

**ENGR 171 ENGINEERING GRAPHICS****University of St. Thomas****School of Engineering****Fall 2009**

Students will learn to read blueprints and working drawings and become familiar with computer-aided-design (CAD) terminology and technology. Topics cover the elements of drafting including: the use of CAD modern software based on solid modeling; principles of projection; and introductory methods of representation and constructive geometry, working drawings, conventions and standards.

Schedule and Location:

- Section 1: MWF 8:15 am - 9:20 am (OSS LL010)
- Section 2: MWF 12:15 pm - 1:20 pm (OSS 428)
- Section 3: MWF 10:55 am- 12:00 pm (OSS 428)

Contact Information:

Note that you may go to any office hours, regardless of the section you are in.

- **Instructors:**

- **AnnMarie P. Thomas (sections 1 and 2)**

107A O'Shaughnessy Science Hall, St. Paul campus

Phone: (651) 962-5751

Email: apthomas@stthomas.edu

Office Hours: MWF: 9:30-10:30 am, Thursdays by appointment

- **Patrick Willoughby (section 3)**

Phone: (651) 582-5575

Email: patrickjw@stthomas.edu

Office hours: OSS 428 or OSS 105 after class

Peer Mentors:

Each section of ENGR171 will have a peer mentor assigned to it. These students will be available to help during the SolidWorks portion of this course. Additionally, each peer mentor will have weekly help sessions open to students from *any* of the ENGR 171 sections.

Section 1 (Thomas)

Sam Johnson

John7491@stthomas.edu

Kevin Barr

kmbarr@stthomas.edu

Section 2 (Thomas)

Katie Bensen

kbensen@stthomas.edu

Peter Douglass

prdouglass@stthomas.edu

Section 3 (Willoughby)

Tim Flesch

tjflesch@stthomas.edu

Matthew Nelson

nels2476@stthomas.edu

CONTENT SPECIFIC COURSE OBJECTIVES

Upon completion of this course, the student will be able to:

Define and apply a structured design process	Develop a working knowledge of manufacturing technology
Identify principles of projection	Consider alternate manufacturing processes
Demonstrate engineering drawing interpretation skills	Identify manufacturing components
Develop freehand sketching skills	Understand feature-based “parametric modeling”
Identify components of working drawings	Learn a typical CAD (computer aided design) package user interface
Demonstrate use of views	Understand “design intent”
Identify standard drawing conventions	Create 3 dimensional parts from 2 dimensional sketches (CAD)
Demonstrate dimensioning techniques	Apply basic features to creation of 3 dimensional parts (CAD)
Identify tolerancing methods	Use the configuration idea to easily create part and assembly families (CAD)
Identify machining methods	Construct an assembly of parts and subassemblies (CAD)
Prepare production drawings	Evaluate engineering drawings for completeness and accuracy, including making changes

LEARNING OUTCOMES

(ABET and St. Thomas School of Engineering self-study designation:

Homework assignments and exams demonstrate the student’s ability to apply knowledge of mathematics, science, and engineering to engineering drawings and design through exercises involving topics such as tolerancing, fits, gear ratios and dimensioning. CAD exercises in both homework assignments and exams involve the use of SolidWorks. (*Outcomes a, e, k*)

The **final project** requires students to work in teams to accurately model a multi-piece system using SolidWorks. Students are responsible for producing a packet of engineering drawings and a poster and giving an oral presentation. (*Outcomes d, g, k*)

Lectures will include examples of CAD being used in industry, and guest lectures from CAD experts. As CAD software is constantly evolving, methods for figuring out how to use new software and how to find help when needed are stressed. (*Outcomes i, j, k*)

Required Texts:

- *Print Reading for Engineering and Manufacturing Technology, 2nd Edition*, by David A. Madsen

Required Equipment

- a sketchbook with blank pages

ENGR 171 — Engineering Graphics

- ruler (metric/inch)
- a set of metric/inch calipers
- A \$15 materials fee will be charged to cover 3D printing and laser cutting costs for your projects in this course

Assessment Method:

Written Homework	15%	Exam 1	5%
SolidWorks Homework	10%	Exam 2	5%
Project #1	10%	Exam 3	5%
Project #2	5%	Exam 4	5%
Final Project	20%	Final Exam	20%

Grading Scale

A: 92-100	B: 82-87.99	C: 72-77.99	D: 65-67.99
A-: 90-91.99	B-: 80-81.99	C-: 70-71.99	D-: 61-64.99
B+: 88-89.99	C+: 78-79.99	D+: 68-69.99	F: Below 61

Academic Integrity Policy:

All students are expected to understand and follow the University of St. Thomas policies on Academic Integrity.

Students With Disabilities:

Qualified students with documented disabilities who may need classroom accommodations should make an appointment with the Enhancement Program – Disability Services office. Appointments can be made by calling 651-962-6315. You may also make an appointment in person in O'Shaughnessy Educational Center, room 119. For further information, you can locate the Enhancement Program on the web at <http://www.stthomas.edu/enhancementprog/>

Attendance Policy: Students are expected to attend all class sessions. Contact the instructor when a special situation arises. Students are responsible for getting notes and handouts for any days that they miss class.

Homework Policy: Homework is due at the beginning of the class session for which it is assigned. Late homework will not be accepted. In case of medical, or other, emergency, please contact your instructor.