Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: PREP. Year.**

Course Specification

A- Basic Information

Title: ***Engineering Drawing*** ***Code Symbol:*** PRE001
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	5%	10%	70%	5%	10%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with basic knowledge of the graphic language for understanding mechanical drawing with emphases on orthographic projection theory and application, As well as, this course provides the student with required skills of reading and writing mechanical drawing, The Purpose of this course is also to give the student an understanding of the interrelationship of engineering graphics and the principles of descriptive geometry. It is a comprehensive study of the graphical solutions to problems, involving the following: orthographic projection, points and lines in a space, auxiliary views, planes, parallel and perpendicular lines, intersecting and nonintersecting lines.

3- Course Objectives:

1-Demonstration of the knowledge and understanding the basic concepts of engineering drawing
2-Definition of the requirements of engineering drawing
3-Realizing of the different types of projections in descriptive geometry.
4-Reading professional engineering drawing.
5-Reflect to act the dimensions and ability to estimate various aspects of engineering drawing.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contributes in achieving	A1, A8 and A13	B2, B3and B18	C2, C3 and C13	D2 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to	a1-1 List the difference between geometric figures and calculation of missing dimensions.
	A8):- Current engineering technologies as related to disciplines.	a8-1 Express and descibe different manufacured parts machine elements using engineering drawing language. a8-2 Define and descibe the dimesions and geometry of any part for suucessive machining processes.
	A13):- Concepts, principles and theories relevant to Mechanical Engineering and manufacture;	a13-1 compare between different and complex shapes of different manufactured produces using projection theory.
Intellectual skills	B2):- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Create the desired dynamc methods for modeling and analyzing engineering problems.
	B3):- Think in a creative and innovative way in problem solving and design	b3-1 Organize and interpret engineering parts to engineering drawing language using projection theory to analyze the design and manufacturing problems.
	B18):- Select appropriate manufacturing method considering design requirements.	b18-1 Make a suitable description of mechanical pats for developing the solutions of manufacturing problems.
	C2):- Professionally merge the engineering knowledge, understanding, and feedback to improve	c2-1 Employ a suitable manufacturing process corresponding to the designed and intended parts to improve mach inability and product quality.

Professional skills	design, products and/or services.	
	C3):- Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1 Apply the designed analysis to solve selected engineering problems concerning industrial technology .
	C13):- Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly.	c13-1 Use the designed analysis for developing solutions of practical problems to improve production process. .
General skills	D2):- Work in stressful environment and within constraints.	d2-1 improve the student level through limited allowed time during drawing.
	D9):- Refer to relevant literatures.	d9-1 share students through reading text in the library .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Intrduction to engineering drawing instruments	1
2nd	Drawing lines an d scales	2
3rd	Construction of geometric figures	3-4
4th	Multiview projections	5
5th	Engineering isometrics	6-7
6th	Deduction of missing views	9-15
7th	Steel sections	16-17
8th	Section of different views	18-23
9th	Intrduction to descriptive geometry.	24
10th	Point ,line and plane projection	25-27
11th	Projection of geometric bodies and figures	28-29

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Drawing instruments	**6**	**2**	**4**		a1-1 & a1-8 &a8-2 & a13-1
Week-2	Line types	**6**	**2**	**4**		a1-1 & a1-8 &a8-2 & a13-1
Week-3	Geometric Constructions: Lines, angles, curves,	**6**	**2**	**4**		a1-1 & a1-8 &a8-2 & a13-1
Week-4	Geometric construction: tangents	**6**	**2**	**4**		a1-1 & a1-8 &a8-2 & a13-1
Week-5	Theory of Projection: First-angle and Third angle Projection, Orthographic Projection	**6**	**2**	**4**		a1-1 & a1-8 &a8-2 & a13-1& b18-1&
Week-6	Isometric Drawing: Isometric circles and arcs	**6**	**2**	**4**		a1-1 & a1-8 &a8-2 & a13-1
Week-7	Multiview Drawing	**6**	**2**	**4**		b2-1& b3-1& b18-1
Week-8	Multiview Drawing **Webs, Fillets, Rounds, Intersection of curved surfaces and base and cylinder**	**6**	**2**	**4**		b2-1& b3-1& b18-1 c2-1& c3-1& c13-1
Week-9	Deduction of missing views	**6**	**2**	**4**		b2-1& b3-1& b18-1
Week-10	Deduction of side view	**6**	**2**	**4**		b2-1& b3-1& b18-1& d2-1
Week-11	Deduction of horizontal plane	**6**	**2**	**4**		b2-1& b3-1& b18-1
Week-12	Exercises on deduction of missing views	**6**	**2**	**4**		b2-1& b3-1& b18-1& d2-1
Week-13	Exercises on deduction of missing views	**6**	**2**	**4**		b2-1& b3-1& b18-1 c2-1& c3-1& c13-1
Week-14	Exercises on deduction of missing views	**6**	**2**	**4**		b2-1& b3-1& b18-1
Week-15	Sectional views	**6**	**2**	**4**		b2-1& b3-1& b18-1 c2-1& c3-1& c13-1
Week-16	Cutting planes and sections	**6**	**2**	**4**		b2-1& b3-1& b18-1& d2-1
Week-17	Line in sections	**6**	**2**	**4**		b2-1& b3-1& b18-1
Week-18	Drawing a full section	**6**	**2**	**4**		b2-1& b3-1& b18-1& d9-1
Week-19	Drawing a half section	**6**	**2**	**4**		b2-1& b3-1& b18-1& d2-1
Week-20	Broken out section	**6**	**2**	**4**		c2-1& c3-1& c13-1& d9-1
Week-21	Webs in sections	**6**	**2**	**4**		c2-1& c3-1&

						c13-1 b2-1& b3-1&
Week-22	Steel structures and sections	**6**	**2**	**4**		c2-1& c3-1& c13-1
Week-23	Plates-Angles-I-sections-Channels Beams-Columns-Footings-	**6**	**2**	**4**		c2-1& c3-1& c13-1
Week-24	Point projection	**6**	**2**	**4**		b2-1& b3-1&c2-1& c3-1& c13-1
Week-25	Line Projection	**6**	**2**	**4**		c2-1& c3-1& c13-1
Week-26	Plane projection	**6**	**2**	**4**		c2-1& c3-1& c13-1& d9-1
Week-27	Auxiliary projection	**6**	**2**	**4**		c2-1& c3-1& c13-1& d9-1
Week-28	Cube projection, pyramid Projection, Conic Projection, Cylinderical projection	**6**	**2**	**4**		c2-1& c3-1& c13-1 b2-1& b3-1&
Week-29	Circle and Sphere projection	**6**	**2**	**4**		c2-1& c3-1& c13-1 b2-1& b3-1
Week-30	Midterm Exam	**6**	**2**	**4**		

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a8-1	**x**		**x**	**x**									
	a8-2	**x**		**x**										
	a13-1	**x**		**x**										
Intellectual Skills	**b2-1**	**x**	**x**		**x**		**x**							
	b3-1	**x**	**x**	**x**	**x**		**x**							
	b18-1	**x**	**x**	**x**			**x**							
Professional Skills	**c2-1**	**x**			**x**						**x**			
	c3-1	**x**			**x**									
	c13-1										**x**			
General Skills	**d2-1**		**x**							**x**	**x**			
	d9-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	Tutorial Assessment	Model Exams Assessment	Report Assessment	Quiz assessment	Presentation Assessment	Discussion	Project Assessment	Home Exam	Monitoring
Knowledge & Understanding	a1-1	x	x	x	x								
	a8-1	x			x								
	a8-2	x											
	a13-1	x	x	x									
Intellectual Skills	b2-1	x	x	x	x						x		
	b3-1	x	x		x								
	b18-1	x	x	x							x		
Professional Skills	c2-1	x		x	x								
	c3-1	x		x	x		x				x		
	c13-1	x		x	x								

General Skills	**d2-1**										**x**		
	d9-2						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**180**	**60%**	**30th**
End of term assessment (*Oral*)	**50**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**50**	**20%**	**weakly**
Total	**300**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of engineering drawing

13.2- Essential books (text books)

1- Engineering Graphics (Chinese-English), Zhong Jiaqi, and Zhong Xiaoying, published by Higher Education Press, 2006 .

2- Workbook of Fundamentals of Engineering Graphics (English, 1st edition, 2009), edited by Feng Dongju, Song Hongxia, printed by DUT.

13.3- Recommended books

1. French, t.e. and Vierck, C.J.; Graphic Science, McGraw-Hill, New York

Goetsch, et. al., Technical Drawing, 6th ed. (Delmar, 2010), using chapters 7-9

James Earle, Engineering Design Graphics with AutoCAD 2007, 12th ed.

2-.‘Descriptive Geometry’(6th edition Chinese)and the corresponding workbook(4th edition), edited by DUT, published by Higher Education Press, 2003

3.‘Engineering Graphics’ (8th edition, English), and ‘Engineering Drawing Problem Series 2’ (10th edition), Frederick E. Giesecke, Lava Mitchell, Henry Cecil Spencer, Ivan Leroy Hill etc. 2004, reedited by professor JIAO Yonghe from Beijing Institute of Technology, 2005

4-.‘Engineering Graphics with AutoCAD 2005’(James D. Bethune) simplified Chinese edition 2006, translated by WANG Danhong, SONG Hongxia, 2006

5-.‘Fundamentals of Graphics of Communication’, 5th edition, Gary R. Bertoline, Eric N. Wiebe, published by McGraw- Hill, 2007,

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Course coordinator **Programme coordinator**

Assoc. Prof. ahmed hamada

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: PREP.**

Course Specification

A- Basic Information

Title: Production Technology **Code Symbol:** PRE 011
Element of program: Major **Date of specification approval: 2012**
Department offering the course: Prod. Eng. & Mech. Design. Dept. **Bylaw 2006**

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	60%	-	---	40%	---	100%

B- Professional Information

2- Course Aims:

This course provides the student with basic knowledge for both manufacturing and industrial engineering beside the information about engineering materials, work shop safety and bench work. This course is designed to help the student acquire knowledge and skills in the use of hand tools, layout tools, measuring tools and machine tools that will prepare the student to build items from the information given. The students will be introduced to advanced surface grinding work such as angular and form grinding, tool grinding (mill cutters, drills and taps). Additional work on the other machine tools in the laboratory will include jig boring. This course provides the student with introduction to manufacturing, metal processing, casting and related processes, metal forming and sheet metal working, conventional machining. In addition, students have to perform laboratory assignments in which they would operate standard machines such as lathe, planning, milling, grinding, and sand casting.

3- Course Objectives:

1- Introducing the basic knowledge in manufacturing processes and Identify the various materials and equipment used in forming and machining processes.
2- Identifying the engineering materials and their application in production technology.
3- introducing the basic knowledge in bench work, casting, welding, and forming processes.
4- Develop in the students an understanding of the basic principles of shop processes well enough to transfer from one machine or job shop to another in an industrial setting.
5- Develop in the students the proper safety habits and attitudes needed in an industrial atmosphere.

4- Relationship between the course and the programmed

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A1, A3 and A13	B13and B18	C1, C2 and C15	D1 and D7

5- Course Intended Learning Outcomes (Ills)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3) Characteristics of engineering materials related to the discipline.	a3-1 Define the basic concept about manufacturing and industrial engineering science
	A8) Current engineering technologies as related to disciplines.	a3-1 Discuss basic mathematics. Science and technologies relevant to modern power and machines
Intellectual skills	B3) Think in a creative and innovative way in problem solving and design.	b3-1 Creat an effective technique to state the different between forming and cutting processes.
Professional skills	C1) Apply knowledge of science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Use the suitable method to state the differences between engineering materials.
	C8) Apply safe systems at work and observe the appropriate steps to manage risks.	c8-1 Apply workshop safety
	C11) Exchange knowledge and skills with engineering community and industry.	c1-1- Perform work part on materials. c1-2- Do some bench work samples
General skills	D2) Work in stressful environment and within constraints.	d2-1 Judge the experimental test by working team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Workshop safety	1
2nd	Fundamental of Engineering Materials	2
3rd	Casting Processes	3-4
4th	Forming Processes(Rolling,Drawing,Extrusion and Spinning	5-6
5th	Welding Processes	7
6th	Bench Work (Measurement, Filling,Taping,Drilling and Sawing)	9-10
7th	Metal Machining Principles(Turning,Milling, Shaping, Drilling and Grinding)	11-14
8th	Introduction to Production Management	15

8- Course Topics/hours/ILOS

Week No.	Sub. Topics	Total Hours	Contact hrs			Course ILOs Covered (By No.)
			Lec.	Tut.	Lab.	
Week-1	Workshop safety	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-2	Fundamental of Engineering Materials	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-3,4	Casting Processes	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-5,6	Forming Processes (Rolling, Spinning Drawing and Extrusion)	5	2	-	1	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-7	Welding Processes	5	2	-	1	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-8						
Week-9	Bench Work (Measurement, Filling and Taping,	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-10	Bench Work (Drilling and Sawing)	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-11	Metal Machining Principles(Turning	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-12	Metal Machining Principles(,Drilling)	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-13	Metal Machining Principles(milling,	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-14	Metal Machining Principles (Grinding)	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1
Week-15	Introduction to Production Management	5	2	-	3	a3-1,a8-1,b3-1,c1-1,c8-1,c11-1,c11-2,d2-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a3-1**	**x**		**x**		**x**								
	a8-1	**x**		**x**										
Intellectual Skills	**b3-1**	**x**	**x**	**x**			**x**	**x**						
Professional Skills	**c1-1**	**x**						**x**			**x**			
	c8-1	**x**		**x**										
	c11-1	**x**		**x**							**x**			
	c11-2													
General Skills	**d2-1**		**x**							**x**				

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	**x**	**x**	**x**									
	a8-1	**x**											
Intellectual Skills	**b3-1**	**x**	**x**	**x**							**x**		
Professional Skills	**c1-1**	**x**		**x**									
	c8-1	**x**		**x**			**x**				**x**		
	c11-1	**x**		**x**									
	c11-2												
General Skills	**d2-1**										**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	60	60%	16th
End of term assessment (*Oral*)	10	10%	15th
End of term laboratory examination (*Lab*)	10	10%	16th
Mid term written Examination1 (*Term Work*)	0	0%	8th
Mid term written Examination 2 (*Term Work*)	0	0%	12th
Tutorial and report assessment (*Term Work*)	20	20%	weakly
Total	100	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

- Students are expected to use different manufacturing machines and equipments to produce simple model products in the workshop.
- Students should be encouraged to use library technical resources in the preparation of problems and reports.

13- List of references:

13.1- Course notes

- Notes of manufacturing technology

13.2- Essential books (text books)

- مقدمة فى هندسة الانتاج — أ.د. أحمد سالم الصباغ وآخرون
- سلسلة الاسس التكنولوجية — مؤسسة الاهرام المصرية
- Maslove *et al, Engineering Manufacturing Processes, Mir Publisher*

13.3- Recommended books

- Kalpakjian, S. (1997). *Manufacturing Processes for Engineering Materials*, 3rd ed. Reading, MA: Addison Wesley.

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Course coordinator **Programme coordinator**

Prof. Abd Elmegeed Attia

Prof. Taha Ali El-Taweel
Dr. SALAH A. ASSELA
Dr. Mohammed Hany Kazamel

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2013-2014**
Faculty of Engineering **Academic term: 1st & 2nd Terms**
Minoufiya University **Academic level: 1st PROD.**

Course Specification

A- Basic Information

Title: ***Drawing and The Machine Construction*** ***Code Symbol:*** ***PRE 101***
Element of program: ***Major*** ***Date of specification approval:*** ***2013***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2003***

Lecture	*Tutorial*	*Laboratory*	*Total*
1	*4*	*-*	*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%	---	80%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, upon completing the bases of production drawing and be able to assemble the different elements of machine construction and some of hand tools. This course will also provide students, with enough knowledge of some symbols to communicate additional information regarding surface quality and applicable standard. As well as, this course will give the student the required comprehensive and practical skills of ability for drawing the machine elements.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concebtes of drawing and the machine construction.**
2. **Definition of the requirements of production and machine drawing.**
3. **Realizing of properly document working drawings.**
4. **Description of fits, tolerances and surface marks.**
5. **Drawing and assembly of different machine elements such as coupling, bearing, seals, threaded elements, gears, vises, valves, springs…etc.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1	B17	C19	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge & Understanding	A1- Conepts pronciples and theories relevant to mechanical engineering and manufucture.	a1-1 Define the basics concepts of working drawing. a1-2 Describe classification of fasteners. a1-3 Recognize the symbols of fits, tolerances and surface roughness. a1-4 Describe the method of gear representation that is used for drawing the machine construction.
Intellectual skills	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Create an effective technique to select the suitable fits and tolerances for different machine components. b17-2 Organize the required information to know the name of each element of an machine tool and how can assemble them.
Professional skills	C19- Prepare the process plan for manufacturing.	c19-1 Sketch the different kinds of keys. c19-2 Sketch assemble drawing of mechanical elements such as vises-bearing, couplings, valves ….etc.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Improve the assembly drawing by working team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Quick return to Engineering Drawing.	1-3
2nd	System of Fits and Tolerances.	4-5
3rd	Machining Marks(Surface roughness Marks).	6
4th	Coded Number of used Metals.	7
5th	Joining of Machine Parts.	9
6th	Machine Parts Exercises.	11-14
7th	FIRST TERM EXAM	15
8th	Assembly Drawing of Groupe of Trolley Wheels	16-17
9th	Assembly Drawing of Some Types of Screw Jack	18
10th	Assembly Drawing of Some Types of Belt Tightener and Tension Rod	19-20
11th	Assembly Drawing of Some Types of Vises	21-24
12th	Assembly Drawing of Some Types of Holders	25-26
13rd	Assembly Drawing of Slide Tool Holder	27
14th	Assembly Drawing of Some Types of Pipe Joints	28
15th	Assembly Drawing of Some Types of Gear Boxes	29
16th	SECOND TERM EXAM	30

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	Tut.	Lab.	
Week-1	Quick return to Engineering Drawing	**5**	**1**	**4**	**--**	**a1-1**
Week-2	System of Fits and Tolerances	**5**	**1**	**4**	**--**	**a1-1**
Week-3	System of Fits and Tolerances	**5**	**1**	**4**	**--**	**a1-2**
Week-4	Machining Marks	**5**	**1**	**4**	**--**	**a1-2**
Week-5	Coded Number of used Metals.	**5**	**1**	**4**	**--**	**a1-2**
Week-6	Machine Parts.	**5**	**1**	**4**	**--**	**a1-2 & c17-1**
Week-7	Machine Parts.	**5**	**1**	**4**	**--**	**a1-2 & c19-1**
Week-8	**Midterm(1) Exam**					
Week-9	Springs	**5**	**1**	**4**	**--**	**a1-2, b17-1 & b17-2**
Week-10	Machine Parts Exercises.	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-11	Machine Parts Exercises.	**5**	**1**	**4**	**--**	**a1-2, a1-3, c7-1, c19-2 & d1-1**
Week-12	Machine Parts Exercises.	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-13	Machine Parts Exercises.	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-14	Machine Parts Exercises.	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-15	**FIRST TERM EXAM**					
Week-16	Assembly Drawing of Groupe of Trolley Wheels	**5**	**1**	**4**	**--**	**a1-1 & a1-3**
Week-17	Assembly Drawing of Groupe of Trolley Wheels	**5**	**1**	**4**	**--**	**a1-4 & c19-1**
Week-18	Assembly Drawing of Some Types of Screw Jack	**5**	**1**	**4**	**--**	**a1-1, a1-3, b17-1 & b17-2**
Week-19	Assembly Drawing of Some Types of Belt Tightener and Tension Rod	**5**	**1**	**4**	**--**	**a1-4**
Week-20	Assembly Drawing of Some Types of Belt Tightener and Tension Rod	**5**	**1**	**4**	**--**	**a1-4**
Week-21	Assembly Drawing of Some Types of Vises	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-22	Assembly Drawing of Some Types of Vises	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week23	Assembly Drawing of Some Types of Vises					

Week-24	Assembly Drawing of Some Types of Vises	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-25	**Midterm(2) Exam**					
Week-26	Assembly Drawing of Some Types of Holders	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-27	Assembly Drawing of Slide Tool Holder	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-28	Assembly Drawing of Some Types of Pipe Joints	**5**	**1**	**4**	**--**	**a1-2, a1-3, c19-1, c19-2 & d1-1**
Week-29	Assembly Drawing of Some Types of Gear Boxes	**5**	**1**	**4**	**--**	**a1-2, a1-3, c719-1, c19-2 & d1-1**
Week-30	**SECOND TERM EXAM**					

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	x			x									
	a1-2	x			x									
	a1-3	x			x									
	a1-4	x			x									
Intellectual Skills	**b17-1**	x			x									
	b17-2	x			x									
Professional Skills	**c19-1**	x			x									
	c19-2	x			x									
General Skills	**d1-1**				x					x	x			

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

For low capacity students	**Assign a portion of the office hours for those students.**
	Give them specific tasks.
	Repeat the explanation of some subjects.
	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 exercises topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz Assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x			x								
	a1-2	x			x								
	a1-3	x			x								
	a1-4	x			x								
Intellectual Skills	**b17-1**	x			x								
	b17-2	x			x								
Professional Skills	**c19-1**	x			x		x						x
	c19-2	x			x		x						x
General Skills	**d1-1**				x		x						

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**31th**
End of term assessment (*Oral*)	**0**	**0%**	**30th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**--**
Mid term (1)written Examination (*Term Work*)	**15**	**10%**	**8th**
Mid term(2) written Examination (*Term Work*)	**15**	**10%**	**25th**
Tutorial and report assessment (*Term Work*)	**30**	**20%**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

A. Library Usage:

Students should be encouraged to use library technical resources in the preparation of drawing semester work and home tasks.

13- List of references:

13.1- Course notes

- AHMED M. EASA" Drawing and The Machine Construction" Faculty of Engineering ,Menoufia university,EGYPT,El-hanafy Pub.,2013.

13.2- Recommended books

- A.M.EASA, "Metrology", Faculty of Engineering ,Menoufia university,EGYPT, El-hanafy Pub. 2013.

-K.L.Naryana,P.kannaiah and K. Venata Reddy," Machine Drawing(Third Edition)",New Age International Publishers,2006.

-Frederick et al ," Technical Drawing" Macmillan Publishers,1980.

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Course coordinator **Programme coordinator**

Prof. Dr. AHMED M.EASA

Head of the Department

Prof. Taha El-Taweel

Date: 15/9/2013.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: FIRST PROD.**

Course Specification

A- Basic Information

Title: ***Properties of Materials*** ***Code Symbol:*** ***PRE 111***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	70%	-	---	30%	---	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 materials, work shop safety and bench work.

3- Course Objectives:

1- introducing the basic knowledge in manufacturing processes
2-Identifying the engineering materials and their application in production technology
3-introducing the basic knowledge in bench work, casting, welding, and forming processes

4- Relationship between the course and the programmed

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A3, A8 and A13	B2, B6 and B18	C2, C15 and C19	D2 and D3

5- Course Intended Learning Outcomes (Ills)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3-):- Characteristics of engineering materials related to the discipline.	a3-1- list the characteristics of engineering materials
	A8-):- Current engineering technologies as related to disciplines.	a8-1 Describe behaviour of materials a8-2 Define the basics concepts of the engineering applications problems.
	A13)- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1 Discuss different engineering techniques for solving some machine element problems using Concepts, principles and theories.
Intellectual skills	B2)- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Formulate the different suitable technique for solving engineering problems.
	B6)-Investigate the failure of components, systems, and processes	b6-1 Create a criterion suitable for studying the performance of the components .
	B18-Select appropriate manufacturing method considering design requirements.	b18-1 Apply experimental tests to select appropriate manufacturing method considering design requirements.
Professional skills	C2):- Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1 Employ a suitable techniques to chose a suitable test to chick the mechanical properties of materials .
	C3-15):- Use basic workshop equipment safely	c15-1 Apply the basic workshop equipment safely
	C16-19)**:-** Prepare the process plan for manufacturing	c19-1 Use the process plan for manufacturing
General skills	D2)- Work in stressful environment and within constraints	d2-1 Lead working team for working in stressful environment and within constraints.
	D3):- Communicate effectively	d3-1 Share working team through communicate effectively .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamental of mechanical properties materials	1
2nd	Simple stresses and strain	2-3
3rd	Volumetric strain and elaastic constants	4-5
4th	Torsion and applications (flange cuplucing, springs, gear shaftes)	6-7
5th	Bending stresses in beams	8-9
6th	Shear stress due to bending	10-11
7th	Deflection of beams	12-13
8th	Buckling in columns and struts	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Fundamental of mechanical properties materials	**5**	**3**	**1**	**1**	a3-1 &a4-2
Week-2	Simple stresses and strain	**5**	**3**	**1**	**1**	a3-1 &a13-1,b2-1&b6-1
Week-3	Tensile test (example)	**5**	**3**	**1**	**1**	b2-1-1&b6-1&c13-1 d1-1
Week-4	Volumetric strain	**5**	**3**	**1**	**1**	a3-1 &a13-1 b2-1&b6-1
Week-5	Compressive test	**5**	**3**	**1**	**1**	b2-1&b6-1&c2-1 c13-1
Week-6	Torsion	**5**	**3**	**1**	**1**	a3-1 &a13-1& b2-1&b6-1
Week-7	Torsion (spring)	**5**	**3**	**1**	**1**	a1-1& d2-1&b18-1
Week-8						
Week-9	Bending stresses in beams (pure bending)	**5**	**3**	**1**	**1**	c6-1 & b2-1 &c15-1&c19-1
Week-10	Direct and Bending stresses	**5**	**3**	**1**	**1**	a1-1 & b18-1 c15-1&c19-1
Week-11	Hardness test	**5**	**3**	**1**	**1**	b2-1-1&b6-1&c2-1 c15-1&d3-1
Week-12	Deflection of beams	**5**	**3**	**1**	**1**	a3-1 &a13-1
Week-13	Deflection of beams	**5**	**3**	**1**	**1**	a3-1 &a13-1
Week-14	Buckling in columns and struts	**5**	**3**	**1**	**1**	a3-1 &a13-1
Week-15	Buckling in columns and struts	**5**	**3**	**1**	**1**	a3-1 &a19-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a3-1**	**x**		**x**		**x**								
	a8-1	**x**		**x**										
	a8-2	**x**		**x**										
	a13-1													
Intellectual Skills	**b2-1**	**x**	**x**	**x**			**x**	**x**						
	b6-3	**x**	**x**	**x**			**x**						**x**	
	b18-1	**x**	**x**	**x**		**x**	**x**						**x**	
Professional Skills	**c2-1**	**x**						**x**			**x**			
	c15-1	**x**		**x**										
	c19-1	**x**		**x**							**x**			
General Skills	**d2-1**		**x**							**x**				
	d3-1		**x**							**x**				

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	x	x	x									
	a8-1	x											
	a8-2	x											
	a13-1	x	x	x									
Intellectual Skills	**b2-1**	x	x	x							x		
	b6-3	x	x										
	b18-1	x	x	x							x		
Professional Skills	**c2-1**	x		x									
	c15-1	x		x			x				x		
	c19-1	x		x									
General Skills	**d2-1**										x		
	d3-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**10**	**100%**	**15th**
End of term laboratory examination (*Lab*)	**10**	**10%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of mechanical properties

13.2- Essential books (text books)

- Solution of problems in strength of materials and mechanical of solids.
- Applied Mechanics
- strength of materials

13.3- Recommended books

-"Advanced strength and applied stress analysis". Richard G. Budynas

" Engineering Solid Mechanics- Fundamentals and Applications", A.R. Ragab and S.E. Bayoumi, CRC Press, 1999 applied stress analysis – Second Edition- Richard G. Budynos

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Course coordinator **Programme coordinator**

Dr. SOAD M.SERAG **Dr. SALAH A. ASSELA**

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 1st PROD.**

Course Specification

A- Basic Information

Title: ***Machining Processes*** ***Code Symbol:*** ***PRE 112***
Element of program: ***Major*** ***Date of specification approval:*** ***2003***
Department offering the course: **Prod. Eng. & Mech. Design Dept.** ***Bylaw 2003***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20%	80%	---	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of machine tools and related operations for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems using machining processes. This course will also provide students, with the required skills of selecting the proper machining process and the suitable variables for solving the engineering problems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic conceptes of machining processes.**
2. **Definition of the requirements of cutting tool materials and cutting fluids.**
3. **Realizing of the different types of machining operations and the suitable variables.**
4. **Evaluation of the suitable process for solving the engineering problems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 and A13	B13 and B18	C15 and C19	D2 and D3

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain different machining processes for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A3 – Characteristics of engineering materials used for manufacturing the cutting tools.	a3-1 List the main properties of the cutting tool materials. a3-2 Discuss the difference between the different cutting tool materials
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture.	a13 -1 Define different engineering techniques for solving some machine element problems by machining.
Intellectual skills	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13 -1 Orgnize and apply the principles of technology in problem solving in manufacturing.
	B18- Select appropriate manufacturing method considering design requirements.	b18 -1 Create a plan for appropriate manufacturing processes considering the design requirements.
Professional skills	C15- Use basic workshop equipment safely.	c15 -1 Use the basic workshop equipments and tools safely.
	C19 - Prepare the process plan for manufacturing.	c19 -1 Develop a process planing for manufacturing products on different machine tools.
General skills	D2 - Work in stressful environment and within constraints.	d2-1 Share in work in stressful environment in workshop.
	D3- Communicate effectively.	d3-1 Communicate effectively by working in a team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction – Cutting tool materials	1-3
2nd	Different bench work	4-6
3rd	Machine tools and their processes	7 -10
4th	Producing and machining threads	11 -12
5th	Processing sheets with different machining processes	13 -15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction	**6**	**2**	**--**	**4**	a13-1
Week-2	Cutting tool materials	**6**	**2**	**--**	**4**	a3-1 & a3-2
Week-3	Properties cutting tool materials	**6**	**2**	**--**	**4**	a3-1& a3-2
Week-4	Introduction to bench work	**6**	**2**	**--**	**4**	a13-1& b13-1
Week-5	Different bench work tools	**6**	**2**	**--**	**4**	c15-1
Week-6	Different bench work operations	**6**	**2**	**--**	**4**	b13-1& c15-1
Week-7	Turning and shaping machines and operations	**6**	**2**	**--**	**4**	a1-1, a13-1, b13-1,c15-1 &d2-1
Week-8						
Week-9	Drilling and milling machines and operations	**6**	**2**	**--**	**4**	a1-1, a13-1, b13-1,c15-1 &d2-1
Week-10	Broaching and grinding machines and operations	**6**	**2**	**--**	**4**	a1-1, a13-1, b13-1,c15-1 &d2-1
Week-11	Producing and machining threads on the lathe and taping machines.	**6**	**2**	**--**	**4**	a1-1, a13-1, b13-1,b18-1, c15-1 &d3-1
Week-12	Producing and machining threads on the milling, broaching and grinding machines.	**6**	**2**	**--**	**4**	a1-1, a13-1, b13-1,b18-1, c15-1 &d3-1
Week-13	Introduction to processing sheets	**6**	**2**	**--**	**4**	b18-1
Week-14	processing sheets on one machine	**6**	**2**	**--**	**4**	b18-1&c19-1
Week-15	processing sheets on several machines	**6**	**2**	**--**	**4**	b18-1&c19-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**										
	a3-1	**x**		**x**										
	a3-2	**x**		**x**										
	a13-1	**x**		**x**										
Intellectual Skills	**b13-1**	**x**		**x**			**x**							
	b18-1	**x**		**x**			**x**							
Professional Skills	**c15-1**	**x**									**x**			
	c19-1	**x**		**x**							**x**			
General Skills	**d2-1**		**x**							**x**	**x**			
	d3-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x	x	x									
	a3-1	x											
	a3-2	x											
	a13-1	x	x	x									
Intellectual Skills	**b13-1**	x	x	x							x		
	b18-1	x	x										
Professional Skills	**c15-1**	x		x									
	c19-1	x		x			x				x		
General Skills	**d2-1**										x		
	d3-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**30**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**15**	**10%**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare a sheet process for a product and apply it in the workshop.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of machining processes.

13.2- Essential books (text books)

- Fundamentals of marching and machine tools, 2nd,ed. Boothoryd, G. & W.A.Knight, N.Y.Marcl, Dekker, 1989 .

13.3- Recommended books

****

Course coordinator **Programme coordinator**

Dr. Mosaad F. Elsafty

d

Dr. Abo Elhagag H. Yousef

Head of the Department

Prof. Taha A. El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 1st PROD.**

Course Specification

A- Basic Information

Title: ***Applied Mechanics*** ***Code Symbol:*** ***PRE 113***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

1-

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

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%	60%	10%	10%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of principles of applied engineering mechanics as they relate to machines; static force analysis for structure elements and simple frames and how to introduce the laws of mechanics which are applicable to the study of kinematic of machine components; kinetics of machine components by the methods of force-mass-acceleration and impulse-momentum; introduction to mechanical vibrations.
This course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems.
The goal of this course is to introduce the students to the fields of strength of materials, dynamics and machine design.

3- Course Objectives:

Upon completion of this course the student will be able to:
1. Apply the principle of equilibrium to problems of solid mechanics to determine external and internal forces (reactions, normal and shear forces, bending moments in structures& frames).
2. Determine the centroid and moment of inertia about any axis of an area and composite areas, also the radius of gyration.
3. Determine the centroid and mass-moment of inertia about any axis of a body and composite bodies, also the radius of gyration.
4. Study kinetics of a particle and a system of particles by the methods of force-mass-acceleration, work-energy, and impulse-momentum.
5. Study of planar kinematics of a rigid body; position, velocity and acceleration of mechanisms.
6. Study kinetics of a rigid body by the methods of force-mass-acceleration, work-energy, and impulse-momentum.
7. Study the characteristics of Force- Free- Un damped vibratin motion.
8. Students will be required to routinely use computer software to solve problems related to statics and dynamics. For example, using the MD Solids software to determine the shear force and bending moment diagrams.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic	A1, A5 and A19	B1, B16	C6, C13 and	D1 and D6

Standards that the course contribute in achieving		and B17	C14	

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain different dynamic methods for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A15- The specifications, programming and range of application of dynamic principles.	a15-1 Describe some methods of creating a desired dynamic analysis in engineering problems. a15-2 Define the basics concepts of applied mechanics which are required for molding and solving the engineering applications problems.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving some machine element problems by programming.
Intellectual skills	B1- Select appropriate mathematical and dynamicbased methods for modeling and analyzing problems.	b1-1 Create the desired dynamc methods for modeling and analyzing engineering problems.
	B16- Interpret engineering problems and apply dynamic principles for engineering design purposes	b16-1 Organize and interpret engineering problems using dynamic principles of motion to analyze the problems.
	B17- Use the principles of engineering mechanics in developing solutions to practical mechanical engineering problems.	b17- Create a suitable dynamic analysis for developing the solutions of practical engineering problems.
Professional skills	C6- Use a wide range of analytical tools, techniques, equipment to the discipline.	c6-1 Employ a suitable dynamic understanding to the discipline .
	C13-Prepare engineering problems, and specialized technical reports and communicate accordingly.	c13-1 Apply the designed dynamic analysis to solve selected engineering problems.
	C14- Employ the traditional and modern dynamic analysis facilities in design and production processes.	c14-1 Use the designed dynamic analysis for developing solutions of practical problems .
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created dynamic analysis by working team.
	D6- Effectively manage tasks, time, and resources.	d6-1 Balance between dynamic experiments resources and laboratory time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Types of structures, loads, supports and reactions	1
2nd	Determine reactions and construction of internal forces of beams and frames	2-5
3rd	Centre of gravity, axis of symmetry, modulus of section, moment of inertia, perpendicular axis theorem, parallel axis theorem, Mohr circle, principal moment of inertia, mass-moment of inertia and radius of gyration.	6-7
4th	Kinetics of a particle and a system of particles by the methods of force-mass-acceleration, work-energy, and impulse-momentum.	9-10
5th	Kinetics of a rigid body by the methods of force-mass-acceleration, work-energy, and impulse-momentum.	11-13
6th	Introduction to mechanical vibrations.	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	A review of statics of rigid bodies, moments, couples and equivalent force systems; types of structures, loads, supports and reactions reactions determinations of structures and frames	**8**	**4**	**2**	**2**	a1-1 &a1-2
Week-2	Apply the principle of equilibrium to problems to determine the reactions and construction the normal and shear forces, bending moments diagrams in beams and cantilevers).	**8**	**4**	**2**	**2**	a15-1, a15-2, a19-1, b1-1, b17-1, c6-1, d1-1 & c14-1
Week-3	Apply the principle of equilibrium to problems of solid mechanics to construct the normal and shear forces, bending moments diagrams in inclined beams and hinged beams.	**8**	**4**	**2**	**2**	a15-1, a15-2, a19-1 & c6-1
Week-4	Apply the principle of equilibrium to problems of solid mechanics to construct the normal and shear forces, bending moments diagrams in simple frames.	**8**	**4**	**2**	**2**	a15-1, a15-2, a19-1 & c6-1
Week-5	Apply the principle of equilibrium to problems of solid mechanics to construct the normal and shear forces, bending moments diagrams in hinged frames.	**8**	**4**	**2**	**2**	a15-1, a15-2, a19-1 & c6-1
Week-6	Determine the center of gravity, moment of inertia and the radius of gyration of areas.	**8**	**4**	**2**	**2**	a1-1 &a15-2, c6-1, c14-1 & d6-1
Week-7	Determine the mass-moment of	**8**	**4**	**2**	**2**	a1-1 &a15-2,

	inertia and the radius of gyration of bodies.					b16-1, c14-1 & d6-1
Week-8						
Week-9	Kinetics of a particle and a system of particles by the method of force-mass-acceleration.	**8**	**4**	**2**	**2**	a1-1, a1-2, b17-1 & c13-1
Week-10	Kinetics of a particle and a system of particles by the method of work-energy.	**8**	**4**	**2**	**2**	a1-1, a1-2, b16-1 & c14-1
Week-11	Kinetics of a particle and a system of particles by the method of impulse-momentum.	**8**	**4**	**2**	**2**	a1-1, a1-2, b17-1 & c13-1
Week-12	Kinetics of a rigid body by the method of force-mass-acceleration.	**8**	**4**	**2**	**2**	a1-1, a15-2, b17-1 & c13-1
Week-13	Kinetics of a rigid body by the methods of work-energy, and impulse-momentum.	**8**	**4**	**2**	**2**	a1-1, a15-2, b17-1 & c14-1
Week-14	Kinetics of a rigid body by the methods of force-mass-acceleration, work-energy, and impulse-momentum.	**8**	**4**	**2**	**2**	a1-1, a15-2, b17-1 & d1-1
Week-15	Study the characteristics of Force-Free- Undamped vibrating motion and determining mass-moment of inertia experimentally.	**8**	**4**	**2**	**2**	a1-1, a15-2, & d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modeling**	**Playing**
Knowledge & understanding	**a1-1**	**x**												
	a15-1	**x**			**x**									
	a15-2	**x**			**x**									
	a19-1	**x**		**x**	**x**									
Intellectual Skills	**b1-1**						**x**			**x**	**x**			
	b16-1	**x**	**x**	**x**	**x**	**x**			**x**					
	b17-1	**x**	**x**	**x**	**x**	**x**			**x**					
Professional Skills	**c6-1**	**x**									**x**			
	c13-1			**x**						**x**	**x**			
	c14-1			**x**						**x**	**x**			
General Skills	**d1-1**		**x**	**x**						**x**	**x**			
	d6-1		**x**	**x**		**x**				**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**		**x**									
	a5-1	**x**		**x**				**x**				**x**	
	a5-2	**x**			**x**								
	a19-1	**x**	**x**		**x**			**x**					
Intellectual Skills	**b1-1**	**x**	**x**	**x**	**x**			**x**				**x**	
	b16-1	**x**	**x**	**x**									
	b17-1	**x**	**x**		**x**								
Professional Skills	**c6-1**	**x**			**x**								
	c13-1	**x**											
	c14-1	**x**			**x**		**x**	**x**					
General Skills	**d1-1**			**x**	**x**		**x**					**x**	
	d6-1			**x**	**x**		**x**	**x**		**x**		**x**	

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**120**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**20**	**10%**	**16th**
Mid term written Examination1 (*Term Work*)	**20**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	
Tutorial and report assessment (*Term Work*)	**20**	**10%**	**weakly**
Total	**200**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students will be required to routinely use computer software to solve problems related to statics and dynamics. For example, using the MDSolids software to determine the shear force and bending moment diagrams. Also, to determine the centroid and moment of inertia for a body experimentally.

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports. Background information is required as part of the study. .

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- Irving H. Shames, "Engineering Mechanics- Statics and Dynamics'', Second Edition – Prentice-Hall of India Private Limited, New Delhi, 1971.
J.L. Meriam, "Engineering Mechanics- Statics and Dynamics'', John Wiley & Sons, Ins. Canada, 1978.
Ferdinand P. Beer – E. Russell johnston, Jr., Mechanics For Engineers – Dynamics, Third Edition – McGraw-Hill, Inc. Kogakusha, LTD, 1976.

13.3- Recommended books

-" Beer, E., Johnston, F., MECHANICS FOR ENGINEERS, McGraw-Hill"

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Course coordinator **Programme coordinator**

Dr. Badr M. Badr Abdelbary

Head of the Department
Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 1st ELEC.**

Course Specification

A- Basic Information

Title: ***Applied Mechanics*** ***Code Symbol:*** ***PRE117***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	20%	10%	60%	….	10%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with basic knowledge of applied mechanics, structure analysis, dynamics of particles and rigid bodies during their accelerated motion .As well as, this course provides the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems. This course also provides students, with the required skills of solving to dynamic problems of systems of particles through introducing the basis of plane motion of rigid bodies.

3- Course Objectives:

1- Demonstration of the knowledge and understanding the basic concepts of applied mechanics.
2- Definition of the requirements of strucure analysis and dynamics.
3- Realizing of the different types of vibration types through vibration theory.
4- Evaluation of the suitable dynamic principles for solving the engineering problems.
5- Analysis of different techniques for solving the engineering problems dealing with dynamics of machine elements.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contributes in achieving	A1, A15 and A19	B1, B16 and B17	C6, C13 and C14	D1and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain different dynamic methods for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A15- The specifications, programming and range of application of dynamic principles.	a15-1 Describe some methods of creating a desired dynamic analysis in engineering problems. a15-2 Define the basics concepts of applied mechanics which are required for molding and solving the engineering applications problems.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving some machine element problems by programming.
Intellectual skills	B1- Select appropriate mathematical and dynamicbased methods for modeling and analyzing problems.	b1-1 Create the desired dynamc methods for modeling and analyzing engineering problems.
	B16- Interpret engineering problems and apply dynamic principles for engineering design purposes	b16-1 Organize and interpret engineering problems using dynamic principles of motion to analyze the problems.
	B17- Use the principles of engineering mechanics in developing solutions to practical mechanical engineering problems.	b17-1 Construct a suitable dynamic analysis for developing the solutions of practical engineering problems.
Professional skills	C6- Use a wide range of analytical tools, techniques, equipment to the discipline.	c6-1 Employ a suitable dynamic understanding to the discipline .
	C13-Prepare engineering problems, and specialized technical reports and communicate accordingly.	c13-1 Apply the designed dynamic analysis to solve selected engineering problems .
	C14- Employ the traditional and modern dynamic analysis facilities in design and production processes.	c14-1 Use the designed dynamic analysis for developing solutions of practical problems .
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created dynamic analysis by working team.
	D6- Effectively manages tasks, time, and resources.	d6-1 Balance between dynamic experiments resources and laboratory time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Intrduction to applied mechanics	1
2nd	Analysis of strucures	2-4
3rd	Dynamics of a particle	5-7
4th	Dynamics of systems of particles	9-10
5th	Plane motion of rigid bodies	11-13
6th	Vibration of one degree of freedom systems	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Basic definitions of statics and dynamics	**4**	**2**	**1**	**1**	a1-1 & a15-1
Week-2	Thrust, shearing force and bending moment	**4**	**2**	**1**	**1**	a15-1, a15-2, a19-1, b1-1, b17-1, c6-1, c133-1 & c14-1
Week-3	Loading study for simple beams	**4**	**2**	**1**	**1**	a15-1, a15-2, a19-1 & c6-1
Week-4	Thrust and Shearing force diagrams and bending moment diagram	**4**	**2**	**1**	**1**	a15-1, a15-2, a19-1 & c6-1
Week-5	Equation of motion in different coordinates	**4**	**2**	**1**	**1**	a15-1, a15-2, a19-1 & c13-1
Week-6	Work and energy principle	**4**	**2**	**1**	**1**	a1-1 , c14-1, c16-1 & d6-1
Week-7	Impulse and momentum	**4**	**2**	**1**	**1**	a1-1 &a1-2, c13-1, c14-1 & d6-1
Week-8						
Week-9	Motion about the center of mass Work and energy principle	**4**	**2**	**1**	**1**	a1-1, b17-1 & c14-1
Week-10	Impact (collision)	**4**	**2**	**1**	**1**	a1-1, b16-1 & c6-1
Week-11	Kinetics of rigid bodies in plane motion	**4**	**2**	**1**	**1**	a1-1, b17-1 & c14 -1
Week-12	Work and energy principle	**4**	**2**	**1**	**1**	a1-1, b16-1 & c13-1
Week-13	Impulse and momentum	**4**	**2**	**1**	**1**	a1-1, b16-1 & c6-1
Week-14	Equivalent spring and damper constants	**4**	**2**	**1**	**1**	a1-1, b17-1 & c14-1
Week-15	Electrical analogue	**4**	**2**	**1**	**1**	a1-1& d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a15-1	**x**		**x**	**x**									
	a15-2	**x**		**x**										
	a19-1	**x**		**x**										
Intellectual Skills	**b1-1**	**x**	**x**		**x**		**x**						**x**	
	b16-1	**x**	**x**	**x**	**x**		**x**						**x**	
	b17-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	**c6-1**	**x**									**x**			
	c13-1	**x**												
	c14-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x	x	x	x								
	a15-1	x			x								
	a15-2	x											
	a19-1	x	x	x									
Intellectual Skills	**b1-1**	x	x	x	x						x		
	b16-1	x	x		x								
	b17-1	x	x	x	x						x		
Professional Skills	**c6-1**	x		x									
	c13-1	x		x			x				x		
	c14-1	x		x									
General Skills	**d1-1**										x		
	d6-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	
Tutorial and report assessment (*Term Work*)	**20**	**20%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare the applied dynamics laws of motion for solving some mechanical engineering problems and Creating the desired dynamic analysis.

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

Heppler,R.C., 1995"Engineering Mechanics-Dynamics:,prentice Hall International Editions,A Simon & Schuster company,Englewood Cliffs,New Jersy.

Heppler,R.C., 1983"Engineering Mechanics-statics:,Macmillan publishing company,New York

13.3- Recommended books

Beer,F.P. and Johnston Jr.E.R.,1962,Vector Mechanics for Engineers-Statics and Dynamics",McGraw-Hill Book Company,Inc.,New York

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Course coordinator **Programme coordinator**

Dr. Raafat Abou- El nasr

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 1st mech. power**

Course Specification

A- Basic Information

Title: ***Applied Mechanics*** ***Code Symbol:*** ***PRE118***
Element of program: ***Major*** ***Date of specification approval:*** ***2006***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2012***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*1*	*1*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	40%	50%	….	10%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with basic knowledge of applied mechanics, structure analysis, dynamics of particles and rigid bodies during their accelerated motion .As well as, this course provides the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems. This course also provides students, with the required skills for solving dynamic problems dealing with particles through introducing the basis of plane motion of rigid bodies.

3- Course Objectives:

1-Demonstration of the knowledge and understanding the basic concepts of applied mechanics.
2-Definition of the requirements of strucure analysis and dynamics.
3-Realizing of the different types of vibration types through vibration theory.
4-Evaluation of the suitable dynamic principles for solving the engineering problems.
5-Analysis of different techniques for solving the engineering problems dealing with dynamics of machine elements.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contributes in achieving	A1 and A4	B2 and B7	C1	D1

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain different dynamic methods for solving engineering problems using Concepts and theories of mathematics.
	A4- Characteristics of engineering materials related to the discipline.	a4-1 Define the basics concepts of applied mechanics considering Characteristics of engineering materials.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking	b2-1 Create the desired dynamc methods for modeling and analyzing engineering problems.
	B7- Solve engineering problems, often on the basis of limited and possibly contradicting information	b7-1 Organize and interpret engineering problems using dynamic principles of motion to analyze the problems.
Professional skills	C1- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems	c1-1 Employ a suitable dynamic concepts in order to understanding the discipline .
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created dynamic analysis by working team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Intrduction to applied mechanics	1
2nd	Analysis of strucures	2-4
3rd	Dynamics of a particle	5-7
4th	Dynamics of systems of particles	9-10
5th	Plane motion of rigid bodies	11-13
6th	Vibration of one degree of freedom systems	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Basic definitions of statics and dynamics	**5**	**3**	**1**	**1**	a1-1
Week-2	Thrust, shearing force and bending moment	**5**	**3**	**1**	**1**	a4-1 &a4-1
Week-3	Loading study for simple beams	**5**	**3**	**1**	**1**	b2-1&c1-1
Week-4	Thrust and Shearing force diagrams and bending moment diagram	**5**	**3**	**1**	**1**	b7-1&c1-1
Week-5	Equation of motion in different coordinates	**5**	**3**	**1**	**1**	a1-1
Week-6	Work and energy principle	**5**	**3**	**1**	**1**	a1-1&a4-1
Week-7	Impulse and momentum	**5**	**3**	**1**	**1**	a4-1&d1-1
Week-8						
Week-9	Motion about the center of mass Work and energy principle	**5**	**3**	**1**	**1**	c1-1 & b2-1 &b7-1
Week-10	Impact (collision)	**5**	**3**	**1**	**1**	a1-1 & b7-1 &c1-1
Week-11	Kinetics of rigid bodies in plane motion	**5**	**3**	**1**	**1**	a4-1&a4-1 & b2-1&b7-1
Week-12	Work and energy principle	**5**	**3**	**1**	**1**	a1-1& a4-1 & b7-1
Week-13	Impulse and momentum	**5**	**3**	**1**	**1**	a1-1& a4-1 & b7-1
Week-14	Equivalent spring and damper constants	**5**	**3**	**1**	**1**	a1-1&c13-1 &b2-1
Week-15	Differential equation of motion of the system	**5**	**3**	**1**	**1**	b2-1 &a4-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a4-1	**x**		**x**	**x**									
Intellectual Skills	**b2-1**	**x**	**x**				**x**						**x**	
	b7-1	**x**	**x**	**x**	**x**		**x**						**x**	
Professional Skills	**c1-1**	**x**									**x**			
General Skills	**d1-1**	**x**	**x**											

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**	**x**	**x**								
	a4-1	**x**											
Intellectual Skills	**b2-1**	**x**	**x**	**x**	**x**						**x**		
	b7-1	**x**	**x**										
Professional Skills	**c1-1**	**x**		**x**	**x**								
General Skills	**d1-1**	**x**	**x**										

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**75**	**60%**	**16th**
End of term assessment (*Oral*)	**12.5**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**12.5**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**0%**	
Tutorial and report assessment (*Term Work*)	**25**	**20%**	**weakly**
Total	**125**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare the applied dynamics laws of motion for solving some mechanical engineering problems and Creating the desired dynamic analysis.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of applied mechanics

13.2- Essential books (text books)

- Heppler,R.C., 1995"Engineering Mechanics-Dynamics:,prentice Hall International Editions,A Simon & Schuster company,Englewood Cliffs,New Jersy.
-Heppler,R.C., 1983"Engineering Mechanics-statics:,Macmillan publishing company,New York

13.3- Recommended books

Beer,F.P. and Johnston Jr.E.R.,1962,Vector Mechanics for Engineers-Statics and Dynamics",McGraw-Hill Book Company,Inc.,New York

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Course coordinator **Programme coordinator**

Assoc. Prof. Ahmed Hamada

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011

MENOUFIYA UNIVERSITY
Faculty of Engineering
Shebin El-Kom
Prod. Eng& Mech. Design Dept.

Academic Year: 2011/2012
First Semester

Course Specification

A- Basic Information

Title: ***Forming Processes*** ***Code Symbol:*** ***PRE 121***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20%	80%	---	---	---	100%

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student with basics of metal forming processes. The course provides the student with required skills of identifying the different metal forming processes. This course will also provide students with the required skills of choosing between the different forming metal processes. The course helps the students to work with mechanical design and manufacturing systems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic conceptes of different metal metal forming processes.
2. Definition of the requirements of different metal forming processes.
3. Realizing the difference between different forming processes.
4. Analysis of different techniques for modeling the forming processes.
5. Work with mechanical design and manufacturing systems

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 and A13	B2, B11 and B18	C7 and C15	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1):- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain the different methods of analyzing the engineering problems
	A3):-Characteristics of engineering materials related to the discipline.	a3- 1 Describe different methods of evaluating the material behaviour.
	A13):- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1 Explain different metal forming processes
Intellectual skills	B2):-Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Formulate the different rquations suitable for solving engineering problems.
	B11):- Analyze results of numerical models and assess their limitations	b11-1 Create a criterion suitable for studying the numerical models .
	B18): - Select appropriate manufacturing method considering design requirements	b18-1 Compare and judge the different metal forming processes.
Professional skills	C7):-Apply numerical modeling methods to engineering problems	c7-1 Apply numerical modeling methods to engineering problems
	C15);- Use basic workshop equipment safely.	C15-1 Use basic workshop equipment safely
General skills	D1):- Collaborate effectively within multidisciplinary team	d1-1 Judge the obtained numerical data
	D9):- Refer to relevant literatures	d9-1 Refer to relevant literature

6- Course Topics.

Topic No.	General Topics	Weeks
1	Casting processes	1-6
2	Basics of plastic deformation	7
3	Analysis of forging process	8-9
4	Analysis of rolling process	10-11
5	Analysis of extrusion process	12-13
6	Sheet metal forming	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Definition of casting process	**2**	**-**	**-**	**4**	a1-1 & a13-1
Week-2	Metal casting processes	**2**	**-**	**-**	**4**	a3 -1& a13-1&b2-1 &c7-1
Week-3	Metal melting processes	**2**	**-**	**-**	**4**	a1-1 & a13-1
Week-4	Design of casting processes	**2**	**-**	**-**	**4**	a3-1 & a13-1 &b2-1 &c7-1
Wee-5	Design of permanent dies	**2**	**-**	**-**	**4**	a3-1 & b6-1
Week-6	Methods of casting inspection	**2**	**-**	**-**	**4**	a3-1 & b11-1
Week-7	Basics of metal forming process through plastic deformation	**2**	**-**	**-**	**4**	a13-1 & c15-1
Week 8						
Week-9	Definition different types of forging processes/Analysis of forging process.	2	-	-	**4**	b2-1 & c3-1 & c7-1
Week-10	Definition of different types of rolling processes.	2	-	-	**4**	b2-1& c3-1& c7
Week-11	Analysis of forging process	**2**	**-**	**-**	**4**	b2-1& b5-1 & c7-1
Week-12	Definition of different types of rolling processes	**2**	**-**	**-**	**4**	b18-1&c7-1& d1-1
Week-13	Analysis of forging process.	**2**	**-**	**-**	**4**	b18-1& c15-1
Week-14	Definition of different types of sheet metal processes	**2**	**-**	**-**	**4**	b11-1& d9-1
Week-15	Analysis of forging process	**2**	**-**	**-**	**4**	b11-1& b6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**				**x**								
	a3-1	**x**				**x**								
	a13-1	**x**				**x**								
Intellectual Skills	**b2=1**	**x**				**x**	**x**						**x**	
	b11-1	**x**		**x**		**x**	**x**						**x**	
	b18-1	**x**		**x**		**x**	**x**						**x**	
Professional Skills	**c7-1**	**x**		**x**		**x**					**x**			
	c15-1	**x**		**x**										
General Skills	**d1-1**			**x**						**x**	**x**			
	d9-1			**x**						**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**		**x**							**x**		
	a13-1	**x**		**x**							**x**		
	a13-1	**x**		**x**							**x**		
Intellectual Skills	**b2-1**	**x**		**x**							**x**		
	b11-1	**x**		**x**							**x**		
	b8-1	**x**		**x**							**x**		
Professional Skills	**c7-1**	**x**		**x**						**x**	**x**		
	c15-1	**x**		**x**						**x**	**x**		
General Skills	**d1-1**		**x**							**x**	**x**		
	d9-1		**x**							**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**15**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**15**	**10%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**15**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**0**	**0%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learni

A. laboratory Usage:

Students are expected to prepare their technical works.

B. Library Usage:

Students should be encouraged to use library text books in the project.

13- List of references:

13.1- Course notes

- Notes of Forming Processes.

13.2- Essential books (text books)

-"Manufacturing Processes for Engineering Materials", 4^{th} Edition , S. Kalpakjian and S.R. Schmid, Pearson Education Inc., 2003.

13.3- Recommended books

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Course coordinator **Programme coordinator**

2-Prof. Dr. Mahmoud Abo-Elkhier

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- *Basic Information*

Title: ***Engineering Economy*** ***Code Symbol:*** ***PRE* 122**
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	40%	50%	-	10%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with the basic knowledge of mathematics, science and engineering concepts to the solution of engineering economy problems. As well as, this course will provide the student with the ability to use techniques, skills, and appropriate engineering tools necessary for engineering economy. This course will also Identify, formulate and solve fundamental engineering economy problems

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concepts and details of machining equipments including conventional and non-conventional machines.**
2. **Design a system; component and process to meet the required needs within realistic constraints.**
3. **Identify, formulate and solve fundamental engineering problems**
4. **Work with mechanical design and manufacturing systems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	**A1, A5, A7 & A20**	**B1, B5, B9 & B10**	**C1, C7& C12.**	**D6 & D8**

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to the solution of engineering problems	a1-1 Explain the engineering economy techniques and concepts to the solution of the engineering problems
		a1-2 Compare between the different engineering economy techniques
	A5- Methodologies of solving engineering problems, data collection and interpretation	a5-1 Define the basics concepts of the engineering theories that required for solving the engineering applications problems
	A-7 Business and management principles relevant to engineering	a7-1.discuss the principles of Business and management related to the engineering
	A20 Management and business techniques and practices appropriate to engineering industry	a20-1 Define the business techniques and practices of the Management and business supported the producer engineers
Intellectual skills	B1 Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Create the desired program dealing with the methods for modeling and analyzing engineering problems.
	B5 Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b5-1 Design the suitable programs to use the principles of mathematics, and science to solve the practical engineering economy problems.
	B9 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact	b9-1 Design the suitable method to Judge engineering decisions considering balanced costs
	B10 Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1 Relate the economic management with the design
Professional skills	C1 Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Use the knowledge of mathematics and engineering practice in solving the engineering problems.
	C7 Apply numerical modeling methods to engineering problems.	c7-1 Employ the numerical modeling methods in engineering.
	C12 Prepare and present technical reports	c19-1. Construct the technical reports.
General skills	D6 Balance between resources and time	d6-1 Balance between the facilities resources and programming time
	D8 Acquire entrepreneurial skills	d2-1 improve the entrepreneurial skills

6- Course Topics.

Topic No.	General Topics	Weeks
1st	The nature of engineering economy Cost concepts	1-2
2nd	Time value of money: Cash flow	3-4
3rd	Comparison of alternatives	5-7
4th	Decision making and breakeven piont	8-11
5th	Depreciation methods	12-13
6th	Replacement analysis	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	The nature of engineering economy	**6**	**4**	**2**		a1-1 &d8-1
Week-2	Cost concepts	**6**	**4**	**2**		a1-1 , a7-1 &b5-1
Week-3	Cash flow: single payment, uniform series payments	**6**	**4**	**2**		a5-1 , a7-1 &b5-1
Week-4	Series of cash flow, gradient uniform series, uniform infinite series,	**6**	**4**	**2**		a5-1 , a7-1 &b5-1
Week-5	Comparison of alternatives: payback period, present worth value	**6**	**4**	**2**		a1-1 , a7-1 &b5-1
Week-6	Equivalent uniform value, internal rate of return	**6**	**4**	**2**		a7-1 , b1-1 &c7-1
Week-7	Benefit-cost ratio, inflation	**6**	**4**	**2**		a7-1 , b1-1 &c7-1
Week-8						
Week-9	Decision making: decision under certainty, decision under risks	**6**	**4**	**2**		b9-1, c1-1&d2-1
Week-10	Decision under uncertainty, decision trees	**6**	**4**	**2**		b9-1, c1-1&d2-1
Week-11	Breakeven point analysis	**6**	**4**	**2**		b9-1, c1-1&d2-1
Week-12	Depreciation methods: Straight line method, declining balance method	**6**	**4**	**2**		a5-1, a20-1, c12-1&d8-1
Week-13	Increasing decline method, sum of years digit, service output method of depreciation	**6**	**4**	**2**		a5-1, a20-1, c12-1&d8-1
Week-14	Replacement analysis	**6**	**4**	**2**		a5-1, a20-1, c12-1&d8-1
Week-15	Replacement analysis	**6**	**4**	**2**		a5-1, a20-1, c12-1&d8-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**	**x**								
	a5-1	**x**		**x**	**x**	**x**								
	a7-1	**x**		**x**	**x**	**x**								
	a20-1	**x**		**x**	**x**	**x**								
Intellectual Skills	**b1-1**	**x**		**x**	**x**	**x**								
	b5-1	**x**		**x**	**x**	**x**								
	b9-1	**x**		**x**	**x**	**x**								
Professional Skills	**c1-1**	**x**		**x**	**x**	**x**								
	c7-1	**x**		**x**	**x**	**x**								
	c12-1	**x**		**x**	**x**	**x**								
General Skills	**d6-1**	**x**		**x**	**x**	**x**								
	d8-1	**x**		**x**	**x**	**x**								

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	Tutorial Assessment	Model Exams Assessment	Report Assessment	Quiz assessment	Presentation Assessment	Discussion	Project Assessment	Home Exam	Monitoring
Knowledge & Understanding	a1-1	x					x			x			
	a5-1	x					x			x			
	a7-2	x					x			x			
	a20-1	x					x			x			
Intellectual Skills	b1-1	x					x			x			
	b5-1	x					x			x			
	b9-1	x					x			x			
	b10-1	x					x			x			
Professional Skills	c1-1	x					x			x			
	c7-1	x					x			x			
	c12-1	x					x			x			
General Skills	d6-1	x					x			x			
	d8 -1	x					x			x			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**66.6%**	**16th**
End of term assessment (*Oral*)	**-**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**-**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**15**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**20**	**13.4%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

.**Library Usage:**

Students should be encouraged to use library technical resources in the preparation of essential reports.

13- List of references:

13.1- Course notes

- Notes of engineering economy

13.2- Essential books (text books)

- white, J., Agee M., and Case A." Engineering Economy Analysis", 3rd Edition, John Wiley and Sons, 1989.
- Ammar, M. A." Feasibility studies for Engineering", 3rd Edition, Faculty of Engineering, Tanta University, Egypt, 2003.

13.3- Recommended books

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Course coordinator **Programme coordinator**

Dr M. Sharaf

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

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

Course Specification

A- Basic Information

Title: ***Computer Applications (1)*** ***Code Symbol:*** ***PRE 123***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	---	20%	80%	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to Give the students a sufficient knowledge of computer programming and analyzing computer programs through using the Flow-Charts. As well as, this course provide the student with needed skills of ability for modeling and analyzing an arithmetic or logic problems.

3- Course Objectives:

1. **Demonstration of the knowledge and basic concepts of computer programming.**
2. **Definition of the requirements of computer programming associated with Flow-Charts.**
3. **Evaluation of the suitable software for solving the engineering problems.**
4. **Analysis of different techniques for solving the engineering problems dealing with different engineering applications.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A15 and A19	B1, B16 and B17	C6, C13 and C14	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Define the basics concepts of programming languages with focusing the FORTRAN language and computer applications.
	A15- The specifications, programming and range of application of CAD and CAD/CAM facilities	a15-1 Discuss the effective soft-ware for solving engineering problems. a15-2 Describe some methods of creating a desired soft-ware for solving engineering problems.
	A19- Engineering design principles and techniques	a19-1 Explain various techniques for solving most arithmetic or logic problems.
Intellectual skills	B1- Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Create the desired computer programs through using principals of flowcharts and innovative program design.
	B16- Interpret numerical data and apply analytical methods for engineering design purposes	b16-1 Organize and interpret numerical data using computer programs to analyze the problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design suitable computer programs to solve the practical engineering problems according to the principals of engineering science.
Professional skills	C6- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required comp. programs.	c6-1 Test different computer programming techniques for solving the problems. c6-2 Employ a suitable techniques and software packages pertaining to the discipline and develop required computer programs.
	C13-Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly.	c13-1 Apply the designed computer programs to solve selected engineering problems and to draw the results of solving these problems.
	C14- Employ the traditional and modern CAD and CAD/CAM facilities in design and production processes.	c14-1 Use the designed computer programs for developing solutions of practical problems comparing the results with the output of traditional and modern CAD/CAM design.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D6- Effectively manage tasks, time, and resources.	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Study of the Fortran language	1-3
2nd	Flow charts	4-5
3rd	Program design in Fortran language	6-7
4th	Numerical methods	9-10
5th	Engineering applications using Fortran language	11-13
6th	Statistical applications	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Fundamental of Programming languages	**4**	**2**	**--**	**2**	a1-1 &a15-2
Week-2	Fundamental of FORTRAN Programming language	**4**	**2**	**--**	**2**	a15-1 & a15-2 &a19-1
Week-3	Advantages of FORTRAN language	**4**	**2**	**--**	**2**	b16-1&c13-1
Week-4	Fundamental of Float chart	**4**	**2**	**--**	**2**	b17-1&c14-1
Week-5	Importance of Float chart through Programming	**4**	**2**	**--**	**2**	a15-1 & a15-2
Week-6	Program design in Fortran language	**4**	**2**	**--**	**2**	a15-1&a15-2
Week-7	Using Programming and Float chart for some engineering problems	**4**	**2**	**--**	**2**	a1-1& &b16-1 d1-1
Week-8						
Week-9	Fundamental of Numerical Methods	**4**	**2**	**--**	**2**	c6-1 & b1-1 &c13-1&c14-1
Week-10	Using another programming language like Visual-Basic for solving some problems dealing with numerical methods	**4**	**2**	**--**	**2**	a1-1 & b17-1 c13-1&c14-1
Week-11	Solving problems dealing with stress and strain evaluations	**4**	**2**	**--**	**2**	a15-1&a15-2 & b16-1&b17-1
Week-12	Using programming for Solving machine design problems	**4**	**2**	**--**	**2**	a1-1& a15-1& a19-1 & b17-1
Week-13	Using programming for Solving theory of machines problems	**4**	**2**	**--**	**2**	a1-1&a19-1 & b17-1 &a12-1
Week-14	Using Fortran language or Visual-Basic for solving statistical engineering problems	**4**	**2**	**--**	**2**	a15-2&c13-1 & &b16-1&d1-1
Week-15	Using programming language for solving advanced statistical problems	**4**	**2**	**--**	**2**	a15-1& a15-2 b16-1 && d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**										
	a15-1	**x**		**x**										
	a15-2	**x**		**x**										
	a19-1	**x**		**x**										
Intellectual Skills	**b1-1**	**x**	**x**				**x**						**x**	
	b16-1	**x**	**x**	**x**			**x**						**x**	
	b17-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	**c6-1**	**x**									**x**			
	c6-2	**x**									**x**			
	c13-1	**x**												
	c14-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x	x	x									
	a15-1	x											
	a15-2	x											
	a19-1	x	x	x									
Intellectual Skills	**b1-1**	x	x	x							x		
	b16-1	x	x										
	b17-1	x	x	x							x		
Professional Skills	**c6-1**	x		x									
	c6-2	x		x									
	c13-1	x		x			x				x		
	c14-1	x		x									
General Skills	**d1-1**										x		
	d6-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare the flow charts and the programming code for solving some mechanical engineering problems. Creating the desired softwares and test these programs.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of Computer Applications

13.2- Essential books (text books)

-

13.3- Recommended books

- "Programming with FORTRAN" seymour lipschutz and Arhur poe, SCHAUM's outline series .
- "Programming with Visual-Basiv 6" Magdy Abo-ElAtta,Compu- Science series , Cairo, Egypt.

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Course coordinator **Programme coordinator**

Dr. Khaled M. Khader

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term:2 nd Term**
Minoufiya University **Academic level: FIRST PROD.**

Course Specification

A- Basic Information

Title: ***Treatment of industrial waste*** ***Code Symbol:*** **PRE 124**
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of treatment of environmental pollution and relations between human beings and surrounding environment and applications in different informative aspects to study how to control environment elements to protect society from harmful effects as a result to human activates. The aims of this course are to provide the student, with enough knowledge of different methods to treat water, air and atmosphere pollution from harmful industrial wastes. it also teach students different methods and techniques to treat solid wastes,water,air ,noise and radiation.

3- Course Objectives:

1. Demonstration of the knowledge and understanding relation between human beings and surrounding and applications to study how to control environment elements.
2. Ability to analyze and solve pollution problems
3. Applied science in the field of treatment of industrial wastes
4. Practical skills in using different techniques in filed treatment of industrial wastes

4- Relationship between the course and the programmed

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A9 and A11	B2 and B9	C1 and C8	D1 and D6 and

5- Course Intended Learning Outcomes (Ills)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A9):- Topics related to humanitarian interests and moral issues.	a9-1- Define the main principles of stresses and strain.
	A11):- Professional ethics and impacts of engineering solutions on society and environment	a11-1 Describe behaviour of materials
Intellectual skills	B2):- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Formulate the different rquations suitable for solving engineering problems.
	B9):- Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1 Create a criterion suitable for studying the performance of the components .
Professional skills	C1):- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Employ a suitable techniques to chose a suitable test to chick the mechanical properties of materials .
	C8):- Apply safe systems at work and observe the appropriate steps to manage risks	c8-1 Apply the designed tests programs to solve selected engineering problems and to draw the results of solving these problems.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the experimental test by working team.
	D6):- Effectively manage tasks, time, and resources	d6-1 Balance between test facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Environmental system	1
2nd	Environment and pollution	2-4
3rd	Radiation pollution	5-7
4th	Treatment of solid wastes	8-10
5th	Engineering and environment considerations	11-13

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	Tut.	Lab.	
Week-1	Environmental system	**3**	**2**	**1**	**…**	c1-1&a9-1& a11-1
Week-2	Types and sources of pollution	**3**	**2**	**1**	**…**	a11-1& a9-1 &d1-1& &d6-1
Week-3	Water and noise pollution	**3**	**2**	**1**	**…**	c1-1&b2-1 & b9-11
Week-4	Water pollution	**3**	**2**	**1**	**…**	b9-1 & a11-1& d-1
Week-5	Types of radiation	**3**	**2**	**1**	**…**	d6-1 &c1-1& b9-1
Week-6	Nuclear energy and atomic reactions	**3**	**2**	**1**	**…**	&c8-1& b9-1
Week-7	Protection and treatment of radiation pollution	**3**	**2**	**1**	**…**	&d1-1& d6-1
Week-8						
Week-9	Effect of Solid wastes Solid wastes components	**3**	**2**	**1**	**…**	b9-1 & a11-1& d6-1
Week-10	Treatment of solid wastes	**3**	**2**	**1**	**…**	&c8-1& b9-1
Week-11	Natural environmental considerations	**3**	**2**	**1**	**…**	&d1-1& d6-1
Week-12	social environmental considerations	**3**	**2**	**1**	**…**	d6-1 &c1-1& b9-1
Week-13	Civilian service centers	**3**	**2**	**1**	**…**	&c8-1& b9-1& d6-1
Week-14	exam	**3**	**2**	**1**	**…**	d6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a9-1**	**x**		**x**		**x**								
	a11-1	**x**	**x**	**x**			**x**	**x**						
Intellectual Skills	**b2-1**													
	b9-1													
Professional Skills	**c1-1**	**x**						**x**			**x**			
	c8-1	**x**		**x**										
General Skills	**d1-1**		**x**							**x**				
	d6-1		**x**							**x**				

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a9-1**	**x**	**x**	**x**									
	a11-1	**x**											
Intellectual Skills	**b2-1**	**x**	**x**	**x**							**x**		
	b9-1	**x**	**x**										
Professional Skills	**c1-1**	**x**		**x**									
	c9-1	**x**		**x**			**x**				**x**		
General Skills	**d1-1**										**x**		
	d6-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**50**	**66.66%**	**16th**
End of term assessment (*Oral*)	**5**	**6.66%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**20%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**5**	**6.66%**	**weakly**
Total	**75**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of mechanical properties

13.2- Essential books (text books)

energy conservation and environmental protection,(combustion Analyzer),case study.volume1,January 1993

13.3- Recommended books

-simplifying environment permitting in the U.S by:Christopher A.Hartwell.Strategic Planning of energy and environment ,Vol.19 No.2,1999 .

****

Course coordinator **Programme coordinator**

car**Dr. Ahmed AbdelHamid hamada**

car**Dr. Ahmed Embaby**

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2ND Term**
Minoufiya University **Academic level: 1st POWER.**

Course Specification

A- Basic Information

Title: Theory of Machine ***Code Symbol:*** PRE 126
Element of program: Major ***Date of specification approval:*** 2012
Department offering the course: Prod. Eng. & Mech. Design. Dept. ***Bylaw*** 2006

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	----	40%	60%	---	-----	---	100%

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student, with an enough knowledge to identify, formulate and solve fundamental engineering problems relating to kinematics (location, displacement, velocity and acceleration) of various machine parts. It also this course provides the required skills to use mathematics, physics, engineering sciences and systems analysis tools to produce suitable design of different parts of machines.

3- Course Objectives:

1. Definition of kinematics and components of various plane motion mechanisms.
2. Analysis of kinematics of plane motion mechanisms.
3. Evaluation of static and dynamic force analysis of mechanisms and flywheels.
4. Construction of cams and different gear train arrangements.
5. Conducting static and dynamic balancing of rotating parts of machines.
6. Introduction to the process of machine components design.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1 and A4	B2, and B5	C1	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Demonstrate Concepts and theories of mathematics and sciences, appropriate to the mechanical power engineering.	a1-1 Define the basics concepts of applied mechanics which are required for molding and solving the engineering applications problems related to mechanical power engineering.
	A4- List Principles of design including elements design, process and/or a system related to mechanical power engineering.	a4-1 Discuss different engineering techniques using principles of design for solving machine element problems
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking	b2-1 Create appropriate analytical solutions for various engineering topics based on analytical thinking.
	B5- Assess and evaluate the characteristics and performance of components, systems and processes	b5-1 Create the suitable solution of engineering problems by using evaluation of the performance of components.
Professional skills	C1- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems	c1-1 Employ a suitable numerical techniques using knowledge of mathematics, and science to model different machine components.
General skills	D3- Communicate effectively.	d3-1 Improve and develop the communication systems of the economical studies.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Kinematics of mechanisms motion in machinery	1-2
2nd	Velocities & accelerations analysis	3-5
3rd	Force analysis of machinery	6-7
4th	Cam systems.	9
5th	Turning moment diagram and flywheel	10-11
6th	Gear geometry and Gear trains	12-13
7th	Balancing of Rotating Masses	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Definitions - Kinematics of links – Kinematics of pairs – Kinematics of chains.	**5**	**3**	**2**	**---**	a1-1 &a4-1
Week-2	Mechanisms - Motion of simple machines.	**5**	**3**	**2**	**---**	a1-1 & b5-1 &a4-1
Week-3	Velocity analysis (Analytical and Graphical).	**5**	**3**	**2**	**---**	a1-1&b2-2 &c1-1
Week-4	Acceleration analysis (Analytical).	**5**	**3**	**2**	**---**	a4-1 & b2-2
Week-5	Acceleration analysis (Graphical).	**5**	**3**	**2**	**---**	a4-1&c1-1
Week-6	Static force analysis.	**5**	**3**	**2**	**---**	a1-1 &b2-1 &c1-1
Week-7	Dynamic force analysis and torque.	**5**	**3**	**2**	**---**	a1-1 &b2-1 &c1-1
Week-8	**Midterm Written Examination**					
Week-9	Cam systems.	**5**	**3**	**2**	**---**	a1-1 &a4-1
Week-10	Turning moment diagrams.	**5**	**3**	**2**	**--**	a1-1 &a4-2 &b2-1
Week-11	Flywheels.	**5**	**3**	**2**	**---**	c1-1 &d3-1
Week-12	Gear geometry.	**5**	**3**	**2**	**---**	a1-1 &a4-1
Week-13	Gear trains.	**5**	**3**	**2**	**---**	a4-1 &b5-1 &c1-1
Week-14	Balancing of rotating masses.	**5**	**3**	**2**	**---**	a1-1 & a4-1&c1-1
Week-15	Balancing of several masses rotating in different planes.	**5**	**3**	**2**	**---**	a1-1 &a4-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**	**x**				**x**			**x**	
	a4-1	**x**		**x**									**x**	
Intellectual Skills	**b2-1**	**x**		**x**	**x**		**x**							
	b5-1	**x**		**x**									**x**	
Professional Skills	**c1-1**	**x**		**x**	**x**								**x**	
General Skills	**d3-1**	**x**												

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

For low capacity students	Give them the opportunity for my office meetings.
	Repeat the explanation of some of the material .
	Assign a teaching assistance to follow up the performance of this group of students.
	Give them some advanced topics to be searched using the internet and conduct presentation.
	Encourage them to attend seminars of suitable research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**		**x**		**x**						
	a4-1	**x**											
Intellectual Skills	**b2-1**	**x**	**x**		**x**		**x**				**x**		
	b5-1	**x**	**x**										
Professional Skills	**c1-1**	**x**			**x**		**x**						
General Skills	**d3-1**										**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**85**	**68%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	
End of term laboratory examination (*Lab*)	**0**	**0%**	
Mid term written Examination1 (*Term Work*)	**10**	**8%**	**6th**
Mid term written Examination 2 (*Term Work*)	**10**	**8%**	**10th**
Tutorial and report assessment (*Term Work*)	**20**	**16%**	**weakly**
Total	**125**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of his reports and to search about more knowledge in these subjects.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- Khurmi, R. et al.; Theory of Machines, 14th ed.; S. Chand & Co. Ltd., New Dehli 2005;
-Shigley,J.E.,and Mischke,C.R."Mechanisms"McGraw-Hillcomp.,1990.
- Mechanisms and Dynamics of Machinery ,Hamilton H.Mabie,and Charles,F.Reinholtz,John Wiely&sons ,Inc.,USA.,1987

13.3- Recommended books

- Dan B. Marghitu, Mechanical Engineer's Handbook, ACADEMIC PRESS, 2001
-Jack P. Holman, John R. Lloyd, DESIGN OF MACHINERY,
AN INTRODUCTION TO THE SYNTHESIS AND ANALYSIS OF MECHANISMS AND MACHINES, Second Edition McGraw-Hili Series in Mechanical Engineering, *1999*

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Course coordinator **Programme coordinator**
Prof. Dr. Sobhy Ghoneam

Head of the Department
Prof. Taha El-Taweel

Date: 1/10/2011.

Produation Eng& Mech. Design Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 1st ELEC.**

Course Specification

A- Basic Information

Title: ***Economy*** ***& Project Management*** ***Code Symbol:*** ***PRE 127***
Element of program: ***Major/ minor*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept..** ***Bylaw*** ***2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the Student, upon completing the Electrical Engineering Programme, with the basic knowledge and skills of how to assess the projects economically. This course will also provide students with the ability to select the appropriate project among alternatives. The skill of setting cash flow diagram of different alternative configurations is also provided. It is also be able to develop Knowledge of different applications of economic and project management.

3- Course Objectives:

1. **Understand the basic concepts of engineering economics.**
2. **Definition of the requirements of discounted cash flow diagram.**
3. **Realizing of the different methods of depreciation for equipments.**
4. **Evaluation of the suitable replacement analysis based on economic life.**
5. **Analysis of different techniques for the economical assessment of projects.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A7, and A16	B8,B9, and A10	C1	D3, D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A7- Know business and management principles relevant to engineering.	a7-1 Define the basics economical concepts of which are required for molding and solving the discounted cash flow problems.
	A16- Recognize the constraints that limits mechanical power engineers ability to reach an optimum solution.	a16-1 Discuss different methods for assessment any project to reach the appropriate alternative.
Intellectual skills	B8- Select and appraise ICT tools to a variety of engineering problems .	b8-1 Design a suitable computer programs for developing the solutions of economical problems.
	B9-Judge engineering decisions considering balanced costs , benefits, safety, quality, reliability, and environmental impact.	b9-1 Construct the decision criteria for mutually exclusive alternatives.
	B10-Incorporate economic, societal, environmental and risk management dimensions in design.	b10-1 Create an effective technique for applying replacement analysis based on economic life for the equipments.
Professional skills	C1- Apply knowledge of mathematical, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Use depreciation methods to compute the annual depreciation and book value for equipments.
General skills	D3- Communicate effectively.	d3-1 Improve and develop the communication systems of the economical studies.
	D7- Search for information and engage in life-long self learning mechanical power.	d7-1 Search for economical information and its effected on the society.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Cash flow	1-2
2nd	Discounted cash flow	3-4
3rd	Comparison of alternatives	5-7
4th	Break- even analysis	9
5th	Depreciation methods	10-11
6th	Decision making	12-13
7th	Replacement Analysis	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	- Fundamental Engineering economic Concepts – Direct and indirect costs. – Variable and fixed costs.	2	2	-	-	a7-1
Week-2	- Simple interest versus Compound interest - Nominal and effective interest rate.- The time value of money.- Cash flow diagram.	2	2	-	--	a7-1
Week-3	Development of Interest formulas - Single cash flow formulas -Uniform Series Payments	2	2	-	-	a7-1
Week-4	- Gradient uniform series - Uniform Infinite series	2	2	-	-	a7-1
Week-5	- Minimum Attractive Rate of return -Bases for comparison of alternatives -Payback period method.	2	2	-	-	a16-1& b8-1
Week-6	- Present Worth value method. - Equivalent uniform value method.	2	2	-	-	a16-1& b8-1
Week-7	- Internal rate of return method - Benefit-Cost ratio method.	2	2	-	-	a16-1& b10-1
Week-8	Midterm written examination					
Week-9	Break-even Analysis: single, Two and Multiple alternatives	2	2	-	-	b9-1
Week-10	- Depreciation and its value - Classifications of Depreciation - Annual depreciation and book value calculation methods: * Straight Line Method.	2	2	-	-	c1-1
Week-11	*declining Balance Method. *Sum-of the Years-Digits Method.	2	2	-	-	c1-1&d3-1
Week-12	- Decision making among alternatives - types of investment proposals - Mutually exclusive alternatives and decision making.	2	2	-	-	b9-1&d7-1
Week-13	- Decision Criteria for mutually exclusive alternatives.- Applying decision criteria when money is limited. - Comparison of alternatives with unequal service lives.	2	2	-	-	b9-1
Week-14	- The general nature of replacement analysis. – Replacement analysis for unequal lives.	2	2	-	-	b10-1
Week-15	- Replacement analysis based on economic life. – Examples of replacement Analyses.	2	2	-	-	b10-1 &d3-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a7-1**	x			x	x								
	a16-1	x			x	x								
Intellectual Skills	**b8-1**	x				x								
	b9-1	x			x	x								
	b10-1	x				x								
Professional Skills	**c1-1**	x				x								
General Skills	**d3-1**		x							x	x			
	d7-1		x							x	x			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)	Assessment Methods											
	Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***

Knowledge & understanding	**a7-1**	**x**											
	a16-1	**x**			**x**								
Intellectual Skills	**b8-1**	**x**			**x**		**x**				**x**		**x**
	b9-1	**x**											
	b10-1	**x**											
Professional Skills	**c1-1**	**x**			**x**								
General Skills	**d3-1**						**x**		**x**	**x**			
	d7-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**40**	**80%**	**16th**
Mid term written Examination (*Term Work*)	**5**	**10%**	**8th**
Tutorial and report assessment (*Term Work*)	**5**	**10%**	**weakly**
Total	**50**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. 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.

13- List of references:

1- "Engineering Economics", Michel Wilkes , 3th Edition , McGraw-Hill, 2001

2 - "Contemporary Engineering Economics", Chan S. Park , 3th Edition , Prentice Hall, 2002

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Course coordinator **Programme coordinator**

Dr. Mohamed Hesham Belal **Prof.**

Head of the Department

Prof. Taha Ali El-Taweel

Date: 01/10/2011.

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

Course Specification

A- Basic Information

Title: ***Production Engineering*** ***Code Symbol:*** ***PRE 128***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	75%	---	---	25%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of machine tools and related operations for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems using manufacturing processes. This course will also provide students, with the required skills of selecting the proper manufacturing process and the suitable variables for solving the engineering problems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic conceptes of manufacturing processes.
2. Definition of the requirements of cutting tool materials and cutting fluids.
3. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.
4. Evaluation of the suitable manufacturing process for solving the engineering problems.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A8	B2	C8	D3

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A8 – Identify Current engineering technologies as related to mechanical power engineering**.**	a8-1 Define the current manufacturing operations of the internal combustion engine components, tubes and pressure vessels.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking	b2-1 Design suitable solutions for manufacturing problems based on analytical thinking.
Professional skills	C8 - Apply safe systems at work and observe the appropriate steps to manage risks.	c8 -1 Employ the basic workshop equipments and tools safely.
General skills	D3- Communicate effectively	d3-1 Lead to communicate effectively

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to production engineering, Cutting tool materials & cutting fluids	1-2
2nd	Machine tools and their processes	3-7
3rd	Introduction to metal forming	9
4th	Bulk metal forming	10 -13
5th	Sheet metal forming	14 -15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to production engineering	**4**	**2**	**--**	**2**	a8-1
Week-2	Cutting tool materials & cutting fluids	**4**	**2**	**--**	**2**	a8-1
Week-3	Turning and shaping machines and operations	**4**	**2**	**--**	**2**	a8-1
Week-4	Drilling machines and operations	**4**	**2**	**--**	**2**	a8-1& c8-1
Week-5	Milling machines and operations	**4**	**2**	**--**	**2**	a8-1& c8-1
Week-6	Indexing heads	**4**	**2**	**--**	**2**	a8-1& c8-1
Week-7	Grinding machines and operations	**4**	**2**	**--**	**2**	c8-1&b2-1
Week-8						
Week-9	Introduction to metal forming	**4**	**2**	**--**	**2**	a8-1& c8-1
Week-10	Forging process	**4**	**2**	**--**	**2**	a8-1& c8-1
Week-11	Extrusion process	**4**	**2**	**--**	**2**	c8-1&b2-1
Week-12	Rolling process	**4**	**2**	**--**	**2**	c8-1
Week-13	Drawing process	**4**	**2**	**--**	**2**	c8-1&d3-1
Week-14	Bending process	**4**	**2**	**--**	**2**	c8-1
Week-15	Shearing process	**4**	**2**	**--**	**2**	c8-1&d3-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & Understanding	**a8-1**	**x**		**x**										
Intellectual Skills	**b2-1**	**x**												
Professional Skills	**c8-1**	**x**									**x**			
General Skills	**d3-1**	**x**												

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**	**x**									
Intellectual Skills	**b2-1**												
Professional Skills	**c8-1**	**x**		**x**			**x**				**x**		
General Skills	**d3-1**												

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**10**	**10%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to apply some machining and forming operations in the workshop.

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- Fundamentals of machining and machine tools, 2nd,ed. Boothoryd, G. & W.A.Knight, N.Y.Marcl, Dekker, 1989 .

13.3- Recommended books

Manufacturing Engineering and Technology, 6th edition, Serope Kalpakjain and Steven R. Schmid, Prentice Hall, 2010.

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Course coordinator **Programme coordinator**

Dr. Abo El-hagag H. Yousef

Head of the Department

Prof. Taha A. El-Taweel

Date: 1/10/2011.

MENOUFIYA UNIVERSITY
Faculty of Engineering
Shebi El-Kom
Prod. Eng& Mech. Design Dept.

Academic Year: 2011/2012
First Semester

Course Specification

A- Basic Information

Title: ***Theory of Elasticity & Plasticity*** ***Code Symbol:*** ***PRE 212***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2003***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20%	80%	---	---	---	100%

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student with means of analyzing the boundary value problems in engineering applications. As well as, this course provide the student with required skills of identifying the critical section in Engineering problems. This course will also provide students with the required skills of identifying, formulating and solving fundamental engineering problems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic conceptes of elastic boudary value problems.**
2. **Definition of the requirements of solving elastic boundary value problems.**
3. **Realizing of the different methods of analyzing boundary value problems.**
4. **Analysis of different techniques for modeling the engineering problems dealing with machine design.**
5. **Analysis of plastic deformation of engineering problems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 and A19	B2, B5 and B6	C3, and C7	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain the different methods of analyzing the engineering problems..
	A3:-Characteristics of engineering materials related to the discipline.	a3- 1 Describe different methods of evaluating the material behaviour .
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving boundary value problem
Intellectual skills	B2:-Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Formulate the different rquations suitable for solving engineering problems.
	B5:- Assess and evaluate the characteristics and performance of components, systems and processes	b5-1 Create a criterion suitable for studying the performance of the components .
	B6:- Investigate the failure of components, systems, and processes.	b6-1 Design a suitable failure criterion for engineering problem..
Professional skills	C3:- Create and/or re-design a process, component or system, and carry out specialized engineering designs	c3-1 Employ a suitable techniques to formulate the required equations for design
	C7:-Apply numerical modeling methods to engineering problems.	c7- 1Apply numerical modeling methods to engineering problems
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the obtained numerical data
	D9):- Refer to relevant literatures	d6-1 Refer to relevant literature

6- Course Topics.

Topic No.	General Topics	Weeks
1	Analysis of Stress	1-2
2	Analysis of strain	3-4
3	Stress and strain relationship and failure theories	5-6
4	Solution of elastic bondary value problems	7
5	Solution of elastic plane problems in Cartesian coordinates	9
6	Solution of elastic plane problem – Polar coordinate	10-13

7	Plastic deformation	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Definition of boundary value problem	**2**	**1**	**2**	**--**	a1 & a19
Week-2	Stress analysis	**2**	**1**	**2**	**-**	a3 & a19 &b2 &c7
Week-3	Definition of different type of strain	**2**	**2**	**2**	**-**	a1 & a19
Week-4	Strain analysis	**2**	**2**	**-2**	**-**	a3 & a19 &b2 &c7
Week-5	Definition of material constants	**2**	**2**	**2**	**-**	a3 & b6
Week-6	Stress-strain relations and failure theories	**2**	**2**	**2**	**-**	a3 & b6
Week-7	Solution methods of elastic problems	**2**	**2**	**2**	**-**	a19 & c5
Week 8						
Week-9	Definition of plane problems and Solution of plane problems in Cartesian coordinate	2	2	2	**-**	b2 & c3 & c7 a19& c7& d1
Week-10	Solution of plane problems in Cartesian coordinate	2	2	2	**-**	b2& c3& c7
Week-11	Formulate the required equation for stress analysis in polar coordinates	**2**	**2**	**2**	**--**	B2& b5 & c7
Week-12	Stress analysis of thick-walled cylinders	**2**	**2**	**2**	**--**	B5&c7& d1
Week-13	Stress analysis of rotating turbines and discs	**2**	**2**	**2**	**--**	b5& c7&
Week-14	Fundamental of plastic deformation	**2**	**2**	**2**	**--**	b5& d1
Week-15	Formulating the required equation for the plastic deformation analysis	**2**	**2**	**2**	**--**	b2& b6

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge &	**a1-1**	**x**			**x**	**x**								

understanding	**A3-1**	**x**			**x**	**x**								
	a19 1-	**x**			**x**	**x**								
Intellectual Skills	**B2=1**	**x**			**x**		**x**						**x**	
	B3-1	**x**		**x**	ع	**x**	**x**						**x**	
	B6-1	**x**		**x**	**x**	**x**	**x**						**x**	
Professional Skills	**C3-1**	**x**		**x**	**x**						**x**			
	C7-1	**x**		**X**										
General Skills	**d1-1**			**X**						**x**	**x**			
	d6-1			**x**						**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**			**x**	**x**							
	a13-1	**x**			**x**	**x**							
	a19-1	**x**			**x**	**x**							
Intellectual Skills	**b2-1**	**x**			**x**	**x**							
	b5-1	**x**			**x**	**x**							
	b6-1	**x**			**x**	**x**	**x**						
Professional Skills	**c3-1**	**x**				**x**	**x**			**x**			
	c7-1	**x**					**x**			**x**			
General Skills	**d1-1**						**x**			**x**			

	d6-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**10%**	**14th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning

A. Library Usage:

Students should be encouraged to use library text books in the preparation of the solution of the assignments .

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

" Engineering Solid Mechanics- Fundamentals and Applications", A.R. Ragab and S.E. Bayoumi, CRC Press, 1999 -

13.3- Recommended books

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Course coordinator **Programme coordinator**

Prof. Dr. Mahmoud Abo-Elkhier

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011

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

Course Specification

A- Basic Information

Title: ***Theory of Machine*** ***Code Symbol:*** ***PRE 126***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	20%	20%	50%	---	10%	---	100%

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student, with an enough knowledge to Identify, formulate and solve fundamental engineering problems relating to kinematics (location, displacement, velocity and acceleration) of various machine parts. It also provides the required skills to use mathematics, physics, engineering sciences and systems analysis tools to produce suitable design of different parts of machines.

3- Course Objectives:

1. Definition of kinematics and components of various plane motion mechanisms.
2. Analysis of kinematics of plane motion mechanisms.
3. Evaluation of static and dynamic force analysis of mechanisms and flywheels.
4. Construction of cams and different gear train arrangements.
5. Conducting static and dynamic balancing of rotating parts of machines.
6. Introduction to the process of machine components design.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A4, A13 and A19	B2, and B17	C7 and C14	D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4- Principles of design including elements design, process and/or a system related to specific disciplines.	a4-1 Discuss different methods to solve different machine components such as linkage mechanisms, gears, cams and flywheels.
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1 Describe mathematical equations to represent different components of machines. a13-2 Identify suitable solutions for these equations. a13-3 Express graphical representations for these solutions.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving machine element problems.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking	b2-1 Create analytical solutions for various engineering topics. b2-2 Confirm some of these solutions graphically using the proper graphical methods.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Formulate suitable solutions to practically represent realistic motion systems.
Professional skills	C7- Apply numerical modeling methods to engineering problems.	c7-1 Use suitable numerical techniques to model different machine components.
	C17- Use laboratory equipment and related computer software.	c17-1 Perform the available laboratory tests to confirm the theoretical results.
General skills	D7- Search for information and engage in life-long self learning discipline.	d7-1 Communicate with some real machine components and try to understand how they have been done.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Kinematics of mechanisms motion in machinery	1-2
2nd	Velocities & accelerations analysis	3-5
3rd	Force analysis of machinery	6-7
4th	Cam systems.	9
5th	Turning moment diagram and flywheel	10-11
6th	Gear geometry and Gear trains	12-13
7th	Balancing of Rotating Masses	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Definitions - Kinematics of links – Kinematics of pairs – Kinematics of chains.	**5**	**3**	**2**	**---**	a13-1 &a19-1
Week-2	Mechanisms - Motion of simple machines.	**5**	**3**	**2**	**---**	a13-1 & b17-1 &a19-1
Week-3	Velocity analysis (Analytical and Graphical).	**5**	**3**	**2**	**---**	A4-1&b2-2 &c7-1
Week-4	Acceleration analysis (Analytical).	**5**	**3**	**2**	**---**	a4-1 & b2-2
Week-5	Acceleration analysis (Graphical).	**5**	**3**	**2**	**---**	A4-1&c7-1
Week-6	Static force analysis.	**5**	**3**	**2**	**---**	A13-1 &b2-1 &c17-1
Week-7	Dynamic force analysis and torque.	**5**	**3**	**2**	**---**	A13-1 &b2-1 &c17-1
Week-8	**Midterm Written Examination**					
Week-9	Cam systems.	**5**	**3**	**2**	**---**	A4-1 &a13-3
Week-10	Turning moment diagrams.	**5**	**3**	**2**	**--**	A13-1 &a13-2 &b2-2
Week-11	Flywheels.	**5**	**3**	**2**	**---**	C7-1 &d7-1
Week-12	Gear geometry.	**5**	**3**	**2**	**---**	A13-1 &a19-1
Week-13	Gear trains.	**5**	**3**	**2**	**---**	A4-1 &b2-1 &c7-1
Week-14	Balancing of rotating masses.	**5**	**3**	**2**	**---**	A3-1 &a13-3 &c17-1
Week-15	Balancing of several masses rotating in different planes.	**5**	**3**	**2**	**---**	A13-1 &a13-3

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	a4-1	**x**		**x**	**x**	**x**				**x**			**x**	
	a13-1	**x**		**x**									**x**	
	a13-2	**x**		**x**	**x**	**x**								
	a13-3	**x**		**x**	**x**									
	a19-1	**x**		**x**										
Intellectual Skills	b2-1	**x**		**x**	**x**		**x**							
	b2-2	**x**		**x**									**x**	
	b17-1	**x**		**x**				**x**					**x**	
Professional Skills	c7-1	**x**		**x**	**x**								**x**	
	c17-1	**x**		**x**										

General Skills	d7-1		**x**							**x**	**x**			

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

For low capacity students	Give them the opportunity for my office meetings.
	Repeat the explanation of some of the material .
	Assign a teaching assistance to follow up the performance of this group of students.
	Give them some advanced topics to be searched using the internet and conduct presentation.
	Encourage them to attend seminars of suitable research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a4-1**	**x**	**x**				**x**						
	a13-1	**x**											
	a13-2	**x**											
	a13-3	**x**	**x**				**x**						
	a19-1												
Intellectual Skills	**b2-1**	**x**	**x**				**x**				**x**		
	b2-2	**x**	**x**										
	b17-1	**x**	**x**				**x**				**x**		
Professional Skills	**c7-1**	**x**					**x**						
	c17-1	**x**		**x**			**x**				**x**		
General Skills	**d7-1**			**x**							**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**85**	**68%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	
End of term laboratory examination (*Lab*)	**0**	**0%**	
Mid term written Examination1 (*Term Work*)	**10**	**8%**	**6th**
Mid term written Examination 2 (*Term Work*)	**10**	**8%**	**10th**
Tutorial and report assessment (*Term Work*)	**20**	**16%**	**weakly**
Total	**125**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of his reports and to search about more knowledge in these subjects.

13- List of references:

13.1- Course notes

- Notes in the specific course subjects provide many solved examples and problems.

13.2- Essential books (text books)

- Khurmi, R. et al.; Theory of Machines, 14th ed.; S. Chand & Co. Ltd., New Dehli 2005;
-Shigley,J.E.,and Mischke,C.R."Mechanisms"McGraw-Hillcomp.,1990.
- Mechanisms and Dynamics of Machinery ,Hamilton H.Mabie,and Charles,F.Reinholtz,John Wiely&sons ,Inc.,USA.,1987

13.3- Recommended books

- Dan B. Marghitu, Mechanical Engineer's Handbook, ACADEMIC PRESS, 2001
-Jack P. Holman, John R. Lloyd, DESIGN OF MACHINERY, AN INTRODUCTION TO THE SYNTHESIS AND ANALYSIS OF MECHANISMS AND MACHINES, Second Edition McGraw-Hili Series in Mechanical Engineering, *1999*

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Course coordinator **Programme coordinator**

Prof. Dr. Sobhy Ghoneam

Assoc.Prof. Raafat Abou-Elnasr

Head of the Department
Prof. Taha El-Taweel

Date: 1/10/2011

Mechanical Power Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd POWER.**

Course Specification

A- Basic Information

Title: ***Mechanical Vibrations*** ***Code Symbol:*** ***PRE 218***
Element of program: ***Major/ minor*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the Student with the basic knowledge and skills of how to analysis of various mechanical systems and formulate mathematical models of problems in vibrations. This course will also provide students with the ability to select and design the appropriate isolation , absorption, and control system of vibration for the application of various mechanical systems. The skill of experimental measurement of vibration monitoring for different mechanical system configurations is also provided.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding of the importance of vibration analysis of mechanical system during design and operating stages.**
2. **Derivation mathematical models for single and multi DOF vibration systems.**
3. **Computing of the natural frequencies for various vibration systems .**
4. **Evaluation of the complete solution (response) to mechanical vibration problems due to free, or periodic forces or base excitation using mathematical techniques.**
5. **Analysis of different mechanical system problems and conducting laboratory experimental verifications.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A19	B2,B5 and B6	C1 and C5	D3 and D4

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A19- Use basic theories and principles of some other engineering and mechanical engineering providing support to mechanical power engineering.	a19-1 Describe the principle of the design of the schemes that are used for power system fault detection. a19-2 List the elements used in the vibrating systems.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Organize the suitable modeling scheme for different mechanical system configurations based on analysis.
	B5- Assess and evaluate the characteristics and performance of components, systems and processes.	b5-1 Create the suitable methods to evaluate the natural frequencies of single D.O.F systems and Multi D.O.F. systems.
	B6- Investigate the failure of components, systems, and processes.	b6-1 Create a suitable design considering investigate the failure of components, systems, and processes.
Professional skills	C1- Apply knowledge of mathematical, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Solve differential equations of motion to obtain the response.
	C5- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 Apply the suitable techniques to analyze the results and identify between the vibration measuring instruments.
General skills	D3- Communicate effectively.	d3-1 Communicate effectively.
	D4- Demonstrate efficient IT capabilities.	d4-1 Judge efficient IT capabilities.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamentals of Vibration	1-2
2nd	Vibration of Single Degree of freedom systems	3-7
3rd	Vibration of Multi Degree of freedom systems	9-12
4th	Vibration of Continuous systems	13-14
5th	Approximate methods for natural frequencies and modes.	15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	- Basic concepts of vibrations. - Classification if vibrations.	4	2	1	1	a19-1 &a19-2
Week-2	-Vibration Analysis procedure. - Spring , mass, damping elements.	4	2	1	1	a19-1
Week-3	- Equation of motion of Single D.O.F systems using: - Newton' s second law of motion, - Energy method, - Lagrange' equation.	4	2	1	1	b2-1&b5-1
Week-4	Response for free vibrations (undamped and viscously damped),	4	2	1	1	c1-1
Week-5	Response for forced vibrations (undamped and viscously damped) due to harmonic excitations and harmonic motion of the base	4	2	1	1	c5-1
Week-6	- Vibration Isolation and control. - Whirling of rotating shafts.	4	2	1	1	c5-1
Week-7	- Vibration measuring instruments	4	2	1	1	c5-1&d3-1
Week-8	Midterm written examination					
Week-9	- Equations of motion of Multi D.O.F systems using: - Newton' s second law of motion, - Lagrange' equation.	4	2	1	1	b2-1 & b6-1
Week-10	Natural frequencies and mode shapes (Eigen values and eigenvectors),	4	2	1	1	b6-1
Week-11	Response for undamped free vibrations	4	2	1	1	c1-1
Week-12	- Response for undamped forced vibrations due to harmonic excitations and harmonic motion of the base. - Dynamic absorber (undamped – damped).	4	2	1	1	c1-1
Week-13	Vibration of one dimensional Continuous systems. - Longitudinal vibration of rods.	4	2	1	1	a19-1& b2-1 &c1-1
Week-14	- Torional vibration of rods, - Flexural vibration of beams.	4	2	1	1	b2-1&c1-1
Week-15	Approximate methods for the eigensolution: - Matrix iterative method, - Rayleigh's method.	4	2	1	1	b2-1&c1-1& d4-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a19-1**	**x**			**x**	**x**								
	a19-2	**x**			**x**	**x**								
Intellectual Skills	**b2-1**	**x**			**x**	**x**								
	b5-1	**x**			**x**	**x**								
	b6-1				**x**	**x**								
Professional Skills	**c1-1**	**x**			**x**	**x**								
	c5-1	**x**			**x**	**x**								
General Skills	**d3-1**		**x**							**x**	**x**			
	d4-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a19-1	x											
	a19-2	x			x								
Intellectual Skills	b2-1	x	x	x	x		x				x		x
	b5-1	x	x	x	x		x				x		x
	b6-1	x	x	x	x		x				x		x
Professional Skills	c1-1	x		x	x								
	c5-1	x		x							x		
General Skills	d3-1						x	x	x	x			
	d4-1						x		x	x			

11.2 Assessment Weight, Schedule and Grades Distribution:

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

12- Facilities required for teaching and learning:

A. 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.

B. 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.

13- List of references:

1- **Mechanical Vibrations.4th Edition book, by Singiresu S.Rao, Prentice Hall, 2004**
2- **Fundamentals of Mechanical Vibration. 2nd Edition book, by S.G.Kelly, McGraw-Hill, 2002.**

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Course coordinator **Programme coordinator**

Dr/ Mohamed Hesham Belal

Head of the Department

Prof. Taha Ali El-Taweel

Date: 01/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 2nd PROD.**

Course Specification

A- Basic Information

Title: ***Theory of machining*** ***Code Symbol:*** ***PRE 221***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	**2**	**2**	**7**

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	20 %	30%	50%	….	……	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student; with an enough knowledge of different cutting processes practically and theoretically and emphazing the mathematical relations between cutting tool and various cutting output responses. It also provide students different designs and techniques to measure forces,temperatures,friction,wear,and surface integrity during metal machining.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic conceptes of the different cutting processes practically and theoritcally.**

2.Definition of the requirements of measuring devices to measure forces,temperatures,friction,wear,and surface integrity during metal machining.
3Realizing facts,concepts,principles, of all cutting processes.
4.Evaluation of the suitable ways for solving the engineering problems related to machining.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1 and A3	B13 and B15	C1 and C6	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1):- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Define the basic concepts of mathematics and science for solving many machining processes through mathematical relations between cutting tool and various cutting output responses
	A3):- Characteristics of engineering materials related to the discipline	a3-1 Discus facts,concepts,principles of all cutting processes taking in to consideration properties of materials.
Intellectual skills	B13):- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Organize the principles of mathematics, science and technology in problem solving scenarios conerining manufacturing problems and mechanical engineering using theoritical relations in metal cutting.
	B15):- Evaluate and appraise designs, processes and products, and propose improvements	b15-1 Manage and interpret data and design experiment to obtain new data in metal machining.
Professional skills	C1):- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Use different techniques to measure forces,temperatures,friction,wear,and surface integrity during metal machining.
	C6):- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c6-1 Employ a wide range of analytical tools, techniques, equipment, and software packages to the discipline and develop required computer for solving machining problems.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the experimental test by working team.
	D6):- Effectively manage tasks, time, and resources. .	d6-1 1 Balance between machining equipment resources and machining time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to machining	1
2nd	Machine tools and machining operations	2-4
3rd	Mechanics of metal cutting	5-8
4th	Temeratures in metal cutting	9-10
5th	Tool life and tool wear	11-13
6th	Cutting fluids and surface roughness	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to machining	**7**	**3**	**2**	**2**	c1-1&a1-1& b13-1
Week-2	Machines with single point tools	**7**	**3**	**2**	**2**	a3-1& b13-1& c1-1
Week-3	Machines with using multipoint tools	**7**	**3**	**2**	**2**	b13-1& c1-1
Week-4	Machines using abrasive wheels	**7**	**3**	**2**	**2**	b15-1& b15-1& c1-1
Week-5	Chip formation and types of chips	**7**	**3**	**2**	**2**	c1-1& b13-1
Week-6	Forces acting on the cutting tool and their measurements	**7**	**3**	**2**	**2**	c6-1& d1-1
Week-7	Forces acting on the cutting tool and their measurements	**7**	**3**	**2**	**2**	d1-1& c6-1
Week-8						
Week-9	Friction in metal cutting and some machining theories	**7**	**3**	**2**	**2**	b13-1& d6-1
Week-10	Heat generation in metal cutting	**7**	**3**	**2**	**2**	c6-1&b15-1& d1-1
Week-11	The measurement of cutting temperatures	**7**	**3**	**2**	**2**	b15-1& c6-1
Week-12	Forms of wear in metal cutting	**7**	**3**	**2**	**2**	d1-1&b13-1& c6-1
Week-13	Tool and work material	**7**	**3**	**2**	**2**	b15-1&b13-1 & c1-1
Week-14	The action of lubricants	**7**	**3**	**2**	**2**	c1-1&b13-1 & a3-1& c6-1
Week-15	Types of lubricants	**7**	**3**	**2**	**2**	c6-1&b13-1 & d1-1
Week-15	Measurements of surface roughness	**7**	**3**	**2**	**2**	&b13-1& c6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a1-1	**x**												
	a3-1	**x**			**x**									
Intellectual Skills	b13-1	**x**					**x**			**x**	**x**			
	b15-1	**x**	**x**	**x**	**x**	**x**			**x**					
Professional Skills	c1-1	**x**									**x**			
	c6-1			**x**						**x**	**x**			
General Skills	d1-1		**x**	**x**						**x**	**x**			
	d6-1		**x**	**x**		**x**				**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a1-1	**x**											
	a3-1	**x**											
Intellectual Skills	b13-1	**x**	**x**		**x**			**x**				**x**	
	b15-1	**x**	**x**										
Professional Skills	c1-1	**x**			**x**								
	c6-1	**x**											
General Skills	d1-1			**x**	**x**		**x**					**x**	
	d6-1			**x**	**x**		**x**	**x**		**x**		**x**	

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**100**	**57%**	**16th**
End of term assessment (*Oral*)	**35**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**-**
Mid term written Examination1 (*Term Work*)	**25**	**14%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**-**
Tutorial and report assessment (*Term Work*)	**15**	**9%**	**weakly**
Total	**175**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students will be required to routinely use computer software to solve problems related to machining technology.

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports. Background information is required as part of the study. .

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

Bowden,F.P.,and D.Tabor:"friction and lubrication of solids,"Oxford Univeristy Press,london,1954

13.3- Recommended books

Axis and motion nomenclature for numerically controlled machine tools:ISO recommendation R481,1st ed.,October,1968.

Mallock,A:the action of cutting tools,Proc.Roy.Soc.,vol.33,p.127,1881-1882

****

Course coordinator **Programme coordinator**

Prof.Dr. Mamood El Khabeery

Head of the Department

Prof. Taha El-Taweel

Date 01/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term:2nd Term**
Minoufiya University **Academic level: 2nd Prod.**

Course Specification

A- Basic Information

Title: ***metallurgy and engineering materials***

Code Symbol: ***PRE 222***

Element of program: ***Major*** ***Date of specification approval:*** ***2006***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2012***

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*1*	*1*	*6*

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of Atomic structure and bonding, Crystal structure, crystal geometry and mechanical properties and relationship between the structures and properties of materials .. it also inform the student the crystallization of metals and focus on equilibrium phase diagrams of binary alloys. The aims of this course are to provide the student, with enough knowledge of Polymer and ceramic materials Composite materials and their applications in different fields

3- Course Objectives:

1. **Demonstration of the knowledge and understanding relation between the structures and properties of materials Ability to analyze and solve pollution problems**
2. **Definition of physical metallurgy and engineering materials**
3. **Realizing facts, concepts, principles, and properties of materials including Polymer, ceramic materials and Composite materials of all cutting processes.**
4. **Evaluation of the suitable ways for solving the engineering problems related to physical metallurgy and engineering materials**

4- Relationship between the course and the programmed

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A3 and A19	B3,B6 and B13	C1 and C17	D1 and D9

5- Course Intended Learning Outcomes (Ills)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3):- Characteristics of engineering materials related to the discipline.	a3-1- Define basic Characteristics physical metallurgy and engineering materials
	A19):- Engineering design principles and techniques	a19-1 Describe behaviour of materials throuhout findinf different mechancal properties for solving design and engineering problems.
Intellectual skills	B3):- Think in a creative and innovative way in problem solving and design.	b3-1 Create a creative and innovative way in problem solving and design throughout finding between between the structures and properties of materials and the intende function .
	B6):- Investigate the failure of components, systems, and processes.	b6-1 Manage the failure of components made of different materials based on finding different physical and mechanical properties
	B13):- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Construct a suitable techniques to chose a suitable material for a particular function based on , science, technology and material selection criteria
Professional skills	C1):- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Employ a suitable techniques to chose a suitable test to check the mechanical properties of materials based on , science and technology .
	C17):- Use laboratory equipment and related computer software.	c17-1 Use the available laboratory tests to confirm the theoretical results..
General skills	D1):- Collaborate effectively within multidisciplinary team.	d1-1 Judge the experimental test by working team.
	D9):- Refer to relevant literatures.	d9-1 Share students through reading texts in the library

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to material science and and engineering	1
2nd	Atomic strucure and bonding and Crystal strucure and crystal geometry and mechanical properties	2-6
3th	Metallugy and phase digrams for alloys	7&9-11
4th	Polymer, ceramic materials and Composite materials	12-14

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to material science and and engineering	**6**	**4**	**1**	**1**	a3-1& a19-1& d9-1
Week-2	Criteria for selecting materials	**6**	**4**	**1**	**1**	a19-1& a3-1& d9-1&
Week-3	The structure of atoms quantum numbers of electron of atoms	**6**	**4**	**1**	**1**	b3-1& a3-1& d9-1
Week-4	Types of atomic and molecular bonds	**6**	**4**	**1**	**1**	b6-1& a3-1& b13-1& c1-1
Week-5	Principal metal crystal structure unit cells and Mechanical properties of metals	**6**	**4**	**1**	**1**	b13-1& d9-1& a19-1
Week-6	Plastic deformation of metal single crystals	**6**	**4**	**1**	**1**	c1-1& a3-1& c1-1&
Week-7	The crystallization of metals	**6**	**4**	**1**	**1**	c17-1& a3-1& c1-1& a19-1
Week-8						
Week-9 *Week-10*	Phase diagrams for alloys Phase diagrams for alloys (continue)	**6** **6**	**4** **4**	**1** **1**	**1** **1**	d9-1& c1-1& a19-1
Week-11	Phase diagrams for alloys (continue)	**6**	**4**	**1**	**1**	d1-1& c1-1& a19-1
Week-12	Phase diagrams for alloys(continue)	**6**	**4**	**1**	**1**	b3-1& a3-1& d9-1
Week-13	Polymer materials	**6**	**4**	**1**	**1**	b6-1& a3-1& c1-1
Week-14	ceramic materials	**6**	**4**	**1**	**1**	b13-1& a3-1& d9-1
Week-15	Composite materials	**6**	**4**	**1**	**1**	b3-1& b13-1& c1-1& a19-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a3-1**	x		x		x								
	a19-1	x	x	x			x	x						
Intellectual Skills	**b3-1**	x			x									
	b6-1	x												
	b13-1	x			x									
Professional Skills	**c1-1**	x			x			x			x			
	c17-1	x		x										
General Skills	**d1-1**		x							x				
	d9-1		x							x				

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	x	x	x									
	a19-1	x											
Intellectual Skills	**b3-1**	x	x	x	x						x		
	b6-1	x	x										
	b13-1	x	x	x	x						x		
Professional Skills	**c1-1**	x		x	x								
	c17-1	x		x			x				x		
General Skills	**d1-1**										x		
	d9-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**15**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**-**
Mid term written Examination1 (*Term Work*)	**30**	**20%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**-**
Tutorial and report assessment (*Term Work*)	**15**	**10%**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to carry out the experiential tests of obtain the mechanical properties

Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

-" physical metallurgy and engineering materials ***"Lakhtin,1980***

13.3- Recommended books

-simplifying environment permitting in the U.S by:Christopher A.Hartwell.Strategic Planning of energy and environment ,Vol.19 No.2,1999 .

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Course coordinator **Programme coordinator**

Prof.Dr. Ahmed El-Sissi

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 2nd PROD.**

Course Specification

A- Basic Information

Title: Production Metrology ***Code Symbol: PRE 223***
Element of program: Major ***Date of specification approval: 2003***
Department offering the course: **Prod. Eng. & Mech. Design Dept.** ***Bylaw 2003***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*2*	*7*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	20%	20%	20%	30%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of metrology associated with many of principle practical work in the field of measurement methods. As well as, this course provide the student with required skills of applying knowledge of measurement science and engineering concepts for creating solutions of standard measurement using various types of tools and instruments. This course will also provide students, with the required skills of selecting the suitable methods of magnification and the suitable comparator instrument for solve the measurement problems. As well as, this course will give the student the required skills of ability for solve the assembly problems and different concepts of measurement errors.

3- Course Objectives:

1. **Analyses and understanding the principles methods of measurement and its application.**
2. **Demonstration of principles measuring methods techniques using different types of tools.**
3. **Evaluation of the suitable design and characteristics for any types of instruments.**
4. **Realizing of the principles methods of measuring using different types of instruments.**
5. **Evaluation of the principles methods of calculating different types of measuring errors.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A1,A12	B8,B13	C1, C9	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of engineering metrology associated with many of practical work in the field of engineering measurements.	a1-1 Explain the principle method and the suitable variables for solving the linear measurement problems.
	A12- Contemporary engineering topics.	a12-1 Describe some methods of creating a desired principles measuring methods for solving internal measurent problems. a12-2 Define the principle tools of measurements which are required for solving the engineering applications of measuring problems.
	A19- Engineering design principles and techniques for the measuring instruments.	a19-1 Discuss the different measuring design techniques for solving some advanced techniques of surface measurement.
Intellectual skills	B8- Select and appraise appropriate the suitable method to solve engineering measurement problems.	b8-1 Create the desired software dealing with the used methods for modeling and analyzing measurement results.
	B13- Apply the principles technology for solving measurement engineering.	b13-1 Organize and interpret numerical data using computer programs to analyze the measurements problems errors.
	B17- Use the principles of engineering science in developing solutions of practical assembly problems.	b17-1 Design a suitable computer programs for developing the solutions of practical assembly problems.
Professional skills	C1- Apply knowledge of information technology to solve engineering measurement. problems	c1-1 Employ a suitable techniques to discipline and develop required methode of measurement.
	C9-Demonstrate basic organizational and project management skills.	c9-1 Apply the designed computer programs to solve selected measurement problems and to draw the results of solving these problems.
	C14- Employ the traditional and advanced methods of measurement facilities in processes measurement..	c14-1 Use the advanced methods of measurement for developing solutions of practical problems of measurement comparing the results with the output of traditional methods.
	D1- Collaborate effectively	d1-1 Judge the created methods of

General skills	within multidisciplinary team	measurement by working team.
	D9- Refer to relevant literatures	d9-1 Balance between facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1	The principals of accurate measurements	1
2	The units of measurements	2
3	Block Gauges	3
4	Limit gauges	4 and5
5	Standardization of fits and tolerances	6 , 7 and 9
6	Errors of measurements	10
7	Types of comparators	11 ,12,13and 14
8	Theory of interferomrtry	15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	The principals of accurate measurements.	**7**	**3**	**2**	**2**	a1-1 ,a12-1&a12-2
Week-2	The units of measurements.	**7**	**3**	**2**	**2**	a1-1 &a12-1
Week-3	Block Gauges (Theoretical and experimental).	**7**	**3**	**2**	**2**	b8-1&c1-1
Week-4	Limit gauges(Theoretical).	**7**	**3**	**2**	**2**	C1-1&c14-1
Week-5	Limit gauges (Theoretical and experimental).	**7**	**3**	**2**	**2**	C1-1&c14-1
Week-6	Standardization of fits and tolerances(Theoretical).	**7**	**3**	**2**	**2**	a12-1&a19-1
Week-7	Standardization of fits and tolerances(Theoretical and experimental).	**7**	**3**	**2**	**2**	a1-1& &b17-1 d1-1
Week-8						
Week-9	Standardization of fits and tolerances (experimental).	**7**	**3**	**2**	**2**	B13-1&c14-1&d9-1
Week-10	Errors of measurements.	**7**	**3**	**2**	**2**	a12-2 & b17-1 C9-1&c14-1
Week-11	Types of comparators (Theoretical).	**7**	**3**	**2**	**2**	a12-1&a12-2 & b8-1&b17-1
Week-12	Types of comparators (experimental).	**7**	**3**	**2**	**2**	a1-1& a12-1& a19-1 & b17-1
Week-13	Types of comparators (experimental).	**7**	**3**	**2**	**2**	a1-1&a19-1 & b17-1 &a12-1

Week-14	Types of comparators (experimental).	**7**	**3**	**2**	**2**	a15-2&c13-1 & &b16-1&d1-1
Week-15	Theory of interferomrtry (Theoretical).	**7**	**3**	**2**	**2**	a15-1& a15-2 b16-1 && d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**			**x**									
	a12-1	**x**			**x**									
	a12-2													
	a19-1	**x**			**x**									
Intellectual Skills	**B8-1**													
	b13-1	**x**	**x**			**x**								
	b17-1	**x**	**x**	**x**		**x**	**x**							
Professional Skills	**C1-1**	**x**									**x**			
	C9-1			**x**										
	c14-1						**x**				**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	x	x	x									
	a12-1	x											
	a12-2	x											
	a19-1	x	x	x									
Intellectual Skills	B8-1	x	x	x							x		
	b13-1	x	x		x								
	b17-1	x	x	x							x		
Professional Skills	C1-1	x		x	x								
	C9-1	x		x						x	x		
	c14-1	x		x									
General Skills	d1-1						x						
	d6-2						x		x	x			

1.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	100	57.15%	16th
End of term assessment (*Oral*)	20	11.44%	15th
End of term laboratory examination (*Lab*)	20	11.44 %	16th
Mid term written Examination1 (*Term Work*)	10	5.7%	8th
Mid term written Examination 2 (*Term Work*)	10	5.7%	12th
Tutorial and report assessment (*Term Work*)	15	8.57%	weakly
Total	175	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are prepared the experimental setting solving some measurement problems. Creating the desired method and test it.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- 'Metrology for Engineers, A.M.Easa, Minoufiya University,2004,Egypt.

13.2- Essential books (text books)

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13.3- Recommended books

- ' Measurement Systems –Application Design', Ernest O. Doebelin., TATA McGRAW-HILL -EDITION.

'ISO Guide to the Expression of Uncertainty in Measurement, Switzerland 1995'.

Course coordinator **Programmer coordinator**

Prof. Dr. Ahmed M. Easa.

Head of the Department

Prof. Taha El-Taweel

Date: 1/1/2012.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd. Term**
Minoufiya University **Academic level: 2nd.PROD.**

Course Specification

A- Basic Information

Title: ***Industrial Statistics*** ***Code Symbol:*** ***PRE 224***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*1*	*-*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	30%	--	--	70%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of applied statistics associated with Flow-Charts for solving industrial problems. As well as, this course provide the student with required skills of applying knowledge of statistics, science for creating solutions of production problems using statistical techniques.

This course will provide students, with the required skills of selecting the proper method and the suitable data for solving the statistical quality control problems. As well as, this course will give the student the required skills of ability for modeling the engineering problems dealing with production quality problems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concepts of industrial statistics.
2. Definition of the requirements of statistical data study and analysis.
3. Realizing of the different types of softwares and the suitable variables.
4. Evaluation of the suitable statistical methods for solving the engineering problems.
5. Analysis of different techniques for modeling the engineering problems.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A5 and A6	B11 and B14	C12 and C14	D4 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A5- knowledge of statistics, science and engineering concepts to the solution of engineering problems.	a5-1 Explain different statistical methods for solving industrial problems using knowledge of statistics, science and engineering concepts.
	A6- The specifications design, range of application of statistical methods.	a6-1 Describe some methods of creating a desired soft-ware for solving engineering quality problems. a6-2 Define the basics statistical concepts of which are required for molding and solving the engineering applications problems.
Intellectual skills	B11- Select appropriate statistical methods for modeling and analyzing problems.	b11-1 Create the desired software dealing with based methods for modeling and analyzing engineering problems.
	B14- Use the principles of engineering statistics in developing solutions to practical engineering quality problems.	b14-1 Design a suitable computer programs for developing the solutions of practical engineering quality problems.
Professional skills	C12- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c12-1 Employ a suitable techniques and software packages pertaining to the discipline and develop required computer programs.
	C14- Prepare computer graphics and specialized technical reports and communicate accordingly.	c14-1 Apply the designed computer programs to solve selected engineering quality problems and to draw the results of solving these problems.
General skills	D4- Collaborate effectively within multidisciplinary team	d4-1 Judge the created soft-ware by working team.
	D6- Balance between resources and time	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Representation of statistical data.	1-2
2nd	Statistical measures.	3-4
3rd	Elementary principals of probability.	5-6
4th	Random variables.	7
5th	Some discrete probability distriputions.	9-10
6th	Some continuous probability distriputions.	11-12
7th	Tests of hypotheses - imple linear regression	13-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Representation of statistical data	**4**	**3**	**1**	**--**	a5-1 &a5-2
Week-2	Representation of statistical data, continued.	**4**	**3**	**1**	**--**	a5-1 & a5-2
Week-3	Statistical measures.	**4**	**3**	**1**	**--**	b11-1&c12-1
Week-4	Statistical measures, continued.	**4**	**3**	**1**	**--**	b11-1&c12-1
Week-5	Basic concepts of probability.	**4**	**3**	**1**	**--**	a5-1 & a5-2
Week-6	Basic concepts of probability, continued.	**4**	**3**	**1**	**--**	a5-1&a5-2
Week-7	Random variables.	**4**	**3**	**1**	**--**	a5-1& &b11-1 d4-1
Week-8						
Week-9	Random variables, continued.	**4**	**3**	**1**	**--**	C12-1 & b11-1 &c12-1&c14-1
Week-10	Some discrete probability distributions.	**4**	**3**	**1**	**--**	A5-1 & b11-1 c12-1&c14-1
Week-11	Some continuous probability distributions.	**4**	**3**	**1**	**--**	a5-1&a5-2 & b11-1&b14-1
Week-12	Tests of hypotheses.	**4**	**3**	**1**	**--**	a1-1& a15-1& a5-1 & b14-1
Week-13	Tests of hypotheses, continued.	**4**	**3**	**1**	**--**	a1-1&a19-1 &
Week-1	Tests of hypotheses, continued.	**4**	**3**	**1**	**--**	a5-2&c14-1 &
Week-15	Simple linear regression.	**4**	**3**	**1**	**--**	a5-1& a5-2 & b11-1 & d6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a15-1	**x**		**x**	**x**									
	a15-2	**x**		**x**										
	a19-1	**x**		**x**										
Intellectual Skills	**b1-1**	**x**	**x**				**x**						**x**	
	b16-1	**x**	**x**	**x**	**x**		**x**						**x**	
	b17-1	**x**	**x**	**x**	**x**		**x**						**x**	
Professional Skills	**c6-1**	**x**									**x**			
	c13-1	**x**												
	c14-1										**x**			
General Skills	**d6-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a5-1**	**x**	**x**		**x**								
	a5-1	**x**			**x**								
	a5-2	**x**											
	a6-1	**x**	**x**										
Intellectual Skills	**b11-1**	**x**	**x**		**x**						**x**		
	b14-1	**x**	**x**										
Professional Skills	**c12-1**	**x**			**x**								
	c14-1	**x**					**x**				**x**		
General Skills	**d4-1**										**x**		
	d6-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning

A. Library Usage:

Students should be encouraged to use library technical resources in the preparation of the erquired reports.

13- List of references:

13.1- Course notes

13.2- Montgomery, D. C. and George C. Runger (2003), "Applied Statistics and Probability for Engineers", 3rd Ed. John Wiley & Sons.

Essential books (text books)

-Sheldon M. Ross (2004), "Introduction to Probability and Statistics for Engineers and Scientists", 3rd Ed. Elsevier Inc.

13.3- Recommended books

- Fadil H. Zuwaylif, "General Applied Statistics" 3rd.Ed. (1980).

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Course coordinator **Programme coordinator**

Dr. Mohamed A. Sharaf El-Din

Head of the Department

Prof. Taha El-Taweel

Date: 27/2/2012

Power Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd `Term**
Menoufia University **Academic level: 2nd Power**

Course Specification

A- Basic Information

Title: ***Machine Elements Design*** ***Code Symbol:*** ***PRE 228***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*3*	*-*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20 %	80%		---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of the design procedure of machine elements. As well as, this course will give the student the required skills for modeling the engineering problems dealing with machine elements design.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic conceptes of mechanical design.**
2. **Definition of the requirements of computer programming related to the mechanical design procedure.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A3, A4 and A19	B1, B16 and B17	C1, C13 and C14	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3- Characteristics of engineering material related to the design procedure.	a3-1 Define the characteristics of engineering materials.
	A4-Principle design procedure for machine elements.	a4-1 Describe some methods of creating a desired model for solving design problems.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving some machine element problems by programming.
Intellectual skills	B1- Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Create the desired software dealing with based methods for modeling and analyzing engineering problems.
	B16- Interpret numerical data and apply analytical methods for engineering design purposes	b16-1 Organize and interpret numerical data using computer programs to analyze the problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable design steps for developing the solutions of practical engineering problems.
Professional skills	C1- Apply knowledge of design and engineering practice integrally to solve design problems.	c1-1 Employ a suitable techniques to develop required design of machine elements.
	C13-Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly.	c13-1 Apply the designed computer programs to solve selected engineering problems and to draw the results of solving these problems.
	C14- Employ the traditional and modern CAD facilities in design .	c14-1 Use the designed computer programs for solutions of elements design problems .
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D9-Refer to relevant literatures.	D9-1 Communicate with libratory and Net.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	General considerations and procedure of machine design.	1
2nd	Fasteners (Weld – Revits – Bolts- Keys)	2-5
3rd	Shaft diameter design based on material strength.	6-7
4th	Machine belts drive (Flat and V-Belts)	9-11
5th	Gear types and reduction gear units.	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	Procedure of machine elements design	**6**	**3**	**3**	**-**	a3-1,a4-1, c14-1,d9-1
Week-2	Welded joints design	**6**	**3**	**3**	**-**	a4-1,a19-1, b17-1
Week-3	Riveted joints design	**6**	**3**	**3**	**-**	a4-1,a19-1 ,b17-1
Week-4	Bolted joints design	**6**	**3**	**3**	**-**	a4-1,a19-1, b17-1
Week-5	Keyed joints design	**6**	**3**	**3**	**-**	A4-1,a19-1,b17-1
Week-6	Design concepts of shaft design	**6**	**3**	**3**	**-**	a4-1,a19-1,b1-1
Week-7	Shaft design on material strength	**6**	**3**	**3**	**-**	b16-1,b17-1,c1-1
Week-8						
Week-9	Fundamentals of belt drives	**6**	**3**	**3**	**-**	a3-1,a19-1, b16-1,c1-1
Week-10	Flat belt design	**6**	**3**	**3**	**-**	b1-1 , b16-1 c13-1& d9-1
Week-11	V-belt design	**6**	**3**	**3**	**-**	b1-1, b16-1,c13-1
Week-12	Theory and operation of gear types	**6**	**3**	**3**	**-**	a3-1, a19-1, c14-1 & d1-1
Week-13	Design of spur and helical gears	**6**	**3**	**3**	**-**	a4-1, b16-1 &b17-1
Week-14	Design of bevel gears	**6**	**3**	**3**	**-**	a4-1,b16-1 & &b17-1
Week-15	Design of warm gears	**6**	**3**	**3**	**-**	a4-1, b16-1,b17-1

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**	**x**		**x**										
	a4-1	**x**		**x**	**X**									
	a19-1	**X**		**X**	**X**									
Intellectual Skills	**b1-1**	**X**		**X**										
	b16-1	**X**		**X**										
	b17-1	**X**		**x**										
Professional Skills	**c1-1**	**X**			**X**	**x**								
	c13-1	**X**			**X**	**X**				**x**				
	c14-1	**X**			**x**	**X**				**x**				
General Skills	**d1-1**		**x**							**x**	**X**			
	d9-1		**x**						**X**	**x**				

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
	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**	x			x								
	a4-1	x			X		X						
	a19-1	X			X				x				
Intellectual Skills	**b1-1**	X			X		X			X			
	b16-1	X			X					x			
	b17-1	X			X		X						
Professional Skills	**c1-1**	X			X								
	c13-1	X	X								X		
	c14-1	X	X										
General Skills	**d1-1**									X			
	d9-1									x	x		

10.1 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	Week
Final Examination (*written*)	**100**	**66.66%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**15**	**10%**	**12th**
Tutorial and report	**20**	**13,40%**	**Weakly**

assessment (*Term Work*)			
Total	**150**	**100%**	

11- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

12- List of references:

12.1- Spotts M.F, " Design of Machine Elements" Prentic –Hall-New-Jersay-1995.
12.2- Fogiel M " The Machine Design Problem Solver" Piscataway, New-Jersay.
12-3- Deutschman Aaron D. "Machine Design (Theory and Practice)" Macmillan Publishing Co. 1990.
12-4-Weinstein N"Problems on The Design of Machine Elements " Mir Publishers,Moscow.
12-5 Allen S. Hall : Theory and Problems of Machine Design " Macgraw-Hill Book Company.
12-6- Lashien O. "Notes of Computer Applications" Menoufia University.
12-7- Essential books (text books)
12-8-Communicate with Net.

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Course coordinator **Programme coordinator**

Dr. Gaber M. SHEHA

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Prod. Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Theory of Machines(2)*** ***Code Symbol:*** ***PRE 312***
Element of program: ***Major/ minor*** ***Date of specification approval:*** ***2003***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2003***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the Student, upon completing the Production Engineering Programme, with the basic knowledge and skills of how to analysis of various mechanical systems and formulate mathematical models of problems in vibrations. This course will also provide students with the ability to select and design the appropriate isolation , absorption, and control system of vibration for the application of various mechanical systems. The skill of experimental measurement of vibration monitoring for different mechanical system configurations is also provided.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding of the importance of vibration analysis of mechanical system during design and operating stages.**
2. **Derivation mathematical models for single and multi DOF vibration systems.**
3. **Computing of the natural frequencies for various vibration systems .**
4. **Evaluation of the complete solution (response) to mechanical vibration problems due to free, or periodic forces or base excitation using mathematical techniques.**
5. **Analysis of different mechanical system problems and conducting laboratory experimental verifications.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1,A19	B13,B17	C1,C6	D1,D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline	a-1 Describe the principle of the dynamics of the schemes that are used for mechanical vibrations. .
	A19- Engineering design principles and techniques	a-19 Define the appropriate isolation , absorption, and control system of vibration for the application of various mechanical systems
Intellectual skills	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b-13 Select the suitable modeling scheme for different mechanical system configurations based on analysis.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b-17-1 Evaluate the natural frequencies of single D.O.F systems. b-17-2 Compute the natural frequencies and mode shapes of Multi D.O.F. systems.
Professional skills	C1- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c-1 Solve differential equations of motion to obtain the response.
	C6- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c-6 Identify between the vibration measuring instruments and analyze the results.
General skills	D1- Collaborate effectively within multidisciplinary team.	d-1 Judge the created soft-ware by working team.
	D7- Search for information and engage in life-long self learning discipline.	d-7 Search for dynamical information and engage in life-long self learning.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamentals of Vibration	1-2
2nd	Vibration of Single Degree of freedom systems	3-7
3rd	Vibration of Multi Degree of freedom systems	9-12
4th	Vibration of Continuous systems	13-14
5th	Approximate methods for natural frequencies and modes.	15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	- Basic concepts of vibrations. - Classification if vibrations.	8	4	2	2	a1-1&a19-1
Week-2	-Vibration Analysis procedure. - Spring , mass, damping elements.	8	4	2	2	a1-1&a19-1
Week-3	- Equation of motion of Single D.O.F systems using: - Newton' s second law of motion, - Energy method, - Lagrange' equation.	8	4	2	2	a1-1&b17-1
Week-4	Response for free vibrations (undamped and viscously damped),	8	4	2	2	c1-1
Week-5	Response for forced vibrations (undamped and viscously damped) due to harmonic excitations and harmonic motion of the base	8	4	2	2	c1-1
Week-6	- Vibration Isolation and control. - Whirling of rotating shafts.	8	4	2	2	c6-1
Week-7	- Vibration measuring instruments	8	4	2	2	c6-1&d1-1
Week-8	Midterm written examination					
Week-9	- Equations of motion of Multi D.O.F systems using: - Newton' s second law of motion, - Lagrange' equation.	8	4	2	2	b13-1 & b17-2
Week-10	Natural frequencies and mode shapes (Eigen values and eigenvectors),	8	4	2	2	b17-2
Week-11	Response for undamped free vibrations	8	4	2	2	c1-1
Week-12	- Response for undamped forced vibrations due to harmonic excitations and harmonic motion of the base. - Dynamic absorber (undamped – damped).	8	4	2	2	c1-1
Week-13	Vibration of one dimensional Continuous systems. - Longitudinal vibration of rods.	8	4	2	2	a19-1& c1-1
Week-14	- Torional vibration of rods, - Flexural vibration of beams.	8	4	2	2	b13-1&c1-1
Week-15	Approximate methods for the eigensolution: - Matrix iterative method, - Rayleigh's method.	8	4	2	2	b13-1&c1-1& d7-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**			**x**	**x**								
	a19-1	**x**			**x**	**x**								
Intellectual Skills	**b13-1**	**x**			**x**	**x**								
	b17-1	**x**			**x**	**x**								
	b17-2	**x**			**x**	**x**								
Professional Skills	**c1-1**		**x**							**x**	**x**			
	c6-1		**x**							**x**	**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d7-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x											
	a19-1	x			x								
Intellectual Skills	**b13-1**	x	x	x	x	x	x				x		x
	b17-1	x	x	x	x	x	x				x		x
	b17-2	x	x	x	x	x	x				x		x
Professional Skills	**c1-1**	x		x	x								
	c6-1	x		x		x					x		
General Skills	**d1-1**						x	x	x	x			
	d7-1						x		x	x			

11.2 Assessment Weight, Schedule and Grades Distribution:

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

12- Facilities required for teaching and learning:

A. 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.

B. 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.

13- List of references:

1- **Mechanical Vibrations.4th Edition book, by Singiresu S.Rao, Prentice Hall, 2004**
2- **Fundamentals of Mechanical Vibration. 2nd Edition book, by S.G.Kelly, McGraw-Hill, 2002.**

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Course coordinator **Programme coordinator**

Prof. ElSayed Mohamed ElBeheiry

Head of the Department

Prof. Taha Ali El-Taweel

Date: 01/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Computer Applications (2)*** ***Code Symbol:*** ***PRE 313***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	---	20%	80%	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of computer programming associated with Flow-Charts for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems using computer programming. This course will also provide students, with the required skills of selecting the proper programming software and the suitable variables for solving the engineering problems. As well as, this course will give the student the required skills of ability for modeling the engineering problems dealing with machine elements and statistical problems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concebtes of computer programming.**
2. **Definition of the requirements of computer programming associated with Flow-Charts.**
3. **Realizing of the different types of softwares and the suitable variables.**
4. **Evaluation of the suitable software for solving the engineering problems.**
5. **Analysis of different techniques for modeling the engineering problems dealing with machine elements, dynamics and statistical problems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A15 and A19	B1, B16 and B17	C6, C13 and C14	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain different computer programming methods for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A15- The specifications, programming and range of application of CAD and CAD/CAM facilities	a15-1 Describe some methods of creating a desired soft-ware for solving engineering problems. a15-2 Define the basics concepts of programming languages which are required for molding and solving the engineering applications problems.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving some machine element problems by programming.
Intellectual skills	B1- Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Create the desired software dealing with based methods for modeling and analyzing engineering problems.
	B16- Interpret numerical data and apply analytical methods for engineering design purposes	b16-1 Organize and interpret numerical data using computer programs to analyze the problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable computer programs for developing the solutions of practical engineering problems.
Professional skills	C6- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required comp. programs.	c6-1 Employ a suitable techniques and software packages pertaining to the discipline and develop required computer programs.
	C13-Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly.	c13-1 Apply the designed computer programs to solve selected engineering problems and to draw the results of solving these problems.
	C14- Employ the traditional and modern CAD and CAD/CAM facilities in design and production processes.	c14-1 Use the designed computer programs for developing solutions of practical problems comparing the results with the output of traditional and modern CAD/CAM design.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D6- Effectively manage tasks, time, and resources.	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamental of Programming language and Float chart	1-3
2nd	Suitable variables and Program Menus	4-5
3rd	Statistical applications using Programming language	6-7
4th	Machine element applications (Keys, belts, welding)	9-10
5th	Dynamic applications (Vibrations, Journal, bearings)	11-13
6th	Numerical applications and Database connection	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Fundamental of Float chart	**4**	**2**	**--**	**2**	a15-1 &a15-2
Week-2	Fundamental of Programming language	**4**	**2**	**--**	**2**	a15-1 & a15-2 &a19-1
Week-3	Using Programming and Float chart for solving some engineering problems	**4**	**2**	**--**	**2**	b16-1&c13-1
Week-4	Suitable variables	**4**	**2**	**--**	**2**	b17-1&c14-1
Week-5	Program Menus and submenus	**4**	**2**	**--**	**2**	a15-1 & a15-2
Week-6	Fundamental of statistical techniques	**4**	**2**	**--**	**2**	a15-1&a15-2
Week-7	Statistical applications using programming language	**4**	**2**	**--**	**2**	a1-1& &b16-1 d1-1
Week-8						
Week-9	Machine element applications for (Keys, belts)	**4**	**2**	**--**	**2**	c6-1 & b1-1 &c13-1&c14-1
Week-10	Machine element applications for (welding)	**4**	**2**	**--**	**2**	a1-1 & b17-1 c13-1&c14-1
Week-11	Dynamic applications (Free Vibration System)	**4**	**2**	**--**	**2**	a15-1&a15-2 & b16-1&b17-1
Week-12	Dynamic applications (Damped Vibration System)	**4**	**2**	**--**	**2**	a1-1& a15-1& a19-1 & b17-1
Week-13	Dynamic applications (Bearings)	**4**	**2**	**--**	**2**	a1-1&a19-1 & b17-1 &a12-1
Week-14	Fundamental of Numerical applications	**4**	**2**	**--**	**2**	a15-2&c13-1 & &b16-1&d1-1
Week-15	Numerical applications and Database connection	**4**	**2**	**--**	**2**	a15-1& a15-2 b16-1 && d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**A1-1**	**x**		**x**										
	a15-1	**x**		**x**										
	a15-2	**x**		**x**										
	a19-1	**x**		**x**										
Intellectual Skills	**b1-1**	**x**	**x**				**x**						**x**	
	b16-1	**x**	**x**	**x**			**x**						**x**	
	b17-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	**c6-1**	**x**									**x**			
	c13-1	**x**												
	c14-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x	x	x									
	a15-1	x											
	a15-2	x											
	a19-1	x	x	x									
Intellectual Skills	**b1-1**	x	x	x							x		
	b16-1	x	x										
	b17-1	x	x	x							x		
Professional Skills	**c6-1**	x		x									
	c13-1	x		x			x				x		
	c14-1	x		x									
General Skills	**d1-1**										x		
	d6-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare the flow charts and the programming code for solving some mechanical engineering problems. Creating the desired softwares and test these programs.

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

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13.3- Recommended books

-"Programming with Visual-Basiv 6" M. Abo-ElAtta,Compu- Science series , Cairo, Egypt .

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Course coordinator **Programme coordinator**

Dr. Khaled M. Khader

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Machining Equipments*** ***Code Symbol:*** ***PRE*** 314
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

Lecture	Tutorial	Laboratory	Total
4	-	2	6

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	40	50%	-	10	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with the basic knowledge of mathematics, science and engineering concepts to the solution of engineering problems. As well as, this course will provide the student with the ability to use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management. This course will also provide students to work with mechanical design and manufacturing systems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concepts and details of machining equipments including conventional and non-conventional machines.**
2. **Definition of the requirements of machining equipments associated with different applications.**
3. **Realizing of the different types of machining equipments and the different machining processes.**
4. **Evaluation of the suitable production schemes for various machining equipments.**
5. **Analysis of different production techniques and conducting some experimental applications.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	**A1, A5, A13, A18 & A19**	**B2, B12, B13 & B18**	**C13, C16, C18 & C19.**	**D2 & D6**

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain different conventional and non-conventional machining methods using knowledge of engineering concepts. a1-2 Compare between the different gear machining methods. a1-3 Identify the factors affecting the different methods.
	A5- Methodologies of solving engineering problems, data collection and interpretation	a5-1 Define the basics concepts of the machining theories that required for solving the engineering applications problems
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1.Discuss the theories related to the manufacture engineering
	A18- The role of information technology in providing support for mechanical engineers	A18-1 Define the information technololgy supported the producer engineers
	A19- Engineering design principles and techniques	a19-1Discuss different engineering techniques for solving some machine element problems by programming.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Create the desired program dealing with the methods for modeling and analyzing engineering problems.
	B12- Create systematic and methodic approaches when dealing with new and advancing technology	b12-1 Organize and interpret numerical data using computer programs to analyze the problems.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Design the suitable programs to develop the solutions of practical engineering problems.
	B18- Select appropriate manufacturing method considering design requirements.	b18-1 Plan the suitable manufacturing method that take the design requirement considerations.
Professional skills	C13- Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly	c13-1 Employ the engineering drawing and computer graphics to explain the required machining programs.
	C16- Analyze experimental results and determine their accuracy and validity;	c16-1 Apply the different monitoring methods to draw and analyze the results of solved problems.
	C18- Operate and maintain mechanical equipment.	c18-1 Use the suitable technique to develop the maintenance program for the best operation and protection system.
	C19- Prepare the process plan for manufacturing	c19-1 Plan the manufacturing steps and production operations.
General skills	D2- Work in stressful environment and within constraints	d2-1 Improve the sharing of the working team to work under stress and within constrains
	D6- Balance between resources and time	d6-1 Balance between the facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Gear manufacturing	1-3
2nd	Deep hole drilling	4-5
3rd	Super finishing processes	6-7
4th	Material removal processes	8
5th	Ultrasonic machining	9
6th	Water jet machining and abrasive jet machining	10
7th	Abrasive water jet machining and magnetic abrasive finishing	11
8th	Electrochemical machining	12
9	Electrodischarge machining	13
10	Laser beam machining	14
11	Hybrid electrochemical processes	15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction and types of gears	**6**	**4**	**--**	**2**	a1-1 &b12-1& b13-1
Week-2	Forming and Generating Methods in Gear Cutting	**6**	**4**	**--**	**2**	a5-1 & a18-1 &a19-1&b2-1& b13-1
Week-3	Gear Cutting by Generation(hobbing)	**6**	**4**	**--**	**2**	a19-1 &b18-1&c13-1
Week-4	Gear Shaping with Pinion Cutter	**6**	**4**	**--**	**2**	b17-1&c14-1&c13-1&c19-1
Week-5	Gear Finishing Operations	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-6	Deep Hole Machining	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-7	Micro Finishing Machining and Operations	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-8	Material Removal Processes	**6**	**4**			a5-1 & a18-1 &a19-1&b2-1& b13-1
Week-9	Ultrasonic Machining	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-10	Water Jet Machining and Abrasive Jet Machining	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-11	Abrasive Water Jet Machining and Magnetic Abrasive Finishing	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-12	Electrochemical Machining	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-13	Electrodischarge Machining	**6**	**4**	**--**	**2**	a5-1 & a18-1 &a19-1&b2-1& b13-1
Week-14	Laser Beam Machining	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1
Week-15	Hybrid Electrochemical Processes	**6**	**4**	**--**	**2**	c13-1&b12-1& b13-1& b18-1& d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a1-1	x		x		x		x		x			x	
	a1-2	x		x		x		x		x			x	
	a1-3	x		x		x		x		x			x	
	a5-1	x		x		x		x		x			x	
	a13-1	x		x		x		x		x			x	
	a18-1	x		x		x		x		x			x	
	a19-1	x		x		x		x		x			x	
Intellectual Skills	b2-1	x		x		x		x		x			x	
	b12-1	x		x		x		x		x			x	
	b13-1	x		x		x		x		x			x	
	b18-1	x		x		x		x		x			x	
Professional Skills	c13-1	x		x		x		x		x			x	
	c16-1	x		x		x		x		x			x	
	c18-1	x		x		x		x		x			x	
	c19-1	x		x		x		x		x			x	
General Skills	d2-1	x		x		x		x		x			x	
	d6-1	x		x		x		x		x			x	

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	Tutorial Assessment	Model Exams Assessment	Report Assessment	Quiz assessment	Presentation Assessment	Discussion	Project Assessment	Home Exam	Monitoring
Knowledge & Understanding	a1-1	x	x	x									
	a1-2	x											
	a1-3	x											
	a5-1	x	x	x									
	a13-1	x	x	x							x		
	a18-1	x	x										
	a19-1	x	x	x							x		
Intellectual Skills	b2-1	x		x									
	b12-1	x		x			x				x		
	b13-1	x		x									
	b18-1										x		
Professional Skills	c3-1						x		x	x	x		
	c16-1										x		
	c8-1						x		x	x	x		
	c19-1										x		
General Skills	d2-1						x		x	x	x		
	d6-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**15**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**15**	**10%**	**15th**
Mid term written Examination1 (*Term Work*)	**10**	**6.66%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**6.66%**	**14th**
Tutorial and report assessment (*Term Work*)	**10**	**6.66%**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare the plan and the different methods for manufacturing some products.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of advanced machining processes

13.2- Essential books (text books)

- McGeough, J. A. (2002). *Micromachining of Engineering Materials.* New York: Marcel Dekker, Inc.
- McGeough, J. A. (1988). Advanced *Methods of Machining.* London, New York: Chapman and Hall.
- Rumyantsev, E., and Davydov, A. (1984). *Electrochemical Machining of Metals*. Moscow: Mir Publishers.

13.3- Recommended books

- Brown, J. (1998). *Advanced Machining Technology Handbook*. New York: McGraw-Hill.
- Tlusty, G. (1999). *Manufacturing Processes and Equipment*. Upper Saddle River, NJ: Prentice-Hall.
- Kalpakjian, S. (1997). *Manufacturing Processes for Engineering Materials*, 3rd ed. Reading, MA: Addison Wesley.
- Kaczmarek, J. (1976). *Principles of Machining by Cutting, Abrasion, and Erosion.* Stevenage, U.K.: Peter Peregrines, Ltd. .

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Course coordinator **Programme coordinator**

Prof. Taha Ali El-Taweel

Dr. Mosad Fayed El-Safty

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/1/2012.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***INDUSTRIAL SAFETY*** ***Code Symbol:*** **PRE 315A**
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of industrial safety for covering the safety application problems. This course will provide students with the required skills of selecting the useful applications and the suitable variables for solving the safety problems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the types of safety problems.**
2. **Definition of the requirements of different types of the industrial safety problems.**
3. **Understanding how to protect the production elements**
4. **Design a recent methods to safe the industrial components.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A6, A8 and A19	B4, B9, B12 and B18	C8, C11 and C15	D3 and D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A6- Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1 Explain different types of safety requirements used in the environmental applications.
	A8- Current engineering technologies as related to disciplines.	. a8-1 Define the basics concepts of industrial safety applications.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for covering safety applications.
Intellectual skills	B4 - Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1 Create a new ideas to solve a recent safety problems.
	B9 -Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1 Organize a new programs to increase the life time of industrial elements.
	B12 - Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1 Design a suitable computer programs for developing the solutions of practical engineering problems.
Professional skills	C8 - Apply safe systems at work and observe the appropriate steps to manage risks.	C8-1 Employ a suitable techniques and software packages pertaining to the discipline and develop required computer programs.
	C11 - Exchange knowledge and skills with engineering community and industry.	c11-1 Apply for a new technique to protect a future problems may affect the safety systems.
	C15 - Use basic workshop equipment safely;	c15-1 Use a new systems of safety.
General skills	D3 - Communicate effectively.	d3-1 Improve and develop the communication systems of the safety components.
	D7 - Search for information and engage in life-long self learning discipline.	d7-1 Balance between the cost of safety system design and time life of using.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Local and international organizations working in safety systems applications	1-2
2nd	Defferencis between static and current electricity safety systems	3-4
3rd	Protection analysis of chemical and petrochemical safety systems	5-6
4th	How to protect the noises and gases in the factories	7
5th	Mechanical safety systems and their applications	9-10
6th	High protection methods in the nuclear power plants	11-12
7th	Personal protection safety systems	13-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Local organizations working in safety systems applications	**2**	**2**	**--**	**--**	a6-1 &a8-1
Week-2	International organizations working in safety systems applications	**2**	**2**	**--**	**--**	a6-1 & a19-1
Week-3	Static electricity safety systems	**2**	**2**	**--**	**--**	b4-1&c12-1
Week-4	Current electricity safety systems	**2**	**2**	**--**	**--**	b9-1&c8-1
Week-5	Protection analysis of chemical safety systems	**2**	**2**	**--**	**--**	a6-1 & a19-1
Week-6	Protection analysis of petrochemical safety systems	**2**	**2**	**--**	**--**	a8-1&a19-1
Week-7	How to protect the noises and gases in the factories	**2**	**2**	**--**	**--**	b9-1&& d3-1
Week-8						
Week-9	Mechanical safety systems and their applications	**2**	**2**	**--**	**--**	c8-1 & b4-1 &c11-1&c15-1
Week-10	Mechanical safety systems and their applications	**2**	**2**	**--**	**--**	a8-1 & b12-1 c8-1&c11-1
Week-11	High protection methods in the nuclear power plants	**2**	**2**	**--**	**--**	a18-1&a19-1 & b9-1&b12-1
Week-12	High protection methods in the nuclear power plants	**2**	**2**	**--**	**--**	a6-1& a8-1& a19-1 & b12-1
Week-13	Personal protection safety systems)	**2**	**2**	--	**--**	a6-1&a19-1 & b12-1 &c11-1
Week-14	Personal protection safety systems	**2**	**2**	**--**	**--**	a8-1&a19-1 & &b12-1&d7-1
Week-15	Personal protection safety systems	**2**	**2**	**--**	**--**	a6-1& a8-1 & d3-1 &d7-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a6-1	**x**		**x**										
	a8-1	**x**		**x**										
	a19-1	**x**		**x**										
Intellectual Skills	b4-1	**x**		**x**										
	b9-1	**x**					**x**							
	b12-1	**x**		**x**			**x**							
	b14-1	**x**		**x**			**x**							
Professional Skills	c8-1	**x**									**x**			
	c11-1	**x**												
	c15-1	**x**									**x**			
General Skills	d3-1	**x**								**x**	**x**			
	d7-2	**x**								**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a6-1	**x**	**x**				**x**			**x**			
	a8-1	**x**					**x**						
	a19-1	**x**					**x**						
Intellectual Skills	b4-1												
	b9-1	**x**	**x**				**x**			**x**	**x**		
	b12-1	**x**	**x**				**x**						
	b14-1	**x**	**x**				**x**				**x**		
Professional Skills	c8-1	**x**					**x**			**x**			
	c11-1	**x**					**x**				**x**		
	c15-1	**x**					**x**			**x**			
General Skills	d3-1	**x**					**x**				**x**		
	d7-1	**x**					**x**			**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports.

13- List of references:

13.1- Course notes

- Notes of Industrial Safety Applications

13.2- Essential books (text books)

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13.3- Recommended books

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Course coordinator **Programme coordinator**

Dr. Omar Lashin

Head of the Department

Prof. Taha El-Taweel

Date: 01/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Production Quality Control*** ***Code Symbol:*** ***PRE 315B***
Element of program: ***Major*** ***Date of specification approval:*** ***2003***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2003***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20%	--	80%	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of quality control associated with Flow-Charts for solving industrial production problems. As well as, this course provide the student with required skills of applying knowledge of statistics, science for creating solutions of production quality problems using statistical techniques. This course will also provide students, with the required skills of selecting the proper method and the suitable data for solving the quality control problems. As well as, this course will give the student the required skills of ability for modeling the engineering problems dealing with statistical quality control problems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concepts of statistical process control (SPC).**
2. **Definition of the requirements of process capability study and analysis.**
3. **Designing of the different types of acceptance sampling plans.**
4. **Evaluation of the suitable statistical methods for solving the quality engineering problems.**
5. **Analysis of different techniques for modeling the quality cost engineering problems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A15 and A19	B1, B16 and B17	C1, C13 and C14	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of statistics, science and engineering concepts to the solution of quality problems.	a1-1 Explain different statistical methods for solving engineering quality problems using knowledge of statistics, science and engineering concepts.
	A15- The specifications design, range of application of statistical methods.	a15-1 Describe some methods of creating a desired soft-ware for solving engineering quality problems. a15-2 Define the basics statistical concepts of which are required for molding and solving the engineering applications problems.
	A19- Process control principles and techniques.	a19-1 Discuss different statistical techniques for designing and solving some control charts problems.
Intellectual skills	B1- Select appropriate statistical methods for modeling and analyzing problems.	b1-1 Create the desired software dealing with based methods for modeling and analyzing engineering quality problems.
	B16- Interpret numerical data and apply analytical methods for specification design purposes	b16-1 Organize and interpret numerical data using computer programs to analyze the problems.
	B17- Use the principles of engineering statistics in developing solutions to practical engineering quality problems.	b17-1 Design a suitable computer programs for developing the solutions of practical engineering quality problems.
Professional skills	C1- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.	c1-1 Employ a suitable techniques and software packages pertaining to the discipline and develop required computer programs.
	C13-Prepare computer graphics and specialized technical reports and communicate accordingly.	c13-1 Apply the designed computer programs to solve selected engineering quality problems and to draw the results of solving these problems.
	C14- Employ the traditional statistical facilities in design acceptance sampling plans.	c14-1 Use the designed computer programs for developing solutions of practical problems.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D6- Balance between resources and time	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamental of Process control	1-3
2nd	Suitable attributes control charts.	4-7
3rd	Statistical applications.	9-10
4th	Suitable variables control charts.	11-12
5th	Process capability study.	13
6th	Accetance sampling.	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Fundamental of quality control.	**2**	**2**	**--**	**--**	a15-1 &a15-2
Week-2	Process control.	**2**	**2**	**--**	**--**	a15-1 & a15-2 &a19-1
Week-3	Process control, continued.	**2**	**2**	**--**	**--**	b16-1&c13-1
Week-4	Suitable attributes control charts.	**2**	**2**	**--**	**--**	b17-1&c14-1
Week-5	Suitable attributes control charts, continued.	**2**	**2**	**--**	**--**	a15-1 & a15-2
Week-6	Suitable attributes control charts, continued.	**2**	**2**	**--**	**--**	a15-1&a15-2
Week-7	Suitable attributes control charts, continued.	**2**	**2**	**--**	**--**	a1-1& &b16-1 d1-1
Week-8						
Week-9	Suitable attributes control charts, continued.	**2**	**2**	**--**	**--**	c6-1 & b1-1 &c13-1&c14-1
Week-10	Statistical applications.	**2**	**2**	**--**	**--**	a1-1 & b17-1 c13-1&c14-1
Week-11	Suitable variables control charts.	**2**	**2**	**--**	**--**	a15-1&a15-2 & b16-1&b17-1
Week-12	Suitable variables control charts.	**2**	**2**	**--**	**--**	a1-1& a15-1& a19-1 & b17-1
Week-13	Process capability analysis	**2**	**2**	**--**	**--**	a1-1&a19-1 & b17-1 &a12-1
Week-14	Fundamental of acceptance sampling	**2**	**2**	**--**	**--**	a15-2&c13-1 & &b16-1&d1-1
Week-15	Design of acceptance sampling plans.	**2**	**2**	**--**	**--**	a15-1& a15-2 b16-1 && d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**										
	a15-1	**x**		**x**										
	a15-2	**x**		**x**										
	a19-1	**x**		**x**										
Intellectual Skills	**b1-1**	**x**	**x**				**x**						**x**	
	b16-1	**x**	**x**	**x**			**x**						**x**	
	b17-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	**c1-1**	**x**									**x**			
	c13-1	**x**												
	c14-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x	x										
	a15-1	x											
	a15-2	x											
	a19-1	x	x										
Intellectual Skills	**b1-1**	x	x								x		
	b16-1	x	x										
	b17-1	x	x								x		
Professional Skills	**c1-1**	x											
	c13-1	x					x				x		
	c14-1	x											
General Skills	**d1-1**										x		
	d6-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**40**	**80%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**5**	**10%**	**weakly**
Total	**50**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

-Montgomery, D., "Introduction To Statistical Quality Control", 5ed., (2005).

13.3- Recommended books

- Jerry Banks, "Principles of Quality Control" (1989).

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Course coordinator **Programme coordinator**

Dr. Mohamed A. Sharaf El-Din

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Project Planning & Management*** ***Code Symbol:*** ***PRE 316***
Element of program: ***Major*** **Date of specification approval:** 2012
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** **Bylaw** 2006

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	---	80%	-----	20%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to develop an understanding of the principles of facilities location, layout & material handling. Also, be able to design a factory layout incorporating product, process, & personnel requirements. It is also aimed that to provide the students with a basic understanding of project management principles & practices.

3- Course Objectives:

1. **Understand the nature & scope of proiects.**
2. **Recognize the different steps / phases for project planning & control.**
3. **Learn analytical techniques project scheduling, control and selection.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A2 and A3	B1, and B2	C1	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Understand the Scope of facilities planning.	a1-1 Describe the principles of facilities planning.
	A2- Recognite the steps/ phases for project planning &control.	a2-1 Identify the different steps for project planning .
	A3- Learn analytical techniques for project scheduling, control and selection.	a3-1 Identify the suitable techniques for project scheduling and control.
Intellectual skills	B1- Design of a facility layout and evaluation layout alternative.	b1-1 Create the suitable design for facilities layout .
	B2- Creating project work break down structure.	b2-1 Create appropriate project structure based on analysis.
Professional skills	C1- Analyzing project plan through networks.	c1-1 Employ a suitable techniques for developing the project plan.
General skills	D1- Use IT skills & display nature computer literacy.	d1-1 Judge the create soft-ware by working team.
	D9- Refer to relevant literatures.	d9-1 Refer to project planning & management handbook .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introdction	1
2nd	Product , process & schedule design	2-4
3rd	Project selection techniques	5-7
4th	Project organization	9-10
5th	Project Planning & control	11-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Definition of Project. Types of Projects . Determination of the objectives of the Project.	**2**	**2**	**--**	**--**	a1-1 &a2-1
Week2	What is a product. Product classifications . Different types of manufacturing operation symbols. Flow processes charts.	**2**	**2**	**--**	**--**	a3-1
Week3	Types of production equipments. Technical specifications of production equipment.	**2**	**2**	**--**	**--**	a3-1

Week4	Economical analysis techniques for the selection of production equipment. Process planning organization scheduling and control of production.	**2**	**2**	**--**	**--**	a3-1
Week5	Project analysis.	**2**	**2**	**--**	**--**	b1-1& b2-1&c1-1
Week 6	Economical analysis techniques for the selection of plant location.	**2**	**2**	**--**	**--**	b1-1& b2-1&c1-1
Week 7	Factors affecting the selection of plant location. Applications.	**2**	**2**	**--**	**--**	b1-1& b2-1&c1-1
Week-8	Midterm written examination.					
Week 9	Definition of organization concept. Difference and relationship between management, administration and organization.	**2**	**2**	**--**	**--**	b2-1
Week 10	Importance of management. Project management types of organization structures.	**2**	**2**	**--**	**--**	b2-1
Week11	Proiect management through PERT/ CPM..	**2**	**2**	**--**	**--**	c1-1& b1-1& d1-1&d9-1
Week12	Phase of project scheduling :- planning – 1.Set objectives, 2.Develop work breakdown structure , 3.Estimate time for these activities , 4.Find interdependence between the activities,	**2**	**2**	**--**	**--**	c1-1& b1-1& d1-1&d9-1
Week13	Scheduling – Determine start and finish time for each activity, critical path on which activities need special attention . Slacks and floats for non-critical path .	**2**	**2**	**--**	**--**	c1-1& b1-1& d1-1&d9-1
Week14	Control – Making periodical progress reports, reviewing the report , and analyzing project status	**2**	**2**	**--**	**--**	c1-1& b1-1& d1-1&d9-1
Week15	.Decision regarding updating resource allocation .	**2**	**2**	**--**	**--**	c1-1& b1-1& d1-1&d9-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge &	**a1-1**	**x**		**x**										

understanding	**a2-1**	**x**												
	a3-1	**x**												
Intellectual Skills	**b1-1**	**x**		**x**		**x**								
	b2-1	**x**		**x**										
Professional Skills	**c1-1**	**x**				**x**								
General Skills	**d1-1**			**x**				**x**						
	d9-1		**x**	**x**							**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**											
	a2-1	**x**	**x**										
	a3-1	**x**											
Intellectual Skills	**b1-1**	**x**									**x**		
	b2-1	**x**											
Professional Skills	**c1-1**	**x**									**x**		
General Skills	**d1-1**										**x**		
	d9-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**40**	**80%**	**16th**
End of term assessment (*Oral*)	**2**	**4%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**3**	**6%**	**weekly**
Total	**50**	**100%**	

12- Facilities required for teaching and learning:

Library Usage:

Students should be encouraged to use library technical resources in the preparation of report and oral presentation.

13- List of references:

13.1 - Projects : Planning , Analysis , Selection , Implementation and Review. 2 nd edition book by Prasanna , Tata Mc – Graw – Hill Publishing Co.Ltd., New Delhi , (1998).

- Notes of Computer Applications

13.2- - Projects Management and control , 2nd edition book by Ghosh , S., New central Book Agency Ltd., Calcutta , (1997).

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Course coordinator **Programme coordinator**

Dr . Ahmed M. Abou El - Ainene

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

MENOUFIYA UNIVERSITY
Faculty of Engineering
Shebi El-Kom
Prod. Eng& Mech. Design Dept.

Academic Year: 2011/2012
First Semester

Course Specification

A- Basic Information

Title: Forming equipment **Code Symbol:** PRE 321
Element of program: Major **Date of specification approval:** 2012
Department offering the course: Prod. Eng. & Mech. Design. Dept. **Bylaw** 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*1*	*6*

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student with means of analyzing the boundary value problems in engineering applications. As well as, this course provide the student with required skills of identifying the critical section in engineering problems. This course will also provide students with the required skills of identifying, formulating and solving fundamental engineering problems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic conceptes of metal forming processe.
2. Definition of press working operations.
3. Understanding the procedure and purposes of die making and die design.
4. Understanding the design of sheet metal forming.

4- Relationship between the course and the programmed

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A4,13 and A19	B5, B6 and B18	C3, and C19	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4- Principles of design including elements design, process and/or a system related to specific disciplines	a4-1Define the main principle metal forming tool..
	A13-Concepts, principles aand theories relevant to Mechanical Engineering and manufacture.	a13- 1 Describe different methods of metal manufacturing.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving boundary value problem
Intellectual skills	B5:- Assess and evaluate the characteristics and performance of components, systems and processes	b5-1 Create a criterion suitable for studying the performance of the components
	B6:- Investigate the failure of components, systems, and processes.	b16-1 Design a suitable failure criterion for metal forming tool.
	B18- Select appropriate manufacturing method considering design requirements	b18-1 Design and selecting the suitable forming technique of press working operation .
Professional skills	C3:- Create and/or re-design a process, component or system, and carry out specialized engineering designs	c3-1 Employ a suitable techniques to formulate the required equations for design
	C19:- Prepare the process plan for manufacturi.	c19-1 Employ a suitable safe technique for forming operation.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Communicate with various types of persons as team work
	D9):- Refer to relevant literatures	d9-1 Refer to relevant literature

6- Course Topics.

Topic No.	General Topics	Weeks
1	Fundamentals of forming presses	1
2	Design of press working tools	2-3
3	Blanking and piercing operation	4-7
4	Bending ,forming and drawing dies	9-13
5	Bluging , embossing and coining dies	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	Tut.	Lab.	
Week-1	Fundamentals of forming presses	**6**	**3**	**2**	**1**	a4-1a&a13-1,b18-1
Week-2	Design of press working tools	**6**	**3**	**2**	**1**	a19-1`&b18-1,c3-1
Week-3	Design of press working tools	**6**	**3**	**2**	**1**	a19-1`&b18-1,c3-1
Week-4	Blanking and piercing operation (scrap-strip layout)	**6**	**3**	**2**	**1**	a13-1&a19-1&b5-1&b18-1
Week-5	Blanking and piercing operation (die sets)	**6**	**3**	**2**	**1**	a13-1&a19-1&b5-1&b18-1
Week-6	Blanking and piercing operation (strippers and pilots)	**6**	**3**	**2**	**1**	a13-1&a19-1&b5-1&b18-1
Week-7	Blanking and piercing operation (clearance-reducing cutting force)	**6**	**3**	**2**	**1**	a12-1&a19-1&b5-1&b18-1
Week 8						
Week-9	Bending dies	6	3	2	**1**	4a4-1,a19-1,b18-1,b6-1,c19-1,d1-1
Week-10	Forming dies	6	3	2	**1**	a4-1,a19-1,b18-1,b6-1,c19-1,d1-1
Week-11	Forming dies	**6**	**3**	**2**	**1**	a4-1,a19-1,b18-1,b6-1,c19-1,d1-1
Week-12	Drawing dies	**6**	**3**	**2**	**1**	a4-1,a19-1,b18-1,b6-1,c19-1,d1
Week-13	Drawing dies	**6**	**3**	**2**	**1**	a4-1,a19-1,b18-1,b6-1,c19-1,d1
Week-14	Bulging operation	**6**	**3**	**2**	**1**	a13-1,b5-1&c19-1,9-1
Week-15	Embossing operation and coining dies	**6**	**3**	**2**	**1**	a13-1,b5-1&c19-1,9-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a4-1**	**x**			**x**	**x**								
	a13-1	**x**			**x**	**x**								
	a19-1	**x**			**x**	**x**								
Intellectual Skills	**b5-1**	**x**			**x**									
	b6-1	**x**	**x**		**x**		**x**							
	b18-1	**x**	**x**	**x**	**x**		**x**							
Professional Skills	**c3-1**	**x**	**x**	**x**	**x**		**x**							
	c19-1	**x**		**x**	**x**									
General Skills	**d1-1**			**x**	**x**					**x**	**x**			
	d9-1			**x**	**x**					**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	Tutorial Assessment	Model Exams Assessment	Report Assessment	Quiz assessment	Presentation Assessment	Discussion	Project Assessment	Home Exam	Monitoring
Knowledge & Understanding	a4-1	x	x	x	x		x			x			
	a13-1	x			x		x			x			
	a19-1	x	x		x		x			x			
Intellectual Skills	b5-1	x		x	x		x			x			
	b6-1	x	x		x		x			x			
	b18-1	x			x	x	x			x			
Professional Skills	c3-1	x	x	x		x	x			x			
	c19-1	x	x				x			x			
General Skills	d1-1						x			x			
	d9-1						x		x	x			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	Week
Final Examination (*written*)	85	68%	16th
End of term assessment (*Oral*)	5	4%	15th
End of term laboratory examination (*Lab*)	15	12%	16th
Mid term written Examination1 (*Term Work*)	10	8%	8th
Mid term written Examination 2 (*Term Work*)	0	0%	12th
Tutorial and report assessment (*Term Work*)	10	8%	weakly
Total	100	100%	

12- Facilities required for teaching and learning

A. laboratory Usage:

Students are prepared the experimental setting .

B. Library Usage:

Students should be encouraged to use library text books in the preparation of the solution of the assignments .

13- List of references:

13.1- Course notes

13-2-Essental books(text books)

1-"Solution of problems in strength of materials and mechanical of solids" S.A Urry&P.J Turner.

13.3- Recommended books

1- "Engineering Solid Mechanics- Fundamentals and Applications", A.R. Ragab and S.E.

2- Bayoumi, CRC Press, 1999 applied stress analysis – Second Edition- Richard G. Budynos.

3- "Advanced strength and applied stress analysis" Richard G. Budynas.

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Course coordinator **Programme coordinator**

Prof. Dr. Mahmoud Abo-Elkhier

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Fracture Mechanics and Stress Analysis*** ***Code Symbol:*** ***PRE 322***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*1*	*1*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	10%	60%	10%	10%	---	100%

B- Professional Information

2- Course Aims:

- This course provides fundamental backgrounds of fracture mechanics and its use for the understanding of brittle fracture.
- Different approaches used for determining fracture toughness of materials will be discussed.
- The application of fracture mechanics are emphasized for the selection of materials for the required applications.

Fracture mechanics is used to formulate quantitatively

1. The degree of safety of a structure against brittle fracture
2. The conditions necessary for crack initiation, propagation and arrest
3. The residual life in a component subjected to dynamic/fatigue loading

3- Course Objectives:

The objective of this course is to develop the tools necessary for fracture control through defect tolerant performance prediction and condition monitoring, optimization of alloy cracking resistance by microstructural means, laboratory experimentation, and fracture mechanism research.
Upon completion of this course the student will be able to:

1. Define stress concentration factor, stress intensity factor and fracture toughness.
2. Define impact testing and ductile to brittle transition.
3. Define fatigue failure, fatigue life time, fatigue limit and fatigue strength.

So, the student (Engineer) will be familiar with appropriate design principles to prevent in-service failures when He understand the following:

- How do flaws in a material initiate failure?
- How is fracture resistance quantified; how do different material classes compare?
- How do we estimate the stress to fracture.
- How do loading rate, loading history, and temperature affect the failure stress?

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 and A19	B6 and B13	C14 and C16	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Recognize the concepts and theories of mathematics, and sciences related to the solution of mechanical engineering problems.	a1-1 Recognize knowledge of mathematics, science and engineering concepts. a1-2 Understanding of the basic concepts of differential, integral calculus and strength of materials.
	A3- Characteristics of engineering materials related to the discipline.	a3-1 Describe ductile fracture, brittle fracture and ductile to brittle transition.
	A19- Engineering design principles and techniques	a19-1 Discuss the degree of safety of a structure against brittle fracture, the conditions necessary for crack initiation, propagation and arrest and the residual life in a component subjected to dynamic/fatigue loading
Intellectual skills	B6- Investigate the failure of components, systems, and processes.	b6-1 Manage How do flaws in a material initiate failure?, How is fracture resistance quantified; how do different material classes compare? How do we estimate the stress to fracture. How do loading rate, loading history, and temperature affect the failure stress?
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering	b13-1 Organize and interpret experimental results and stress analysis to analyze the fracture problems.
Professional skills	C14- Employ the traditional and modern CAD and CAD/CAM facilities in design and production processes.	c14-1 Employ a suitable techniques to the discipline and understanding the best method for solving engineering problems .
	C16- Analyze experimental results and determine their accuracy and validity	c16-1 Compare the experimental results with the theoretical calculations to determine their accuracy and validity
General skills	D1- Collaborate effectively within multidisciplinary team.	d1-1 Share the available information related to the problem by working team.
	D9- Refer to relevant literatures.	d9-1 Balance between laboratory facilities resources for conducting experiments and laboratory programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamentas and Historical Overview	1
2nd	Notches and Stress Concentration & Cracks and Stress Intensity Factor	2-3
3rd	Stress Analysis of Cracked Components	4-6
4th	Plastic Yielding at Crack Tip	7&9
5th	Fracture Criteria	10-12
6th	Fatigue and Life Prediction & Hot Ductility	13-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Historical Overview, Notches and Stress Concentration, Cracks and Stress Intensity Factor, Plane Stress and Plane Strain	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1
Week-2	Stress Analysis of Cracked Components: Energy Balance During Crack Growth, Griffith Theory	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1, b13-1, c14-1
Week-3	Stress Analysis of Cracked Components: Energy Release Rate *G* and Compliance, Constant Load Conditions, Constant Displacement Condition, and Determination Of Energy Release Rate From Compliance	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1, b13-1, c14-1
Week-4	Stress Analysis of Cracked Components: Stress Intensity Factor *K*, Relationship Between *G* and *K*	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1, b13-1, c14-1
Week-5	Stress Analysis of Cracked Components: Determination of K_{Ic} using different tests.	**5**	**3**	**1**	**1**	a3-1, b6-1, b13-1, c14-1, c16-1, d9-1
Week-6	Plastic Yielding at Crack Tip: Irwin's Model, The Strip Yield Model, and Shapes of Plastic Zone	**5**	**3**	**1**	**1**	a1-1, a19-1, a3-1, b6-1, b13-1, c14-1
Week-7	Fracture Criteria: *K* as a Failure Criterion, Residual (Fracture) Strength and Critical Crack Size	**5**	**3**	**1**	**1**	a3-1, b6-1, b13-1, c14-1, c16-1, d9-1
Week-8						
Week-9	Plastic Yielding at Crack Tip: Crack Tip Opening Displacement.	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1, b13-1, c14-1
Week-10	Elastic-Plastic fracture mechanics : J-integral.	**5**	**3**	**1**	**1**	a1-1, a19-1, b6-1, b13-1, c14-1
Week-	Impact Tests and Ductile to Brittle	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1,

11	transition.					b13-1, c14-1
Week-12	Fatigue and Life Prediction: Fatigue fracture, Fatigue limit, and Endurance limit., Fatigue Life.	**5**	**3**	**1**	**1**	a1-1, a1-2, a3-1, b6-1, b13-1, c14-1, c16-1
Week-13	Fatigue and Life Prediction: Fatigue Crack Growth Equations and Fatigue life.	**5**	**3**	**1**	**1**	a1-1, a1-2, b6-1, b13-1, c14-1, c16-1
Week-14	Study of Transverse Cracking and Hot Ductility of some steel alloys	**5**	**3**	**1**	**1**	a3-1, b6-1, b13-1, c14-1, c16-1, d9-1
Week-15	.Study of Transverse Cracking and Hot Ductility of some steel alloys.	**5**	**3**	**1**	**1**	a3-1, b6-1, b13-1, c14-1, c16-1, d9-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**												
	a1-2	**x**			**x**									
	a3-1	**x**			**x**									
	a19-1	**x**		**x**	**x**									
Intellectual skills	**b6-1**	**x**	**x**	**x**	**x**	**x**			**x**					
	b13-1	**x**	**x**	**x**	**x**	**x**			**x**					
Professional skills	**c14-1**			**x**						**x**	**x**			
	c16-1	**x**	**x**			**x**					**x**			
General Skills	**d1-1**		**x**	**x**						**x**	**x**			
	d9-1		**x**	**x**		**x**				**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**												
	a1-2	**x**											
	a3-1	**x**						**x**				**x**	
	a19-1	**x**	**x**		**x**			**x**					
Intellectual skills	**b6-1**	**x**	**x**										
	b13-1	**x**	**x**		**x**								
Professional skills	**c14-1**	**x**			**x**		**x**	**x**					
	c16-1	**x**			**x**								
General Skills	**d1-1**			**x**	**x**		**x**					**x**	
	d9-1			**x**	**x**		**x**	**x**		**x**		**x**	

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**85**	**68%**	**16th**
End of term assessment (*Oral*)	**10**	**8%**	**15th**
End of term laboratory examination (*Lab*)	**10**	**8%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**8%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**8%**	**weakly**
Total	**125**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students will be required to routinely use the laboratory facilities to examine the surface fracture of some specimens under different loads, Also, to determine the fracture toughness experimentally.

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports. Background information is required as part of the study. .

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- Fracture Mechanics - *An Introduction* - Second Edition by E.E. Gdoutos, *Democritus University of Thrace,Xanthi, Greece*, 2005 Springer.
- Fracture Mechanics - Second Edition by M. Janssen, J. Zuidema and R. J. H. Wanhill - 2002, 2004 Vereniging voor Studie- en Studentenbelangen te Delft

13.3- Recommended books

- T.L. Anderson, "Fracture Mechanics, Fundamentals and Applications", CRC Press (1991) Boston

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Course coordinator **Programme coordinator**

Dr. Badr M. Badr Abdelbary

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3 rd PROD.**

Course Specification

A- Basic Information

Title: Metrology and calibration ***Code Symbol:*** ***PRE 323***
Element of program: ***Major*** ***Date of specification approval:*** ***2003***
Department offering the course: **Prod. Eng. & Mech. Design Dept.** ***Bylaw 2003***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	20%	20%	20%	30%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of metrology and calibration associated with many of practical work in the field of calibration methods. As well as, this course provide the student with required skills of applying knowledge of measurements science and engineering concepts for creating solutions of measurement problems using various types of instruments. This course will also provide students, with the required skills of selecting the suitable method for calibration problems. As well as, this course will give the student the required skills of ability for solve the problems of miscellaneous measurements.

3- Course Objectives:

1. **Analyses and understanding the advanced methods of measurements and its application.**
2. **Demonstration of advanced methods techniques using developed calibration methods.**
3. **Evaluation of the suitable design and calibration methods for any types of instruments.**
4. **Realizing of the principles methods of measuring using different advanced methods.**
5. **Evaluation of the principles calibration methods using different types of instruments.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A1,A14and A19	B13,B14	C5, C12 and C16	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
	A1- knowledge of metrology and calibration concepts with many	a1-1 Explain the different method and the suitable variables for solving

Knowledge& Understanding	of practical work in the field of metrology and calibration.	the problems of angular measurements and miscellaneous measurements.
	A14- Understanding The measuring methods operations and solve some measuring proplems.	a14-1 Describe some methods of creating a desired measuring methods for solving production measurenting problems of gears. a14-2 Define the advanced concepts of measurements which are required for solving the engineering applications problems
	A19- Compare the tradintial measuring method with the advanced techniques for the measuring instruments.	a19-1 Discuss some of different measuring techniques for compering some advanced techniques of angular measurements with the tradintial methods.
Intellectual skills	B13- Construct the principles of measurement technology in solving mechanical measuring problems .	B13-1 Create the desired software dealing with the used methods for modeling and analyzing M/C tool metrology.
	B14- Formulate and interpret data, and design experiments to obtain primary data of measuring results.	b14-1 Organize and interpret numerical data using computer programs to analyze the measurements results.
	B17- Use the principles of measurement in developing solutions of practical measurements problems.	b17-1 Design a suitable measuring programs for developing the solutions of practical measurements problems.
Professional skills	C5- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	C5-1 Employ a suitable techniques to discipline and develop required method of measurement for screw .
	C12-Prepare and present technical reports..	c12-1 Apply the designed computer programs to solve selected measurement problems and to draw the results of solving these problems.
	C16- Analyze experimental results and determine their accuracy and validity;	c16-1 Use the advanced methods of measurement for developing solutions of practical problems of measurement comparing the results with the output of traditional methods.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created methods of measurement by working team.
	D6- Balance between resources	d6-1 Balance between facilities resources

	and time	and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Angular measurements	1-2
2nd	Gear measurements	3-5
3rd	Screw threads measurements	6-7
4th	Miscellaneous measurements	9-10
5th	M/C tool metrology	11-13
6th	Geometrical tolerance	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Angular measurements(theoretical and analysis).	**7**	**3**	**2**	**2**	a1-1 &a14-2
Week-2	Angular measurements(experimental work).	**7**	**3**	**2**	**2**	a1-1 , a14-2 &a19-1
Week-3	Gear measurements(theoretical and analysis).	**7**	**3**	**2**	**2**	b13-1&c1-1
Week-4	Gear measurements(experimental work).	**7**	**3**	**2**	**2**	b17-1&c14-1
Week-5	Gear measurements(experimental work).	**7**	**3**	**2**	**2**	b17-1 & C5-1
Week-6	Screw threads measurements(theoretical and analysis).	**7**	**3**	**2**	**2**	b17-1&a16-1
Week-7	Screw threads measurements(experimental work).	**7**	**3**	**2**	**2**	c12-1-&b17-1 & d1-1
Week-8						
Week-9	Miscellaneous measurements(theoretical and analysis).	**7**	**3**	**2**	**2**	a1-1 &c12-1
Week-10	Miscellaneous measurements(experimental work).	**7**	**3**	**2**	**2**	C12-1&c16-1 and b13-1
Week-11	M/C tool metrology(theoretical and analysis).	**7**	**3**	**2**	**2**	B13-1,c12-1&d6-1
Week-12	M/C tool metrology(theoretical and analysis).	**7**	**3**	**2**	**2**	B13-1,c12-1&d6-1
Week-13	M/C tool metrology(experimental work).	**7**	**3**	**2**	**2**	a19-و a1-1 1,c16-1, d6-1-1 & c16-1

Week-14	Geometrical tolerance(theoretical and analysis).	**7**	**3**	**2**	**2**	B13-1,c12-1&c16-1
Week-15	Geometrical tolerance(experimental work).	**7**	**3**	**2**	**2**	a19-وa1-1 1,c16-1, d6-1-1 & c16-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**			**x**									
	a14-1	**x**			**x**									
	a14-2	**x**			**x**									
	a19-1	**x**			**x**									
Intellectual Skills	**b13-1**	**x**	**x**			**x**								
	b14-1	**x**	**x**	**x**		**x**	**x**							
	b17-1	**x**	**x**	**x**		**x**	**x**							
Professional Skills	**C5-1**	**x**									**x**			
	c12-1			**x**										
	c16-1						**x**				**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning	**Assessment Methods**

Outcome (ILOs)		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	x	x	x									
	a14-1	x											
	a14-2	x				x							
	a19-1	x	x	x				x					
Intellectual Skills	b13-1	x	x	x									
	b14-1	x	x		x								
	b17-1	x	x			x		x					
Professional Skills	C5-1	x	x	x	x								
	c12-1	x		x						x			
	c16-1	x		x									
General Skills	d1-1						x						
	d6-1						x		x	x			

1.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	85	68%	16th
End of term assessment (*Oral*)	10	8%	15th
End of term laboratory examination (*Lab*)	10	8%	16th
Mid term written Examination1 (*Term Work*)	5	4%	8th
Mid term written Examination 2 (*Term Work*)	5	4%	12th
Tutorial and report assessment (*Term Work*)	10	8%	weakly
Total	125	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are prepared the experimental setting , solving some measurement problems. Creating the desired method and test it.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Production Metrology and Calibration, A. M. Easa, Menoufia University, 2004. (Arabic).

13.2- Essential books (text books)

13.3- Recommended books

- "Measurement systems-Application and Design". Mc. Graw Hill, Pub. Company Limited, 2003 .
- ASME B1 Technical Report, Measurement Uncertainty for 60 deg. Screw Thread Gage Element Measurement (Inch and Metric), N.Y. (1993).

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Course coordinator **Programmer coordinator**

Prof. Dr. Ahmed M. Easa.

Head of the Department

Prof. Taha El-Taweel

Date: 1/1/2012.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3 rd PROD.**

Course Specification

A- Basic Information

Title: Metrology and calibration ***Code Symbol: PRE 323***
Element of program: Major ***Date of specification approval: 2012***
Department offering the course:* Prod. Eng. & Mech. Design Dept.** ***Bylaw 2006

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*1*	*1*	*5*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	20%	20%	20%	30%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of metrology and calibration associated with many of practical work in the field of calibration methods. As well as, this course provide the student with required skills of applying knowledge of measurements science and engineering concepts for creating solutions of measurement problems using various types of instruments. This course will also provide students, with the required skills of selecting the suitable method for calibration problems. As well as, this course will give the student the required skills of ability for solve the problems of miscellaneous measurements.

3- Course Objectives:

1. **Analyses and understanding the advanced methods of measurements and its application.**
2. **Demonstration of advanced methods techniques using developed calibration methods.**
3. **Evaluation of the suitable design and calibration methods for any types of instruments.**
4. **Realizing of the principles methods of measuring using different advanced methods.**
5. **Evaluation of the principles calibration methods using different types of instruments.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A1, A14 and A19	B13,B14 and B17	C5, C12 and C16	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain the different method and the suitable variables for solving the problems of angular measurements and miscellaneous measurements.
	A14- The constraints within which his/her engineering judgment will have to be exercised;	a14-1 Describe some methods of creating a desired measuring methods for solving production measurenting problems of gears. a14-2 Define the advanced concepts of measurements which are required for solving the engineering applications problems
	A19- Engineering design principles and techniques	a19-1 Discuss some of different measuring techniques for comparing some advanced techniques of angular measurements via traditional methods.
Intellectual skills	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Create the desired software dealing with the used methods for modeling and analyzing M/C tool metrology.
	B14- Analyze and interpret data, and design experiments to obtain primary data;	b14-1 Organize and interpret numerical data using computer programs to analyze the measurements results.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable measuring programs for developing the solutions of practical measurements problems.
Professional skills	C5- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 Employ a suitable techniques to discipline and develop required method of measurement for screw .
	C12-Prepare and present technical reports.	c12-1 Apply the designed computer programs to solve selected measurement problems and to draw the results of solving these problems
	C16- Analyze experimental results and determine their accuracy and validity;	c16-1 Use the advanced methods of measurement for developing solutions of practical problems of measurement comparing the results with the output of traditional methods.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created methods of measurement by working team.
	D6- Effectively manage tasks, time, and resources.	d6-1 Balance between facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Angular measurements	1-2
2nd	Gear measurements	3-5
3rd	Screw threads measurements	6-7
4th	Miscellaneous measurements	9-10
5th	M/C tool metrology	11-13
6th	Geometrical tolerance	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Angular measurements(theoretical and analysis).	**5**	**3**	**1**	**1**	a1-1 &a14-1
Week-2	Angular measurements(experimental work).	**5**	**3**	**1**	**1**	a1-1 , a14-2 &a19-1
Week-3	Gear measurements(theoretical and analysis).	**5**	**3**	**1**	**1**	b13-1&c1-1
Week-4	Gear measurements(experimental work).	**5**	**3**	**1**	**1**	b17-1&c14-1
Week-5	Gear measurements(experimental work).	**5**	**3**	**1**	**1**	b14-1 & c5-1
Week-6	Screw threads measurements(theoretical and analysis).	**5**	**3**	**1**	**1**	b17-1&a16-1
Week-7	Screw threads measurements(experimental work).	**5**	**3**	**1**	**1**	c12-1-&b17-1 & d1-1
Week-8						
Week-9	Miscellaneous measurements(theoretical and analysis).	**5**	**3**	**1**	**1**	a1-1 &c12-1
Week-10	Miscellaneous measurements(experimental work).	**5**	**3**	**1**	**1**	c12-1&c16-1 and b13-1
Week-11	M/C tool metrology(theoretical and analysis).	**5**	**3**	**1**	**1**	b13-1,c12-1 &d6-1
Week-12	M/C tool metrology(theoretical and analysis).	**5**	**3**	**1**	**1**	b13-1,c12-1& d6-1
Week-13	M/C tool metrology(experimental work).	**5**	**3**	**1**	**1**	a1-1, a19-1, c16-1, d6-1-1 & c16-1
Week-14	Geometrical tolerance(theoretical and analysis).	**5**	**3**	**1**	**1**	b13-1,c12-1&c16-1
Week-15	Geometrical tolerance(experimental	**5**	**3**	**1**	**1**	a1-1, a19-1, c16-1, d6-1

	work).					

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**			**x**									
	a14-1	**x**			**x**									
	a14-2	**x**			**x**									
	a19-1	**x**			**x**									
Intellectual Skills	**b13-1**	**x**	**x**			**x**								
	b14-1	**x**	**x**	**x**		**x**	**x**							
	b17-1	**x**	**x**	**x**		**x**	**x**							
Professional Skills	**c5-1**	**x**									**x**			
	c12-1			**x**										
	c16-1						**x**				**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**	**x**									
	a14-1	**x**											
	a14-2	**x**				**x**							
	a19-1	**x**	**x**	**x**				**x**					
Intellectual Skills	**b13-1**	**x**	**x**	**x**									
	b14-1	**x**	**x**		**x**								
	b17-1	**x**	**x**			**x**		**x**					
Professional Skills	**c5-1**	**x**	**x**	**x**	**x**								
	c12-1	**x**		**x**						**x**			
	c16-1	**x**		**x**									
General Skills	**d1-1**						**x**						
	d6-1						**x**		**x**	**x**			

1.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**85**	**68%**	**16th**
End of term assessment (*Oral*)	**10**	**8%**	**15th**
End of term laboratory examination (*Lab*)	**10**	**8%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**4%**	**8th**
Mid term written Examination 2 (*Term Work*)	**5**	**4%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**8%**	**weakly**
Total	**125**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are prepared the experimental setting , solving some measurement problems. Creating the desired method and test it.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Production Metrology and Calibration, A. M. Easa, Menoufia University, 2004. (Arabic).

13.2- Essential books (text books)

13.3- Recommended books

- "Measurement systems-Application and Design". Mc. Graw Hill, Pub. Company Limited, 2003 .
- ASME B1 Technical Report, Measurement Uncertainty for 60 deg. Screw Thread Gage Element Measurement (Inch and Metric), N.Y. (1993).

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Course coordinator **Programmer coordinator**

Dr.Samya El-Hefnawy **Prof. Dr. Ahmed M. Easa.**

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Machines Maintenance*** ***Code Symbol:*** ***PRE324***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	10%	60%	10%-	10%	---	100%

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student with enough knowledge of the fundamental maintance ,machine health monitoring (MHM) and early fault detection using vibration analysis and nondestrictive test for mechanical elements and structures. Maintance requires a strong maintance design interface so that maintance engineer works in close cooperation with design engineer.Where most of the maintance concepts aim to minimize number of failure or effects of failers. For high maintenance cost,the choise to be made is between the cost of redesign and cost of recurring maintenance.this course gives the ability of solving engineering problem(technical problems of machines and equipments operated in industrial application.As well as , this course provide the student with required skills for applying knowledge of advanced post processing and engineering concepts for creating solutions of engineering problems using suitable techinque.This course will also provide students with the required skills of applying predective and preventive maintance off line and on line typese for solving the engineering problem.As well as ,this course will give the students the required skills of ability for macking a decision based on combination of skill and experience.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concepts of types of maintance ,condition monitoring of industrial machinery and structures using mechanical vibration as machine health indicator.**
2. **Definition of nature and scope of types of maintenance ,techniques of monitoring ,diagnosis and treatments .**
3. **Realizing of the different types of maintenance ,monitoring dignosis for variety of requirments in industrial application.**
4. **Evaluation of the suitable type of maintenancefor solving engineering problems.**

Analysis of different problems from industrial field to achieve safety and answer

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1,A3,A5,A6, A13,A15,A19	B2, B3,B6 and B17	C1, C2,C5, C14,C16 ,C17 and C18	D1 ,D5andD9

5- Course Intended Learning Outcomes (ILOs)

Field	Programmed ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain different methods of maintenance a system; component and process to meet the required needs using knowledge of mathematics, science and engineering concepts.
	A3- Characteristics of engineering materials related to the discipline.	a3-1 Discuss different engineering maintenance techniques to meet the required needs within realistic constraints.
	A5- Methodologies of solving engineering problems, data collection and interpretation,	a5-1 Discuss methodologies of solving problems data collections.
	A6- Quality assuring systems, codes of practices and standards, health and safety requirements and environment issues.	a6-1 Discuss codes and standers health and safety requirements
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1 Define the basics concepts of maintenance types which are required for &solving the engineering applications problems.
	A15-The specification,programing and range of application of CAD facilities.	a15-1 Discuss different engineering techniques for solving some mechanical problems using CAD facilities.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving some mechanical problems.
Intellectual skills	B2- . Select appropriate solutions for engineering problems based on analytical thinking	b2-1 Create the desired circuit & components dealing with based method for monitoring and Analyzing engineering problems.
	B5-Assess and evaluate the characteristics and performance of components systems and processes.	b5-1 Discuss characteristics and performance of components systems and processes
	B6- Investigate the failure of components, systems, and processes	b6-1 Construct a suitable analysis technique for redesign components

	B9-Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	b9-1 Discuss suitable technique for solving a problem throw diagnosis
Professional skills	C3-Creat and/or re- design a process, component or system, and carry out specialized engineering designs.	c3-1 Apply and carry out specialized engineering designs .
	C5-Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect analyze and interpret results.	C5-Disuss computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect analyze and interpret results
	C6-Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs..	**c6**-Discuss of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs
	C12-Prepare and present technical reports.	c12-Discuss technical reports.
	C18-Operate and maintain mechanical equipment.	c18-APPly maintenance program for mechanical equipment..
General skills	D2-work in stressful environment and within constraints.	d1-1 Discuss work in stressful environment and within constraints.
	D5- Lead and motivate individuals	d5-1 Revise, Lead and motivate individuals
	D9- Refer to relevant literatures	d9-1 Apply relevant literatures

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Major types of maintenance and its applications	1 -6
2nd	Condition Monitoring of industrial Machinery using mechnical vibration as machine health indactor.	7
3rd	Vibration measurements in practice	10
4th	Practical examples of industrial applications using Vibration analysis and correction	11
5th	Balancing of rotating machinery	12-13
6^{th}	Vibration isolation of rotating machinery	14
7th	Practical examples of noise control	15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction and definitions	**2**	**1**	**--**	**--**	a1-1&a3-1
Week-2	Reactive maintenance	**2**	**1**		**--**	a1-1,a3-1&a6-1
Week-3	Preventive maintenance	**2**	**1**		**--**	a3-1,a13-1,a19-1,b3-1,b6-1,b17-1,c1-1,c3-1&c14-1
Week-4	Predictive maintenance	**2**	**1**		**--**	a3-1,a13-1,a6-1,b3-1,b6-1,b17-1,c1-1&c3-1
Week-5	Reliability centered maintenance	**2**	**1**		**---**	a3-1,a13-1,a19-1,b2-1,b3-1,b6-1,b17-1,c1-1,c3-1&c14-1
Week-6	Troubleshooting and fault diagnosis (introduction)	**2**	**1**		**--**	a3-1,a19-1,b2-1,b3-1,b6-1,b17-1,c1-1,c3-1,d1-1&d5-1
Week-7	Lubrication &Non destructive testing	**2**	**1**		**--**	a13-1,b3-1,c1-1,c3-1 &d1-1
Week-8						
Week-9	Condition Monitoring of industrial Machinery using mechanical vibration as machine health indictor.	**2**	**1**		**1-**	a1-1,a3-1 ,a8-1,a13-1,a19-1,b2-1,b3-1,b6-1,c1-1,c6-1
Week-10	Vibration measurements in practice	**2**	**1**	**-**	**1**	a1-1,a8-1,a19-1 ,b6-1
Week-11	Practical examples of industrial applications using Vibration analysis and correction	**2**	**1**	**-**	**1-**	a3-1,a13-1,a19-1,b3-1,b6-1, b17-1,c1-1,c14-1
Week-12	Types of unbalance &its problems	**2**	**1**	**-**	**1-**	a3-1,a13-1,a19-1,b3-1, b6-1,b17-1,c1-1,c18-1
Week-13	Balance techniques &industrial application	**2**	**1**	**-**	**1-**	a3-1,a13-1,a19-1,b3-1 b6-1,b17-1,c1-1,c18-1
Week-14	Vibration isolation of rotating machinery	**2**	**1**	**-**	**1-**	a3-1
Week-15	Practical examples of noise control	**2**	**1**	**-**	**1-**	a3-1,a19-1,b2-1,b3-1,b6-1, b17-1,c1-1,c3-1,d1-1,d5-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**X**		**X**										
	a3-1	**X**		**X**			**x**				**X**		**X**	
	a5-1	**x**												
	a6-1	**X**		**X**					**X**				**X**	
	a13-1	**X**		**X**	**x**	**X**	**X**		**X**					
	a19-1	**x**												
Intellectual Skills	**b2-1**	**x**		**X**		**X**	X	**X**	**x**	**x**		**X**	**x**	
	b3-1	**x**		**X**		**X**	X			**X**				
	b6-1	**X**		**X**		**x**		**x**		**x**				
	b12-1	**x**		**X**		**x**	**X**	**X**		**x**		**X**		
	b17-1	**X**		**X**		**X**				**x**		**x**		
Professional Skills	**c3-1**	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			
	c5-1			**x**		**x**	**x**		**X**		**x**	**X**		
	c6-1	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			
	c12-1	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			
	c18-1	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			
General Skills	**d2-1**	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			
	d5-1	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			
	d9-1	**X**		**X**		**X**	**X**	**x**	**X**	**x**	**X**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	X	**X**										
	a3-1	X			**X**		**X**	**x**		**x**			
	a5-1	X	**x**	**x**	**X**			**x**		**x**			
	a6-1	X	**x**	**x**						**x**			
	a13-1	X											
	a19-1	X											
Intellectual Skills	**b2-1**	X	**x**		**x**		**X**	**X**		**x**	**x**		**X**
	b3-1	X			**x**					**x**			**x**
	b6-1	x						**x**		**X**			
	b12-1	x					**x**			**x**	**x**		
	b17-1	**x**							**x**				
Professional Skills	**c3-1**	**x**					**x**		**X**				
	c5-1	**x**							**x**				
	c6-1	**x**							**x**				
	c12-1	**x**					**X**		**x**				
	c17-1	**x**							**x**				
General Skills	**d2-1**	**x**							**x**				
	d5-1	**x**					**X**		**x**				
	d9-1	**x**					**X**		**x**				

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0**	**0**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**

Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare the reports and the programming code for maintenance some mechanical engineering problems. Creating the desired maintenance program

Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports.

13- List of references:

13.1- Course notes

- Notes of Fault detection in mechanical systems and structures

13.2- Essential books (text books)

1-Practical Machinery vibration analysis and predictive Maintenance. C.Scheffer series editor Steve Mackary (2007)

13.3- Recommended books

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Course coordinator **Programmer coordinator**

Prof. Mohamed Naser

Head of the Department
Prof. Taha El-Taweel

Date: 01/ 10 /2011

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

***Title:* Materials Handling and Systems Design** ***Code Symbol:* PRE 325**
***Element of program:* Major** ***Date of specification approval:* 2012**
***Department offering the course:* Prod. Eng. & Mech. Design. Dept.** ***Bylaw* 2006**

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of materials handling associated with systems design for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems using materials handling. This course will also provide students, with the required skills of selecting the proper materials handling equipment and the suitable variables for solving the engineering problems. As well as, this course will give the student the required skills of ability for modeling the engineering problems dealing with materials handling.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concebtes of materials handling.
2. Definition of the requirements of materials handling and systems design.
3. Realizing of the different types of handled materials and the suitable handling equipments.
4. Evaluation of the suitable handling system for solving the engineering problems.
5. Analysis of different techniques for modeling the engineering problems dealing with the mateials handling.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A3 and A16	B12 and B13	C5 and C6	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3- Characteristics of engineering materials related to the discipline.	a3-1 Compare between different engineering materials
	A16- Relevant contemporary issues in mechanical engineering.	a16-1 Describe some methods of creating a desired handling system. a16-2 Define the basics of handling systems design
Intellectual skills	B12- Create systematic and methodic approaches when dealing with new and advancing technology.	b12-1 Create the desired handling system with new and advancing technology.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Organize and interpret numerical data using the principles of mathematics, science and technology in problem solving scenarios in materials handling.
Professional skills	C5- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 Employ a suitable techniques to design the handling systems.
	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 the analytical tools and techniques to the discipline and develop required handling systems.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created handling system by working team.
	D6- Balance between resources and time	d6-1 Balance between handling equipments facilities and handling time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Materials handling & mechanisms	1-2
2nd	Positions – handling path	3-4
3rd	Handling systems, handling characteristics, store equipments	5-7
4th	Types of materials, Deflection due to moving loads.	9-11
5th	Robots, manipulators	12-13
6th	Mechatronic systems	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Preface and definitions	**8**	**4**	**4**	**---**	a3-1, a16-1 &b12-1
Week-2	Materials handling hoisting systems	**8**	**4**	**4**	**---**	a16-2, b13-1 & c5-1
Week-3	Materials handling hoisting systems (continue)	**8**	**4**	**4**	**---**	a3-1, b13-1 & c6-1
Week-4	Materials handling hoisting systems (continue)	**8**	**4**	**4**	**---**	a16-1, a16-2, b12-1&c5-1
Week-5	Handling systems	**8**	**4**	**4**	**---**	a16-2, b13-1 & c6-1
Week-6	Handling characteristics	**8**	**4**	**4**	**---**	b12-1, c5-1 & d1-1
Week-7	Store equipments	**8**	**4**	**4**	**---**	a16-2, b13-1 & d6-1
Week-8						
Week-9	Types of materials	**8**	**4**	**4**	**---**	a3-1, a16-1 &c6-1
Week-10	Deflection of frames and booms due to moving loads	**8**	**4**	**4**	**---**	a16-2, b12-1 &d1-1
Week-11	Deflection of frames and booms due to moving loads (continue)	**8**	**4**	**4**	**---**	a16-2, b12-1, c6-1 &d6-1
Week-12	Robots	**8**	**4**	**4**	**---**	b12-1, b13-1, c5-1 & c6-1
Week-13	Manipulators	**8**	**4**	**4**	**---**	b12-1, b13-1, c5-1 & c6-1
Week-14	Mechatronic systems	**8**	**4**	**4**	**---**	b12-1, b13-1, c5-1, c6-1& d1-1
Week-15	Mechatronic systems (continue)	**8**	**4**	**4**	**---**	b12-1, b13-1, c5-1, c6-1& d6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a3-1**	**x**		**x**	**x**	**x**								
	a16-1	**x**		**x**	**x**	**x**								
	a16-2	**x**		**x**	**x**	**x**								
Intellectual Skills	**b12-1**	**x**	**x**		**x**		**x**							
	b13-1	**x**	**x**	**x**	**x**		**x**							
Professional Skills	**c5-1**	**x**									**x**			
	c6-1	**x**			**x**									
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	**x**	**x**		**x**								
	a16-1	**x**			**x**								
	a16-2	**x**			**x**								
Intellectual Skills	**b12-1**	**x**	**x**		**x**		**x**				**x**		
	b13-1	**x**	**x**		**x**								
Professional Skills	**c5-1**	**x**			**x**								
	c6-1	**x**			**x**		**x**				**x**		
General Skills	**d1-1**										**x**		
	d6-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**120**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**40**	**20%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**20**	**10%**	**weakly**
Total	**200**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of the required reports.

13- List of references:

13.1- Course notes
- Notes of Materials Handling and Systems Design

13.2- Essential books (text books)
-"Materials handling equipments" – N. Rudwnko 1969

13.3- Recommended books
- Materials handling equipments" – M. P. Alexanderov 1981

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Course coordinator **Programme coordinator**

Prof. Sabry A. El-Shakry

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Total Quality Systems*** ***Code Symbol:*** ***PRE 326A***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20%	--	--	80%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of quality systems providing the proper channels through which the stream of essential product-quality-related activities must flow. As well as, this course provide the student with required skills of applying knowledge of quality management systems and engineering concepts for creating solutions of engineering quality problems.

This course will provide students, with enough knowledge of total quality systems on the companywide and plantwide operating work structure. As well as this course will provide the student with integrated technical and managerial procedures, for guiding the coordinated actions of the work force, and the information of the company and plant in the best and most practical ways to assure customer quality satisfaction and economical costs of quality.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concepts of total quality systems.
2. Definition of the requirements of integrated technical and managerial procedures.
3. Realizing of the different types of the suitable statistical variables.
4. Evaluation of the suitable software for solving the engineering problems.
5. Analysis of different techniques for modeling the engineering problems dealing with quality problems.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A6, A7 and A14	B13and B14	C9 and C10	D1 and D4

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A6 - Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1 Explain different quality systems for solving engineering problems using knowledge of statistical, mathematics, science and engineering concepts.
	A7- Business and management principles relevant to engineering.	a7-1 Describe some methods of creating a desired soft-ware for solving engineering quaity problems. a7-2 Define the basics concepts of quality systems which are required for molding and solving the engineering applications problems.
	A14- The constraints within which his/her engineering judgment will have to be exercised;	a14-1 Discuss different statistical techniques for solving some managerial quality problems.
Intellectual skills	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Create the desired software dealing with based methods for modeling and analyzing production cost problems.
	B14- Analyze and interpret data, and design experiments to obtain primary data;	b14-1 Organize and interpret numerical data using computer programs to analyze the problems.
Professional skills	C9- Demonstrate basic organizational and project management skills.	c9-1 Use the suitable technique to apply management skills.
	C10- Apply quality assurance procedures and follow codes and standards.	c14-1 Use the suitable technique to apply quality assurance procedures and follow codes and standards
General skills	D1- Collaborate effectively within multidisciplinary team**.**	d1-1 Collaborate effectively within working team
	D4- Demonstrate efficient IT capabilities	d4-1 Lead the working team for using IT capabilities

6- Course Topics.

Topic No.	General Topics	Weeks
1st	The system approach to quality.	1-2
2nd	Establishing the quality system.	3-5
3rd	Quality system implementation.	6-7
4th	Quality management systems.	9-10
5th	Advanced Quality Systems (AQS).	11-12
6th	Quality improvement using AQS.	13-14
7th	Problem solving methods.	13-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	The system approach to quality.	**2**	**2**	**--**	**--**	a6-1 & a7-1
Week-2	The system approach to quality, continued.	**2**	**2**	**--**	**--**	a6-1 , a7-2 &a14-1
Week-3	Establishing the quality system.	**2**	**2**	**--**	**--**	b13-1&c9-1
Week-4	Establishing the quality system, continued.	**2**	**2**	**--**	**--**	b13-1&c14-1
Week-5	Establishing the quality system, continued.	**2**	**2**	**--**	**--**	a6-1 &b14-1
Week-6	Quality system implementation.	**2**	**2**	**--**	**--**	a6-1&a6-2
Week-7	Quality system implementation, continued.	**2**	**2**	**--**	**--**	b13-1,a6-1& d1-1
Week-8						
Week-9	Quality management systems.	**2**	**2**	**--**	**--**	c4-1 , b13-1, &c10-1
Week-10	Quality management systems, continued.	**2**	**2**	**--**	**--**	a6-1 , b14-1 c9-1&c10-1
Week-11	Advanced Quality Systems (AQS).	**2**	**2**	**--**	**--**	a6-1, b13-1 &b14-1
Week-12	Advanced Quality Systems (AQS), continued.	**2**	**2**	**--**	**--**	a6-1, a14-1& b14-1
Week-13	Quality improvement using AQS.	**2**	**2**	**--**	**--**	a7-1,a14-1 , b14-1 &c10-1
Week-14	Quality improvement using AQS, continued.	**2**	**2**	**--**	**--**	a14-1,c10-1 , b14-1&d1-1
Week-15	Problem solving methods.	**2**	**2**	**--**	**--**	a14-1, b14-2 c9-1 & d4-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a6-1**	**x**		**x**										
	a7-1	**x**		**x**										
	a7-2	**x**		**x**										
	a14-1	**x**		**x**										
Intellectual skills	**b13-1**	**x**	**x**	**x**			**x**							
	b14-1	**x**	**x**	**x**			**x**							
Professional Skills	**c9-1**	**x**									**x**			
	c10-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d4-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a6-1**	**x**	**x**										
	a7-1	**x**											
	a7-2	**x**											
	a14-1	**x**	**x**										
Intellectual Skills	**b13-1**	**x**	**x**								**x**		
	b14-1	**x**	**x**								**x**		
Professional Skills	**c9-1**	**x**											
	c10-1	**x**					**x**				**x**		
General Skills	**d1-1**										**x**		
	d4-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**40**	**80%**	**16th**
End of term assessment (*Oral*)	**5**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**0**	**0%**	**weakly**
Total	**50**	**100%**	

12- Facilities required for teaching and learning:

A. Library Usage:

Students should be encouraged to use library technical resources in the preparation of the required reports.

13- List of references:

13.1- Course notes

- Notes of Total Quality Systems

13.2- Essential books (text books)

13.3- Recommended books

- Peter W. M.John, (1990), "Statistical Methods in Engineering and Quality Assurance", Wiley, New York.

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Course coordinator **Programme coordinator**

Assoc. Prof. Mohamed A. sharaf El-Din

Head of the Department

Prof. Taha El-Taweel

Date: 01/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term:2 nd Term**
Minoufiya University **Academic level: third PROD.**

Course Specification

A- Basic Information

Title: ***Non-destructive tests*** ***Code Symbol:*** ***PRE 326B***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*…*	*…..*	*2*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	25%	25%	30%	20%	….	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of different methods to detect industrial process defects. It also inform the students different methods and techniques to predict and detect defects such as Ultrasonic, penetrant, Magnetic particle, Eddy current methods as non destructive tests. It also provide the students with basic knowledge of how to detect defect in products produced by different manufacturing processes.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the differen non destructive test.
2. Ability to detect defects in products produced by different manufacturing processes.
3. Ability to use different non destructive tests to find mechanical
4. Practical skills in using different tests appropriately in filed of finding industrial defects.

4- Relationship between the course and the programmed

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A3 and A18	B6 and B13	C5 and C16	D1 and D6

5- Course Intended Learning Outcomes (Ills)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3):- Characteristics of engineering materials related to the discipline.	a3-1- Define the main principles of stresses and strain.
	A18):- The role of information technology in providing support for mechanical engineers	a18-1 Describe behaviour of materials
Intellectual skills	B6):- Investigate the failure of components, systems, and processes. .	b6-1 Formulate the different rquations suitable for solving engineering problems.
	B13):- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Create a criterion suitable for studying the performance of the components .
Professional skills	C5):- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 Employ a suitable techniques to chose a suitable test to chick the mechanical properties of materials .
	C16):- Analyze experimental results and determine their accuracy and validity.	c16-1 Use the designed computer programs for developing solutions of practical problems comparing the results with the output of traditional and modern CAD/CAM design.
General skills	D10:- Collaborate effectively within multidisciplinary team	d1-1 Judge the experimental test by working team.
	D6):- Effectively manage tasks, time, and resources.	d6-1 Balance between test facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Types of defects	1-4
2nd	Ultrasonic method	5-8
3rd	liquid penetrant method	9-10
4th	Magnetic particle method	11-13
5th	Eddy current method	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Discontinuous and defects	**2**	**2**	**…**	**….**	a3-1& c5-1& c16-1 & b13-1
Week-2	Corrosion and grinding defects	**2**	**2**	**…**	**….**	& c5-1a18-1&
Week-3	Forging, drawing and fatigue	**2**	**2**	**…**	**….**	& d6-1 & c5-1&b6-1& a18-1
Week-4	Welding defects	**2**	**2**	**…**	**….**	c16-1& d6-1 c5-1b13-1& a18-1
Week-5	Types of ultrasonic waves	**2**	**2**	**…**	**….**	&c5-1& b13-1
Week-6	Ultrasonic wave properties	**2**	**2**	**…**	**….**	& d6-1& c16-1& d1-1
Week-7	Pulse echo, transmission and resonance	**2**	**2**	**…**	**….**	b6-1 & d6-1 & d1-1& a18-1
Week-8	Ultrasonic circuit and applications	**2**	**2**	**…**	**….**	d1-1& d6-1 & a18-1
Week-9	liquid penetrant method	**2**	**2**	**…**	**….**	&a3-1& b13-1 a18-1
Week-10	liquid penetrant techniques ,applications and test layout	**2**	**2**	**…**	**….**	a18-1 c16-1& b13-1
Week-11	Magnetic particle method	**2**	**2**	**…**	**….**	&b6-1& b13-1
Week-12	Magnetization and magnetic powder method	**2**	**2**	**…**	**….**	& a18-1 b13-1& c5-1
Week-13	Introduction to Eddy current method	**2**	**2**	**…**	**….**	c5-1& b13-1&d1-1& a18-1
Week-14	Probe types,bridge circuit and test circuits	**2**	**2**	**…**	**….**	a18-1 c16-1& b13-1
Week-15	Applications of eddy current method and midterm exam	**2**	**2**	**…**	**….**	&d1-1& a18-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a3-1	**x**		**x**		**x**								
	a18-1	**x**		**x**										
Intellectual Skills	b6-1	**x**	**x**	**x**			**x**	**x**						
	b13-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	c5-1	**x**						**x**			**x**			
	c16-1	**x**		**x**										
General Skills	d1-1		**x**							**x**				
	d6-1		**x**							**x**				

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a3-1	**x**	**x**	**x**									
	a18-1	**x**											
Intellectual Skills	b6-1	**x**	**x**	**x**							**x**		
	b13-1	**x**	**x**										
Professional Skills	c5-1	**x**		**x**									
	c16-1	**x**		**x**			**x**				**x**		
General Skills	d1-1										**x**		
	d6-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**40**	**80%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**5**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**0**	**0%**	**weakly**
Total	**50**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of mechanical properties

13.2- Essential books (text books)

-Solution of problems in strength of materials and mechanical of solids.

- Applied Mechanics
- strength of materials

13.3- Recommended books

- "Advanced strength and applied stress analysis". Richard G. Budynas

" Engineering Solid Mechanics- Fundamentals and Applications", A.R. Ragab and S.E. Bayoumi, CRC Press, 1999 applied stress analysis – Second Edition- Richard G. Budynos

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Course coordinator **Programme coordinator**

Prof.Dr.Mohmed Fattouh Abdelhamid

Dr. Ahmed Abdelhamid Hamada

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Mechanical Power Eng. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th POWER.**

Course Specification

A- Basic Information

Title: ***Engineering Economy*** ***Code Symbol:*** ***PRE 327***
Element of program: ***Major/ minor*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept..** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the Student, upon completing the Power Engineering Programme, with the basic knowledge and skills of how to assess the projects economically . This course will also provide students with the ability to select the appropriate project among alternatives. The skill of setting cash flow diagram of different alternative configurations is also provided.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding of the importance of the concepts of engineering economics .**
2. **Definition of the requirements of discounted cash flow diagram.**
3. **Realizing of the different methods of depreciation for equipments.**
4. **Evaluation of the suitable replacement analysis based on economic life.**
5. **Analysis of different techniques for the economical assessment of projects.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A6,A7, and A16	B6,B8,B9, and B10	C1	D3, D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A6- Remember Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues	A6-1 Discuss Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues
	A7- Know business and management principles relevant to engineering.	a7-1 Define the basics economical concepts of which are required for solving the discounted cash flow problems.
	A16- Recognize the constraints that limits mechanical power engineers ability to reach an optimum solution.	a16-1 List different methods for assessment any project dealing with constraints to reach the appropriate alternative.
Intellectual skills	B6- Investigate the failure of components, systems, and processes	b6 –1 Plan to investigate the failure of components, systems, and processes
	B8- Select and appraise ICT tools to a variety of engineering problems .	b8 -Design a suitable computer programs for developing the solutions of problems.
	B9-Judge engineering decisions considering balanced costs , benefits, safety, quality, reliability, and environmental impact.	b9- Construct the decision criteria for mutually exclusive alternatives.
	B10-Incorporate economic, societal, environmental and risk management dimensions in design.	b10- Create replacement analysis based on economic life for the equipments.
Professional skills	C1- Apply knowledge of mathematical, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1- Use depreciation methods to compute the annual depreciation and book value for equipments.
General skills	D3- Communicate effectively.	d3 -Lead to develop the communication systems of the economical studies.
	D7- Search for information and engage in life-long self learning mechanical power.	d7- Search for economical information and its effect on the society.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Cash flow	1-2
2nd	Discounted cash flow	3-4
3rd	Comparison of alternatives	5-7
4th	Break- even analysis	9
5th	Depreciation methods	10-11
6th	Decision making	12-13
7th	Replacement Analysis	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Fundamental Engineering economic Concepts Direct and indirect costs –Variable& costs.	2	2	-	-	a6-1
Week-2	Simple interest versus Compound interest - Nominal and effective interest rate. The time value of money.- Cash flow diagram.	2	2	-	--	a7-1
Week-3	Development of Interest formulas- Single cash flow formulas-Uniform Series Payments	2	2	-	-	a7-1
Week-4	Gradient uniform series-Uniform Infinite series	2	2	-	-	a16-1
Week-5	Minimum Attractive Rate of return –Bases for comparison of alternatives-Payback period m.	2	2	-	-	a16-1& b6-1
Week-6	Present Worth value method-Equivalent uniform value method.	2	2	-	-	a16-1& b8-1
Week-7	Internal rate of return method-Benefit	2	2	-	-	a16-1& b9-1
Week-8	Midterm written examination					
Week-9	Break-even Analysis: single, Two and Multiple alternatives	2	2	-	-	b10-1
Week-10	Depreciation and its value-Classifications of Depreciation- Annual depreciation and book value calculation methods:* Straight Line M.	2	2	-	-	c1-1
Week-11	Declining Balance Method.-*Sum-of the Years-Digits Method.	2	2	-	-	c1-1
Week-12	Decision making among alternatives- types of investment proposals- Mutually exclusive alternatives and decision making.	2	2	-	-	b9-1&d7-1
Week-13	- Decision Criteria for mutually exclusive alternatives.- Applying decision criteria when money is limited. - Comparison of alternatives with unequal service lives.	2	2	-	-	b9-1
Week-14	- The general nature of replacement analysis. – Replacement analysis for unequal lives.	2	2	-	-	b10-1
Week-15	- Replacement analysis based on economic life. – Examples of replacement Analyses.	2	2	-	-	b10-1 &d3-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a6-1**	**x**				**x**								
	a7-1	**x**				**x**								
	a16-1	**x**				**x**								
Intellectual Skills	**b6-1**	**x**				**x**								
	b8-1	**x**				**x**								
	b9-1	**x**				**x**								
	b10-1	**x**				**x**								
Professional Skills	**c1-1**	**x**				**x**								
General Skills	**d3-1**		**x**							**x**	**x**			
	d7-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & understanding	**a6-1**	x											
	a7-1	x											
	a16-1	x											
Intellectual Skills	**b6-1**	x					x				x		x
	b8-1	x											
	b9-1	x											
	b10-1	x											
Professional Skills	**c1-1**	x											
General Skills	**d3-1**						x		x	x			
	d7-1						x		x	x			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	Week
Final Examination (*written*)	**40**	**80%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**5**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**0**	**0%**	**Weakly**
Total	**50**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. 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.

13- List of references:

1- "Engineering Economics", Michel Wilkes , 3rd Edition , McGraw-Hill, 2001

2 - "Contemporary Engineering Economics", Chan S. Park , 3rd Edition , Prentice Hall, 2002

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Course coordinator **Programme coordinator**

Dr. Mohamed Hesham Belal

Head of the Department

Prof. Taha Ali El-Taweel

Date: 01/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: Project ***Code Symbol: PRE 406***
Element of program: Major ***Date of specification approval: 2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	15%	15%	---	60%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with the opportunity to synthesize knowledge from various areas of learning, and critically and creatively apply it to industrial life situations. This process, which enhances students' knowledge and enables them to acquire skills like collaboration, communication, engineering sense and independent learning, prepares them for lifelong learning and the challenges ahead. In today's dynamic and fast-changing technology world, students need to learn how to engage with industrial and engineering issues presented in a manner that is less structured, not subject-specific and open-ended. Students need to learn to work together on tasks that require different skills and to apply experimentally what they have learned theoretically to complete a project in a group.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concebtes for preparing a practical project.
2. Definition of the requirements of students to have collaborative skills through working in a team to achieve common goals in the field of engineering.

3- Demonstration the ability of students to generate, develop and evaluate ideas and information so as to apply these skills as they carry out a project task

4- Analysis of the obtained results and make a comparison between theoretical and experimental results to ensure validity of the results .

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A5and A11	B4and B14	C5 and C16	D1 and D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A5):- Methodologies of solving engineering problems, data collection and interpretation	a5-1.Descibe and compare different Methodologies of solving engineering problems thought out experimental data collection and interpretation .
	A11):- Professional ethics and impacts of engineering solutions on society and environment	a11-1 Identify different engineering solutions for a particular engineering problem through experimental work to help society and environment.
Intellectual skills	B4):- Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1 create Design ability of students to make links across different areas of knowledge to generate ,evaluate and develop ideas and information so as to apply these skills to the project task
	B14):- Analyze and interpret data, and design experiments to obtain primary data;	b14-1 Plan and organize experimental procedure to collect primary data then Analyze and interpret the obtained data .
Professional skills	C5):- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 use computational techniques , measuring instruments and laboratory equipments to have both theatrical and experimental results which will be analyzed and interpreted to ensure consistency of both results .
	C16):- Analyze experimental results and determine their accuracy and validity;	C16-Compare between theatrical and experimental results throughout analysis of collected data to detemine accuracy and valididy of results.
General skills	D1):- Collaborate effectively within multidisciplinary team.	d1-1 Judge the created experiments by working in a multidisciplinary team.
	D7):- Search for information and engage in life-long self learning discipline.	d7-1 Imprve the ability of students to Search for information and engage in life-long self learning discipline.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introducion to project preparation	1
2nd	Survey on a specified engineering point or problem	2-4
3rd	Experimental work and analysis of colected data	5-7&9-11
4th	Theorical work and analysis of data	12-14
5th	Comparios between experimental and theoritical results	17
6th	Conclusion	18

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to how to prepare a project	**4**	**2**	**-**	**2**	a-5&a11-1 & c16-1 &b4-1
Week-2/4	Survey on a specified engineering point or problem	**4**	**2**	**-**	**2**	a5-1& c16-1&b14-1&c5-1
Week-5/6	Preparation of experimental samples	**4**	**2**	**-**	**2**	a1-1 &b4-1 & d1-1& a11-1
Week-7/11	Make several experiments and collect data using measuring instruments and laboratory equipments.	**4**	**2**	**-**	**2**	a1-1 & b4-1 & d7-1& c5-1&d1-1
Week-8						
Week-12/14	Theoretical and numerical work analysis	**4**	**2**	**-**	**2**	a1-1 &c5-1& c16-1 & d1-1
Week-15,16/20						
Week-21,22	Analysis ,discussion and Comparison between experimental and theoretical results	**4**	**2**	**-**	**2**	a1-1 &c5-1& d7-1 &c16-1
Week-23	Conclusions and solution of the specified problem	**4**	**2**	**-**	**2**	a1-1 & b14-1& c16-1 &d7-1 &b4-1
Week-24	Discussion and final evaluation of the project	**4**	**2**	**-**	**2**	a1-1 &c16-1 &d1-1& c5-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a5-1**	**X**		**x**										
	a11-1	**X**		**x**										
Intellectual Skills	**b4-1**	**X**	**x**				**x**						**x**	
	b14-1	**X**	**x**	**x**			**x**						**x**	
Professional Skills	**c5-1**	**X**									**x**			
	c16-1	**X**												
General Skills	**d1-1**		**x**							**x**	**x**			
	d7-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a5-1	x	x	x									
	a11-1	x											
Intellectual Skills	b4-1	x	x	x							x		
	b14-1	x	x										
Professional Skills	c5-1	x		x									
	c16-1	x		x			x				x		
General Skills	d1-1										x		
	d7-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)			16th
End of term assessment (*Oral*)	100	50%	19th
End of term laboratory examination (*Lab*)			16th
Mid term written Examination1 (*Term Work*)			8th
Mid term written Examination 2 (*Term Work*)			12th
Tutorial and report assessment (*Term Work*)	100	50%	weakly
Total	200	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to demonstrate the ability to generate, develop and evaluate ideas and information so as to apply these skills as they carry out a project task.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- Notes of the project

13.2- Essential books (text books)

13.3- Recommended books

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Course coordinator **Programme coordinator**

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Machine tool design*** ***Code Symbol:*** ***PRE 411***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student with an enough knowledge to identify, formulate and solve fundamental engineering problems dealing with design considerations (loads, dimensions, and materials) of various machine tool parts. Also, the aim of this course is to provide the students with the required skills for using mathematics, physics, engineering sciences and systems analysis tools to produce suitable design of different parts of machines.

3- Course Objectives:

1. Definition of power transmitting elements and components of various machine tools.
2. Analysis of forces and moments acting on various components of machine tools.
3. Evaluation of static and dynamic forces acting on machine parts.
4. Construction of gears, shafts, power screws, main spindles, and guide ways.
5. Conducting static and dynamic balancing of moving parts of machine tools.
6. Introduction to the process of force analysis on machine tool frames.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A4, A13 and A19	B2 and B17	C7 and C14	D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4- Principles of design including elements design, process and/or a system related to specific disciplines	a4-1 Explain different design of machine components such as gears, shafts, power screws and spindles.
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture;	a13-1 Describe the considerations required to design different components of machine tool. a13-2 Identify suitable solutions for these equations. a13-3 Express graphical representations for these solutions.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving machine element problems.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Create analytical solutions for various engineering topics. b2-2 Create analytical solutions and confirm these solutions graphically using the proper graphical methods.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Formulate suitable solutions to practically represent realistic motion systems.
Professional skills	C7- Apply numerical modeling methods to engineering problems.	c7-1 Use suitable numerical techniques to model different machine components.
	C14- Employ the traditional and modern CAD and CAD/CAM facilities and production process.	c14-1 Apply the designed computer programs for developing solutions of practical problems comparing the results with the output of traditional and modern CAD design.
General skills	D7- Search for information and engage in life-long self learning discipline.	d7-1 Revise using some real machine components and try to understand how they have been done.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	General principles of machine tool design	1-2
2nd	Regulation of speeds, feed rats, and small gear boxes.	3-4
3rd	Multi-speed ;(main, feed) gear boxes, and the best probability to design gear box	5-6
4th	Multi-speed gear boxes with double speed motors.	7
5th	Guide ways.	9-10
6th	Power screws.	11-12
7th	Main spindles	13-14
8th	Force analysis on machine tool frames	15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	General principles of machine tool design.	**8**	**4**	**4**	**---**	a4-1 &a13-1
Week-2	Machine tool drives and mechanisms.	**8**	**4**	**4**	**---**	a13-1 & a13-2 &a19-1
Week-3	Regulation of speeds and feed rats	**8**	**4**	**4**	**---**	b17-1&c14-1
Week-4	Gear boxes with two , three shafts.	**8**	**4**	**4**	**---**	b17-1&c7-1
Week-5	Multi-speed gear boxes; main, feed.	**8**	**4**	**4**	**---**	a13-3 & a19-1
Week-6	The best probability to design gear box, flow chart, kinematic diagram, speed chart…..etc.	**8**	**4**	**4**	**---**	a4-1
Week-7	Multi-speed gear boxes with double speed motors.	**8**	**4**	**4**	**---**	a13-2& &b19-1 d7-1
Week-8	**Midterm Written Examination**					
Week-9	Sliding friction guide ways.	**8**	**4**	**4**	**---**	c7-1 & b2-1 &c13-1&c14-1
Week-10	Anti-friction guide ways.	**8**	**4**	**4**	**--**	c7-1 & b2-1 c14-1
Week-11	Sliding friction power screws.	**8**	**4**	**4**	**---**	a4-1 & b17-1 c7-1&c14-1
Week-12	Anti- friction power screws.	**8**	**4**	**4**	**---**	a13-2&a19-1 & b2-2&b17-1
Week-13	Main spindles	**8**	**4**	**4**	**---**	a4-1& b2-1 & b17-1
Week-14	Main spindle supports	**8**	**4**	**4**	**---**	b17-2&c7-1 & &b2-1&d7-1
Week-15	Force analysis on machine tool frames	**8**	**4**	**4**	**---**	a13-1& a13-2 b2-1 && d7-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a4-1**	**x**		**x**		**x**								
	a13-1	**x**		**x**	**x**			**x**		**x**				
	a13-2	**x**		**x**										
	a13-3					**x**	**x**							
	a19-1	**x**		**x**				**x**						
Intellectual Skills	**b2-1**	**x**	**x**		**x**	**x**	**x**						**x**	
	b2-2	**x**	**x**	**x**			**x**						**x**	
	b17-1	**x**	**x**	**x**		**x**	**x**	**x**					**x**	
Professional Skills	**c7-1**	**x**									**x**			
	c14-1	**x**	**x**					**x**	**x**					
General Skills	**d7-1**		**x**			**x**		**x**		**x**	**x**			

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

For low capacity students	Give them the opportunity for my office meetings.
	Repeat the explanation of some of the material .
	Assign a teaching assistance to follow up the performance of this group of students.
	Give them some advanced topics to be searched using the internet and conduct presentation.
	Encourage them to attend seminars of suitable research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	x	x										
	a13-1	x											
	a13-2	x											
	a19-1	x	x										
Intellectual Skills	b2-1	x	x								x		
	b2-2	x	x		x	x		x					
	b17-1	x	x						x	x	x		
Professional Skills	c7-1	x			x		x						
	c14-1	x						x					
General Skills	d7-1		x				x			x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	130	65%	16th
End of term assessment (*Oral*)	20	10%	15th
End of term laboratory examination (*Lab*)	0	0%	0
Mid term written Examination1 (*Term Work*)	30	15%	8th
Mid term written Examination 2 (*Term Work*)	10	5%	12th
Tutorial and report assessment (*Term Work*)	10	5%	weakly
Total	200	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

– P H Joshi, " Machine Tools Hand book Design and Operation", Copyright C, 2007,Tata MacGraw Hill Publishing Company Limited

13.3- Recommended books

- Joseph E., Shigley, Mechanical Engineering design

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Course coordinator **Programme coordinator**

Prof. Dr. Mohamed NASSER

Head of the Department
Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Mechanical Measurements*** ***Code Symbol:*** ***PRE 412***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of mechanical measurements associated with many of practical work in the field of power measurements. As well as, this course provide the student with required skills of applying knowledge of measurements, science and engineering concepts for creating solutions of measurement problems using various types of instruments. This course will also provide students, with the required skills of selecting the suitable method and the suitable variables for solving the measurement problems. As well as, this course will give the student the required skills of ability for solve the measurement problems and metrology understanding.

3- Course Objectives:

1. **Analyzing and understanding the advanced methods of measurements and its application.**
2. **Demonstration of advanced methods techniques using developed computer software.**
3. **Evaluation of the suitable design and calibration methods for any types of instruments.**
4. **Realizing of the principles methods of measuring using different methods.**
5. **Evaluation of the principles methods of measuring using different types of transducers.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic Standards that the course contribute in achieving	A1,A15 and A19	B1,B16and B17	C1 and C13	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain the suitable cconcepts, theories and method and the suitable variables for solving the measurement problems of surface measurements.
	A15- The specifications, programming and range of application of CAD and CAD/CAM facilities	a15-1 Describe some methods of creating a desired measuring methods using CAD/CAM facilities for solving mechanical power measurent problems. a15-2 Define the advanced concepts of measurements which are required for solving the engineering applications problems.
	A19- Engineering design principles and techniques.	a19-1 Discuss different measuring techniques for solving some advanced techniques of surface measurement.
Intellectual skills	B1- Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Create the desired software dealing with the used methods for modeling and analyzing measurement problems.
	B16- Interpret numerical data and apply analytical methods for engineering design purposes	b16-1 Organize and interpret numerical data using computer programs to analyze the measurements problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable computer programs for developing the solutions of practical measurements problems.
Professional skills	C1- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Employ a suitable knowledge to develop required method of measurement.
	C13-Prepare engineering drawings of instruments and specialized technical reports andcommunicate accordingly.	c13-1 Apply the designed computer programs to solve selected measurement problems and to draw the results of solving these problems.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created methods of measurement by working team.
	D6- Effectively manage tasks, time, and resources.	d6-1 Balance between facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Measurement of The temperature.	1-2
2nd	Mechanical Pressure Measuring systems.	3-5
3rd	Measurement of Fluid Flow.	6-7
4th	Mechanical Power Measurements.	9-10
5th	Theory of Interferometry and its applications.	11-13
6th	Surface Roughness assessments .	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Measurement of The temperature	**4**	**2**	**1**	**1**	a1-1 &a15-1
Week-2	Mechanical Pressure Measuring systems.	**4**	**2**	**1**	**1**	a15-1 & a15-2 &a19-1
Week-3	Measurement of Fluid Flow.	**4**	**2**	**1**	**1**	b16-1&c13-1
Week-4	Measurement of Strain..	**2**	**--**	**1**	**1**	b17-1
Week-5	Mechanical Power Measurements.	**4**	**2**	**1**	**1**	a15-1 & a15-2
Week-6	Theory of Interferometry and its applications.	**4**	**2**	**1**	**1**	a1-1& a15-1&a15-2
Week-7	Surface Roughness assessments .	**6**	**2**	**2**	**2**	a1-1& &b16-1 d1-1
Week-8						
Week-9	Application of The temperature measurements.	**4**	**2**	**1**	**1**	c1-1 & b1-1 &c13-1&c14-1
Week-10	Application of Pressure measurements.	**4**	**2**	**1**	**1**	a1-1 & b17-1 c1-1&c14-1
Week-11	Application of Fluid Flow measurements.	**4**	**2**	**1**	**1**	a15-1&a15-2 & b16-1&b17-1
Week-12	Application of Strain measurements..	**4**	**2**	**1**	**1**	a1-1& a15-1& a19-1 & b17-1
Week-13	Application of Interferometry theory.	**4**	**2**	**1**	**1**	a1-1&a19-1 & b17-1 &a12-1
Week-14	Application of Surface Roughness measurement For traditional materials .	**4**	**2**	**1**	**1**	a15-2&c13-1 & &b16-1&d1-1
Week-15	Application of Surface Roughness measurement For composite materials	**4**	**2**	**1**	**1**	a15-1& a15-2 b16-1 && d6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	x			x									
	a15-1	x			x									
	a15-2	x			x									
	a19-1	x			x									
Intellectual Skills	**b1-1**	x	x			x								
	b16-1	x	x	x		x	x							
	b17-1	x	x	x		x	x							
Professional Skills	**c1-1**	x									x			
	c13-1			x										
General Skills	**d1-1**		x							x	x			
	d6-2		x							x	x			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x	x	x									
	a15-1	x											
	a15-2	x											
	a19-1	x	x	x									
Intellectual Skills	**b1-1**	x	x	x							x		
	b16-1	x	x		x								
	b17-1	x	x	x							x		
Professional Skills	**c6-1**	x		x	x								
	c13-1	x		x						x	x		
General Skills	**d1-1**						x						
	d6-1						x		x	x			

1.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**10**	**10%**	**16th**
Mid term written Examination1 (*Term Work*)	**5**	**5%**	**8th**
Mid term written Examination 2 (*Term Work*)	**5**	**5%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students can prepared the experimental setting solving some measurement problems. Also, creating the desired method and test it.

B. Library Usage:

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

13- List of references:

13.1- Course notes

- A.M.EASA, Mechanical Measurements, Menoufia University ,2013.

13.2- Essential books (text books)

-

13.3- Recommended books

- 'Metrology and calibration', A.M.Easa, Minoufiya University,2004,Egypt.
- ' Measurement Systems –Application Design', Ernest O. Doebelin., TATA McGRAW-HILL -EDITION.

Course coordinator **Programmer coordinator**

Prof. Dr. Ahmed M. Easa.

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3st PROD.**

Course Specification

A- Basic Information

Title: ***Machining Technologies*** ***Code Symbol:*** ***PRE 413***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*1*	*6*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	…..	80%	20%	….	……	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of modern automatic machine tools. This course will also provide students, with the application of numerical and computerized control in machine tools. As well as, this course will give the student the required skills of creating and designing suitable jigs and fixtures used in manufacturing processes

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic conceptes of automatic and semi-automatic machine tools.**
2. **Definition of the requirements of computer programming associated with CNC machine tools.**
3. **Realizing of the different types jigs and fixtures suitable for manufacturing processes.**
4. **Evaluation of the suitable ways for solving the engineering problems related to machining.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A3, A13 and A15	B1, B3 and B13	C1, C10 and C14	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3- Characteristics of engineering materials related to the discipline.	a3-1 Discus properties of engineering materials related to each machining process
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture;	a13-1 Explain different machining theories relevant to machining technology
	A15- The specifications, programming and range of application of CAD and CAD/CAM facilities	a15-1 Define the specifications of CAM programming in CNC machining
Intellectual skills	B1- Select appropriate mathematical and dynamicbased methods for modeling and analyzing problems.	b1-1 Design suitable mathematical and dynamic methods in modeling manufacturing problems
	B3- Think in a creative and innovative way in problem solving and design.	b3-1 Organize how to think a creative and innovative way in solving some manufacturing problem.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Plan the principles of mathematics, science and technology in problem solving scenarios manufacturing problems and mechanical engineering
Professional skills	C6- Use a wide range of analytical tools, techniques, equipment to the discipline.	c6-1 Use different analytical techniques and equipments in machining processes
	C10- Apply quality assurance procedures and follow codes and standards.	c10-1 Apply quality assurances to have standard and good products
	C14- Employ the traditional and modern CAD and CAD/CAM facilities in design and production processes.	c14-1 Use CAM programming in the production processes
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D9- Refer to relevant literatures.	d9-1 Revise how to search for missing information in electronic libraries

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Automatic and semi-automatic lathes	1-2
2nd	Numerically controlled machine tools	3-6
3rd	Jigs and fixtures	7-9
4th	Varios attachments in machine tools	10-11
5th	High speed machining and machinability	12-13
6th	Design for machining	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Operation and tool layout in semi-automatic lathes	**6**	**3**	**2**	**1**	a3-1& a15-1
Week-2	Operation and tool layout in Automatic lathes	**6**	**3**	**2**	**1**	A13-1& a15-1& d1-1
Week-3	Introduction to numerically controlled machine tools	**6**	**3**	**2**	**1**	a13-1& a15-1& b3-1 & d1-1
Week-4	Function of machine tools and machine tool strucure	**6**	**3**	**2**	**1**	a13-1& b1-1&b3-1
Week-5	Application of automatic control to machine tools	**6**	**3**	**2**	**1**	b3-1& a13-1 & c14-1
Week-6	CNC machining	**6**	**3**	**2**	**1**	c14-1&b13-1& b3-1& d1-1& c6-1
Week-7	Introduction to jigs and fixtures Purpose of jigs and fixtures	**6**	**3**	**2**	**1**	d1-1&c6-1& b3-1& a13-1
Week-8						
Week-9	Design and application of jigs and fixtures	**6**	**3**	**2**	**1**	a13-1&c14-1& c10-1
Week-10	Condition and places for application of attachments in machine tools	**6**	**3**	**2**	**1**	d1-1&d6-1&c1-1& c10-1
Week-11	Working principles of various attachments in different machine tools	**6**	**3**	**2**	**1**	d1-1&d6-1 c1-1& a13-1
Week-12	High speed machining theory	**6**	**3**	**2**	**1**	c10-1& b3-1& d1-1
Week-13	Concepts of machinability	**6**	**3**	**2**	**1**	d6-1&c14-1& a13-1
Week-14	Standardization	**6**	**3**	**2**	**1**	c6-1& d6-1 & d1-1
Week-15	Assembly of components	**6**	**3**	**2**	**1**	d6-1&c10-1 & a13-1 & c1-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a3-1	**x**												
	a13-1	**x**			**x**									
	a15-1	**x**			**x**									
Intellectual Skills	b1-1						**x**			**x**	**x**			
	b3-1	**x**	**x**	**x**	**x**	**x**			**x**					
	b13-1	**x**	**x**	**x**	**x**	**x**			**x**					
Professional Skills	c6-1	**x**									**x**			
	c10-1			**x**						**x**	**x**			
	c14-1			**x**						**x**	**x**			
General Skills	d1-1	**x**	**x**	**x**						**x**	**x**			
	d9-1	**x**	**x**	**x**		**x**				**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a3-1												
	a13-1	**x**											
	a15-1	**x**						**x**				**x**	
Intellectual Skills	b1-1	**x**	**x**		**x**			**x**				**x**	
	b3-1	**x**	**x**										
	b13-1	**x**	**x**		**x**								
Professional Skills	c6-1	**x**			**x**								
	c10-1												
	c14-1	**x**			**x**		**x**	**x**					
General Skills	d1-1			**x**	**x**		**x**					**x**	
	d6-1			**x**	**x**		**x**	**x**		**x**		**x**	

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	**Mark**	**Percentage**	**week**
Final Examination (*written*)	**60**	**60%**	**16th**
End of term assessment (*Oral*)	**20**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students will be required to routinely use computer software to solve problems related to machining technology.

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports. Background information is required as part of the study. .

13- List of references:

13.1- Course notes

- "Manufacturing Automation, Metal cutting Mechanics, Mc Vibraion,, and CNC Design" by Yusuf Altinas, Cambridge Univ. Press, 2000.

13.2- Essential books (text books)

13.3- Recommended books

- "Manufacturing and CNC Technology" by Michaely Fitzpatric, 2004.
- Jig and Fixtures Design by Hoffinan, Edward Galgatia publ. New Delhi, 1987.

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Course coordinator **Programme coordinator**

Prof.Dr. Mamood El Khabeery

Dr. Mohammed Hany Kazamel

Head of the Department

Prof. Taha Ali El-Taweel

Date: 01/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th. PROD.**

Course Specification

A- Basic Information

Title: ***Total Quality Management*** ***Code Symbol:*** ***PRE 414A***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	20%			80%	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of *Total Quality Management* (TQM) associated with techniques for solving quality problems. As well as, this course provide the student with required skills of applying knowledge of quality and management tools aimed at increasing business and reducing losses due to wasteful practices. This course will also provide students, with the required skills of selecting the proper method and the suitable data for solving the TQM problems.

3- Course Objectives:

1. Understanding total quality concept and techniques for managing, controlling, and improving quality.
2. Gaining the information and skills needed to implement total quality practices.
3. Determining the impact of quality on profitability.
4. Using seven QC tools for data collection and analysis.
5. Implementation a business strategy driven by Total Quality Management.
6. Accomplishing the cultural transformation necessary for successful implementation of total quality practices.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A5 and A19	B1, B16 and B17	C1 and C13	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, statistcs and engineering concepts to the solution of engineering problems.	a1-1 Explain different statistical methods for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A5- Methodologies of solving engineering problems, data collection and interpretation	a5-1 Describe some methods of creating quality models for solving engineering problems. a5-2 Define the TQM concepts which are required for molding and solving the engineering applications problems.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving some quality problems.
Intellectual skills	B1- Select appropriate and computer –based method for modeling and analyzing problems.	b1-1 Create the desired software dealing with based methods for modeling and analyzing engineering quality problems.
	B16- Interpret numerical data and apply analytical methods for improving quality purposes.	b16-1 Organize and interpret numerical data using computer programs to analyze quality improving problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable computer programs for developing the solutions of practical engineering problems.
Professional skills	C1- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the quality and develop required statistical programs.	c1-1 Employ a suitable techniques and software packages pertaining to the discipline and develop required quality programs.
	C13-Prepare computer graphics and specialized technical reports and communicate accordingly.	c13-1 Apply the designed computer programs to solve selected engineering problems and to draw the results of solving these problems.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D6- Balance between resources and time	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Fundamentals of TQM	1-4
2nd	Implementing of TQM	5-7
3rd	Tools for the quality journey	9-11
4th	Quality measurement in product development	12-13
5th	Quality costing	14
6th	Six sigma pograms	15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Quality and quality control	**4**	**2**	**2**	**--**	a5-1 &a5-2
Week-2	Quality and quality control, continued	**4**	**2**	**2**	**--**	a5-1 & a5-2 &a19-1
Week-3	Total quality management	**4**	**2**	**2**	**--**	b16-1&c13-1
Week-4	Concepts of TQM	**4**	**2**	**2**	**--**	b17-1&c14-1
Week-5	Implementing of TQM	**4**	**2**	**2**	**--**	a5-1 & a5-2
Week-6	Implementing of TQM, continued	**4**	**2**	**2**	**--**	a5-1&a5-2
Week-7	Implementing of TQM, continued	**4**	**2**	**2**	**--**	a1-1& &b16-1 d1-1
Week-8						
Week-9	Tools of the quality journey	**4**	**2**	**2**	**--**	c6-1 & b1-1 &c1-1&c13-1
Week-10	Tools of the quality journey, continued	**4**	**2**	**2**	**--**	a1-1 & b17-1 c13-1
Week-11	Tools of the quality journey, continued	**4**	**2**	**2**	**--**	a5-1&a5-2 & b16-1&b17-1
Week-12	Quality measurement in product development	**4**	**2**	**2**	**--**	a1-1& a5-1& a19-1 & b17-1
Week-13	Quality measurement in product development, continued	**4**	**2**	**2**	**--**	a1-1&a19-1 & b17-1 &a12-1
Week-14	Quality costing	**4**	**2**	**2**	**--**	a5-2&c13-1 & &b16-1&d1-1
Week-15	Six sigma programs	**4**	**2**	**2**	**--**	a5-1& a5-2 & b16-1 &d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**										
	a5-1	**x**		**x**	**x**									
	a5-2	**x**		**x**	**x**									
	a19-1	**x**		**x**										
Intellectual Skills	**b1-1**	**x**	**x**				**x**							
	b16-1	**x**	**x**	**x**	**x**		**x**							
	b17-1	**x**	**x**	**x**	**x**		**x**							
Professional Skills	**c1-1**	**x**									**x**			
	c13-1	**x**												
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**		**x**								
	a5-1	**x**											
	a5-2	**x**											
	a19-1	**x**	**x**		**x**								
Intellectual Skills	**b1-1**	**x**	**x**		**x**						**x**		
	b16-1	**x**	**x**										
	b17-1	**x**	**x**		**x**						**x**		
Professional Skills	**c1-1**	**x**			**x**								
	c13-1	**x**			**x**		**x**				**x**		
General Skills	**d1-1**										**x**		
	d6-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**20**	**20%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

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13.3- Recommended books

-Jens J. Dahlgaard, etal.,"Fundamentals of Totals Quality Management" Taylor & Francis, 2002.

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Course coordinator **Programme coordinator**

Dr. Mohamed A. Sharaf El-Din

Head of the Department

Prof. Taha El-Taweel

Date: 01/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- Basic Information

Title: ***Tribology*** ***Code Symbol:*** ***PRE 414B***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with an enough knowledge of tribology associated with Charts for solving engineering problems. This course will also provide students, with the required skills for selecting the proper solutions and the suitable variables for solving the engineering problems. As well as, this course will give the student the required skills of ability for analyzing the engineering problems dealing with machine elements, and dynamics problems.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concebtes of friction, wear and lubrication**
2. **Definition of the requirements of friction, wear and lubrication**
3. **Realizing of the different types of friction and wear mechanisms and the suitable variables.**
4. **Evaluation of the suitable laboratory experiments for solving the engineering problems.**
5. **Analysis of different techniques for testing of tribological engineering problems dealing with machine elements, and dynamics .**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1 and A16	B13 and B17	C13 and C16	D1 and D8

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1-Concepts, principles and theories relevant to Mechanical Engineering and manufacture;	a1-1 Define the basics concepts of friction and wear. a1-2 Describe some methods of testing materials on friction and wear
	A16- Relevant contemporary issues in mechanical engineering	a16-1 Discuss different engineering techniques for solving some machine element problems.
Intellectual skills	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Organize and interpret numerical data using computer programs to analyze the problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 formulate an equation for developing the solutions of practical engineering problems.
Professional skills	C13-Prepare engineering drawings, computer graphics and specialized technical reports and communicate accordingly.	c13-1 Apply the designed computer programs to solve selected engineering problems and to draw the results of solving these problems.
	C16- Analyze experimental results and determine their accuracy and validity	c16-1 Compare between the tribological results of different methods of testing for developing solutions of practical problems
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the obtained results by working team.
	D8- Acquire entrepreneurial skills.	d8-1 Improve the facilities resources and testing conditions .

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Surface characteristics	1-3
2nd	Mechanics of sliding motion	4-5
3rd	Tribology behavior	6-7
4th	Friction	9-10
5th	Wear	11-13
6th	Lubrication	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction and historical approach	**4**	**2**	**2**	**--**	a1-1 &a16-1
Week-2	The occurrence of tribology	**4**	**2**	**2**	**--**	a1-1&a16-1
Week-3	Fundamental of tribology	**4**	**2**	**2**	**--**	a1-2 & b13-1&c13-1
Week-4	The nature of surface and their contact	**4**	**2**	**2**	**--**	b17-1&c16-1
Week-5	Surface roughness assessment	**4**	**2**	**2**	**--**	a16-1
Week-6	Contact of rough surfaces- real contact area- bearing area	**4**	**2**	**2**	**--**	a1-1&a1-2
Week-7	Tribological solutions Economical considerations	**4**	**2**	**2**	**--**	b17-1, & d3-1
Week-8						
Week-9	Friction: Friction laws -The simple adhesion theory and its extensions	**4**	**2**	**2**	**--**	a16-1 & b17-1 &c13-1&c16-1
Week-10	Friction between elastic bodies- Rolling friction Measurement of friction	**4**	**2**	**2**	**--**	a3-1 & b17-1 c13-1&c16-1
Week-11	Wear and properties of materials Types and mechanisms of wear	**4**	**2**	**2**	**--**	a16-1&a1-2 & b13-1&b17-1
Week-12	Wear measurement	**4**	**2**	**2**	**--**	a4-1&a1-1 & b17-1
Week-13	Hydrodynamic lubrication Elastohydrodynamic lubrication	**4**	**2**	**2**	**--**	a16-1&a1-1 & b17-1
Week-14	Hydrostatic lubrication Properties and testing of lubricants Externally pressurized bearing	**4**	**2**	**2**	**--**	a1-1&c13-1 & d1-1
Week-15	Design of journal bearing	**4**	**2**	**2**	**--**	a1-1& a1-2 & b17-1 &d8-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a1-2	**x**		**x**										
	a16-1	**x**		**x**										
Intellectual Skills	**b13-1**	**x**	**x**	**x**			**x**							
	b17-1	**x**	**x**	**x**			**x**							
Professional Skills	**c13-1**	**x**												
	c16-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d8-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a1-1	x											
	a1-2	x											
	a16-1	x	x		x								
Intellectual Skills	b13-1	x	x										
	b17-1	x	x		x						x		
Professional Skills	c13-1	x			x		x				x		
	c16-1	x			x								
General Skills	d1-1				x						x		
	d8-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	60	60%	16th
End of term assessment (*Oral*)	20	20%	15th
End of term laboratory examination (*Lab*)	0	0%	16th
Mid term written Examination1 (*Term Work*)	10	10%	8th
Mid term written Examination 2 (*Term Work*)	0	0%	12th
Tutorial and report assessment (*Term Work*)	10	10%	weakly
Total	100	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

.

6.4- Periodicals, web sites, … etc

13.1- Course notes

13.2- Essential books (text books)

- Czichos, H. Tribology-system approach to the science & Technology .
- Schey, J.A Tribology in metal working-Friction-lubrication &wear

13.3- Recommended books

-J. Halling ,"Introduction to tribology , The Wykham Engineering and technology series,(London),1976.

****

Course coordinator **Programme coordinator**

Prof.Dr. Taha El-Taweel

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Materials Handling*** ***Code Symbol:*** ***PRE 414C***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of materials handling for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems using suitable materials handling systems. This course will also provide students, with the required skills of selecting the proper handling system and the suitable variables for solving the engineering problems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concebtes of materials handling.
2. Definition of the requirements of materials handling.
3. Realizing of the different types of materials handling systems and the suitable variables.
4. Evaluation of the suitable handling systems for solving the engineering problems.
5. Analysis of different techniques for solving the engineering problems dealing with materials handling.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 &A13	B2 & B17	C3& C8	D1 & D3

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain different materials handling systems for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A3- Characteristics of engineering materials related to the discipline.	a3-1 Describe some methods of creating a desired handling system for a specified material. a3-2 Define the basics concepts of the materials handling equipments which are required for solving the engineering applications problems.
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1 Discuss different engineering techniques for solving some materials handling problems.
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Create the desired handling equipments for solving engineering problems.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable materials handling systems for developing the solutions of practical engineering problems.
Professional skills	C3- Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1 Develop new designs for handling systems to carry out specialized solutions for materials handling problems.
	C8- Apply safe systems at work and observe the appropriate steps to manage risks.	c8-1 Apply safe handling systems and observe the appropriate steps to manage risks.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created materials handling systems by working team.
	D3- Communicate effectively.	d3-1 Communicate effectively with the working team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Design and synthesis of some materials handling system	1-3
2nd	Hoisting system design	4-5
3rd	Conveying system design	6-7
4th	Robots and mechatronic systems design	9-12
5th	Construction of some models as applications	13-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Design and synthesis of some materials handling system	**4**	**2**	**2**	**---**	a1-1, a3-1 & a3-2
Week-2	Design and synthesis of some materials handling system (continue)	**4**	**2**	**2**	**---**	a3-2, a13-1 & b2-1
Week-3	Design and synthesis of materials handling hoisting systems (continue)	**4**	**2**	**2**	**---**	a3-1, a13-1 & b17-1
Week-4	Hoisting system design	**4**	**2**	**2**	**---**	a3-2, b2-1 & c3-1
Week-5	Hoisting system design (continue)	**4**	**2**	**2**	**---**	a3-2, b2-1 & c3-1
Week-6	Conveying system design	**4**	**2**	**2**	**---**	a1-1, b17-1 & c8-1
Week-7	Conveying system design (continue)	**4**	**2**	**2**	**---**	a1-1, b17-1 & c8-1
Week-8						
Week-9	Robots and mechatronic systems design	**4**	**2**	**2**	**---**	a3-2, a13-1, b2-1 & c8-1
Week-10	Robots and mechatronic systems design (continue)	**4**	**2**	**2**	**---**	a3-2, a13-1, b2-1 & c8-1
Week-11	Robots and mechatronic systems design (continue)	**4**	**2**	**2**	**---**	a3-2, a13-1, b2-1 & c8-1
Week-12	Robots and mechatronic systems design (continue)	**4**	**2**	**2**	**---**	a3-2, a13-1, b2-1 & c8-1
Week-13	Construction of some models as applications	**4**	**2**	**2**	**---**	a1-1, b17-1, c3-1, d1-1& d3-1
Week-14	Construction of some models as applications (continue)	**4**	**2**	**2**	**---**	a1-1, b17-1, c3-1, d1-1& d3-1
Week-15	Construction of some models as applications (continue)	**4**	**2**	**2**	**---**	a1-1, b17-1, c3-1, d1-1& d3-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**	**x**								
	a3-1	**x**		**x**	**x**	**x**								
	a3-2	**x**		**x**	**x**									
	a13-1	**x**		**x**	**x**	**x**								
Intellectual Skills	**b2-1**	**x**	**x**			**x**	**x**							
	b17-1	**x**	**x**	**x**			**x**							
Professional Skills	**c3-1**	**x**				**x**		**x**			**x**			
	c8-1	**x**			**x**			**x**						
General Skills	**d1-1**		**x**							**x**	**x**			
	d3-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**										
	a3-1	**x**			**x**								
	a3-2	**x**					**x**						
	a13-1	**x**	**x**		**x**		**x**						
Intellectual Skills	**b2-1**	**x**	**x**		**x**						**x**		
	b17-1	**x**	**x**		**x**						**x**		
	c3-1	**x**			**x**		**x**				**x**		
	c8-1	**x**			**x**								
General Skills	**d1-1**		**x**								**x**		
	d3-1		**x**				**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**15%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of the required reports.

13- List of references:

13.1- Course notes

- Notes of Materials Handling

13.2- Essential books (text books)

-"Materials handling equipments" – N. Rudenko 1969

13.3- Recommended books

- Materials handling Equipments" – M. P. Alexanderov 1981

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Course coordinator **Programme coordinator**

Prof. Sabry A. El- Shakry

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Cutting and Forming Tools Design*** ***Code Symbol:*** ***PRE 414D***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	10%	80%	10%	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of cutting and forming tools and their design for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems. This course will also provide the students with the required skills of selecting the proper design technique and the suitable variables for the cutting and forming tools.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concebtes of cutting and forming tools design.**
2. **Definition of the requirements of cutting and forming tools materials snd their properties.**
3. **Realizing of the different types of cutting and forming tools and the suitable variables.**
4. **Evaluation of the suitable cutting and forming tools for solving the engineering problems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 and A19	B1, B6 and B17	C6 and C14	D1 and D3

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain different cutting and forming tools design procedures using knowledge of mathematics, science and engineering concepts.
	A3 – Characteristics of engineering materials used for manufacturing the cutting and forming tools.	a3-1 List the main properties of the cutting tool materials. a3-2 Compare between the different cutting tool materials
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering design techniques for solving some cutting and forming tools problems.
Intellectual skills	B1- Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Create the desired software for modeling and analyzing cutting and forming tools problems.
	B6- Investigate the failure of components, systems, and processes.	b6-1 Formulate the cutting and forming tools failure behavior to avoiding it.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Design a suitable cutting and forming tools for developing the solutions of practical engineering 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 Apply the designed cutting and forming tools to solve selected engineering problems.
	C14- Employ the traditional and modern CAD and CAD /CAM facilities in design and production process.	c14-1 Use the traditional and modern CAD facilities in design of cutting and forming tools.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created designs by working team.
	D3- Communicate effectively.	d3-1 Communicate effectively by working in a team.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Cutting tool materials.	1-2
2nd	Classification of cutting and forming tools.	3-4
3rd	Design of single point tool geometry.	5-6
4th	Reamer design-forming and Forming tools.	7&9
5th	CAD of cutting and Forming tools	10-11
6th	Shear die design-Deep drawing design.	12-13
7th	Effect of lubrication process on the die performance	14-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Cutting tool materials.	**4**	**2**	**2**	**--**	a3-1& a3-2
Week-2	Properties of cutting tool materials.	**4**	**2**	**2**	**--**	a3-1& a3-2
Week-3	Classification of cutting tools	**4**	**2**	**2**	**--**	a1-1 &a19-1
Week-4	Classification of forming tools.	**4**	**2**	**2**	**--**	a1-1 &a19-1
Week-5	Single point tool geometry.	**4**	**2**	**2**	**--**	a1-1 &a19-1
Week-6	Design of single point tool	**4**	**2**	**2**	**--**	b6-1, b17-1 &c6-1
Week-7	Reamer design	**4**	**2**	**2**	**--**	b6-1, b17-1 &c6-1
Week-8						
Week-9	Forming and forming tools design.	**4**	**2**	**2**	**--**	b6-1, b17-1 &c6-1
Week-10	CAD of cutting tools.	**4**	**2**	**2**	**--**	b1-1 &c14-1
Week-11	CAD of forming tools	**4**	**2**	**2**	**--**	b1-1,c14-1and d3-1
Week-12	Shear die design	**4**	**2**	**2**	**--**	b6-1, b17-1 &c6-1
Week-13	Deep drawing design	**4**	**2**	**2**	**--**	b6-1, b17-1 &c6-1
Week-14	Lubricant fluids in forming processes	**4**	**2**	**2**	**--**	b6-1, c6-1& d1-1
Week-15	Effect of lubrication process on the die performance.	**4**	**2**	**2**	**--**	b6-1, c6-1 & d1-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	x		x	x									
	a3-1	x		x	x									
	a3-2	x		x	x									
	a19-1	x		x	x									
Intellectual Skills	**b1-1**	x	x		x		x							
	b6-1	x	x	x	x	x	x							
	b17-1	x	x	x	x	x	x							
Professional Skills	**c6-1**	x			x	x					x			
	c14-1	x			x						x			
General Skills	**d1-1**		x							x	x			
	d3-1		x							x	x			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x			x								
	a3-1	x			x		x						
	a3-2	x			x		x						
	a19-1	x			x								
Intellectual Skills	**b1-1**	x			x								
	b6-1	x			x								
	b17-1	x			x		x						
Professional Skills	**c6-1**	x			x								
	c14-1	x			x		x						
General Skills	**d1-1**										x		
	d3-1						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**15%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. Library Usage:

Students should be encouraged to use library technical resources in the preparation of reports.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)
- Production Technology: HMT, Rman, Khana 1987

13.3- Recommended books
- Advanced machine technology, C. Thomas olivo, 1982

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Course coordinator **Programme coordinator**

Dr. Abo Elhagag H. Yousef

Head of the Department

Prof. Taha A. El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Biomaterials*** ***Code Symbol:*** ***PRE 415A***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	80%	20%	…..	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of biomaterials and different manufacturing processes. As well as, this course gives an introduction to biomaterials and associated physical concepts and introduces physicists to the challenges faced in biomaterials design and measurement. The course is designed, with the focus on emerging technologies, including the role of biomaterials in tissue engineering, controlled-release systems and minimally-invasive diagnostic tools This course will also teach students the characteristics and classification of Biomaterials , different metals and ceramics used as biomaterials , polymeric materials and combinations that could be used as a tissue replacement implants and the artificial organ developed using these materials.

3- Course Objectives:

1. Definition of a biomaterial and biocompatibility.
2. Describe the structure and composition of naturally occurring biomaterials, such as tooth enamel, bone, collagen, skin etc.
3. Realizing of the different types methods of manufacture of the different types of materials used in medicine and biosciences, their properties and their suitability for a particular function
4. use phase diagrams to determine compositions of materials
5. Describe the relationship between physical processes such as flow, and biological processes such as enzyme reactions in governing how a material may function in a living organism.
6. Analysis of methods of modifying surfaces and their impact on the material/biological interface.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A3 and A13	B3and B18	C2and C3	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	**Course ILOs**
Knowledge& Understanding	A3):- Characteristics of engineering materials related to the discipline.	a3-1 Explain different manufacturing processes of solving bioengineering problems.
	A13):- Concepts, principles and theories relevant to Mechanical Engineering and manufacture	a13-1 Define and descibe the basic concepts of biomaterials processing in medical applcations.
Intellectual skills	B3):- Think in a creative and innovative way in problem solving and design.	b3-1 Create the desired biomaterial properties with high biocomtability for problem solving and design.
	B18):- Select appropriate manufacturing method considering design requirements	b18-1 Organize and interpret biomaterial properties to select the most suitabl manufafacuring process.
Professional skills	C2):- Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1 explain and define the intentional biomaterial properties to improve design and products.
	C3):- Create and/or re-design a process, component or system, and carry out specialized engineering designs. .	c3-1 Apply the designed analysis to solve selected engineering problems concerning biomaterial applications
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D9):- Refer to relevant literatures	d9-1 share students through reading text books in the library

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to biomaterials	1
2nd	Metals and implants	2-3
3rd	Degradation(in vitro-in vivo corrosion)	4-6
4th	Surfaces,surface modification and tailoring	7&9
5th	Special thin organic coatings	10-11
6th	Adhesion of polymers	12-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to biomaterials	**4**	**2**	**2**	**…**	a3-1 & a13-1
Week-2	Chemical composition and physical properties of dental restoration and refractory materials	**4**	**2**	**2**	**…**	d9-1 & c3-1 & b18-1
Week-3	Recommendation for processing dental restoration and refractory materials	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1
Week-4	Introduction to degradation of metallic biomaterials	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1
Week-5	Kinetics of corrosion and localized corrosion	**4**	**2**	**2**	**…**	d9-1 & c3-1 & b18-1
Week-6	Experimental methods for assessment The biocompatibility of a material	**4**	**2**	**2**	**…**	a3-1 & a13-1 & b18-1
Week-7	Influence of the surface structure of an implant on the strength of adhesion to the tissue	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1
Week-8						
Week-9	Influence of the surface composition on the orientation of the cell.	**4**	**2**	**2**	**…**	d9-1 & c3-1 & b18-1
Week-10	Composition and structure of biopolymers	**4**	**2**	**2**	**…**	a3-1 & a13-1 & b18-1
Week-11	Protein adsorption at the surface of solids with some selected examples	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1 & b18-1
Week-12	Introduction to adhesion of polymers	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1
Week-13	Important polymer feature in the bulk	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1
Week-14	Polymer- polymer interfaces	**4**	**2**	**2**	**…**	a3-1 & a13-1 & b18-1
Week-15	Polymers combined with inorganic materials	**4**	**2**	**2**	**…**	d1-1 & b3-1 c2-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a3-1**	**x**		**x**	**x**									
	a13-1	**x**		**x**	**x**									
Intellectual Skills	**b3-1**	**x**	**x**		**x**		**x**						**x**	
	b18-1	**x**	**x**	**x**	**x**		**x**						**x**	
Professional Skills	**c2-1**	**x**									**x**			
	c3-1	**x**			**x**									
General Skills	**d1-1**		**x**							**x**	**x**			
	d9-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	x	x		x								
	a13-1	x			x								
Intellectual Skills	**b3-1**	x	x		x						x		
	b18-1	x	x		x								
Professional Skills	**c2-1**	x											
	c3-1	x			x		x				x		
General Skills	**d1-1**										x		
	d91						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**15%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources to know more about biomaterials and their use.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- Biomaterials Science: An Introduction to Materials in Medicine. Ratner, Hoffman, Schoen, Lemons
-Hand book of materials for medical devices and dental applications

13.3- Recommended books

- Biomaterial Science and Biocompatibility. Silver, Christiansen, Springer-Verlag
-Introduction to Biomedical Engineering. Enderle, Blanchard, Bronzino
-Biomaterials: An Introduction. Parks, Lakes.

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Course coordinator **Programme coordinator**

Prof,Dr. Abdel Mageed Nagi attia

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4rd PROD.**

Course Specification

A- Basic Information

Title: ***Computer Aided Design*** ***Code Symbol:*** ***PRE 415B***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with the necessary knowledge of computer programming dealing with Computer Aided Design CAD, Finite Element, Optimum Design and Numerical Analysis. This course will also provide students, with the required skills of selecting the proper programming software for solving the engineering problems. As well as, this course provide the student with required skills of ability for modeling the engineering problems dealing with CAD, Finite Element, Optimum Design and Numerical Analysis.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic concepts of computer Aided Design using a suitable software.**
2. **Realizing of the different types of softwares and the suitable variables.**
3. **Evaluation of the suitable software for solving the engineering problems.**
4. **Analysis of different techniques for modeling the engineering problems dealing with Computer Aided Design, Finite element, Optimum Design and statistical problems.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard (NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A4, A15 and A17	B7, B13 and B16	C3, C7 and C14	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4- Principles of design including elements design, process and/or a system related to specific disciplines	a4-1 Explain different engineering software for using principles of engineering design including elements design, finite element, optimum Design.
	A15- The specifications, programming and range of application of CAD and CAD/CAM facilities	a15-1 Describe some techniques of creating soft-ware for solving selected problems dealing with Computer Aided Design using Finite Element, Optimum Design and Numerical Analysis.
	A17- Basic electrical, control and computer engineering subjects related to the discipline	a17-1 Define the essentials concepts of programming languages or software package as MATLAB which is needed for molding and solving the engineering problems.
Intellectual skills	B7- Solve engineering problems, often on the basis of limited and possibly contradicting information.	b7-1 Design a suitable computer programs for solving selected practical problems using an effective optimum design techniques to insure improvements.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering	b13-1 Create the desired solutions of the selected engineering problems applying the principles of mathematics and engineering science
	B16- Interpret numerical data and apply analytical methods for engineering design purposes	b16-1 Organize and interpret numerical data using computer programs to analyze the problems.
Professional skills	C3- Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1 Employ a suitable software packages to design component or mechanical system, and carry out optimum engineering designs.
	C7- Apply numerical modeling methods to engineering problems.communicate accordingly.	c7-1 Use the designed computer programs in order to use numerical modeling methods for solving selected engineering problems.
	C14- Employ the traditional and modern CAD and CAD/CAM facilities in design and production processes.	c14-1 Test the designed computer programs for developing solution of engineering problems and comparing the results with the output of modern CAD/CAM design
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D6- Balance between resources and time	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	General Fundamentals of design using Computer Aided Design CAD	1-3
2nd	Numerical methods which uses in design using Computer Aided Design CAD	4-5
3rd	Fundamentals of drawing and design using Computer Aided Design CAD	6-7
4th	Finite Element Methods	9-11
5th	Optimum Design	12-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	General Fundamentals of design using Computer Aided Design CAD	**4**	**2**	**2**	**--**	a4-1 &a15-1
Week-2	Advantages of design using Computer Aided Design CAD	**4**	**2**	**2**	**--**	a15-1 & a17-1
Week-3	Software & Engineering computer Packages can be used for mechanical design	**4**	**2**	**2**	**--**	b13-1&c7-1
Week-4	Numerical methods	**4**	**2**	**2**	**--**	b16-1&c14-1
Week-5	Numerical methods which uses in design using Computer Aided Design CAD	**4**	**2**	**2**	**--**	a15-1
Week-6	Fundamentals of drawing and design	**4**	**2**	**2**	**--**	a15-1
Week-7	Fundamentals of drawing and design using Computer Aided Design CAD	**4**	**2**	**2**	**--**	a4-1& &b13-1 d1-1
Week-8						
Week-9	Fundamentals of Finite Element Methods	**4**	**2**	**2**	**--**	c3-1 & b7-1 &c7-1&c14-1
Week-10	Advantages of using Finite Element Methods through mechanical Design	**4**	**2**	**2**	**--**	a4-1 & b16-1 c7-1&c14-1
Week-11	Programming using Finite Element Methods and techniques	**4**	**2**	**2**	**--**	a15-1& b13-1 & b16-1
Week-12	Advantages Optimum Mechanical Design	**4**	**2**	**2**	**--**	a4-1& b16-1
Week-13	Fundamentals of Optimum Design	**4**	**2**	**2**	**--**	a15-1 & b16-1 &a17-1
Week-14	Using Optimum Design for soling engineering problems	**4**	**2**	**2**	**--**	a15-1&c14-1 & &b13-1&d1-1
Week-15	Using engineering computer packages dealing with Optimum Design	**4**	**2**	**2**	**--**	&a15-1 & d6-1 b13-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a4-1**			**x**	**x**									
	a15-2	**x**		**x**	**x**									
	a17-1	**x**		**x**										
Intellectual Skills	**b7-1**	**x**	**x**		**x**		**x**						**x**	
	b13-1	**x**	**x**	**x**	**x**		**x**						**x**	
	b16-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	**c3-1**	**x**			**x**						**x**			
	c7-1	**x**												
	c13-1										**x**			
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	*Tutorial Assessment*	*Model Exams Assessment*	*Report Assessment*	*Quiz assessment*	*Presentation Assessment*	*Discussion*	*Project Assessment*	*Home Exam*	*Monitoring*
Knowledge & Understanding	a4-1	x	x		x								
	a15-2	x			x								
	a17-1	x	x										
Intellectual Skills	b7-1	x	x		x						x		
	b13-1	x	x		x								
	b16-1	x	x								x		
Professional Skills	c3-1	x	x		x								
	c7-1	x					x				x		
	c13-1	x											
General Skills	d1-1										x		
	d6-2						x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	70	70%	16th
End of term assessment (*Oral*)	0	0%	15th
End of term laboratory examination (*Lab*)	0	0%	16th
Mid term written Examination1 (*Term Work*)	15	15%	8th
Mid term written Examination 2 (*Term Work*)	0	0%	12th
Tutorial and report assessment (*Term Work*)	15	15%	weakly
Total	100	100%	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

-

13.3- Recommended books

- "Applications in MATLAB with Numerical Analysis"Yaseen A. El-Shabol,Dar-El-Hamed, Aman , Jordan .
- "Programming with Visual-Basiv 6" Magdy Abo-ElAtta,Compu- Science series , Cairo, Egypt

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Course coordinator **Programme coordinator**

Dr. Khaled M. Khader

Head of the Department

Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Welding Technology*** ***Code Symbol:*** ***PRE 415C***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	30%	70%	--	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student with an enough knowledge of recent welding technologies associated with manufacturing processes. This course will also provide students with the required skills of selecting the proper welding process and the suitable variables for solving the engineering problems. As well as, this course will give students the required skills of ability for the Production Engineering to deal with the different techniques in welding practically and theoretically.

3- Course Objectives:

1. Demonstration of knowledge of the different techniques used in field of welding technology.
2. Realizing of the experience to solve most welding problems.
3. Evaluation of the knowledge of the different technological and mathematical relationships in field of welding .
4. Definition of the prod-Eng. to deal with the different techniques in welding practically and theoretically**.**

4- Relationship between the course and the p

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A3, A18 and A19	B4, B18	C2, C19	D6, D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A3- Characteristics of engineering materials related to the discipline.	a3-1 Discuss different Characteristics of engineering materials related to the welding processes
	A18- The role of information technology in providing support for mechanical engineers	a18-1 Define the role of information technology in providing support for mechanical engineers
	A19- Engineering design principles and techniques	a19-1 Discuss engineering design principles and techniques
Intellectual skills	B4- Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.	b4-1 Create different ideas, views, and knowledge from a range of sources.
	B18- Select appropriate manufacturing method considering design requirements.	b18-1 Select appropriate manufacturing method considering design requirements.
Professional skills	C2- Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	c2-1 Discuss professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
	C19- Prepare the process plan for manufacturing	c19-1 Describe the process plan for manufacturing.
General skills	D6- Effectively manage tasks, time, and resources	d6-1 Communicate effectively manage tasks, time, and resources
	D9- Refer to relevant literatures	d9-1 Judge referring to relevant literatures

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Types of joints (Temporary, Permanent)	1-2
2nd	Welding processes	3-5
3rd	Main factors affecting fusion welding	6-7
4th	Resistance welding-TIG welding-MIG welding	9-10
5th	Laser welding	11-13
6th	Testing methods for welding quality	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to joining and fastening processes	**4**	**2**	**2**	**-**	a3-1,a18-1
Week-2	Fusion welding processes (Thermal)	**4**	**2**	**2**	**-**	a3-1, a19-1 &b4-1
Week-3	Electric arc welding , Resistance welding	**4**	**2**	**2**	**-**	a3-1, a18-1 &b18-1
Week-4	Solid state welding (Roll, Friction)	**4**	**2**	**2**	**-**	a18-1, b4-1 & c2-1
Week-5	Explosion, Pressure, Ultrasonic welding	**4**	**2**	**2**	**-**	a19-1, b18-1 &c19-1
Week-6	Brazing and soldering welding	**4**	**2**	**2**	**-**	a18-1,b4-1 & c2-1
Week-7	Adhesive bonding	**4**	**2**	**2**	**-**	a18-1,b4-1 & c2-1
Week-8						
Week-9	Mechanical fastening (rivets, screws)	**4**	**2**	**2**	**-**	a3-1, b4-1 &c19-1
Week-10	Factors affecting welding zone	**4**	**2**	**2**	**-**	a18-1, b18-1 &c2-1
Week-11	Destructive tests of welding joint	**4**	**2**	**2**	**-**	a3-1,c19-1 &d6-1
Week-12	Non-destructive tests of welding joint	**4**	**2**	**2**	**-**	a3-1,c19-1 &d6-1
Week-13	Evaluation costs of welding process	**4**	**2**	**2**	**-**	a3-1,a18-1 &a19-1
Week-14	Advantages and disadvantages	**4**	**2**	**2**	**-**	a3-1,a18-1 &c19-1
Week-15	Case studies	**4**	**2**	**2**	**-**	b4-1, c2-1 &d9-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a3-1**	**x**		**x**	**x**									
	a18-1	**x**		**x**	**x**									
	a19-1	**x**		**x**	**x**					**x**	**x**			
Intellectual Skills	**b4-1**	**x**		**x**	**x**									
	b18-1	**x**		**x**	**x**									
Professional Skills	**c2-1**	**x**		**x**	**x**									
	c19-1	**x**												
General Skills	**d6-1**									**x**	**x**			
	d9-1									**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	**x**	**x**		**x**								
	a18-1	**x**			**x**								
	a19-1	**x**			**x**			**x**				**x**	
Intellectual Skills	**b4-1**	**x**	**x**		**x**								
	b18-1	**x**	**x**		**x**								
Professional Skills	**c2-1**	**x**											
	c19-1	**x**					**x**						
General Skills	**d6-1**							**x**	**x**	**x**			
	d9-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1. Course notes

13.2. Essential books (text books)

- Welding principles & applications., jeffus, L.F., Albany, NY: Delmar, publishers, 1992

13.3. Recommended books

- Welding processes: Cambridge univ. press, P.T. Houlderoft, B.B C. (Eng. Met.), 1967 .

13.4. Periodicals, web sites, … etc

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Course coordinator **Programme coordinator**

Prof. Dr. Ahmed El-Sissi

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Prod. Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Machine Dynamics*** ***Code Symbol:*** ***PRE 421***
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
3	*2*	*1*	*6*

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, upon completing the Production Engineering Programme, with the basic knowledge and skills of how to analysis of various machines and machine tools and formulate mathematical models of problems in dynamics. This course will also provide students with the ability to select and design the appropriate isolation , absorption, and control system of vibration for the application of various machines and machine tools. The skill of experimental measurement of vibration monitoring and cutting forces for different machines and machine tools configurations is also provided.

3- Course Objectives:

1. Demonstration of the knowledge and understanding of the importance of dynamic analysis of machines and machine tools during design and operating stages.
2. Derivation mathematical models and modal analysis for single and multi DOF systems.
3. Determination of the dynamic cutting forces in machines and the characteristic cross-receptance.
4. Analysis of the reduction of chatter in machines in the design and production stages.
5. Analysis of different machines and machine tools problems and conducting laboratory experimental verifications.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1,A15,A19	B10,B13	C5,C17	D1,D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- Demonstrate Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Explain concepts of dynamics of machines.
	A15- Understand The specifications, programming and range of application of CAD and CAD/CAM facilities.	a15-1 Identify the computer programming to study the modification of machine structures.
	A19- List Engineering design principles and techniques	a19-1 Define the appropriate isolation , absorption, and control system of vibration for the application of various machines.
Intellectual skills	B10- Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1 Analyze the reduction of chatter in machines in the design and production stages.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering.	b13-1 Compute the analytical modal analysis of single and Multi D.O.F. systems.
Professional skills	C5- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 Use measuring instruments to determine the dynamic cutting forces.
	C17- Use laboratory equipment and related computer software	c17-1 Use laboratory equipments to construct the frequency response function.
General skills	D1- Collaborate effectively within multidisciplinary team.	d1-1 Collaborate effectively within multidisciplinary team.
	D9- Refer to relevant literatures.	d9-1 Refer to relevant literatures.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Reduction of forced vibration in m/c tools	1-2
2nd	Vibration isolation	3
3rd	Modal Analysis of Machine Tools	4-6
4th	Noise: analysis, control, measurements	7
5th	Dynamic cutting forces in m/c tools	9-10
6th	Theoretical prediction of m/c tool instability	11-12
7th	Chatter analysis of m/c tools	13
8th	Stability charts of m/c tools	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	- Introduction to machine dynamics - Sources of vibration in machine . - Reduction of vibration in machine.	6	3	2	1	a1-1&b10-1
Week-2	- Sources of vibration in machine tool. - Reduction of vibration in machine tool. - Absorbation (dynamic absorber).	6	3	2	1	a15-1&b10-1
Week-3	- Vibration damping. - Vibration isolation.	6	3	2	1	a19-1&b13-1
Week-4	- Introduction to Modal Analysis. (objective – Modeling) - Experimental modal analysis.	6	3	2	1	c5-1&b13-1
Week-5	- Analytical modal analysis for single DOF and Multi DOF systems. - Application.	6	3	2	1	b13-1
Week-6	- Modification of machine structures. - Proportional damped structures.	6	3	2	1	c5-1&d1-1
Week-7	Noise machine: analysis, control, measurements	6	3	2	1	c5-1&d9-1
Week-8	Midterm written examination					
Week-9	- Prediction of dynamic characteristic of machine tool structures. - Instrumentation.	6	3	2	1	a1-1&b10-1
Week-10	- Dynamic cutting forces. - Determination of the dynamic cutting forces. Instrumentation.	6	3	2	1	a15-1&b10-1
Week-11	Theoretical prediction of machine tool instability. Chatter.	6	3	2	1	a19-1&b13-1
Week-12	- The characteristic cross-response. - General stability chart.	6	3	2	1	c5-1&b13-1
Week-13	- General reduction of machine tool chatter. – reduction of chatter in the design stage. reduction of chatter in the production stage.	6	3	2	1	b13-1
Week-14	- Planning and shaping machines. – Determination of the characteristic cross-receptance.	6	3	2	1	c5-1&d1-1
Week-15	- Lathes and Boring machines. – Determination of the characteristic cross-receptance.	6	3	2	1	c5-1&d9-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**			**x**	**x**								
	a15-1	**x**			**x**	**x**								
	a19-1	**x**			**x**	**x**								
Intellectual Skills	**b10-1**	**x**			**x**	**x**								
	b13-1	**x**			**x**	**x**								
Professional Skills	**c5-1**	**x**			**x**	**x**								
	c17-1	**x**			**x**	**x**								
General Skills	**d1-1**		**x**							**x**	**x**			
	d9-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**											
	a15-1	**x**			**x**								
	a19-1	**x**			**x**								
Intellectual Skills	**b10-1**	**x**	**x**	**x**	**x**	**x**	**x**				**x**		**x**
	b13-1	**x**	**x**	**x**	**x**	**x**	**x**				**x**		**x**
Professional Skills	**c5-1**	**x**		**x**	**x**								
	c17-1	**x**		**x**		**x**					**x**		
General Skills	**d1-1**						**x**	**x**	**x**	**x**			
	d9-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**15**	**10%**	**16th**
End of term laboratory examination (*Lab*)	**15**	**10%**	**16th**
Mid term written Examination (*Term Work*)	**15**	**10%**	**8th**
Tutorial and report assessment (*Term Work*)	**15**	**10%**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

Students are expected to prepare and conduct some laboratory experiments relating to determination of the dynamics of machines (natural frequencies and mode shapes – cutting forces).

B. 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.

13- List of references:

- Machine tool structures "F.Koenisberger, J.Tlusty – 1970
- Modal Analysis of large Structures-Multiple Exciter system B&K Denmark 1985-K.Zavari, Mophil

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Course coordinator **Programme coordinator**

Prof. Dr/ Taha Ali El-Taweel

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/2/2012.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Automatic Control*** ***Code Symbol:*** **PRE 422**
Element of program: ***Major*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

Develop an understanding of the elements of classical control theory as applied to the control of various mechanical systems. In particular understand: the concept of feedback and its properties; the concept of stability and stability margins; and the different tools that can be used to analyze the previous properties. Finally gain a working knowledge of the basic linear design techniques, in particular as applied to mechanical, electrical, pneumatic, hydraulic, vibratory, thermal, and process control systems.

3- Course Objectives:

Students who successfully complete the course will demonstrate the following outcomes by tests, homework, and quizzes:

1. An ability to apply knowledge of mathematics, science and engineering.
2. An ability to perform modeling of various mechanical, electrical and process control systems
3. An ability to use the analysis and design tools of classical linear control in simplified homework problems, and in more realistic problems.
4. An ability to perform stability checks of control systems by means of analytical and graphical methods.
5. An ability to perform compensation design of control systems by means of analytical and graphical methods..

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A4, A13 and A19	B2, and B17	C7 and C14	D7

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A4- Principles of design including elements design, process and/or a system related to specific disciplines.	a4-1 Discuss the principles of design including elements design and process.
	A13- Concepts, principles and theories relevant to Mechanical Engineering and manufacture.	a13-1 Describe mathematical equations to represent physical control systems a13-2 Identify suitable solutions for these equations. a13-3 Express graphical representations for these solutions.
	A19- Engineering design principles and techniques	a19-1 Discuss different engineering techniques for solving control problems
Intellectual skills	B2- Select appropriate solutions for engineering problems based on analytical thinking.	b2-1 Create analytical solutions for various engineering topics. b2-2 Confirm some of these solutions graphically using the proper graphical methods.
	B17- Use the principles of engineering science in developing solutions to practical mechanical engineering problems.	b17-1 Formulate suitable solutions to practically represent realistic control systems.
Professional skills	C7- Apply numerical modeling methods to engineering problems.	c7-1 Use suitable numerical techniques to model different control components.
	C17- Use laboratory equipment and related computer software.	c17-1 Perform the available laboratory tests to confirm the theoretical results.
General skills	D7- Search for information and engage in life-long self learning discipline.	d7-1 Communicate with some real control components and try to understand how they have been done.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to control systems	1
2nd	Laplace transform operations and the system transfer function	2
3rd	Mathematical modeling: Basic control actions and classification, Block diagram representation, PID family of controllers	3
4th	Mathematical modeling: Mechanical, electrical and electronic systems, state-space representation	4-5
5th	Mathematical modeling: fluid systems (pneumatic, hydraulic, thermal, liquid-level, etc.)	6-7
6th	Transient and steady-state response analysis, steady-state errors, etc.	9
7th	Stability theory and Routh stability criterion,	10
8th	Root locus analysis and design	11-12
9th	Frequency response analysis and design Bode diagram, Nyquist diagram, Nicolas's stability charts,	13-15

8- 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.	**6**	**4**	**2**	**---**	a4-1
Week-2	Laplace transform operations and the system transfer function	**6**	**4**	**2**	**---**	a13-1 & a13-2, a19-1
Week-3	Mathematical modeling: Basic control actions and classification, Block diagram representation, PID family of controllers	**6**	**4**	**2**	**---**	a19-1, b17-1
Week-4	Mathematical modeling: Mechanical, electrical and electronic systems, state-space representation	**6**	**4**	**2**	**---**	a4, a13-1, a13-2, a13-3, b17-1, d7-1
Week-5	Mathematical modeling: Mechanical, electrical and electronic systems, state-space representation	**6**	**4**	**2**	**---**	a4, a13-1, a13-2, a13-3, b17-1, d7-1
Week-6	Mathematical modeling: fluid systems (pneumatic, hydraulic, thermal, liquid-level, etc.)	**6**	**4**	**2**	**---**	a4, a13-1, a13-2, a13-3, b17-1, d7-1
Week-7	Mathematical modeling: fluid systems (pneumatic, hydraulic, thermal, liquid-level, etc.)	**6**	**4**	**2**	**---**	a4, a13-1, a13-2, a13-3, b17-1, d7-1
Week-8	**Midterm Written Examination**					
Week-9	Transient and steady-state response analysis, steady-state errors, etc.	**6**	**4**	**2**	**---**	b2-1, b2-2, b17-1 , c7-1, c17-1
Week-10	Stability theory and Routh stability criterion	**6**	**4**	**2**	**--**	A13-1, a13-2, b2-2
Week-11	Root locus analysis	**6**	**4**	**2**	**---**	b2-1,b2-2, a19-1, a13-1, a13-2&a13-3
Week-12	Root locus design	**6**	**4**	**2**	**---**	b2-1,b2-2,

						a19-1, a13-1, a13-2&a13-3
Week-13	Frequency response analysis and design: Bode diagram	**6**	**4**	**2**	**---**	b2-1,b2-2, a19-1, a13-1, a13-2&a13-3
Week-14	Frequency response analysis and design: Nyquist diagram,	**6**	**4**	**2**	**---**	b2-1,b2-2, a19-1, a13-1, a13-2&a13-3
Week-15	Frequency response analysis and design: Nicolas's stability charts	**6**	**4**	**2**	**---**	b2-1,b2-2, a19-1, a13-1, a13-2&a13-3

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a4-1**	**x**		**x**	**x**	**x**				**x**			**x**	
	a13-1	**x**		**x**									**x**	
	a13-2	**x**		**x**	**x**	**x**								
	a13-3	**x**		**x**	**x**									
	a19-1	**x**		**x**										
Intellectual Skills	**b2-1**	**x**		**x**	**x**		**x**							
	b2-2	**x**		**x**									**x**	
	b17-1	**x**		**x**				**x**					**x**	
Professional Skills	**c7-1**	**x**		**x**	**x**								**x**	
	c17-1	**x**		**x**										
General Skills	**d7-1**		**x**							**x**	**x**			

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

For low capacity students	Give them the opportunity for my office meetings.
	Repeat the explanation of some of the material .
	Assign a teaching assistance to follow up the performance of this group of students.
	Give them some advanced topics to be searched using the internet and conduct presentation.
	Encourage them to attend seminars of suitable research projects.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a4-1**	**x**	**x**		**x**		**x**						
	a13-1	**x**											
	a13-2	**x**											
	a13-3	**x**	**x**		**x**		**x**						
	a19-1												
Intellectual Skills	**b2-1**	**x**	**x**		**x**		**x**				**x**		
	b2-2	**x**	**x**		**x**								
	b17-1	**x**	**x**		**x**		**x**				**x**		
Professional Skills	**C7-1**	**x**					**x**						
	c17-1	**x**					**x**				**x**		
General Skills	**d7-1**										**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**15**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**15**	**10%**	**14th**
Tutorial and report assessment (*Term Work*)	**15**	**10%**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of his reports and to search about more knowledge in these subjects.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

Ogata, K., Modern Control Engineering, 4th ed. Aeeizb Lithopraphy, Norang, Printing & bookbinding : Pezhman, 2004.

13.3- Recommended books

Brogan, W. L., Modern Control Theory. Upper Saddle River, NJ: Prentice Hall, 1985.

Cannon, R., Dynamics of' Physical Systems. New York: McGraw-Hill Book Company, 1967.

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Course coordinator **Programme coordinator**

Dr. Samy Aly Hassan

Head of the Department
Prof. Taha El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD**

Course Specification

A- Basic Information

Title: Processes of forming technology ***Code Symbol:*** PRE 423
Element of program: *Major* ***Date of specification approval:*** *2012*
Department offering the course: Prod. Eng. & Mech. Design. Dept. ***Bylaw*** *2006*

Lecture	*Tutorial*	*Laboratory*	*Total*
4	*1*	*1*	*6*

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aim of this course is to provide the student with basics of metal forming processes. The course provides the student with required skills of identifying the different metal forming processes. This course will also provide students with the required skills of choosing between the different forming metal processes based on material and process selection criteria taking into considerations functional and environmental requirements of low cost and high quality products.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic conceptes of different metal metal forming processes.
2. Definition of the requirements of different metal forming processes.
3. Realizing the difference between different forming processes.
4. Analysis of different techniques for manufacuring different products based on material and process selection criteria.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3 and A13	B3, B15 and B18	C2 and C3	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1)- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain the different methods of analyzing the engineering problems related to forming technology.
	A3):-Characteristics of engineering materials related to the discipline.	a3- 1 Describe different methods of evaluating the material behaviour to select the most suitable material for some product based on material selection criteria.
	A13):- Concepts, principles and theories relevant to Mechanical Engineering and manufacture.	a19-1 Explain different metal forming processes to select the most suitable one taking into consideration quality and cost of the product.
Intellectual skills	B3):- Think in a creative and innovative way in problem solving and design.	b3-1 Create the most suitable manufacuring flow chart to selest the suitabe design of a product based on different criteria of the material and the forming process for solving engineering problems .
	B15):- Evaluate and appraise designs, processes and products, and propose improvements;	b5-1 Create a criterion suitable for selecting the best material, process and product design and redesign throughout chart of the final product .
	B18):- Select appropriate manufacturing method considering design requirements.	b18-1 costruct the metal forming processes chart taking into consideration criteria of process material and design selection.
Professional skills	C2):- Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.	C2- 1 use the basic engineering knowledge related to engineering material and forming processes using design and feedback of the design to improve products.
	C3):- Create and/or re-design a process, component or system, and carry out specialized engineering designs.	C3-1 Use developed design of a flow chart for a product based on material and process section criteria and functional and environmental requirements of the product
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Improve the obtained design of rhe formed products .
	D9):- Refer to relevant literatures	d9-1 Improve the ability of students to look for relevant literature in the electronic libraries

6- Course Topics.

Topic No	General Topics	Weeks
1th	Fundamentals of metal forming	1
2th	Bulk forming of metals	2-4
3th	Casting and joining processes	5-7&9
4th	Piercing,punching and manfacuriong of small parts	10,11
5th	Sheet forming	12,13
6th	Metal forming under special conditions	14,15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Fundamentals of metal forming	**6**	**4**	**1**	**1**	a1-1 & a3-1& d9-1
Week-2	Bulk forming of metals	**6**	**4**	**1**	**1**	a3-1 & c3-1 & d9-1& b18-1
Week-3	Bulk forming of metals	**6**	**4**	**1**	**1**	a13-1 & a1-1& d9-1& c3-1
Week-4	Bulk forming of metals	**6**	**4**	**1**	**1**	b3-1 & c2-1& a3-1
Wee-5	Casting processes	**6**	**4**	**1**	**1**	b15-1 & b18-1& a3-1& d9-1
Week-6	casting processes	**6**	**4**	**1**	**1**	b18-1& c2-1& d1-1
Week-7	joining methods	**6**	**4**	**1**	**1**	c2-1 & b18-1 c3-1& d9-1
Week 8						
Week-9	joining methods	**6**	**4**	**1**	**1**	c3-1& b18& a3-1& d1-1
Week-10	Piercing, punching	**6**	**4**	**1**	**1**	d1-1& c2-1& c3-1
Week-11	manufacturing of small parts	**6**	**4**	**1**	**1**	d9-1& b18& d1-1& c3-1
Week-12	Sheet forming	**6**	**4**	**1**	**1**	b3-1 & c2-1& d9-1
Week-13	Sheet forming.	**6**	**4**	**1**	**1**	b15-1 & c3-1 & a3-1& d9-1
Week-14	Metal forming under special conditions	**6**	**4**	**1**	**1**	b18-1& c3-1 & c2-1& d9-1
Week-15	Metal forming under special conditions	**6**	**4**	**1**	**1**	c2-1 & c3-1 &d9-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**			**x**	**x**								
	a3-1	**x**			**x**	**x**								
	a13-1	**x**				**x**								
Intellectual Skills	**b3-1**	**x**			**x**	**x**	**x**						**x**	
	b15-1	**x**		**x**	**x**	**x**	**x**						**x**	
	b18-1	**x**		**x**		**x**	**x**						**x**	
Professional Skills	**c2-1**	**x**		**x**	**x**	**x**					**x**			
	c3-1	**x**		**x**										
General Skills	**d1-1**			**x**						**x**	**x**			
	d9-1			**x**						**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	x		x	x						x		
	a3-1	x		x	x						x		
	a13-1	x		x							x		
Intellectual Skills	**b3-1**	x		x	x						x		
	b15-1	x		x	x						x		
	b18-1	x		x							x		
Professional Skills	**c2-1**	x		x	x					x	x		
	c3-1	x		x						x	x		
General Skills	**d1-1**		x							x	x		
	d9-1		x							x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**90**	**60%**	**16th**
End of term assessment (*Oral*)	**30**	**20%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0**	**16th**
Mid term written Examination1 (*Term Work*)	**30**	**20%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0**	
Tutorial and report assessment (*Term Work*)	**0**	**0**	**weakly**
Total	**150**	**100%**	

12- Facilities required for teaching and learni

A. laboratory Usage:

Students will share through prepared laboratory work.

B. Library Usage:

Students should be encouraged to use library text books.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- S. Kalpakjian and S.R. Schmid, "Manufacturing Engineering and technology" 4th Edition Pearson Education Inc., 2010.

13.3- Recommended books

- M.P.Groover"Fundamentals of Modern Manufacuring "3rd Edition,J.Willey Pub.,2007.
- K.Lange(ed),Hand book of metal forming,McGraw-Hill,1985

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Course coordinator **Programme coordinator**

Prof. Dr. Ahmed El- Sissy

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Casting Engineering*** ***Code Symbol:*** ***PRE 424A***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	70%	30%	--	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student with an enough knowledge of recent casting technologies associated with manufacturing processes. This course will also provide students with the required skills of selecting the proper casting process and the suitable variables for solving the engineering problems. As well as, this course will give students the required skills of ability for the Prod-Eng. to deal with the different techniques in casting practically and theoretically .

3- Course Objectives:

1. Demonstration of knowledge of the different techniques used in field of casting technology.
2. Realizing of the experience to solve most casting problems.
3. Evaluation of the knowledge of the different technological and mathematical relationships in field of casting .
4.Definition of the prod-Eng. to deal with the different techniques in casting practically and theoretically **.**

4- Relationship between the course and the p

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3	B6, B13	C5, C15	D1, D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1):-Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Describe to concepts and theories of mathematics and sciences, appropriate to the discipline.
	A3- Characteristics of engineering materials related to the discipline	a3-1 Explain to characteristics of engineering materials related to the discipline
Intellectual skills	B6):- Investigate the failure of components, systems, and processes.	b6):-Design to investigate the failure of components, systems, and processes.
	B13) Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering	B13-1 Construct to apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering
Professional skills	C5):- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results. .	c5-1 Apply to use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results
	C15):-Use basic workshop equipment safely;	c15-1 Employ to use basic workshop equipment safely; .
General skills	D1):- Collaborate effectively within multidisciplinary team.	d1-1 lead to collaborate effectively within multidisciplinary team.
	D9: Refer to relevant literatures	d9-1 share to refer relevant literatures

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Solidification mechanisms	1-2
2nd	Foundry sands (types, properties)	3-5
3rd	Pattern (design and manufacture)	6-7
4th	Casting defects	9-10
5th	Modern casting methods	11-13
6th	Tests of casting defects	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to casting processes	**4**	**2**	**2**	**-**	a1-1,a3-1
Week-2	Solidification mechanisms	**4**	**2**	**2**	**-**	a1-1, a3-1&b6-1
Week-3	Risers design	**4**	**2**	**2**	**-**	a1-1, a3-1&b13-1
Week-4	Foundry sands (types, properties)	**4**	**2**	**2**	**-**	a3-1, b6-1& c5-1
Week-5	Pattern (design and manufacture)	**4**	**2**	**2**	**-**	a3-1, b6-1&c15-1
Week-6	Casting defects	**4**	**2**	**2**	**-**	a3-1,b13-1& c5-1
Week-7	Modern casting methods	**4**	**2**	**2**	**-**	a3-1,b6-1& c15-1
Week-8						
Week-9	Centrifugal Casting	**4**	**2**	**2**	**-**	a3-1, b6-1&c15-1
Week-10	Pressure die casting	**4**	**2**	**2**	**-**	a1-1, b13-1,&c5-1
Week-11	Squeeze casting	**4**	**2**	**2**	**-**	a3-1,c15-1&d1-1
Week-12	Continuous casting	**4**	**2**	**2**	**-**	a3-1,c15-1&d9-1
Week-13	Tests of casting defects	**4**	**2**	**2**	**-**	a1-1,a3-1
Week-14	Advantages and disadvantages	**4**	**2**	**2**	**-**	a3-1,a13-1&c15-1
Week-15	Die design	**4**	**2**	**2**	**-**	b6-1, c5-1&d9-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a3-1	**x**		**x**	**x**									
	a1-1	**x**		**x**	**x**					**x**	**x**			
Intellectual Skills	**b6-1**	**x**		**x**	**x**									
	b13-1	**x**		**x**	**x**									
Professional Skills	**c5-1**	**x**		**x**	**x**									
	c15-1	**x**												
	d1-1									**x**	**x**			

General Skills	**d9-1**									**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a3-1**	**x**	**x**		**x**								
	a13-1	**x**			**x**								
	a19-1	**x**			**x**			**x**				**x**	
Intellectual Skills	**b4-1**	**x**	**x**		**x**								
	b8-1	**x**	**x**		**x**								
Professional Skills	**c2-1**	**x**											
	c19-1	**x**					**x**						
General Skills	**d6-1**							**x**	**x**	**x**			
	d19-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1. Course notes

13.2. Essential books (text books)

- Hand book of metal forming: A.Vitzur, P., J. Willey & Sons, N.Y. 1985 .

13.3. Recommended books

- Hand book of metal forming: Lang K., Mc graw Hill, 1985.

13.4. Periodicals, web sites, … etc

****

Course coordinator **Programme coordinator**

Prof. Dr. Ahmed El-Sissi

Head of the Department

Prof. Taha Ali El-Taweel

Prod. Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

***Title:* Robotics** ***Code Symbol:* PRE 424B**
***Element of program:* Selective** ***Date of specification approval:* 2012**
***Department offering the course:* Prod. Eng. & Mech. Design. Dept.** ***Bylaw* 2006**

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the Student, upon completing the Production Engineering Programme, with the basic knowledge and skills of how to analysis of various robotic systems and formulate mathematical models of problems in kinematics of robot manipulator and planar serial robot. This course will also provide students with the ability to improve the performance of the manipulator and to simulate the dynamic behavior by constructing more accurate model of a robot.

3- Course Objectives:

1. Demonstration of the knowledge and understanding of the importance of robotic manipulators in various engineering applications.
2. Derivation mathematical homogenous transformation matrices for direct and inverse kinematics of robot manipulator and planar serial robot.
3. Computing of the location (orientation and position) for end-effector with respect to the base and vise versa .
4. Evaluation of the dynamics of robot manipulators including the internal and external forces and moments associated with manipulator assembly in matrix form.
5. Analysis of different robotic system problems and industrial robots.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A2,A11,A17	B10,B13	C6,C17	D1,D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A2- Basics of information and communication technology (ICT)	a2-1 Discuss the main elements of a robot manipulator.
	A11- Professional ethics and impacts of engineering solutions on society and environment.	a11-1 Identify the different types of industrial robots.
	A17- Basic electrical, control and computer engineering subjects related to the discipline.	a17-1 Select the suitable control and computer techniques for different robotic systems.
Intellectual skills	B10- Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1 Design the resulting joint moments actuating on a revolute joints of robots.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Create the suitable technique for applying the principles of mechanics for mathematical modeling, and analysis of robot manipulators.
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 Employ a suitable techniques and software packages pertaining to the discipline and develop required computer programs.
	C17- Use laboratory equipment and related computer software	c17-1 Solve the direct and inverse kinematics of planar serial robot.
General skills	D1- Collaborate effectively within multidisciplinary team.	d1-1 Judge the created soft-ware by working team.
	D6- Effectively manage tasks, time, and resources.	d6-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction – Need for robots - Robot types	1-2
2nd	Kinematics of robots	3-5
3rd	Robots configurations	6-7
4th	Design technology of robots	9-11
5th	End effectors and quality	12-13
6th	Sensors – Applications	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	- Introduction to Robotics: - Basic Technical terms. - Major parts of robot.	4	2	2	-	a11-1 &a2-1
Week-2	-Robot Anatmy. - Kinematics and dynamics of robots. - Classification of Robotic systems and applications.	4	2	2	-	a11-1 & a2-1
Week-3	- Kinematics of Robot Manipulator. - Basic concepts of Kinematics. - Coordinate Frames. - Transformation of vectors.(rotation and translation)	4	2	2	-	b10-1& a17-1
Week-4	- Denavit-Hartenberg Notation. - kinematic Relationship between Adjacent Links. -Manipulator Transformation Matrix.	4	2	2	-	c6-1&b13-1
Week-5	- Velocity Propagation along links. - Manipulator Jacobian. - Kinematic analysis of end-effector.	4	2	2	-	c17-1
Week-6	- Application on planar serial robot. - Inverse Kinematics Problems.	4	2	2	-	c6-1
Week-7	- Applicability problems.	4	2	2	-	C17-1& d1-1
Week-8	Midterm written examination					
Week-9	- Dynamic of robot manipulator. - Manipulator Dynamic Formulation.	4	2	2	-	a11-1 & a2-1
Week-10	- Mathematical modeling of Robot Manipulator. – Equations of motion of serial planar robot with flexible joint.	4	2	2	-	a11-1 & a2-1
Week-11	- Dynamic analysis of serial planar robot (Assembly Techniques). - The resulting joint moments actuating on a revolute joints.	4	2	2	-	b10-1& a17-1
Week-12	- Industrial Robot with applications. - Characteristics of industrial manipulator in various domains.	4	2	2	-	c6-1& b13-1
Week-13	- Kinematics and dynamics of industrial robot. - Eigen analysis of a semi elastic robot manipulator using condensation techniques.	4	2	2	-	c17-1
Week-14	- Robotic Sensors and Vision. - the meaning of sensing. - sensors in robotics.	4	2	2	-	c6-1
Week-15	- Kinds of sensors used in Robotics. - Industrial applications of vision- Controlled Robotic Systems.	4	2	2	-	C17-1& d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a2-1	x			x	x								
	a11-1	x			x	x								
	a117-1	x			x	x								
Intellectual Skills	b10-1	x			x	x								
	b13-1	x			x	x								
Professional Skills	c6-1	x			x	x								
	c17-1	x			x	x								
General Skills	d11-1		x							x	x			
	d6-1		x							x	x			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	Tutorial Assessment	Model Exams Assessment	Report Assessment	Quiz assessment	Presentation Assessment	Discussion	Project Assessment	Home Exam	Monitoring
Knowledge & Understanding	a2-1	**x**			**x**	**x**							
	a11-1	**x**			**x**	**x**							
	a17-1	**x**			**x**	**x**							
	b10-1	**x**	**x**		**x**	**x**	**x**				**x**		**x**
	b13-1	**x**	**x**		**x**	**x**	**x**				**x**		**x**
Professional Skills	c6-1	**x**	**x**		**x**	**x**							
	c17-1	**x**	**x**			**x**					**x**		
General Skills	d1-1						**x**	**x**	**x**	**x**			
	d6-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**16th**
Mid term written Examination (*Term Work*)	**10**	**10%**	**8th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. 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.

13- List of references:

1- J. J. Craig , Introduction to Robotics: Mechanics and Control , 2nd edition, Addison-Wesley, 1989.

2- R.P. Paul, Robot Manipulators : Mathematical, Programming and Control, MIT Press, Cambridge , 1981.

3- R K Mittal and I J Nagrath, Robotics and Control, McGraw-Hill, New Delhi, 2005

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Course coordinator **Programme coordinator**

Dr / Mohamed Hesham Belal

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Numerical Analysis*** ***Code Symbol:*** *PRE 424C*
Element of program: ***Selective*** ***Date of specification approval:*** *2012*
Department offering the course: Prod. Eng. & Mech. Design. Dept**.** ***Bylaw*** *2006*

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	60%	10%	-	30%	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge about methods used to solve problems involving continuous variables. It is a highly applied branch of mathematics and computer science, wherein abstract ideas and theories become the quantities describing things we can actually touch and see. we will survey some of the basic problems and methods needed to simulate the solutions of ordinary differential equations. We will build the methods ourselves, starting with computer arithmetic, so that students will understand all of the pieces and how they fit together in state of the art algorithms. Along the way, we will write programs to solve equations, plot curves, integrate functions, and solve initial value problems.

3- Course Objectives:

1. Demonstration of the knowledge about methods used to modern numerical methods for solving ordinary and partial differential equations
2. Definition of the requirements of computer programming software associated with numerical analysis

3- Realizing intersections between the theory of numerical analysis and ideas from computer science, including the effects of finite-precision arithmetic and parallel computing.

4-understanding numerical algorithms and skills to implement algorithms to solve mathematical problems on the computer.

5-Analysis of numerical methods with emphasis on algorithm construction, analysis and implementation.

3.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1 and A5	B1 and B13	C1 and C6	D2 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1):- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Define and understand Concepts and theories of mathematics to solve problems involving continuous variables.
	A5):- Methodologies of solving engineering problems, data collection and interpretation	a5-1 Describe and explain numerical methods for solving ordinary and partial differential equations
Intellectual skills	B1):- Select appropriate mathematical and computer-based methods for modeling and analyzing problems.	b1-1 Design of computer programming software associated with numerical analysis.
	B13):- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Design numerical algorithms to implement algorithms to solve mathematical problems on the computer.
Professional skills	C1):- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.	c1-1 Employ mathematics to solve Approximation problems in Several Variables using different methods .
	C6):- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs	c6-1 Solve and understand fundamental difficulties of scientific computation, (discrete calculus).
General skills	D2):- Work in stressful environment and within constraints.	d1-1 Judge the created soft-ware by working team.
	D9):- Refer to relevant literatures.	d9-1 Balance between computer facilities resources and programming time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Introduction to numerical analysis	1
2nd	Polynomials and Polynomial Interpolation	2-4
3rd	Nonlinear Equations of a Single Real Variable	5-7
4th	Differentiation and Integrations of Functions	9-11
5th	Differential Equations	12-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to numerical analysis(Forward and Backward Error Analysis)	**4**	**2**	**2**	**----**	a1-1& a5-1& d9-1
Week-2	Definition of a Polynomial and Fundamental Theorem of Algebra	**4**	**2**	**2**	**----**	a5-1& b13-1& d2-1& d9-1
Week-3	Polynomial Interpolation	**4**	**2**	**2**	**----**	b1-1& a5-1& b13-1& d2-1
Week-4	Lagrange Interpolation	**4**	**2**	**2**	**----**	b13-1& c1-1& b1-1
Week-5	Roots of Nonlinear Equations	**4**	**2**	**2**	**----**	c1-1& b13-1& b1-1& d9-1
Week-6	The Method of Bisection and The Secant Method	**4**	**2**	**2**	**----**	c6-1& a5-1& b13-1& d9-1
Week-7	The Newton-Raphson Method	**4**	**2**	**2**	**----**	c1-1& b13-1& d2-1&b1-1
Week-8						
Week-9	Numerical Differentiation	**4**	**2**	**2**	**----**	d2-1 & b13-1& b1-1& d9-1
Week-10	Quadrature(Newton-Cotes Rules)	**4**	**2**	**2**	**----**	d9-1& c1-1&b13-1& d2-1
Week-11	Programming Case Study: Recursion and Adaptive Quadrature	**4**	**2**	**2**	**----**	b1-1& a5-1&b13-1& d2-1
Week-12	Initial Value Problems and Single-Step Methods	**4**	**2**	**2**	**----**	b13-1& c1-1& b1-1& d9-1
Week-13	Taylor Methods	**4**	**2**	**2**	**----**	c1-1& a5-1& b1-1& d9-1
Week-14	Runge-Kutta Methods	**4**	**2**	**2**	**----**	c6-1& c1-1& b13-1& d2-1
Week-15	Multi-Step Methods	**4**	**2**	**2**	**----**	a5-1& b13-1& d2-1&b1-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a1-1	**x**		**x**	**x**									
	a5-1	**x**		**x**										
Intellectual Skills	b1-1	**x**	**x**		**x**		**x**						**x**	
	b13-1	**x**	**x**	**x**			**x**						**x**	
Professional Skills	c1-1	**x**			**x**						**x**			
	c6-1	**x**												
General Skills	d2-1		**x**							**x**	**x**			
	d9-2		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a1-1	**x**	**x**		**x**								
	a5-1	**x**											
Intellectual Skills	b1-1	**x**	**x**		**x**						**x**		
	b13-1	**x**	**x**										
Professional Skills	c1-1	**x**			**x**								
	c6-1	**x**			**x**		**x**				**x**		
General Skills	d2-1										**x**		
	d9-2						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**10**	**10%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of numerical analysis problems.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

-Richard L. Burden and J. Douglas Faires, Numerical Analysis, 8th Edition.
Student Edition: ISBN-10: 0-534-39200-8

- J. Stoer and R. Bulirsch, Introduction to Numerical Analysis, Springer-Verlag, ISBN 0-387-90420-4
- Forsythe, Malcolm and Moler, Numerical Methods and Software

Michael T. Heath, Scientific Computing An Introductory Survey 2nd Edition

13.3- Recommended books

- L.N. Trefethen and D. Bau, Numerical Linear Algebra, Society of Industrial and Applied Mathematics
- C.T. Kelley, Iterative methods for linear and nonlinear equations, Society of Industrial and Applied Mathematics

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Course coordinator **Programme coordinator**

Prof. Dr. Sabry El-Sakery

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Technology of advanced composites*** ***Code Symbol:*** ***PRE 425A***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	---	70%	30%	--	---	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student with an enough knowledge of recent technologies in composite fabrication including processing , materials and design . This course will also provide students with the required skills of selecting the proper process and the suitable variables for solving the engineering problems. As well as, this course will give students the required skills of ability for the Prod-Eng. to deal with the different techniques in composite fabrication practically and theoretically .

3- Course Objectives:

1. Demonstration of knowledge of the different techniques used in field of composites technology.
2. Realizing of the experience to solve most of composite problems.
3. Evaluation of the knowledge of the different technological and mathematical relationships in field of composite.
4. Definition of the prod-Eng. to deal with the different techniques in composite fabrication practically and theoretically**.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1, A3	B3, B13	C1, C11	D1, D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1):- Concepts and theories of mathematics and sciences, appropriate to the discipline.	a1-1 Describe to various Concepts and theories of mathematics and sciences, appropriate to the discipline.
	A3- Characteristics of engineering materials related to the discipline	a3-1 Explain to Characteristics of engineering materials related to the discipline
Intellectual skills	B3):- Think in a creative and innovative way in problem solving and design.	b3-1 Plan to think in a creative and innovative way in problem solving and design.
	B13) Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering	b13-1 Construct to applythe principles of mathematics, science and technology in problem solving scenarios in mechanical engineering
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
	C11):- Exchange knowledge and skills with engineering community and industry	c11-1 Operate to exchange knowledge and skills with engineering community and industry.
General skills	D1):- Collaborate effectively within multidisciplinary team.	d1-1 lead to collaborate effectively within multidisciplinary team.
	D6):- Effectively manage tasks, time, and resources	d6-1 Improve to effectively manage tasks, time, and resources

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Classification of advanced composites	1-2
2nd	Manufacturing processes of composite materials (CM)	3-5
3rd	Mechanical properties of CM	6-7
4th	Design consideration of CM	9-10
5th	Some practical applications	11-13
6th	Tests of composite defects	14-15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to composite materials	**4**	**2**	**2**	**-**	a1-1,a3-1
Week-2	Classification of advanced composites	**4**	**2**	**2**	**-**	a1-1, a3-1 &b3-1
Week-3	Types of composite materials	**4**	**2**	**2**	**-**	a1-1, a3-1&b13-1
Week-4	Fabrication of composite materials	**4**	**2**	**2**	**-**	a3-1, b3-1& c1-1
Week-5	Manufacturing processes of composite materials (CM)	**4**	**2**	**2**	**-**	a3-1, b13-1&c11-1
Week-6	Materials	**4**	**2**	**2**	**-**	a3-1,b13-1& c1-1
Week-7	Mechanical properties of CM	**4**	**2**	**2**	**-**	a3-1,b3-1& c11-1
Week-8						
Week-9	Design consideration of CM	**4**	**2**	**2**	**-**	a3-1, b3-1&c11-1
Week-10	Some practical applications	**4**	**2**	**2**	**-**	a1-1, b13-1,&c1-1
Week-11	Recycling track	**4**	**2**	**2**	**-**	a3-1,c13-1&d1-1
Week-12	Advantages and disadvantages	**4**	**2**	**2**	**-**	a3-1,c13-1&d6-1
Week-13	Destructive and nondestructive tests	**4**	**2**	**2**	**-**	a1-1,a3-1
Week-14	Case study	**4**	**2**	**2**	**-**	a1-1,a3-1&c11-1
Week-15	Problems	**4**	**2**	**2**	**-**	b3-1, c1-1&d6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	a1-1	**x**		**x**	**x**									
	a3-1	**x**		**x**	**x**									
	a1-1	**x**		**x**	**x**					**x**	**x**			
Intellectual Skills	b6-1	**x**		**x**	**x**									
	b13-1	**x**		**x**	**x**									
Professional Skills	c5-1	**x**		**x**	**x**									
	c15-1	**x**												
General Skills	d1-1									**x**	**x**			
	d9-1									**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		**Assessment Methods**											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a3-1	**x**	**x**		**x**								
	a13-1	**x**			**x**								
	a19-1	**x**			**x**			**x**				**x**	
Intellectual Skills	b4-1	**x**	**x**		**x**								
	b8-1	**x**	**x**		**x**								
Professional Skills	c2-1	**x**											
	c19-1	**x**					**x**						
General Skills	d6-1							**x**	**x**	**x**			
	d19-1						**x**		**x**	**x**			

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**10**	**10%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**10**	**10%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**10**	**10%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

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

13- List of references:

13.1. Course notes

13.2. Essential books (text books)

- Comp. site materials: Design & analysis: W.P.dewide & W.R. blain, ESBN, 1991 13.3. Recommended books
- Mechanics of composite material: Robert M.jones ISBN 2000 .

13.4. Periodicals, web sites, … etc

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Course coordinator **Programme coordinator**

Dr. Mohammed Shady

Head of the Department

Prof. Dr. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***CNC Machine tools*** ***Code Symbol:*** ***PRE 425B***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

Lecture	*Tutorial*	*Laboratory*	*Total*
2	*2*	*…*	*4*

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
---	10%	10%	50%	30%	……	---	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of the construction and components of CNC machine tools and emphasizing of of the basic knowledge about data and programming with different languages. This course will also provide students, with the application of numerical and computerized control in machine tools. As well as, this course will give the student the required skills of creating and designing suitable products and processes by numerical and computerized control in machine tools.

3- Course Objectives:

1. **Demonstration of the knowledge and understanding the basic conceptes CNC machine tools**
2. **Definition of the requirements of computer programming associated with CNC machine tools.**
3. **Realizing of the different programming languages suitable for manufacturing processes.**
4. **Evaluation of the suitable ways for solving the engineering problems related to machining processes.**

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A12, A15 and A17	B10 and B13	C5, C17 and C18	D1 and D9

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A12):- Contemporary engineering topics.	a3-1 Describe the main concepts of modern CNC programs in production processes
	A15):- The specifications, programming and range of application of CAD and CAD/CAM facilities	a15-1 Discuss wide range of CAM and CAD programming in CNC machining
	A17):- Basic electrical, control and computer engineering subjects related to the discipline	a17-1 Discuss control and computer engineering subjects suitable for programming with different languages in production processes
Intellectual skills	B10):- Incorporate economic, societal, environmental dimensions and risk management in design.	b10-1 apply safe systems of work on machine tools
	B13):- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering;	b13-1 Create the suitable technique using the principles of mathematics , science and technology to solve some manufacturing problem
Professional skills	C5):- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	C5-1 Apply different techniques and computational facilities in machining processes to analyze experimental results and determine accuracy and validity
	C17):- Use laboratory equipment and related computer software;	c17-1 Use laboratory equipment and related computer software suitable for manufacturing complex products with the help of programming languages
	C18):- Operate and maintain mechanical equipment.	c18-1 Use CAM programming in the production processes to maintain mechanical equipment
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the created soft-ware by working team.
	D9):- Refer to relevant literatures.	d9-1 Learn how to search for missing information in electronic libraries

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Basic principles and components of CNC machine tools	1-2
2nd	Analysis of different CNC machines drilling –milling	3-7&9
3rd	Study of of different CNC programming languages	10-12
4th	Applications on simple and complex pieces	13-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	Basic principles and components of CNC machine tools	**4**	**2**	**2**	**…..**	a3-1& a15-1
Week-2	Basic principles and components of CNC machine tools	**4**	**2**	**2**	**…..**	a17-1& b10-1 &b13-1
Week-3	Analysis of different CNC machines drilling –milling	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1
Week-4	Analysis of different CNC machines drilling –milling	**4**	**2**	**2**	**…..**	a3-1& a15-1
Week-5	Analysis of different CNC machines drilling –milling	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1
Week-6	Analysis of different CNC machines drilling –milling	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1& c17-c18-1&1
Week-7	Analysis of different CNC machines drilling –milling	**4**	**2**	**2**	**…..**	c18-&c17-11& a3-1& a15-1
Week-8						
Week-9	Analysis of different CNC machines drilling –milling	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1
Week-10	Study of of different CNC programming languages	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1
Week-11	Study of of different CNC programming languages	**4**	**2**	**2**	**…..**	c18-&c17-11& a3-1& a15-1
Week-12	Study of of different CNC programming languages	**4**	**2**	**2**	**…..**	a17-1& b10-1 &b13-1
Week-13	Applications on simple and complex pieces	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1& c17-1 c18-1&
Week-14	Applications on simple and complex pieces	**4**	**2**	**2**	**…..**	d1-1 &C5-1& d9-1
Week-15	Applications on simple and complex pieces	**4**	**2**	**2**	**…..**	a17-1& b10-1 &b13-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	a12-1	**x**												
	a15-1	**x**			**x**									
	a17-1	**x**			**x**									
Intellectual Skills	b10-1						**x**			**x**	**x**			
	b13-1	**x**	**x**	**x**	**x**	**x**			**x**					
Professional Skills	c5-1	**x**									**x**			
	c17-1			**x**						**x**	**x**			
	c18-1			**x**						**x**	**x**			
General Skills	d1-1	**x**	**x**	**x**						**x**	**x**			
	d9-1	**x**	**x**	**x**		**x**				**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	a12-1												
	a15-1	**x**											
	a17-1	**x**						**x**				**x**	
Intellectual Skills	b10-1	**x**			**x**			**x**				**x**	
	b13-1	**x**			**x**								
Professional Skills	c5-1	**x**			**x**								
	c17-1												
	c18-1	**x**			**x**		**x**	**x**					
General Skills	d1-1				**x**		**x**					**x**	
	d9-1				**x**		**x**	**x**		**x**		**x**	

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**15%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of laboratory reports. Background information is required as part of the study. .

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

-"machining and CNC Technology ",by Michael Fitzpatric,2004

13.3- Recommended books

-"CNC of Machining",by James Madison,Industrial Press,1996.

-"Computer Numerical Control for Machining", Mikel Ynch,Mc Graw-Hill Inc.,1999

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Course coordinator **Programme coordinator**

Prof.Dr. Mamood El Khabeery

Date: 1/10/2011.

Head of the Department

Prof. Taha El-Taweel

Production Eng. & Mech. Design. Dept. **Academic year: 2011-2012**
Faculty of Engineering **Academic term: 2nd Term**
Minoufiya University **Academic level: 4th PROD.**

Course Specification

A- Basic Information

Title: ***Non-traditional Machining*** ***Code Symbol:*** ***PRE 425C***
Element of program: ***Selective*** ***Date of specification approval:*** ***2012***
Department offering the course: **Prod. Eng. & Mech. Design. Dept.** ***Bylaw 2006***

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

1- Course Subject Area:

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

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with enough knowledge of non-traditional machining applied for solving engineering problems. As well as, this course provide the student with required skills of applying knowledge of mathematics, science and engineering concepts for creating solutions of engineering problems using non-traditional machining processes. This course will also provide students, with the required skills of selecting the proper machining process and the suitable variables for solving the engineering problems. As well as, this course will give the student the required skills of ability for modeling the engineering problems dealing with manufacturing problems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concebtes of non-traditional machining.
2. Definition of the requirements of non-traditional machining.
3. Realizing of the different types of non-traditional machining.
4. Evaluation of the suitable non-traditional machining process for solving the engineering problems.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	A1 and A12	B3 and B13	C3 and C5	D1 and D6

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A1- knowledge of mathematics, science and engineering concepts to the solution of engineering problems.	a1-1 Explain different non-traditional machining methods for solving engineering problems using knowledge of mathematics, science and engineering concepts.
	A12- Contemporary engineering topics.	a12-1 Describe some methods of non-traditional machining for solving engineering problems. a12-2 Define the basics concepts of non-traditional techniques which are required for solving the engineering applications problems.
Intellectual skills	B3- Think in a creative and innovative way in problem solving and design.	b1-1 Create the desired non-traditional technique dealing with solving machining problems.
	B13- Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering	b16-1 Manage the principles of mathematics, science and technology in problem solving scenarios in manufacturing operations.
Professional skills	C3- Create and/or re-design a process, component or system, and carry out specialized engineering designs.	c3-1 Employ a suitable non-traditional techniques to the discipline and develop required machining process.
	C5- Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.	c5-1 Apply the selected non-traditional machining process and analyze the results.
General skills	D1- Collaborate effectively within multidisciplinary team	d1-1 Judge the selected non-traditional machining by working team.
	D6- Balance between resources and time	6-1 Balance between non-traditional machining facilities and machining time.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Mechanisms of metal removal: Rate-Advantages-Disadvantages-Accuracy-Economical aspects and Applications for: Electron beam	1-3
2nd	Ion beam-Chemical machining processes	4-5
3rd	Electrochemical machining	6-7
4th	Electro discharge machining	9-10
5th	Laser beam machining	11-12
6th	Ultrasonic machining	13-14
7th	Water jet machining	15

8- Course Topics/hours/ILOS

Week No.	*Sub. Topics*	*Total Hours*	*Contact hrs*			*Course ILOs Covered (By No.)*
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to non-traditional machining.	**4**	**2**	**2**	**---**	11-1, a12-1 &b3-1
Week-2	Mechanism of metal removal rate-Advantages-Disadvantages of Electron beam machining.	**4**	**2**	**2**	**---**	a16-2, b13-1 & c3-1
Week-3	Accuracy, economical aspects and applications for: Electron beam machining.	**4**	**2**	**2**	**---**	a12-1, b13-1 & c5-1
Week-4	Ion beam machining	**4**	**2**	**2**	**---**	a1-1, a12-1, b3-1-1&c5-1
Week-5	Chemical machining process	**4**	**2**	**2**	**---**	a12-1, b13-1 & c3-1
Week-6	Electrochemical machining	**4**	**2**	**2**	**---**	b13-1, c5-1 & d1-1
Week-7	Electrochemical machining (continue)	**4**	**2**	**2**	**---**	a1-1, b13-1 & d6-1
Week-8						
Week-9	Electro discharge machining	**4**	**2**	**2**	**---**	a1-1, a12-1 &c5-1
Week-10	Wire electro discharge machining	**4**	**2**	**2**	**---**	a12-1, b13-1 &d1-1
Week-11	Laser beam machining	**4**	**2**	**2**	**---**	a1-1, b13-1, c3-1 &d6-1
Week-12	Laser beam machining (continue)	**4**	**2**	**2**	**---**	b13-1, c5-1 & c6-1
Week-13	Ultrasonic machining	**4**	**2**	**2**	**---**	b13-1, c5-1 & c6-1
Week-14	Ultrasonic machining (continue)	**4**	**2**	**2**	**---**	b13-1, c3-1, c5-1& d1-1
Week-15	Water jet machining	**4**	**2**	**2**	**---**	b13-1, c3-1, c5-1& d6-1

9- ***Teaching and Learning Method:***

Course Intended learning outcomes (ILOs)		Lecture	Presentation and Movies	Discussion	Tutorial	Problem solving	Brain storming	Projects	Site visits	Self learning	Cooperative	Discovering	Modelling	Playing
Knowledge & understanding	**a1-1**	**x**		**x**	**x**									
	a12-1	**x**		**x**	**x**									
	a12-2	**x**		**x**	**x**									
Intellectual Skills	**b3-1**	**x**			**x**		**x**						**x**	
	b13-1	**x**		**x**	**x**		**x**						**x**	
Professional Skills	**c3-1**	**x**			**x**						**x**			
	c5-1	**x**			**x**									
General Skills	**d1-1**		**x**							**x**	**x**			
	d6-1		**x**							**x**	**x**			

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

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

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	**Oral Exam**	**Laboratory Test**	***Tutorial Assessment***	***Model Exams Assessment***	***Report Assessment***	***Quiz assessment***	***Presentation Assessment***	***Discussion***	***Project Assessment***	***Home Exam***	***Monitoring***
Knowledge & Understanding	**a1-1**	**x**	**x**										
	a12-1	**x**			**x**								
	a12-2	**x**											
Intellectual Skills	**b3-1**	**x**	**x**		**x**						**x**		
	b13-1	**x**	**x**										
Professional Skills	**c3-1**	**x**			**x**								
	c5-1	**x**					**x**				**x**		
General Skills	**d1-1**										**x**		
	d6-1						**x**		**x**	**x**	**x**		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**70**	**70%**	**16th**
End of term assessment (*Oral*)	**0**	**0**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	**16th**
Mid term written Examination1 (*Term Work*)	**15**	**15%**	**8th**
Mid term written Examination 2 (*Term Work*)	**0**	**0%**	**12th**
Tutorial and report assessment (*Term Work*)	**15**	**15%**	**weakly**
Total	**100**	**100%**	

12- Facilities required for teaching and learning:

A. laboratory Usage:

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B. Library Usage:

Students should be encouraged to use library technical resources in the preparation of the required reports.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- Hand book of machine tools: week M. V.4, New York Willy 1994

13.3- Recommended books

- Advanced machine technology, C. Thomas olivo, 1982.

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Course coordinator **Programme coordinator**

Prof. Mahmoud S. Hewidy

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design. Dept. **Academic year: 2010-2011**
Faculty of Engineering **Academic term: 1st Term**
Minoufiya University **Academic level: 3rd PROD.**

Course Specification

A- *Basic Information*

Title: ***Project planning and management*** ***Code Symbol:*** *PRE* 429
Element of program: *Major* ***Date of specification approval:*** *2012*
Department offering the course: Prod. Eng. & Mech. Design. Dept. ***Bylaw*** *2006*

Lecture	Tutorial	Laboratory	Total
3	-	-	3

1- Course Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. And Design	Computer application and ICT	Projects and practice	Discretionary subjects	Total
20%	20%	30%	30%	-	-	-	100%

B- Professional Information

2- Course Aims:

The aims of this course are to provide the student, with the basic knowledge of mathematics, science and engineering concepts to the solution of engineering problems. As well as, this course will provide the student with the ability to use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management. This course will also provide students to work with mechanical design and manufacturing systems.

3- Course Objectives:

1. Demonstration of the knowledge and understanding the basic concepts to the solution of the engineering problems.
2. Design the requirements of the production system associated with different applications.
3. Realizing of the different types of machining equipments and the different machining processes.
4. Use the techniques, skills, and appropriate engineering tools for engineering practice and project management.

4- Relationship between the course and the programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programme Academic Standards that the course contribute in achieving	**A6, A7, A12, A17 & A19**	**B9,**	**C2, C9, C10 & C11.**	**D3 & D6**

5- Course Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the course contribute in achieving	Course ILOs
Knowledge& Understanding	A6- Remember quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6-1 Define the quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues .
	A7- know business and management principles relevant to engineering.	a7-1 Define the relations btween business and engineering a7-2 Eexplain the principles of management in the engineering
	A-12 Discuss contemporary engineering topics.	a12-1 Discuss the recent topics related to the field of projects planning.
	A17 Comprehend business and management techniques and practices appropriate to Mechanical Power applications	a17-1 list the information and techniques of business and management appropriate to mechanical power engineers
	A19- Use basic theories and principles of some other mechanical engineering providing support to mechanical power engineering.	a19-1 Describe the using of the basic theories and different engineering techniques for supporting the mechanical power engineering.
Intellectual skills	B9- judge engineering decisions considering balance costing, benefits, safety, quality, reliability, and environmental impact.	b9-1 Create the desired program dealing with the methods for balance costing, benifits, safetey and quality.
Professional skills	C2- Professionally merge the engineering knowledge, understanding, and feed back to improve design, product and / or services.	c2-1 Use different methods for improving design.
	C9- Demonstrate basic organizational and project management skills.	c9-1 Use the basic organizational and the management skills for the projects.
	C10- Apply quality assurance procedures and follow codes and standards.	c10-1 Inspect the quality assurance and standards
	C11- Exchange knowledge and skills with engineering community and industry.	c11-1 Apply the techniques for Exchanging the knowledge and skills with engineering community and industry.
General skills	D3- communicate effectively.	d3-1 Manage to communicate effectively with team.
	D6- Effectively manages tasks, time, and resources.	d6-1 Lead to Improve the management tasks, time and different resources.

6- Course Topics.

Topic No.	General Topics	Weeks
1st	Market and consumption models	1-2
2nd	Design of the production system	3-7
3rd	Use the network analysis for the project scheduling	9-11
4th	Assignment by transportation methods	12-15

8- Course Topics/hours/ILOS

Week No.	***Sub. Topics***	***Total Hours***	***Contact hrs***			***Course ILOs Covered (By No.)***
			Lec.	**Tut.**	**Lab.**	
Week-1	**Market demands**	**3**	**3**	**--**	**--**	a7-1 ,b9-1& d6-1
Week-2	**Market supply**	**3**	**3**	**--**	**--**	a7-1 ,b9-1& d6-1
Week-3	Design of the Industrial processes	**3**	**3**	**--**	**--**	a19-1 &c2-1
Week-4	Selection of machines	**3**	**3**	**--**	**--**	a12-1, c2-1&c10-1
Week-5	Processes planning	**3**	**3**	**--**	**--**	c10-1& d6-1
Week-6	Planning of Production department	**3**	**3**	**--**	**--**	a6-1, c10-1& c11-1
Week-7	Project layout	**3**	**3**	**--**	**--**	a17-1, c10-1& d3-1
Week-8	**MID TERM Exam**					
Week-9	Wages and organization structures	**3**	**3**	**--**	**--**	a7-1 , c9-1& c10-1
Week-10	Network construction	**3**	**3**	**--**	**--**	a19-1
Week-11	Project or activities timing	**3**	**3**	**--**	**--**	a17-1 , d6-1
Week-12	Project scheduling	**3**	**3**	**--**	**--**	a17-2, d6-1
Week-13	Initial solution of transportation problems	**3**	**3**	**--**	**--**	a19-1 , d6-1
Week-14	Test for quality	**3**	**3**	**--**	**--**	a19-1 , d6-1
Week-15	Assignment method	**3**	**3**	**--**	**--**	a19-1, d6-1

9- *Teaching and Learning Method:*

Course Intended learning outcomes (ILOs)		**Lecture**	**Presentation and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Projects**	**Site visits**	**Self learning**	**Cooperative**	**Discovering**	**Modelling**	**Playing**
Knowledge & understanding	**a6-1**	**x**	**x**	**x**						**x**	**x**			
	a7-1	**x**		**x**						**x**				
	a7-2	**x**		**x**						**x**				
	a12-1	**x**		**x**			**x**	**x**	**x**	**x**	**x**	**x**		
	a17-1	**x**		**x**		**x**	**x**			**x**				
	a19-1	**x**		**x**		**x**	**x**			**x**				
Intellectual Skills	**b9-1**	**x**		**x**		**x**				**x**				
Professional Skills	**c2-1**	**x**		**x**		**x**		**x**		**x**				
	c9-1	**x**		**x**		**x**		**x**		**x**				
	c10-1	**x**		**x**		**x**		**x**		**x**				
	c11-1	**x**		**x**		**x**		**x**		**x**				
General Skills	**d3-1**	**x**		**x**		**x**		**x**		**x**				
	d6-1	**x**		**x**		**x**		**x**		**x**				

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

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material
	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.
	Encourage them for discussion at any time.

11- Assessment

11.1 Assessment Methods:

Course Intended Learning Outcome (ILOs)		Assessment Methods											
		Written Exam	Oral Exam	Laboratory Test	Tutorial Assessment	Model Exams Assessment	Report Assessment	Quiz assessment	Presentation Assessment	Discussion	Project Assessment	Home Exam	Monitoring
Knowledge & Understanding	a6-1	x	x										
	a7-1	x											
	a7-2	x											
	a12-1	x	x										
	a17-1	x	x								x		
	a19-1	x	x										
Intellectual Skills	b9-1	x	x								x		
Professional Skills	c2-1	x	x										
	c9-1	x	x				x				x		
	c10-1	x	x						x	x			
	c11-1	x	x						x	x			
General Skills	d3-1	x	x								x		
	d6-1	x	x				x		x	x	x		

11.2 Assessment Weight, Schedule and Grades Distribution:

Assessment Method	Mark	Percentage	week
Final Examination (*written*)	**50**	**67%**	**16th**
End of term assessment (*Oral*)	**0**	**0%**	**15th**
End of term laboratory examination (*Lab*)	**0**	**0%**	
Mid term written Examination1 (*Term Work*)	**15**	**20%**	**8th**
Mid term written Examination2 (*Term Work*)	**0**	**0**	
Report assessment (*Term Work*)	**10**	**13%**	**16th**
Total	**75**	**100%**	

12- Facilities required for teaching and learning:

Libratory Usage:

Library Usage:

Students should be encouraged to use library technical resources in the preparation of some reports.

13- List of references:

13.1- Course notes

13.2- Essential books (text books)

- "production / operations management: Concepts, Structure, and Analysis", Richard J. Tersine, Elsevier North Holland Inc, second Printing, 1980.
- " Project planning Handbook",

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Course coordinator **Programme coordinator**

Dr. Abd elaziz Kandeel

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2011.

Production Eng. & Mech. Design Dept. **Academic year: 2012-2013**
Faculty of Engineering **Academic term: *Summer Vacation***
Minoufiya University **Academic level: 2nd year**

Course Specification

A- Basic Information

Title: **Field Training** ***Code Symbol:*** ***None***

Element of program: ***Major/ minor*** ***Date of specification approval:*** ***2006***

Department offering the course: **Production Eng. & Mech. Design. Dept.** ***Bylaw*** ***2006***

Duration of Field Training	***Four Weeks in Summer Vacation of the Second Academic year***

1- Field Training Subject Area:

Humanities and Social Science	Math. and Basic Sciences	Basic Eng. Science	Applied Eng. and Design	Computer application and ICT	Projects and practice	Disccretionry subjects	Total
0	0	0	0	**0**	**100%**	0	**100%**

B- Professional Information

2- Field Training Aims:

The Aims of the field training are to provide the student upon completing the Production Eng. & Mech. Design Programme, the skills of practical experience form the relevant activities in industry associated with Production Eng. & Mech. Design discipline, using basic tools and equipment safely and appropriately, operating, and maintaining Production Eng. & Mech. Design equipment and systems. It well also provide students with the ability to work and communicate with other people , develop their responsibility and awareness of the risks in real and practical situations Moreover , it well provide the students with the ability to understand the relationships between the principles sciences of the Production Eng. & Mech. Design and the real practical situations .

3- Field Training Objectives:

1. **Understanding the inter-relationships between the principles of Production Eng. & Mech. Design sciences and the real practical situations .**
2. **Understanding the operation, performance and maintaining safely and correctly for Production engineering equipment, components and systems**
3. **Employing the traditional and recent advents technologies in Production Eng. & Mech. Design.**
4. **Understanding the codes of practice and standards related to Production Eng. & Mech. Design.**
5. **Working in team and communicate with other**
6. **Broaden his / her practical experience self-assurance and sense of responsibility.**

4- Relationship between the Field Training and programme

Field	National Academic Reference Standard(NARS)			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Programmed Academic standard that the field training contribute in achieving	**A6 , A8 , and A14**	**B5 , B6, and , B13**	**C8 , C10 , C11 , C12 , C13 and C19**	**D1 and D3**

5- Field Training Intended Learning Outcomes (ILOs)

Field	Programme ILOs that the Field Training contribute in achieving	*Project* ILOs
Knowledge& Understanding	A6 Remember Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.	a6.1 Specify the codes of practice and standards relevant to Production Eng. equipment components and systems a6.2 Recognise the safety requirements in operating equipment and systems for Production Eng. & Mech. Design. a6.3 Identify the risks in real and practical situations
	A8 Identify Current engineering technologies as related to Production Eng. & Mech. Design.	a8.1) Identify Traditional technologies in Production Eng. & Mech. Design a8.2) Specify the recent technologies as related to Production Eng. & Mech. Design
	A14 Understand the working principles of machine tool, classification, construction design concepts, operation and characteristics	a14.1 : Demonstrate the working principles of Production Eng. & Mech. Design equipment and systems a14.2 : Know the techniques and practice of machine tool and systems
Intellectual skills	B5 Assess and evaluate the characteristics and performance of components, systems and processes	b5.1 : Analyze the performance of Production Eng. equipment and systems
	B6 Investigate the failure of components, systems, and processes.	b6.1 Investigate the failure components of machine tool systems b6.2 Assess the risks in real and practical situations
	B13 Evaluate the Production Eng. & Mech. Design, processes and performances and propose improvements	b13.1 Evaluate the performance of Production Eng. components and systems b13.2 Assess the real performance of Production Eng. equipment and systems
Professional skills	C8 Apply safe systems at work and observe the appropriate steps to manage risks.	c8.1 Apply safe systems at work in field c8.2 : Observe the appropriate steps to manage risks in real and practical situations
	C10 Apply quality assurance procedures and follow codes and standards.	c10.1 : Employ codes of practice and standards for Production Eng. & Mech. Design

	C11 Exchange knowledge and skills with engineering community and industry.	c.11.1 Exchange knowledge and skills with engineering community and industry. c11.2 : Employ the traditional and recent advances technologies in Production Eng. & Mech. Design
	C12 Prepare and present technical reports.	c.12.1 : Prepare technical report for field training c12.2 : Present the technical report
General Skills	C13 Use basic workshop equipment safely and appropriately.	c13.1 Use mechanical power engineering equipment and systems safely and appropriately
	C19 Work in mechanical power and energy operations, maintenance and overhaul	c19.1 Work in mechanical power and energy operations, maintenance and overhaul
	D1 Collaborate effectively within multidisciplinary team.	d1.1: Collaborate effectively within multidisciplinary team.
	D3 Communicate effectively.	d3.1: Communicate effectively. With engineering community and industry .

6- General Area of Field Training

- **Steel industry**
- **Machine tool industry**
- **Car industry**
- **CNC Factory**
- **Field of maintainononce of production machines**
- **Industrial Engineering**

7-Teaching and Learning Methods

Practical industrial training must be conducted in a relevant working situation in industry for four weeks in summer vacation of the second academic year . A number of companies have agreed to collaborate with the Production Eng. & Mech. Design Dept. in providing industrial training experience . The mechanical power engineering department offers supervision to the students during the field training through their staff members period by conducting visits to the training places .

8- Student Assessment analysis

a- A report from the training place responsible concerning the attendance of the student and evaluate his / her performance and communicating with industry community is directed to the department .

b- Submit a detailed field training technical report to the department .

c- Final oral examination in the submitted technical report held on the first two weeks from the starting date of the academic year .

d. Students must undertake related industrial training in a relevant working situation in industry as part of the total requirement of completing the B.Sc. Programme in Mechanical power engineering

Programmer coordinator

Head of the Department

Prof. Taha Ali El-Taweel

Date: 1/10/2012