

# **BE 1251**

## **Introduction to Engineering Methods**

Fall 2016

**Credit hours:** 2 (1 hour lecture, 3 hours of lab per week)

**Course Description:** Fundamentals of engineering design; presentation of an engineering design; graphical expression of engineering design using computer-aided drafting.

**Objectives:**

1. To learn and apply the engineering design process to a design problem.
2. To become proficient in the use of computer-aided drafting.
3. To make an engineering design report.
4. To gain competency in written and technical communication.
5. To effectively use spreadsheets to solve engineering problems.

**Instructor:**

Dr. Todd Monroe  
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Mr. Nicholas Totaro  
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**Office hours:** We are available for in-person questions or by appointment, and at any time via email. If you make an appointment and you cannot attend, please contact us to cancel as soon as you can.

**Supplemental Instruction Leader:**

Mitchell St. Pierre                      E-mail: mstpie3@lsu.edu  
SI Session Room: 106 AgMetals Bldg (PC Lab)  
SI Sessions: Wednesday's – 5:00 pm to 6:30 pm and Friday's – 3:00 pm to 4:30 pm  
Office Hours: Friday's - 12:30 pm to 2:30 pm  
Office Room: 102-A3 AgMetals Bldg

**Text:**

*Technical Drawing 101 with AutoCAD 2016: A Multidisciplinary Guide to Drafting Theory and Practice with Video Instruction* by Smith, Ramirez, and Schmidt, SDC Publications, 2015. ISBN: 978-1-58503-963-0

Recommended source: <http://knowledge.autodesk.com/support>

**Criteria for determining grade:**

Homework and Quizzes (15 - 16 assignments listed in schedule below)	36%	(180pts)
Design Project (group design report, presentation, animation, & drawings)	24%	(120pts)
Career Assignment (Part I, Part II, and Part III)	20%	(100pts)
Midterm Exam	16%	(80pts)
Participation (lab attendance & group participation including peer evaluation)	4%	(20pts)

Final course grade will be determined from the following scale:

A+ = 100 ≥ 96.0%, A = 95.9 ≥ 91%, A- = 90.9 ≥ 90%  
B+ = 90 ≥ 86.0%, B = 85.9 ≥ 81%, B- = 80.9 ≥ 80%  
C+ = 80 ≥ 76.0%, C = 75.9 ≥ 71%, C- = 70.9 ≥ 70%  
D+ = 70 ≥ 66.0%, D = 65.9 ≥ 61%, D- = 60.9 ≥ 60%  
F = less than 60%

### **Regulations and Procedures**

Class attendance and participation is required and will be recorded for all labs.

Homework assignments will be given daily. Assignments turned in after the due date will receive no credit unless permission is obtained from a physician or certified therapist or previously approved by the instructor. The exams will not be made up unless prior approval is obtained from the instructor in advance or in the case of extremely mitigating circumstances.

No electronic or other devices (laptops, cell phones, iPod, iPads, newspaper, etc.) are allowed to be used during class unless used for note taking. Cell phones should be turned off or set to silent and put away. If you are caught creating a distraction by using an electronic or other device you will lose 1% off of your final grade. If you are caught more than once, you will lose 3% off of your final grade for each infraction.

### **Expectations:**

LSU's general policy states that for each credit hour, you (the student) should plan to spend at least two hours working on course related activities outside of class. Since this course is for 2 credit hours, you should expect to spend a minimum of four hours outside of class each week working on assignments for this course. For more information see: <http://catalog.lsu.edu/content.php?catoid=12&navoid=822>.

### **C-I course:**

This is a certified Communication-Intensive (C-I) course which meets all of the requirements set forth by LSU's Communication across the Curriculum program, including

- instruction and assignments emphasizing informal and formal visual and technical;
- teaching of discipline-specific communication techniques;
- use of draft-feedback-revision process for learning;
- practice of ethical and professional work standards;
- 40% of the course grade rooted in communication-based work; and
- a student/faculty ratio no greater than 35:1

Students interested in pursuing the LSU Distinguished Communicators certification may use this C-I course for credit. For more information about this student recognition program, visit [www.cxc.lsu.edu](http://www.cxc.lsu.edu).

### **Academic Misconduct:**

Academic Misconduct, as defined in the Code of Student Conduct, will not be tolerated in this course. It is our responsibility as the instructors to report such incidents to the Department of Judicial Affairs. It is your responsibility to understand the Code of Student Conduct and make sure your actions and perceived actions are not considered as misconduct. Ignorance of these rules will not be an adequate defense in such cases. Go to <http://students.lsu.edu/saa/students/code> for a copy of the current Code of Student Conduct.

**Schedule of classes (subject to change)**

<u>Date</u>	<u>Topic</u>	<u>Assignment</u>
8/22 – Lecture	Introduction to course, CxC/BESO/SI speakers	1 Business letter
8/22-26 – Lab	Excel Spreadsheet, advanced functions	2 Excel Exercise
8/29 – Lecture	Engineering design method	
8/29–9/2 – Lab	Orthographic Projections and Drawings	3 Excel Quiz 5 Ortho Proj. Worksheet
9/12 – Lecture	Introduction to AutoCAD and Autodesk Inventor	
9/12-16 – Lab	AutoCAD and Autodesk Inventor Sketches and Part Modeling	4 Eng. Des. Mthd Quiz 6 Hand Grip Base Sketch 7 Cottage Floor Plan Geometry
9/19 – Lecture	Dimensioning Rules	
9/19-23 – Lab	AutoCAD Layers, Layouts and Autodesk Inventor Part Modeling	8 Hand Grip Base Part 9 Hand Gripper Cam Part
9/26 – Lecture	AutoCAD Review and Inventor Drawing File Type	
9/26-30 – Lab	Scaling / raster & Excel with AutoCAD and Finish Part Modeling and Drawing Files	10 Hand Gripper Part Drawings 11 LSU lake / Excel
10/3 – Lecture	Engineering Method, Service Learning Speaker	
10/3-7 – Lab	FALL BREAK	
10/10- Lecture	Midterm Review	12 Hand Gripper Assembly
10/10-14 – Lab	Assembly / Animation	13 Hand Gripper Assembly Animation 14 Hand Gripper Assembly drawings
10/17-Lecture	<u>Cancelled</u>	
10/17-21- Lab	MIDTERM	Exam Part A: Inventor Exam Part B: AutoCAD Exam Part C: Written

10/24-Lecture	Career Assignment, Sweep and Spline, Scheduling Career Assignment Part I – <b>Library Speaker</b>	
10/24-28 – Lab	Exploded Assembly Drawings, Sweep and Spline - Slide	15 Hand Gripper Exploded View Drawing 16 Sweep and Spline – Slide Drawing
10/31- Lecture 10/31-11/4Lab	Stereolithography, 3-D printing, Career Assignment Part II Project Intro, CxC Engineering Studio, Groups for Note Card Build Career Assignment - Contact Alumni	Team exercise
11/7 – Lecture 11/7 – 10- Lab	Group Projects – Inventor Studio Career Assignment Part III Group Projects	Project design Career Assignment Part I Project design
11/14 –Lecture	Group Projects – Inventor Studio	Project design Career Assignment Part II Career Assignment Part III
11/14-17 Lab	Group Projects	Project design
11/21-Lecture 11/21-25- Lab	<b>Industry Speaker</b> THANKSGIVING - no class	
11/28- Lecture 11/28-12/2Lab	Group Projects <b>Test of Design Day</b>	Rough Draft Project Report and Drawings <u>Competition!</u>
<b>12/9 Final</b>	<b>Final Project Report, Animation, and Drawings Due by 9:30 am</b>	

**NOTE: The final project report, animation and drawings serve as the final exam, since they best display the student’s knowledge of the course material over a more traditional paper / computer exam. The students are asked to apply the course material to effectively communicate their design process and results.**