechanical engineering systems.	a15-1)Explain basics of special machines characteristics. a15-2)Demonstrate 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.	b13-1)Solve problems in machines systems. b13-2)Select appropriate mathematical tools for the solution of problems in special machines. b13-3) Analysis of special machines performances .
	B14) Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical	b14-1)Analyze design problems of special machines. b14-2)Select the mathematical models for the solution of problems in special machines.
Professional skills	C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1) Identify, diagnose and troubleshoot faults in special machines
	C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1) Create and/or re-design a process, component or system, and carry out specialized engineering designs.
	C7) Apply numerical modeling methods to engineering problems.	c7-1) Apply numerical modeling methods to Machines problems.
	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 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.	Lab.	
WEEK-1,2	Single-phase Induction motor	8	4	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	8	4	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	8	4	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 .	4	2	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 .	4	2	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	8	4	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	8	4	4	-	a12-1, a15-1, a15-2, b13-1, b13-2, b13-3, b14-1, b14-2, c21, c2-2, c3-1, c7-1, c16-1, d2-1, d2-2
WEEK-14,15	Hysteresis motors	8	4	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	Lab.
Knowledge & understanding	a12-1	*	*	*	*	*				*	*			
	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	d2-1	*	*	*			*	*	*	*	*	*		
	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	a12-1	*		*	*		*						
	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	d2-1	*		*				*	*	*	*		
	d2-2	*		*				*	*	*	*		

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory 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 ElShbini

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: *Computer Security*

Code Symbol: *ECE413*

Element of program: *Minor*

Date of specification approval: *2011*

Department offering the course: *Electrical and Computer Engineering Dept.*

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	--	3	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
----	---	----	25%	50%	25%	----	100%

B-Professional Information

2- Course Aims:

- The overall aims of this course are describing the principles and fundamentals of information and network security with emphasis on: Basic concepts of information and computer network security; classical encryption techniques; modern symmetric encryption techniques; public-key encryption; system and network security tools and network security practice.

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3- Course Objectives:

- Define the three aspects of information security: services, mechanisms and attacks.
- Describe block cipher principles and mode of operations
- Define and check the Finite Fields and Modular Arithmetic used in some modern ciphers.
- Describe the principles of Public-Key Cryptosystem.
- Describe the basic operations and applications of firewalls, Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS).
- Discuss the cryptographic systems: SSL/TLS, Virtual Private Network (VPN), PPP VPNs, PPTP and L2TP VPNs, IPsec VPNs and Kerberos.
- Discuss the Malicious Software and Antivirus Approaches.

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	A24,A26	B18,B21	C18,C19	D3,D4

5- Course Intended Learning Outcomes (ILOs)

Field	Program ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A24) Demonstrate Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.	a24-1) Define the three aspects of information security: services, mechanisms and attacks. a24-2) Explain block cipher principles and mode of operations. a24-3) Define and check the Finite Fields and Modular Arithmetic used in some modern ciphers. a24-4) Describe the principles of Public-Key Cryptosystem. a24-5) Describe the basic operations and applications of firewalls, Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS). a24-6) Discuss the cryptographic systems: SSL/TLS, Virtual Private Network (VPN), PPP VPNs, PPTP and L2TP VPNs, IPsec VPNs and Kerberos. a24-7) Discuss the Malicious Software and Antivirus Approaches.
	A26) Discuss Related research and current advances in the field of computer software and hardware.	a26-1) Discuss Related research and current advances in the field of information security
Intellectual skills	B18) Select, synthesize, and apply suitable IT tools to computer engineering problems.	b18-1) Evaluate classical techniques. b18-2) Evaluate Data Encryption Standard (DES) cipher, Triple DES.
	B21) Innovating solutions based on non-traditional thinking and the use of latest technologies	b21-1) Evaluate Advanced Encryption Standard (AES). b21-2) Evaluate RSA algorithm.
Professional skills	C18) Design and operate computer-based systems specifically designed for business applications.	c18-1) Design and operate computer-based systems specifically designed for business applications.
	C19) Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development.	c19-1) Implement classical techniques. c19-2) Implement Data Encryption Standard (DES) cipher, Triple DES. c19-3) Implement Advanced Encryption Standard (AES). c19-4) Implement block cipher mode of operations. c19-5) Implement RSA algorithm.
General skills	D1) Collaborate effectively within multidisciplinary team.	d1-1) Team working skills.
	D3) Communicate effectively.	d3-1) Develop research skills and extend professional knowledge to clarify problems and take responsibility for furthering own learning.
	D4) Demonstrate efficient IT capabilities.	d4-1) Improved ability to use the Internet to locate information.

6- Course Topics.

Topic No.	General Topics	Weeks
1 st	Introduction to Information Security	1
2 nd	Classical Encryption Techniques	2-3
3 rd	Block Ciphers and DES	4
4 th	Finite Fields	5
5 th	Advanced Encryption Standard	6-7
6 th	Block Cipher	9
7 th	Introduction to Number Theory	10
8 th	Public Key Cryptography and RSA	11
9 th	Firewalls	12
10 th	Cryptographic Systems: SSL/TLS, VPNs, and Kerberos	13-14
11th	Computer Viruses and Malicious Software	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 to Information Security	5	2	--	3	a24-1, b18-1
WEEKS-2-3	Classical Encryption Techniques	10	4	--	6	b18-1, c19-1, d3-1, d4-1
WEEK-4	Block Ciphers and DES	5	2	--	3	b18-2, c19-2
WEEK-5	Finite Fields	5	2	--	3	a24-3
WEEKS-6-7	Advanced Encryption Standard	10	4	--	6	b21-1, c19-3, d1-1, d3-1, d4-1
WEEK-8	Midterm written examination					
WEEK-9	Block Cipher	5	2	--	3	a24-2, c19-4
WEEK-10	Introduction to Number Theory	5	2	--	3	b18-1
WEEK-11	Public Key Cryptography and RSA	5	2	--	3	a24-4, b21-2, c19-5
WEEK-12	Firewalls	5	2	--	3	a24-5, c18-1, d1-1, d3-1, d4-1
WEEKS-13-14	Cryptographic Systems: SSL/TLS, VPNs, and Kerberos	10	4	--	6	a24-6, d1-1, d3-1, d4-1
WEEK-15	Computer Viruses and Malicious Software	5	2	--	3	a24-7, c18-1, 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	a24-1	*		*	*	*		*		*			*	*
	a24-2	*		*	*	*		*		*			*	*
	a24-3	*		*	*	*		*		*			*	*
	a24-4	*		*	*	*		*		*			*	*
	a24-5	*		*	*	*		*		*			*	*
	a24-6	*		*	*	*		*		*			*	*
	a24-7	*		*	*	*		*		*			*	*
Intellectual Skills	b18-1	*	*		*	*								*
	b18-2	*	*		*	*								*
	b21-1	*	*		*	*	*			*			*	
	b21-2	*	*		*	*	*			*			*	
Professional Skills	c18-1	*			*	*		*					*	
	c19-1	*			*	*		*					*	*
	c19-2	*			*	*		*					*	*
	c19-3	*			*	*		*					*	*
	c19-4	*			*	*		*					*	*
	c19-5	*			*	*		*					*	*
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	Modelling	Research & Report	Quizzes	Presentation	Discussion	Laboratory Test	Home Exam	Monitoring
Knowledge& Understanding	a24-1	*	*	*	*	*	*	*	*	*	*	*	*
	a24-2	*	*	*	*	*	*	*	*	*	*	*	*
	a24-3	*	*	*	*	*	*	*	*	*	*	*	*
	a24-4	*	*	*	*	*	*	*	*	*	*	*	*
	a24-5	*	*	*	*	*	*	*	*	*	*	*	*
	a24-6	*	*	*	*	*	*	*	*	*	*	*	*
	a24-7	*	*	*	*	*	*	*	*	*	*	*	*
Intellectual Skills	b18-1	*		*		*		*	*			*	*
	b18-2	*		*		*		*	*			*	*
	b21-1	*	*				*		*			*	*
	b21-2	*	*				*		*			*	
Professional Skills	c18-1	*		*	*	*		*			*	*	*
	c19-1	*		*	*	*		*		*	*		*
	c19-2	*		*	*	*		*		*	*		
	c19-3	*		*	*	*		*		*	*		
	c19-4	*		*	*	*		*		*	*		
	c19-5	*		*	*	*		*		*	*		
General Skills	d1-1	*	*	*		*	*	*	*		*		
	d3-1	*	*	*	*		*	*	*	*	*	*	
	d4-1	*	*	*	*	*	*	*	*	*	*	*	

10.2 Assessment Weight, Schedule and Grades Distribution:

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

11- Facilities required for teaching and learning:

11-1 Laboratory

Computer Lab. is used to execute all experimental related to course.

11-2Library Usage:

Students should be encouraged to use library technical resources.

12- List of references:

- 1-Stallings, William. "Cryptography and network security: principles an Fourth edition, Prentice-Hall, Inc, 2005
- 2- Raymond R. Panko. "Corporate Computer and Network Security",2004
- 3- Arthur E. Hutt, Douglas B. Hoyt, Seymour Bosworth. "Computer Security Handbook", 2006.
- 4- Rick Lehtinen. "Computer Security Basics", 2006.
- 5- Stallings, William. "Network Security Essentials: Applications and Standards", 2008.

Course coordinator

Prof.Dr.Ashraf Salah El Din Zein El Din

Head of the Department

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: Robotics

Code Symbol: ECE414

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
2	----	3	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%	20%	40%	10%	10%	---	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 numerous 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, D5, 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) Demonstrate understanding of basic 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) Select appropriate solution to 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)Analyze 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 an perform experiments to test, measure a robot, performance.
General skills	D3) Communicate effectively.	d3-1)Use information technologies effectively.
	D5) Lead and motivate individuals.	d5-1) Lead and motivate individuals with Robotic Assembly for the 21 st Century
	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 21 st Century	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 to robotics- What is a robot? A brief History of robotics.	5	2	---	3	a15-1,a15-2, 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)	10	4	--	6	a15-1,a15-2, 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.	5	2	---	3	a15-1,a15-2, b5-1, b15-1, c1-1, c15-1, d3-1, d7-1, d7-2
WEEK-5	Basic kinematics, introduction, reference frames, translation, rotation.	5	2	---	3	a15-1,a15-2, 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	10	4	--	6	a15-1,a15-2, 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.	10	4	--	6	a15-1,a15-2, b5-1, b15-1, c1-1, c15-1, d3-1, d7-1, d7-2
WEEK-12	Inverse kinematics	5	2	---	3	a15-1,a15-2, b5-1, b15-1, c1-1, c15-1, d3-1, d7-1, d7-2
WEEKS-13,14	Robot control architectures	10	4	--	6	a15-1,a15-2, b5-1, b15-1, c1-1, c15-1, d3-1, d7-1, d7-2
WEEK-15	Robotic Assembly for the 21 st Century	5	2	---	3	a15-1,a15-2, b5-1, b15-1, c1-1, c15-1, d3-1, d5-1, 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	a15-1	*	*	*	*	*		*	*					
	a15-2	*	*	*	*	*		*	*					
Intellectual Skills	b5-1	*	*	*	*	*		*		*	*		*	*
	b15-1	*	*	*	*	*		*		*	*		*	*
Professional Skills	c1-1	*	*	*	*	*	*	*	*	*	*		*	
	c15-1	*	*	*	*	*	*	*	*	*	*		*	
General Skills	d3-1	*	*	*	*	*	*	*	*	*	*	*		
	d5-1		*	*	*	*	*	*	*	*	*	*	*	*
	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	a15-1	*		*			*	*	*	*			
	a15-2	*		*			*	*	*	*			
Intellectual Skills	b5-1	*	*	*	*	*	*	*		*	*		
	b15-1	*	*	*	*	*	*	*	*	*	*		
Professional Skills	c1-1	*	*	*	*		*	*	*	*	*	*	
	c15-1	*					*	*	*		*		
General Skills	d3-1	*	*	*	*		*	*	*	*	*	*	
	d5-1	*	*	*	*	*	*	*	*	*	*	*	
	d7-1	*		*	*		*	*	*	*		*	
	d7-2	*		*	*		*	*	*	*		*	

10.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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, 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

Course coordinator

Head of the Department

Prof. Dr. Ashraf Salah El Din Zein El Din

Prof.Dr. Shaban Mabrouk Osheba

Course Specification

A-Basic Information

Title: High Voltage Engineering

Code Symbol: ECE415

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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
---	---	37.5%	37.5%	---	----	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 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, A6, A8, A21	B5, B13	C1, C5	D2,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) Recognize breakdown mechanism in gases, liquid and solid dielectrics.
	A6) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1) Explain Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues related to Insulation Coordination in Electric Power Systems.
	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.
	A21) Distinguish basic power system design concepts for underground, cable tray, grounding, and lighting systems.	a21-1) Distinguish basic power system design concepts for underground, cable tray, grounding.
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	D2) Work in stressful environment and within constraints.	d2) Work in stressful environment and within constraints during measurement of High DC, AC and impulse Voltages.
	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	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- Course Topics/hours/ILOS

WEEK NO.	SUB. TOPICS	TOTAL HOURS	CONTACT HRS			COURSE ILOS COVERED (BY NO.)
			Lec.	Tut.	Lab.	
WEEK-1	Introduction Conduction and Breakdown in Gases	4	2	2	--	a1-1
WEEK-2	Conduction and Breakdown in Gases Cont.: Collision and Ionization Processes, Townsend's Current Growth Equation,	4	2	2	--	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.	4	2	2	--	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.	4	2	2	--	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.	4	2	2	--	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.	4	2	2	--	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.	4	2	2	--	a1-1, a21-1, b13-1, c1-1
WEEK-8	Midterm written examination					
WEEK-9	Generation of High Voltages and Currents Generation of High DC and AC Voltages.	4	2	2	--	a8-1, d6-2,
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.	4	2	2	--	a8-1, d6-2,

WEEK-11	Measurement of High Voltages and Currents: Measurement of High DC, AC and impulse Voltages,	4	2	2	--	a8-1, c5-2, d2-1,d6-2
WEEK-12	Measurement of High Voltages and Currents Cont.: Measurement of High DC, AC and Impulse voltages Cont.,	4	2	2	--	a8-1, c5-2, d2-1,d6-2
WEEK-13	Measurement of High Voltages and Currents Cont.: Measurement of High DC, AC and Impulse Currents Cont.,	4	2	2	--	a8-1, c5-2, d2-1,d6-2
WEEK-14	Overvoltage Phenomenon and Insulation Coordination in Electric Power Systems: National causes for overvoltage, Lightning Phenomenon.	4	2	2	--	a8-2, a6-1, b5-1
WEEK-15	Overvoltage Phenomenon in Electric Power Systems Cont.: Overvoltage due to switching surges, system faults and other abnormal conditions.	4	2	2	--	a8-2, b5-1

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	*		*											
	a6-1	*	*	*	*	*	*		*	*	*				*
	a8-1	*		*											
	a8-2	*		*											
	a21-1	*		*	*	*	*		*						*
Intellectual Skills	b5-1	*		*	*										
	b13-1	*		*	*										
Professional Skills	c1-1	*		*							*	*			
	c5-1	*		*		*									
	c5-2	*		*		*					*	*			
General Skills	d2-1	*	*	*			*	*	*	*	*	*			*
	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	*											
	a6-1	*		*			*	*	*	*	*		
	a8-1	*											
	a8-2	*											
	a21-1	*		*			*		*	*			
Intellectual Skills	b5-1	*			*								
	b13-1	*			*								
Professional Skills	c1-1	*					*						
	c5-1	*	*	*									
	c5-2	*	*	*			*						
General Skills	d2-1	*		*				*	*	*	*		*
	d6-1			*			*			*			
	d6-2			*			*			*			

10.2 Assessment Weight, Schedule and Grades Distribution:

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

Course coordinator
Prof. Mohamed Izzularab

Head of the Department
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Course Specification

A-Basic Information

Title: Control of Electrical Machines

Code Symbol: ECE416

Element of program: Minor

Date of specification approval: 2011

Department offering the course: Electrical and Computer Engineering Dept.

<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Total</i>
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%	25%	50%	---	---	---	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, A14, 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 the 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.
	A14) Distinguish design methods and tools for electrical power and machines equipment and systems.	a14-1) Distinguish design control method for closed loop speed control of dc motors. a14-2) Distinguish design control method for control of induction motors.
	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,	1
2nd	Graphical symbols, Transfer functions and block diagrams.	2
3rd	Control of DC Machine: Control of DC motor in the armature control range, Control of DC motor in the field-weakening region.	3-4
4 th	Combined armature and field control, Closed loop control. Current control of DC machine.	5-6
5 th	Speed control of DC machine	7
6 th	Position control of DC machine	9
7th	Control of Induction Machine: Scalar control.	10-11
8th	Control of Induction Machine: Vector or field – oriented control .	12-13
9th	Sensorless vector control, Direct torque and flux control (DTC)	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: 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	Transfer functions and block diagrams of electrical machines.	4	2	2	-	a4-1,b13-1,b13-2, b13-3, c17-1
WEEKS-3-4	Control of DC Motors: Armature control range Field-weakening control region	8	4	4	-	a19-1,a19-2,a19-3, c17-1, d1-1,d1-2
WEEK-5	Combined armature and field control of a DC machine	8	4	4	-	a19-1,a19-2,a19-3, c17-1, d1-1,d1-2
WEEKS-6-7	Closed-loop Speed Control of DC motor .	4	2	2	-	a14-1,a19-1,a19-2, a19-3, c17-1, d3-1, d3-2
WEEK-8	Midterm written examination					
WEEK-9	Position control of a DC motor.	4	2	2	-	a19-1,a19-2, a19-3, c17-1, d1-1,d1-2
WEEKS-10-11	Control of Induction Motors: Scalar control	8	4	4	-	a14-2, a19-1,a19-2, a19-3, c17-1, d1-1, d1-2
WEEKS-12-13	Control of Induction Motors: Field Oriented Control (FOC).	8	4	4	-	a14-2, a19-1,a19-2, a19-3, c17-1, d1-1, d1-2
WEEKS-14-15	Sensorless vector control, Direct torque and flux control (DTC).	8	4	4	-	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 Renoring	Group Working	Discovering	Simulation and Modelling	Lab. Experiments
Knowledge & understanding	a4-1	*	*	*	*	*	*	*	*	*	*			
	a13-1	*	*	*	*			*		*	*		*	
	a14-1	*		*	*	*	*						*	
	a14-2	*		*	*	*	*						*	
	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)		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	*		*				*		*			
	a14-1	*		*				*		*	*		*
	a14-2	*		*				*		*	*		*
	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
Semester work (Tutorial and report assessment)	20	20%	Weekly
Mid-Term Examination (Written)	20	20%	8th
Oral and Practical Examination	10	10%	15th
Final-Term Examination	50	50%	16th
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.

Course coordinator

Head of the Department

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