

---

# MIDDLESEX COUNTY COLLEGE

---

## COURSE SYLLABUS

<b>Department:</b>	Engineering Technologies
<b>Program:</b>	Civil Engineering Technology
<b>Course Number:</b>	CIT 218
<b>Title of Course:</b>	Steel Design
<b>Curriculum Coordinator:</b>	Daniel Grek
<b>Designation:</b>	Required Course

### Course Description:

Practical application of steel design using the LRFD (Load and Resistance Factor Design) procedure as governed by the American Institute of Steel Construction. Topics include principles of structural design and analysis using steel as the primary building material. Analysis and design of steel members, such as beams, girders, columns and connections is studied using the principles of statics. A study of framing and load analysis will be done for various loading conditions.

### Prerequisite:

CIT203 Strength of Materials

### Co-requisite:

None

### Textbooks and /or other required material:

Structural Steel Design by McCormac, Pearson, 6<sup>th</sup> Ed

### Course Learning Outcomes and their relationships to Student Outcomes:

1. Calculate load combinations using loads and load factors. **(SO e)**
2. Analyze and design tension members. **(SO m)**
3. Analyze and design compression members - columns. **(SO m)**
4. Analyze and design beams. **(SO m)**
5. Analyze and design beam-columns.
6. Analyze and design bolted & welded connections.
7. Design column base plates and beam bearing plates.
8. Recognize the need for and an ability to engage in professional development.
9. Demonstrate an awareness of how professional, ethical and social responsibilities affect engineering decisions.

**Topics Covered:**

- Introduction to Structural Systems and the Steel Construction Manual
- Loads – Live Loads, Dead Loads, Environmental Loads & Load Combinations
- Tension Members – Effective Net Area, Block Shear, Bolt Shear & Rods
- Columns – Euler Formula, Stiffened & Unstiffened Elements, Splices & Alignment Charts
- Beams – Plastic Modulus, Elastic/Inelastic Buckling, Continuous, Shear & Deflection
- Beam Columns – DAM, ELM, Braced & Unbraced
- Column Base Plates & Beam Bearing Plates
- Bolted Connections
- Welded Connections
- Built-Up Members

**Class/Laboratory schedule. Number of sessions each week and duration of each session:**

3 lecture hours per week for 14 weeks

**Criterion 5 Contribution:** Technical Content

<b>Prepared By:</b>	Jay Edelson	<b>Date:</b>	9/17/2008
<b>Rev 1:</b>	T. Sabol	<b>Date:</b>	1-15-2010
<b>Rev 2:</b>	T. Sabol Update mapping of course outcomes to ABET 2014-2015 student outcomes	<b>Date:</b>	3-24-2014
<b>Rev 3:</b>	T. Sabol Update description to focus on LRFD code	<b>Date:</b>	1-12-18
<b>Rev 4:</b>	General Update	<b>Date:</b>	3/15/21