



THE ILLINOIS FOUNDRY FOR INNOVATION
IN ENGINEERING EDUCATION

SYLLABUS

ENG 198

**INTRODUCTION TO THE MISSING BASICS OF ENGINEERING:
PREPARING FOR A WORLD OF WORK & SERVICE IN A
CREATIVE ERA.**

FALL 2009, MONDAYS & WEDNESDAYS

12:00-12:50 SIEBEL 1302

3:00-3:50 GREGORY 317

4:00-4:50 TALBOT 104

INSTRUCTOR CONTACT INFORMATION

Prof. Pete Dragic

Plus additional guest instructors throughout the semester.

Office: 201 Engineering Hall

Office phone: 244-3821

e-mail: ifoundry@illinois.edu

Office hours: Most anytime, by appointment (email your ELA to schedule an appointment)

Course Website: www.compass.illinois.edu

COURSE DESCRIPTION

Introduction to the Missing Basics of Engineering (ENG 198) provides iFoundry students with a broad interdisciplinary view of the field of engineering. The "basics" in engineering are usually assumed to be math, science, and engineering science, but young engineers on their first assignments sometimes struggle with the combination of critical and creative thinking, communications, and people skills that are essential to being an engineer in a century characterized by rapid technological innovation and global connectedness. This course investigates the missing basics through classroom study, reading, hands-on exercises, and design projects to prepare students for an exciting environment in which engineers make important contributions to the world.

COURSE MATERIALS

- 1) Goldberg, D. E. (2006). *The entrepreneurial engineer*. Hoboken, NJ: Wiley-Interscience.
- 2) Roam, D. (2008). *The back of the napkin*. New York: Penguin Books.
- 3) Critical Thinking mini guide
- 4) The Human Mind mini guide
- 5) Online accounts with blogger.com and YouTube.com.
- 6) Laptop and YouTube-ready digital camera.
- 7) Additional readings and handouts as assigned.

OBJECTIVES

After taking this course, you should:

- Be able to enthusiastically describe what it means to be an engineer in the 21st century.
- Be able to explain how you apply engineering thinking across multiple disciplines in organizations and society.
- Be familiar with the variety of engineering majors.
- Appreciate the complex social and technical interactions in engineering.
- Develop skills for lifelong learning and engagement in professional and social communities.

COURSE ASSIGNMENTS

Lab Projects: 50% of final grade

The laboratory projects component of this course is an important and sizeable one. Your grade will depend on various performance criteria, including team participation, documentation of your work, plans and proposals, status and final reports, and project demonstrations. For a detailed description please refer to the projects grading policy posted on the course website.

Communication: 25% of final grade.

An important resource for this community is the ongoing exchange of ideas anytime-anywhere. It is critical to record and communicate your ideas, thoughts, and questions about this experience. Each student will open a blog on blogger.com for the purpose of communicating: (a) key points from the coursework and iFoundry experiences, (b) questions that you have about the work, as well as (c) your reflections about the work. We expect students to post at least seven entries (text or text and photos) plus one video in their blogs over the course of the semester. The quality of content will be assessed for the depth of thought and analysis. The primary method of communication is through blogger.com (for text, photos, and video links); and YouTube for hosting video.

Quizzes: 15% of final grade.

We use quizzes to check your understanding of the reading and class material. These quizzes will occur periodically throughout the semester.

Community Participation: 10% of final grade.

Expectations for class participation go beyond attendance. You are expected to engage in the various communities made up of iFoundry students, faculty, corporate partners, the university, and the community at large. Active involvement in group activities and teamwork is vital to this course.

EVALUATION OF ASSIGNMENTS

Your assignments will be evaluated based upon the following criteria. Simply **knowing** something is the lowest level of learning, **understanding** is the next highest level, and **applying** your learning is the highest level.

1. **Knowing:** You can simply recognize information and ideas you have learned. (Examples: You can write, list, label, name, state, and define information and ideas.)
2. **Understanding:** You can translate and interpret information and ideas into new situations. (Examples: You can explain, summarize, paraphrase, describe and illustrate information.)
3. **Application:** You can use data and ideas to solve problems or complete tasks with minimal direction. (Examples: You can use, compute, solve, demonstrate, apply, and construct solutions to problems and tasks.)

GRADING

Grading of your performance and work is based on the percentage of total points you earned:

A	90-100%
B	80-90%
C	70-80%
D	60-70%
F	< 60%

NOTE: If you would be so unfortunate as to receive a Failing grade (F), you will not receive credit for this course toward your degree.

DISABILITY ACCOMMODATIONS

Learners with disabilities are encouraged to contact UIUC Disability Services [(217)-333-4603] and to discuss any accommodations and other special needs with course facilitator.

ACADEMIC INTEGRITY

All learners in attendance at the University of Illinois at Urbana-Champaign have the obligation to maintain high personal standards of academic integrity. Learners unfamiliar with the University of Illinois policy regarding academic dishonesty should refer to the "Handbook for Graduate Students and Advisers" or should seek advice from the course facilitator. The facilitator will not tolerate any violations of academic integrity.

TENTATIVE COURSE SCHEDULE AND ASSIGNMENTS

Please refer to following "Tentative Course Schedule." Expect us to make changes to the syllabus, course schedule and assignments as necessary. Changes will be announced in advance.

Week	Topics	Assignments due
Week 1	8/24 Monday Goldberg Introductions to course	none
	8/26 Wednesday Dragic Intro to Projects and Project #1	Handout in class Entrepreneurial Engineer: Chap. 1 Back of the Napkin: Chap. 1
Week 2	8/31 Monday Dragic Plan Review; work on projects	Entrepreneurial Engineer: Chap. 9
	9/2 Wednesday Korte Inquiry: Asking Questions	Entrepreneurial Engineer: Chap. 7 Back of the Napkin: Chap. 2, 3 Critical Thinking Handbook (read entire book)
Week 3	9/7 Monday No class Labor Day	
	9/9 Wednesday Korte Networking	Handout in class
Week 4	9/14 Monday Dragic Work on projects	Handout in class
	9/16 Wednesday Price Taking initiative	Handout in class Entrepreneurial Engineer: Chap. 4

Week 5	9/21 Monday Dragic Discussion on reporting; work on projects	Handout in class Entrepreneurial Engineer: Chap. 5
	9/23 Wednesday Goldberg Communicating	Entrepreneurial Engineer: Chap. 6
Week 6	9/28 Monday Dragic Demo Day; final project reports	
	9/30 Wednesday Goldberg Labeling, categorizing	Online video lecture 1: GE 498 TV: #6- 2 <i>Techniques from Athens</i> Back of the Napkin: Chap. 4, 5, 6, 7
Week 7	10/5 Monday Dragic Intro to project 2	
	10/7 Wednesday Goldberg Modeling	Online video lecture 2: GE 498 TV: #4- <i>What is a model? Modeling for TVs</i> Back of Napkin: Chap. 8, 9, 10, 11
Week 8	10/12 Monday Dragic Plan review; design session	
	10/14 Wednesday Weightman Visualizing	Back of the Napkin: Chap. 12, 13, 14

Week 9	10/19 Monday Dragic Design and build session	
	10/21 Wednesday Dragic, Korte Systems thinking	In class handout
Week 10	10/26 Monday Dragic Design presentations	
	10/28 Wednesday Goldberg Joy of engineering, learning, community	Online video lecture 3: GE 498 TEE: #2- <i>The joy of engineering</i> Entrepreneurial Engineer: Chap.2, 3
Week 11	11/2 Monday Dragic Progress reports; work on projects	
	11/4 Wednesday Price Emotional Intelligence 1	In class handout
Week 12	11/9 Monday Dragic Project day	
	11/11 Wednesday Price Emotional Intelligence 2	In class handout Entrepreneurial Engineer: Chap. 10
Week 13	11/16 Monday Dragic Project day	
	11/18 Wednesday Loui Ethics	In class handout Entrepreneurial Engineer: Chap. 8

