

## Course Outline

**Winter 2005**

<b>Division:</b> Business, Engineering & Information Technology			
<b>Program/Dept:</b> Architectural Engineering Drafting			
<b>Course Number:</b>	TDR 160	<b>Credits:</b>	5.0 <b>Variable:</b>
<b>Course Title:</b> <b>Applied Mechanics I</b>			
<b>Inst. Intent:</b>	21 Vocational Preparatory	<b>CIP:</b>	15.1304
<b>Fee:</b> None <b>Type:</b>			

<b>Degree/Certificate Requirement:</b>	Yes		
<b>Name of Degree/</b>	Architectural Engineering Drafting		
<b>Certificate Requirements:</b>	Associate of Applied Science Degree		
<b>Distribution Requirement for AA/AAS:</b>	Yes		
<b>Transfer Status to 4-year institution:</b>	No.		
<b>If yes, please describe:</b>			
<b>Course Length:</b>	Based on 11 wks/qtr.	<b>Class Size:</b>	24
<b>Course Contact Hours:</b>	55 hrs.		
<b>Lecture:</b>	55	<b>Lab:</b>	0 <b>Clinical:</b> <b>Other:</b>
<b>Prerequisite:</b>	<b>If yes, please describe:</b>		
<b>Required Placement Tests:</b>	No	<b>If yes, please describe:</b>	
<b>Comments:</b>			

### Course Description:

Designed primarily for the non-engineering students, covering basic concepts of force systems, equilibrium, moments, centroids, moments of inertia, and simple beam design as applied to structural steel. Includes loading criteria, tributary loads and deflection.

**Course Outcomes/Learning Objectives:**

1. To familiarize the student with the basic computational methods for elementary structural solution.
2. To acquaint the student with static equilibrium, geometric properties of shapes and material limits.
3. To have the student determine the adequacy of simple structural steel elements.

**NSCC General Education Outcomes and/or Related Instructional Outcomes (for technical courses) Met by Course:**

- Outcome 2. Demonstrate the ability to use quantitative reasoning processes to understand, analyze, interpret and solve quantitative problems.
- Outcome 4. Demonstrate the ability to access, evaluate and apply information from a variety of sources and a variety of contexts.
- Outcome 10. Identify and understand fundamental concepts of the physical and life sciences and the effects that the uses of these concepts and resulting technologies have on the individual, on society and on the biosphere.

**Topical Outline and/or Major Divisions:**

- I Introduction To TDR 160**
  - A. Course content
  - B. Class procedures
  - C. Course objectives
- II Introduction to Principles Of Applied Mechanics**
  - A. Forces and static equilibrium
  - B. Stresses and elongations
  - C. Simple idea beams and co-planer forces
    1. Loads and reactions
    2. Shear and moment diagrams
- III. Geometric Properties of Shapes**
  - A. Centroids and moments of inertia
  - B. Section modulus
  - C. Radius of gyration
- IV. Introduction to Structural Steel**
  - A. Material properties of steel
  - B. Common rolled shapes
  - C. Simple beam sizing
    1. Flexure
    2. Shear
    3. Deflection
  - D. Simple column considerations
  - E. Basic steel connections
- V. Evaluations**

**Course Requirements (Expectation of Students):**

Attendance and active participation in problem solutions.

**Methods of Assessment/Evaluation:**

Accumulated points based on homework and quizzes.

**Required Text(s) and/or Materials:**

Simplified Engineering for Builders and Architects, latest edition; Parker and Ambrose; John Wiley & Sons, Inc; ISBN 0-471-58703-6

**Supplemental Text(s) and/or Materials:**

Uniform Building Code, Current edition.

**Outline Developed by:** Mark Hillman      **Date:** 4/89

**Revised by:** James Wall      **Date:** 3/94, 2/02, 5/04