



Model No.12

Course Specifications: Machine Design

University: Benha University

Faculty: Faculty of Engineering at Shoubra

Department offering the program: Mechanical Engineering Department

Department offering the course: Mechanical Engineering Department

1- Course Data

Course Code: MDP312

Course Title: Machine Design

Specialization: Mechanical Production Engineering

Course Type: Compulsory

Study Year: Third Year

Teaching Hours: Lecture: 2

Tutorial: 2

Practical: 0

Total: 4

2- Course Aim

For students undertaking this course, the aims are to:

1. Apply the concepts of stress analysis, theories of failure and material science to analyze, design and/or select commonly used machine components.
2. Illustrate the variety of mechanical components available and emphasize the need to continue learning.
3. Apply mechanical engineering design theory to identify and quantify machine elements in the design of commonly used mechanical systems.

3- Intended Learning Outcomes of Course (ILO's)

Knowledge and Understanding Skills: On completing this course, students will be able to demonstrate the knowledge and understanding of:

a-1- The different types of gears and bearing. (A.2)

a. 2- Mechanical properties like hardness and strength of steel and cast iron. (A.3)

a. Intellectual Skills: At the end of this course, the students will be able to:

b-1- Use Lewis theory to reach the dimension of gears box. (B.2)

b-2- Classify the different types of gears according to shape, direction, power which it can carry. (B.4)

b-3- Investigate the failure of the teeth and the reasons. (B.6)

b. Practical and Professional Skills: On completing this course, the students are expected to be able to:

c-1- Apply Lewis and Buckingham theories to find the whole dimensions of gear box. (C.1)

c-2- Compare between results of the two theories. (C.5)

c-3- Draw different types of gears and bearing manually and using computers. (C.6)

c. General and Transferable Skills: At the end of this course, the students will be able to:

d-1 Collaborate effectively within multidisciplinary team. (D.1)

d-2- Work in stressful environment and within constraints. (D.2)

d-3- Communicate effectively. (D.3)



COURSE SPECIFICATIONS (2014-2015)

4- Course Contents

Week no.	Topics
1	Introduction to machine design
2	Spur gear design
3	Helical gear design
4	Bevel gear design
5	Worm gear design
6	Single ball bearing design
7	Single ball bearing design
8	Applications by using computer

5- Teaching and Learning Methods

- 5.1- Lectures
- 5.2- Class activity
- 5.3- Case study
- 5.4- Assignments / homework

6- Teaching and Learning Methods of Disables

- Nothing.

7- Student Assessment

a- Student Assessment Methods

1. Four Assignments to assess knowledge and intellectual skills.
2. Two Quizzes to assess knowledge, intellectual and professional skills.
3. Midterm exam to assess knowledge, intellectual, professional and general skills.
4. Final exam to assess knowledge, intellectual, professional and general skills.

b- Assessment Schedule

NO.	Assessment	Week
1	Assignments	3,6,9,11
2	Quiz	6,11
3	Midterm exam	8
4	Oral exam	-
5	Final exam	15

c- Weighting of Assessments

Assessment	Weight (%)
Midterm Examination	20
Final Term Examination	60
Oral Examination	0
Practical Examination	0
Semester Work	10
Other Types of Assessment	10
Total	100



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COURSE SPECIFICATIONS (2014-2015)

8- List of References

a- Course Notes: 1- Course notes prepared by instructor

b- Recommended Books

1. Textbook of machine design by khurmi 2010.

c- Web Sites

1. www.Machine design.com

Course Coordinator: Dr. Hamdy El-sayed Ebaied

Head of Department: Prof. Dr. Osama Ezzat Abdelatif



BENHA UNIVERSITY



FACULTY OF ENGINEERING AT SHOUBRA

COURSE SPECIFICATIONS (2014-2015)

Model No.11A

Course Specifications: Machine Design

University: Benha University

Faculty: Faculty of Engineering at Shoubra

Department offering the program: Mechanical Engineering Department

Department offering the course: Mechanical Engineering Department

Matrix of Knowledge and Skills of the Course

no.	Topics	Week no.	Knowledge and Understanding Skills	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
1	Introduction to machine design	1	a1	b2		d3
2	Spur gear design	2	a2	b2		
3	Spur gear design	3			c3	
4	Helical gear design	4	c3	b1		d1
5	Bevel gear design	5		b2		d2
6	Bevel gear design	6	a1			d3
7	Worm gear design	7				a2
8	Worm gear design	9	c3	b2	c3	
9	Single ball bearing design	10				
10	Single ball bearing design	11	d3		b2	
11	Gear box design	12				
12	Gear box design	13	a2			b2
13	Applications by using computer	14		d3		

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COURSE SPECIFICATIONS (2014-2015)

Matrix of Course Aims and ILO's

Course Title: Machine Design

Course Code: MDP312

Teaching Hours: Lecture: 2 Tutorial: 2 Total: 4

Major or minor element of program: Major

Program on which the course is given: B.Sc. Mechanical Production Engineering

Department offering the program: Mechanical Engineering Department

Department offering the course: Mechanical Engineering Department

Academic year / level: 2014-2015 Third Year / First Semester

Date of specifications approval: 2014

Course aims	Knowledge and Understanding Skills	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
Apply the concepts of stress analysis, theories of failure and material science to analyze, design and/or select commonly used machine components.	a1	b1		d1
Illustrate the variety of mechanical components available and emphasize the need to continue learning	a1	b2	c1, c2	d1, d2
Apply mechanical engineering design theory to identify and quantify machine elements in the design of commonly used mechanical systems.	a2		c2	d3

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