A. Basic Information

Course Title: Mechanical Engineering 2 **Code**: MDE 271
Lecture: 4 **Tutorial**: 2 **Practical**: - **Total:** 6
Program on which the course is given: B.Sc. Electrical Engineering (power)
Major or minor element of program: Major
Department offering the program: Electrical Engineering Department
Department offering the course: Mechanical Engineering Department
Academic year / level: **Second** Year / **First** Semester
Date of specifications approval: 10/5/2006

B. Professional Information

1. **Overall aims of course**
   Providing the students with the knowledge and skills for understanding and analyzing the relative motion between the various parts of a machine.

2. **Intended Learning outcomes of Course (ILOs)**
   By completion of the course, the student should be able to:

a. Knowledge and Understanding:
a.8) Current engineering technologies as related to disciplines.
a.13) Concepts, principles and theories relevant to Mechanical Engineering and manufacture.
a.14) The constraints within which his/her engineering judgment will have to be exercised.
a.16) Relevant contemporary issues in mechanical engineering.

b. Intellectual Skills
b.9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.

b.13) Apply the principles of mathematics, science and technology in problem solving scenarios in mechanical engineering.
b.15) Evaluate and appraise designs, processes and products, and propose improvements.
b.17) Use the principles of engineering science in developing solutions to practical mechanical engineering problems.

c. Professional and Practical Skills

c.15) Use basic workshop equipment safely.
c.16) Analyze experimental results and determine their accuracy and validity.
c.18) Operate and maintain mechanical equipment.
c.19) Prepare the process plans for manufacturing.

d. General and Transferable Skills

d.3) Communicate effectively
d.5) Lead and motivate individuals.
d.6) Effectively manage tasks, time, and resources.
d.7) Search for information and engage in life-long self learning discipline.
d.9) Refer to relevant literatures.

3. Contents

No	Topic	No. of hours	ILOs	Teaching / learning methods and strategies	Assessment method
1	Introduction to theory of machines	4	a.8 , a.14	Lecture	-
2	Mechanisms	6	a.14, a.8 , b.9, d.3	Lecture	Assignment
3	Velocity diagram	6	a.14, b.13 , c.15	Lecture, class activity	Assignment
4	Acceleration diagram	6	a.13, b.9 , c.16, d3	Lecture	Assignment
5	Velocity and acceleration	6	a.8, b.15 , c.18, d.5	Lecture	Assignment

6	Properties and Types of Engineering Materials	6	a.8, b.9 , c.18, d.7	Lecture, class activity	Assignment, Quiz
7	Strength of Materials	6	a.14, b.13 , c.15	Lecture	Assignment + Report
8	Midterm exam				
9	Toothed gears	6	a.14, b.15 , c.19, d.3	Lecture , Case study	Assignment +
10	Gear train-1	6	a.8, b.17 , d.7	Lecture	Quiz +Assignment
11	Gear train-2	6	a.13, b.13 , b.4, d.9	Lecture	Assignment
12	Balancing of rotating masses-1	6	a.14, a.8 , b.13, b.15, c.18, d.6	Lecture	Assignment
13	Balancing of rotating masses-2	6	a.14, a.8 , b.17, c.19, d.9	Lecture, class activity	Quiz + Assignment
14	Mechanical Design Principles	6	a.8, a.14, b.9, b.13, b.19, c.11, d.9, c.19	Lecture,Case study	Oral Exam
15	Final exam				
16					

4. Teaching and Learning Methods

- ✓ Lectures
- Practical training / laboratory
- Seminar / workshop
- ✓ Class activity
- ✓ Case study
- ✓ Assignments / homework

5. Student Assessment Methods

- ✓ Assignments to assess knowledge and intellectual skills.
- ✓ Quiz to assess knowledge, intellectual and professional skills
- ✓ Mid-term exam to assess knowledge, intellectual, professional and general skills.
- ✓ Oral exam to assess knowledge and intellectual skills.
- ✓ Final exam to assess knowledge, intellectual, professional and general skills.

6. Assessment schedule

Assessment 1 on 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13
Assessment 2 Quizzes on weeks 6, 10, 13.
Assessment 3 Mid-term exam on week 8
Assessment 4 Oral Exam on week 15
Assessment 5 Final exam on week 16
Other **Report** on week **7**

7. Weighting of Assessments

Mid- Term Examination	20 %
Final Examination	60 %
Oral Examination	10 %
Practical Examination	00 %
Semester Work (Assignment)	10 %
Other (Quizzes)	10 %
Total	100%

8. List of References

8.1 Course notes:

Course notes prepared by instructor.

8.2 Essential books:

1. kurmi." Theory of machines " 1980

2- Motti "Fundamental of Machine Elements Design 1990
3. Shariff A. " Theory of machines " 1977

9. Facilities Required for Teaching and learning

Lecture room equipped with overhead projector.
Presentation board, computer and data show.

Course coordinator: Prof. Dr. Mohamed Salah A. Hamed
Course instructor: Assoc. Prof. Ahmed Mohamed Gaafer, Assoc. Tamer Samir Mahmoud

Head of department: Prof. Dr. Mousa Abd-Allah **Date:** December, 2011