MOHAWK VALLEY COMMUNITY COLLEGE

UTICA and ROME, NEW YORK

COURSE OUTLINE

MT203

DESIGN OF MACHINE ELEMENTS

1. CATALOG DESCRIPTION:

MT203 Design of Machine Elements C-2, P-2, Cr-3

This course addresses the methods and theory of practical machine design. Topics include stress analysis, shaft design, kinematics of linkages, springs, gears, chains, belts, bearings and welding joints. The application of computer aided design software to some of the analysis problems are covered. An introduction to finite element analysis software are presented.

Prerequisites: MT140 Drafting and Design Using AutoCAD and MT230 Strength of Materials: Mechanical.

1. Student Learning Outcomes:

*After this course the student will be able to:*

1. … apply basic design standards to design problems point that guide decisions (h).
2. … use kinematics of linkages.
3. … apply computer software to analyze machine element design.
4. … explain ideas and solutions with oral and written presentations of a design.
5. … demonstrate the ability to analytically solve problems through the use of computer aided design (e).
6. … apply solid modeling techniques to design problems (a).
7. … demonstrate the ability to use finite element analysis to complex loading problems.
8. … compare theoretical stress formulas to interpret the computer aided finite element analysis (c).

() – References ETAC of ABET Program Outcome

1. Major Topics:

|  |  |  |
| --- | --- | --- |
| Week | Reading | Topic |
| 1 | Ch 1 | Class Introduction, Into to Machine Design |
| 2 | Ch 2 | Materials of Machine Design |
| 3 | Ch 3 | Stress Analysis |
| 4 | Ch 3 | Stress Analysis |
| 5 | Ch 3, 4 | Stress Analysis and Combined Loading |
| 6 | Ch 4 | Combined Loading |
| 7 | Ch 6 | Endurance |
| 8 | Ch 7 | Belts and Gears, Midterm |
|  |  | Spring Break |
| 9 | Ch 8 | Belts and Gears |
| 10 | Ch 9 | Belts and Gears |
| 11 | Ch 11, 12 | Keys, Splines, and Shaft Design |
| 12 | Ch 11, 12 | Keys, Splines, and Shaft Design |
| 13 | Ch 13, 14, 19 | Tolerances and Bearings |
| 14 | Ch 18 | Fasteners and Springs |
| 15 |  | Project Presentations and Final Exam Review |
| 17 |  | Final Exam |

# COURSE NAME: MT203

## DATE FACULTY NAME CHANGE INPUT MEASUREMENT ASSESSMENT ACTION

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| --- | --- | --- | --- | --- | --- | --- |
| **01.23.15** | **N. Roscup** | **Updated the book edition** |  |  |  |  |
| **03.23.15** | **N. Roscup** | **Added references to ETAC of ABET Program Outcomes** |  |  |  |  |
| **4/30/15** | **B. Fuller** | **Edited Format** |  |  |  |  |
| **5/20/15** | **N. Roscup** | **Removed Objectives** |  |  |  |  |
| **3/02/17** | **N. Roscup** | **Added Cover Page** |  |  |  |  |
| **3/31/17** | **S. Cuda** | **Updated course description, credit hours and pre req** |  |  |  |  |
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