

METROPOLITAN STATE COLLEGE of DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

CIP Code: 15.0201

Prefix & Course Number: CET 3170

Crosslisted With*:

Course Title: Introduction to Structural Analysis

Check All That Apply: Required for Major: Required for Minor: Specified Elective:

Required for Concentration: Elective: Service Course:

Credit Hours: 3 (3+0)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 45 Lab 0 Internship 0 Practicum 0 Other (please specify type and hours):

Schedule Type(s): L Grading Mode(s): L

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned**):

**** NOTE: This information must be included in the course description.**

Restrictions (Variable Topics Course):

Prerequisite(s): CET 3130 with a grade of "C" or better, or permission of instructor

Corequisite(s): None

Prerequisite(s) or Corequisite(s):

Banner Enforced:

Prerequisite(s):

Corequisite(s):

Prerequisite(s) or Corequisite(s):

Catalog Course Description:

This course presents and applies the principles of structural analysis to statically determinate and indeterminate structures.

APPROVED:

Department Chair OR Program Director

3 Apr 08
Date

Dean OR Associate Dean

4/8/08
Date

Associate VP, Academic Affairs

5/19/08
Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Prefix and Course Number: CET 3170

Required Reading and Other Materials will be equivalent to:

Hibbeler, Russell C.(2006). *Structural Analysis, 6th edition*. Pearson/Prentice Hall

Specific, Measurable Student Behavioral Learning Objectives:

Upon completion of this course the student should be able to:

1. Apply the principles of Mechanics of Materials to statically indeterminate elastic structural members to determine external loads, deformation, and internal forces.
2. Illustrate shear force and bending moment diagrams for beams and frames.
3. Analyze structures with moving loads.
4. Calculate structural member deflections under given loading.
5. Apply the stiffness method for truss, beam, and frame analysis.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

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| <ul style="list-style-type: none"> I. Structures <ul style="list-style-type: none"> A. Classification of structures B. Loads C. Design II. Structures <ul style="list-style-type: none"> A. Statically determinate B. Statically indeterminate III. Shear and Moment Diagrams <ul style="list-style-type: none"> A. Beams B. Frames C. Finite Element Software applications IV. Analysis of structures <ul style="list-style-type: none"> A. Trusses <ul style="list-style-type: none"> 1. Plane trusses-2D 2. Space trusses-3D using FE software B. Cables C. Arches D. Beams E. Frames V. Influence Lines <ul style="list-style-type: none"> A. Beams | <ul style="list-style-type: none"> B. Trusses VI. Deflections <ul style="list-style-type: none"> A. Deflection Diagrams and Elastic Curve B. Elastic Beam Theory C. Double Integration method D. Moment area Theorem E. Conjugate beam method F. Method of Virtual work <ul style="list-style-type: none"> 1. Trusses 2. Beams 3. Frames G. Castigliano's Theorem VII. Basic concepts of force (flexibility) method VIII Stiffness Method <ul style="list-style-type: none"> A. Matrix operations B. Basic concepts of displacement (stiffness) method <ul style="list-style-type: none"> 1. Trusses 2. Beams 3. Frames |
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Evaluation of Student Performance:

1. Written Exams
2. Homework
3. Computer solution and presentation of structural problems