Benha University
Shoubra Faculty of Engineering
Industrial Engineering Department

Course Specification

Mechanical Design

Course Specifications

Program(s) in which the course is given: **Industrial Engineering**
Major or minor element of programs: **N/A**
Department offering the program: **Industrial Engineering**
Department offering the course: **Industrial Engineering**
Academic year / Level: **2008/2009 / Level 2**

Date of specification approval:

A- Basic Information

Title: Mechanical Design Code: MDP 206
Credit Hours: **3**
Lecture: **2**.
Exercises: **2**
Total: **4**

B- Professional Information

1- Overall aims of the course

- To present an overview of the mechanical machine design and the design methodology;
- To introduce the subject of total design and the design and selection of various common mechanical engineering components and machine elements.
- To provide 'building blocks' with which the designer and engineer can practice their art.

2- Intended learning outcomes of the course (ILOs)

a. Knowledge and understanding

- Foundations of Mechanics of Materials.
- Fundamentals of Machine Elements Design.
- Theory of Machinery.

b. Intellectual skills

☒ Analysis ☒ Creative thinking ☒ Problem solving

c. Professional and practical skills

☐ Managing
☒ Computer program
☒ Ability to identify the problem
☒ Ability to estimate cost
☒ Engineering design
☒ Ability to diagnose
☐ Other.

d. General and transferable skills

☒ Computing
☐ Management
☒ Use of technological tools
☐ Communication
☒ Working in group

3- Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
1- Introduction to Machine design	4	2	2
2- Engineering Materials & Their Properties	4	2	2
3- Stresses in Machine Members	8	4	4
4- Mechanisms; Velocity and acceleration	8	4	4
5- Cam Design	4	2	2
6- Brakes & Clutches	8	4	4
7- Mechanical Springs	4	2	2
8- Screw Fasteners & Welded Joints	8	4	4
9- Case Studies	16	8	8
Total	**60**	**30**	**30**

4- Teaching and learning methods

- ☒ Information collection
- ☐ Research assignment
- ☒ Lecture
- ☒ Class activities
- ☒ Discussions
- ☐ Field visit
- ☐ Practical training/lab
- ☒ Case study

5- Student assessment methods

Class attendance and participation
Homework assignments & Design Projects
First midterm exam
Final exam

Assessment schedule

Homework assignments	weeks 3, 4, 5, 7, 8, 9, 10
First midterm exam	week 6
Final exam	

Weighting of assessments

Final	40 %
7^{th} week Exam	30 %
12^{th} week Exam	20 %
Class attendance and participation	5 %
Homework assignments	5 %

6- List of references

6.1 Course notes

6.2 Essential books

- Mechanical Engineering Design, Joseph E. Shigley & Charles R. Mischke, McGraw Hill.
- Design of Machinery, Robert L. Norton, McGraw Hill.

6.3 Recommended books

- Machine Design, Schaum's Outline Series, Allen S. Hall, McGraw Hill.
- Machine design; An Integrated Approach, Robert L. Norton, Pearson-Printce Hall.

7- Facilities required for teaching and learning

Computer Lab
Data Show
Overhead Projector

Course Coordinator: Prof. Dr. Dr.Tamer Samir
Program Coordinator: Prof. Dr. Attia Gomaa
General Supervisor & Vice Dean: Prof. Dr. Abdallh Saad
Date: 01 / 06 / 2010