

MECHANICAL ENGINEERING PROGRAM
ABET COURSE SYLLABUS

ME 329 Intermediate Design (4 Units) Required

Course Descriptions: (2013-15 Catalog) Design of mechanical equipment and systems using various machine elements and components such as threaded fasteners, power screws, springs, gears, bearings, clutches, prime movers, etc. Decision modeling based on technical and economic feasibility. 3 lectures, 1 laboratory.

Prerequisite Courses: ME 328

Prerequisites by Topic: Introduction to Design (advanced strength of materials including failure theories)

Textbook: (and/or other required material) Shigley's Mechanical Engineering Design, 9th Edition, R.G. Budnyas and J.K. Nisbett, McGraw-Hill, 2011

References: Various Manufactures' Catalogs, trade journals, websites, etc. Mark's Standard Handbook for Mechanical Engineers.

Course Coordinator/Instructor: James M. Widmann, Professor of ME

- Course Learning Outcomes:**
1. Define design objectives
 2. Generate ideas and concepts for mechanical designs
 3. Apply engineering fundamentals to create mathematical models for the analysis and synthesis of designs.
 4. Select appropriate machine elements, components and materials for mechanical systems.
 5. Analyze and size selected machine components for appropriate strength, stiffness, or fatigue life.
 6. Integrate computer-aided design

Relationship of Course to MECHANICAL ENGINEERING Program Outcomes:												
<i>a</i>	<i>b</i>	<i>C</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>	<i>l</i>	<i>m</i>
H	M	H	H	H	M	H	M	M	L	H	H	M

Topics Covered: Design of power transmitting shafts
Kinematic analysis and design of gear trains.
Design and selection of gears (spur, helical, bevel, worm).
Analysis and selection of threaded fasteners and bolted joints
Design of riveted, welded or bonded joints

Properties of hydrodynamic bearings
Analysis and selection of rolling element bearings
Design of springs
Design and analysis of clutches and brakes

Laboratory Activities: Team effort on assigned projects which require problem evaluation, literature search, idea generation, modeling and analysis, computer aided engineering, and generation of assembly drawings. Hardware is designed, constructed and tested. Projects geared to integrate lecture topics.

Class/Lab Schedule: Three 50-minute lecture per week; One 170 minute lab per week

Contribution of Course to Meeting the Professional Component:

(a) College-level mathematics and basic sciences:	0 credits
(b) Engineering Topics:	4 credits
Design:	Yes
(c) General Education:	0 credits
(d) Other:	0 credits

Prepared by:
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Date:
11/12/13
