A. Basic Information

Course Title: Hydraulic Machines
Code: MEP391
Lecture: 2          Tutorial: 2          Practical: -          Total: 4
Program on which the course is given: B.Sc. Mechanical Engineering (Productions)
Major or minor element of program: Major
Department offering the program: Mechanical Engineering Department
Department offering the course: Mechanical Engineering Department
Academic year / level: Third Year / First Semester
Date of specifications approval: 10/5/2006

B. Professional Information

1. Overall aims of course
   By the end of the course the students will be able to:
   1- Basic information of Hydraulic machines
   2- Increase the theoretical and practical skills of Hydraulic machines
   3- Identify how to design, install and maintain Hydraulic Machines

2. Intended Learning outcomes of Course (ILOs)

   a. Knowledge and Understanding:
      a.8) Current engineering technologies as related to disciplines.
      a.16) Relevant contemporary issues in mechanical engineering.
      a.18) The role of information technology in providing support for mechanical engineers

   b. Intellectual Skills
b.17) Use the principles of engineering science in developing solutions to practical mechanical engineering problems.

c. Professional and Practical Skills

c.18) Operate and maintain mechanical equipment.

d. General and Transferable Skills

d.1) Collaborate effectively within multidisciplinary team.
d.2) Work in stressful environment and within constraints.
d.3) Communicate effectively
d.8) Acquire entrepreneurial skills.

3. Contents

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<th>No. of hours</th>
<th>ILOs</th>
<th>Teaching / learning methods and strategies</th>
<th>Assessment method</th>
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<td>a.8, a.16</td>
<td>Lecture</td>
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<tr>
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<td>Continuity equation</td>
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<td>a.16, d.2</td>
<td>Lecture, Class activity</td>
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<td>4</td>
<td>Hydraulic Pumps and Turbines</td>
<td>4</td>
<td>b.7, d.8</td>
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<td>Classification of Pumps</td>
<td>4</td>
<td>a.18, b.15, c.18</td>
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<td>b.17, d.3</td>
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<td>Quiz</td>
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<td>analysis of Centrifugal pumps</td>
<td>4</td>
<td>a.18, b.7, c.18, d1</td>
<td>Lecture, Class activity</td>
<td>Assignment</td>
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<td>Mid term exam</td>
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<td>Pelton wheels</td>
<td>4</td>
<td>a.18, b.15, d.8</td>
<td>Lectures, homework</td>
<td>Assignment</td>
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</table>
10 Study of Pelton wheels 4 a.16, b.17, c.18 Lectures, laboratory Assignment
11 Francis turbine 4 a.18, b.15 Lecture, Class activity Quiz
12 Study of Francis turbine 4 a.18, b.7, c.18, d1 Lectures, laboratory Assignment
13 Kaplan turbine 4 a.16, c.18, d.2, d.8 Lectures, homework Assignment
14 Study of Kaplan turbine a.18, b.15, d.8 Lectures Oral Exam
15 Final exam
16

4. Teaching and Learning Methods
✓ Lectures
✓ Practical training/ laboratory
✓ 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.
  Others ___________to assess__________________________

6. Assessment schedule
  Assessment 1 on weeks 2, 3, 4, 5, 7, 9, 10, 12, 13
  Assessment 2 Quizzes on weeks 2, 5, 11
  Assessment 3 Mid-term exam on week 8
  Assessment 4 Oral Exam on week 14
  Assessment 5 Final exam on week 15
7. Weighting of Assessments

<table>
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<tr>
<th>Assessment</th>
<th>Weight</th>
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<tr>
<td>Mid-Term Examination</td>
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<tr>
<td>Final-Term Examination</td>
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<tr>
<td>Oral Examination</td>
<td>15 %</td>
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<tr>
<td>Practical Examination</td>
<td>00 %</td>
</tr>
<tr>
<td>Semester Work (assignments)</td>
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<tr>
<td>Other (Quizzes)</td>
<td>05 %</td>
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<tr>
<td>Total</td>
<td>100 %</td>
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8. List of References

8.1 Course Notes
- Course notes prepared by instructor

8.2 Essential Books (Text Books)
- Boston: BH, 1998

8.3 Recommended Books

8.4 Periodicals Web sites, etc

9. Facilities Required for Teaching and learning

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

Course coordinator: Prof. Dr. Mohamed Moawed
Course instructor: Dr. Mamdoh Esamt
Head of department: Prof. Dr. Maher Hegazy

Date: March 18, 2012