Course Syllabus

Department: Science & Technology

Date: 01-16-2013

I. Course Prefix and Number: TECH 221

Course Name: Machine Design II

Credit Hours and Contact Hours: 3 credit hours and 3 contact hours

Catalog Description including pre- and co-requisites: supporting data required for grade prerequisite of 'C' or higher. Continuation of the analytic design of machine elements. Topics include power transmission shafting, mechanical clutches and brakes, springs, welded and riveted connections, power screws, and working stresses.

Pre-requisite: TECH 220  Co-requisite: TECH 217

Relationship to Academic Programs and Curriculum including SUNY Gen Ed designation if applicable:
This course is primarily a required course for the A.A.S. in Mechanical Technology program. Other students from other programs may also take the course if they have the appropriate background.

II. Course Student Learning Outcomes: State the student learning outcome(s) for the course (e.g. Student will be able to identify...)

Upon completion of the course the student will be able to:

1. Calculate the required design specifications for a bearing
2. Identify the correct size for a shaft key
3. Specify the correct size machine screw for a mechanical fastening application
4. Calculate the correct dimensions of a linkage system
5. Design a compression or a tension spring for a given application
6. Design a brake mechanism as a part of a drive system

College Learning Outcomes Addressed by the Course: (check each College Learning Outcome addressed by the Student Learning Outcomes)

- writing
- oral communications
- reading
- mathematics
- critical thinking
- computer literacy
- ethics/values
- citizenship
- global concerns
- information resources

III. Assessment Measures (Summarize how the college and student learning outcomes...
will be assessed): For each identified outcome checked, please provide the specific assessment measure.

<table>
<thead>
<tr>
<th>List identified College Learning Outcomes(s)</th>
<th>Specific assessment measure(s)</th>
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</thead>
<tbody>
<tr>
<td>eg: writing</td>
<td>eg: student will complete a research paper</td>
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<tr>
<td>Writing</td>
<td>Student will complete a lab report</td>
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<tr>
<td>Mathematics</td>
<td>Student will answer specific test questions correctly</td>
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<tr>
<td>Critical Thinking</td>
<td>Student will complete homework assignments</td>
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IV.  Instructional Materials and Methods

Types of Course Materials:
Current edition of Robert L. Mott, "Machine Elements in Mechanical Design", is used as the textbook. Instructor notes are used as the supplemental source of information for the course content.
Each student is required to have a scientific calculator.
A course website is maintained on the internet for lecture schedule, test solutions, and other supplemental learning material.

Methods of Instruction (e.g. Lecture, Lab, Seminar ...):
Main avenue used to convey knowledge to the student are lectures. They are presented in the traditional way, using either whiteboard or smartboard, supplemented with models, material samples, or power point presentations.
Plenty of example problems are solved in class and the students are allowed to practice the problem solutions through various homework assignments.
Weekly lab sessions are used to reinforce the theory by allowing the students to carry out hands-on design activities with various mechanical systems, such as linkage systems, keys, springs, bearings, and brakes.

V.  General Outline of Topics Covered:
Parallel keys
Wooddruff keys
Shear pins
Linkage systems
Mechanical fasteners
Rolling contact bearings
Plain surface bearings
Full-film bearings
Tension springs
Compression springs
Clutches
Brakes