ME 370: The Mechanical Engineering Profession

Lecture 01: Introduction

Purpose

Prepare you for the non-technical aspects of you career

Course Learning Objectives

Upon complete of this class you should be able to

1. Develop a five-year career plan
2. Demonstrate professional standards of written communication, including email
3. Describe the cost of hiring an engineer and other operating costs associated with engineering
4. Describe the role of patents and intellectual property rights.
5. Perform a preliminary patent search at uspto.gov

Course Learning Objectives

(continued)

6. Distinguish between sustaining and disruptive innovation; distinguish between incremental and radical innovation
7. Identify the basic tenets of the ASME code of ethics
8. Demonstrate basic knowledge of ethical reasoning through the discussion of case studies.
9. Discuss the role of ethics in design decisions.

Course Learning Objectives

(continued)

10. Describe social, environmental, political and economic factors influencing development and use of technology

11. Describe how considerations of sustainability affect engineering decisions

Instructor

Gerry Recktenwald

gerry@pdx.edu

Associate Professor & Department Chair

Engineering Building, Suite 400

503-725-4290

Relationship of ME 370 to the BSME Curriculum

Department of Mechanical and Materials Engineering

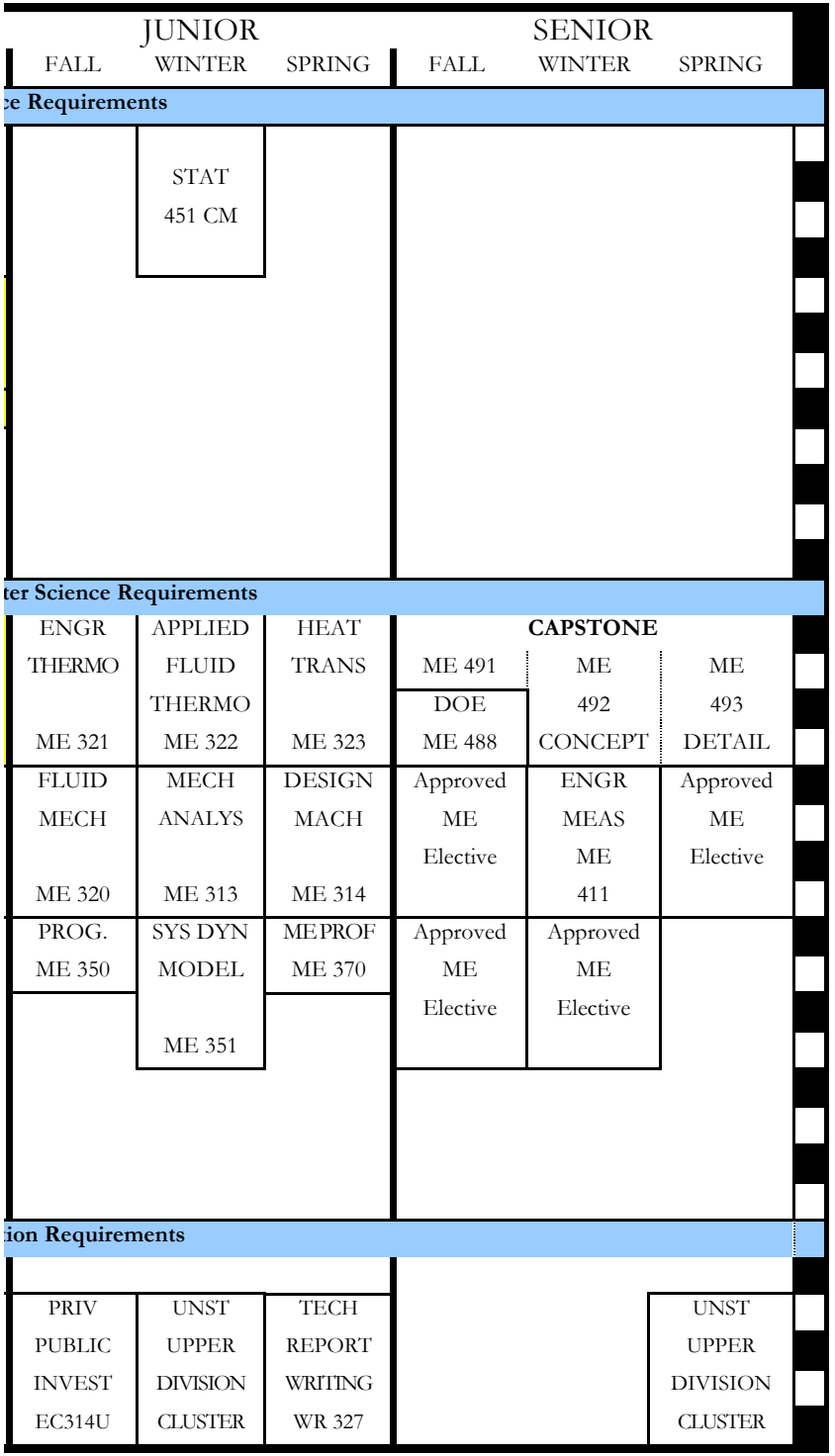
Mechanical Engineering Program

pdx.edu/mme/undergraduate-mme

Possible 4 Year Course Plan

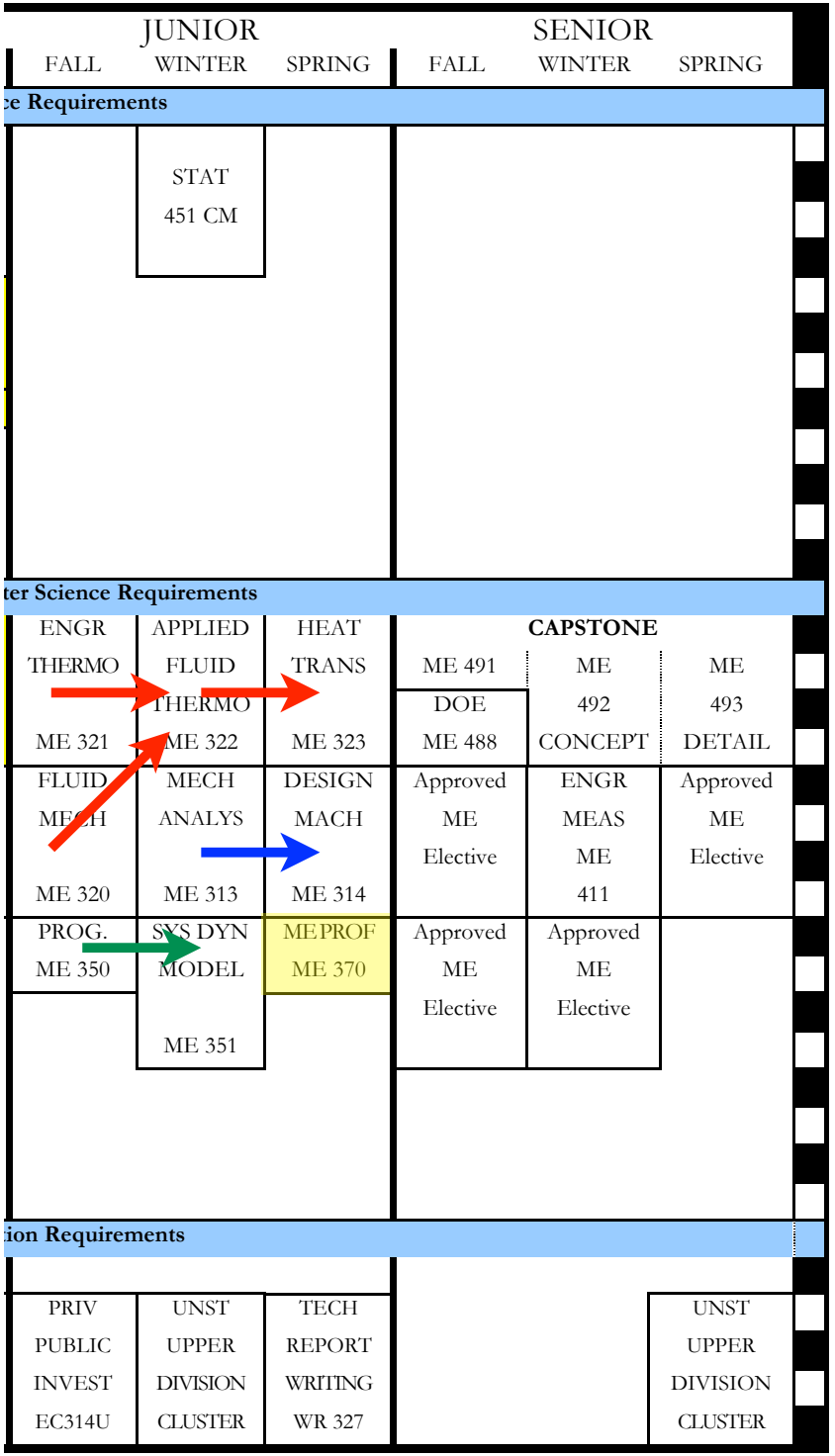
FRESHMAN			SOPHOMORE			JUNIOR			SENIOR		
FALL	WINTER	SPRING	FALL	WINTER	SPRING	FALL	WINTER	SPRING	FALL	WINTER	SPRING
Math / Science Requirements											
CALCULUS		**LINEAR ALG**	**CALC IV**	**DIF EQ I**							
MTH 251	**MTH 252**	**MTH 261**	**MTH 254**	**MTH 256**			STAT 451 CM				
CHEM	CHEM		**PHYSICS**								
CH 221	CH 222		**PH 221**	**PH 222**	**PH 223**						
CH 227	CH 228		**PH 214**	**PH 215**	**PH216**						
Engineering / Computer Science Requirements											
Freshmen Engineering			**STATICS**	STREN OF MAT	**DYNAM -ICS**	ENGR THERMO	APPLIED FLUID THERMO	HEAT TRANS	**CAPSTONE**		
ME 120	**ME 121**	**ME 122**	**EAS 211**	EAS 212	**EAS 215**	ME 321	ME 322	ME 323	ME 491 DOE ME 488	ME 492 CONCEPT	ME 493 DETAIL
			PROP OF MAT ME 213	**ELECT CIRC ECE 241 &**	MFG PROC ME 241	FLUID MECH ME 320	MECH ANALYS ME 313	DESIGN MACH ME 314	Approved ME Elective	ENGR MEAS ME 411	Approved ME Elective
				241L		PROG. ME 350	SYS DYN MODEL ME 351	MEPROF ME 370	Approved ME Elective	Approved ME Elective	
General Education Requirements											
FRESHMAN INQUIRY			SOPHOMORE INQUIRY			PRIV PUBLIC INVEST EC314U	UNST UPPER DIVISION CLUSTER	TECH REPORT WRITING WR 327			UNST UPPER DIVISION CLUSTER
UNST 1X1	**UNST 1X2**	**UNST 1X3**	UNST 2XX	UNST 2XX	UNST 2XX						

Upper Division BSME Curriculum



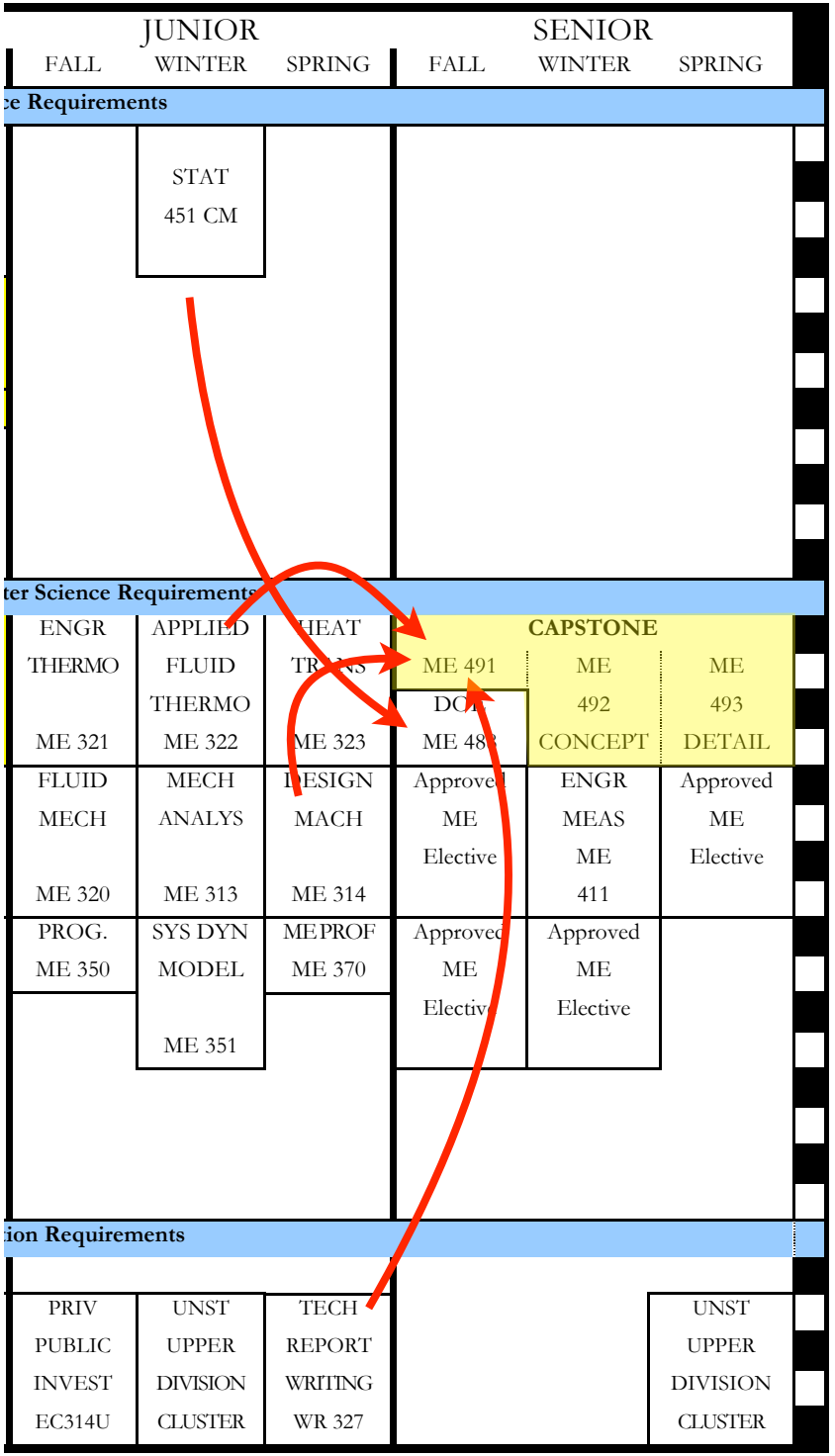
Upper Division BSME Curriculum

Junior year prerequisites



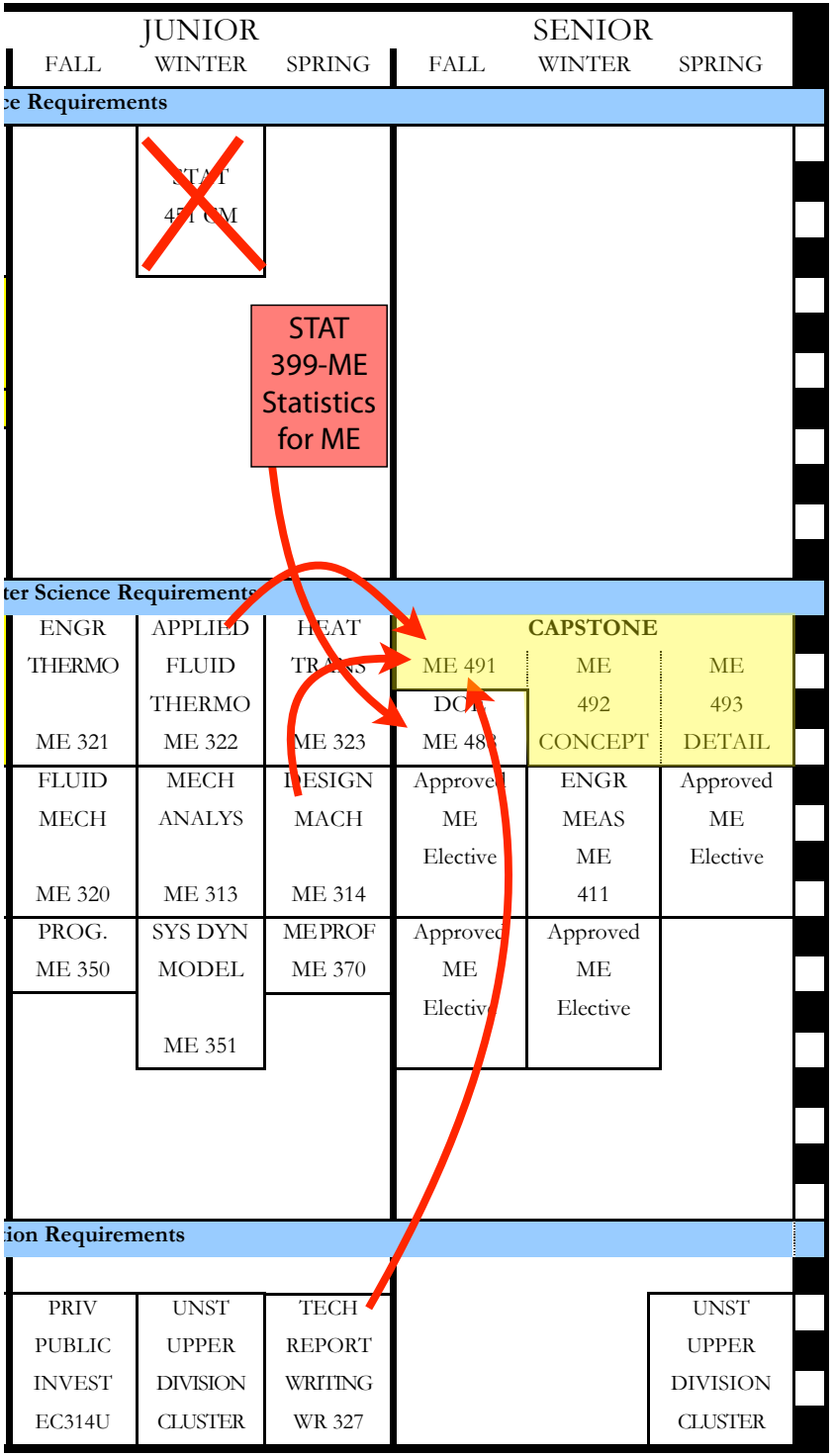
Upper Division BSME Curriculum

Key senior year prerequisites

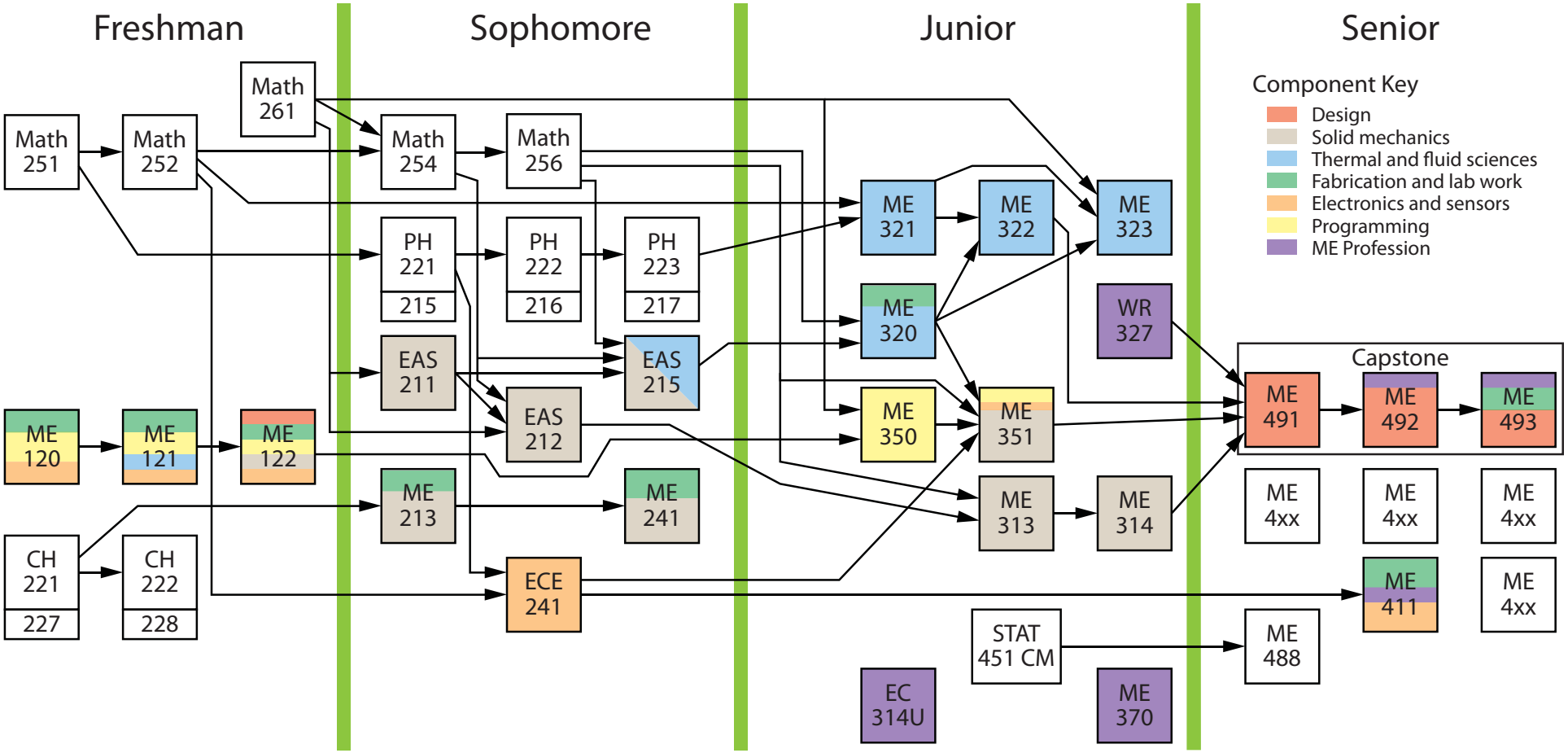


Upper Division BSME Curriculum

Key senior year prerequisites



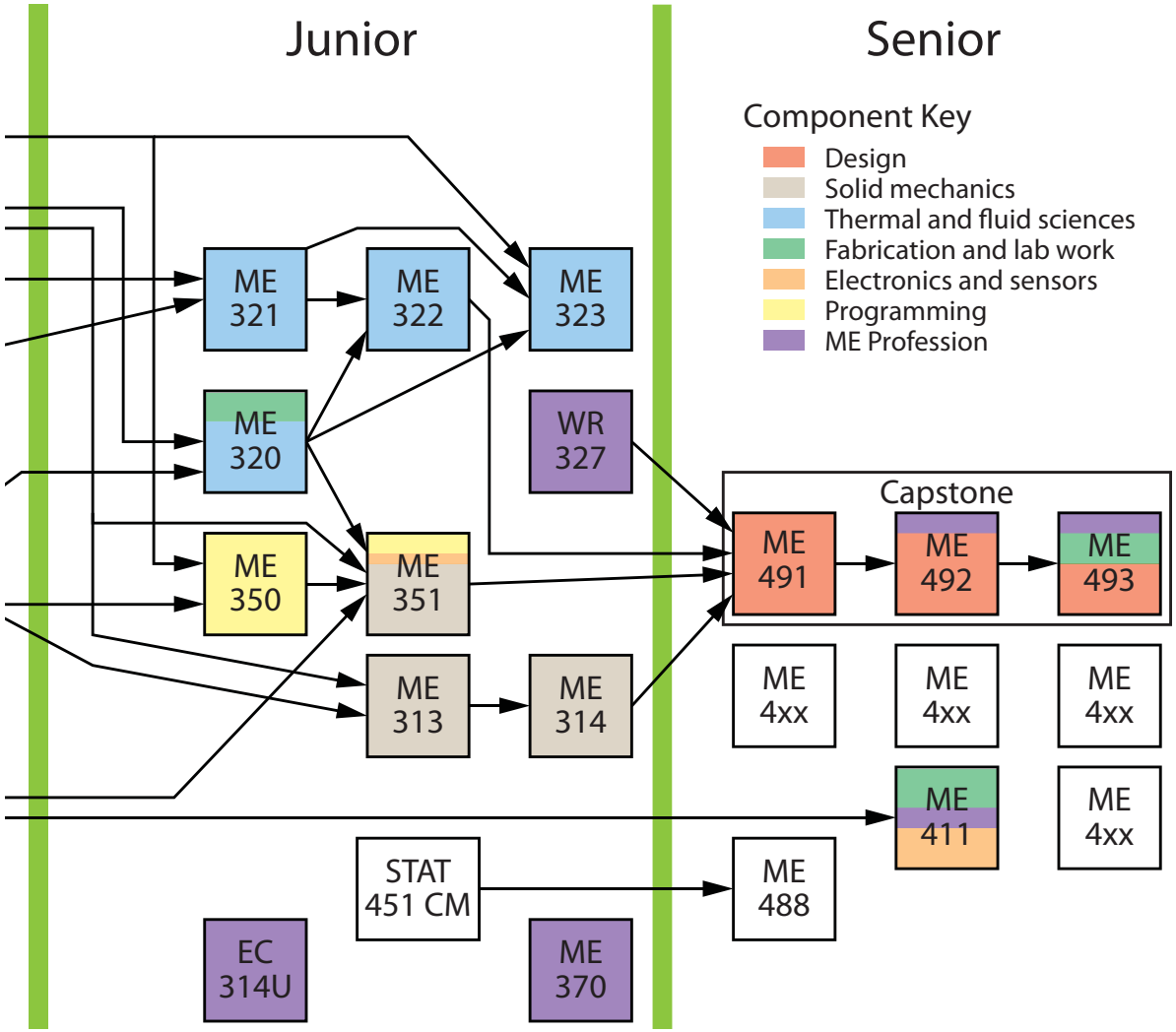
BSME Prerequisite Map



http://www.pdx.edu/mme/sites/www.pdx.edu.mme/files/BSME_All_Prerequisite_Map_2011.pdf

Link at http://pdx.edu/mme/undergraduate-mme

BSME Prerequisite Map



D2L Logistics

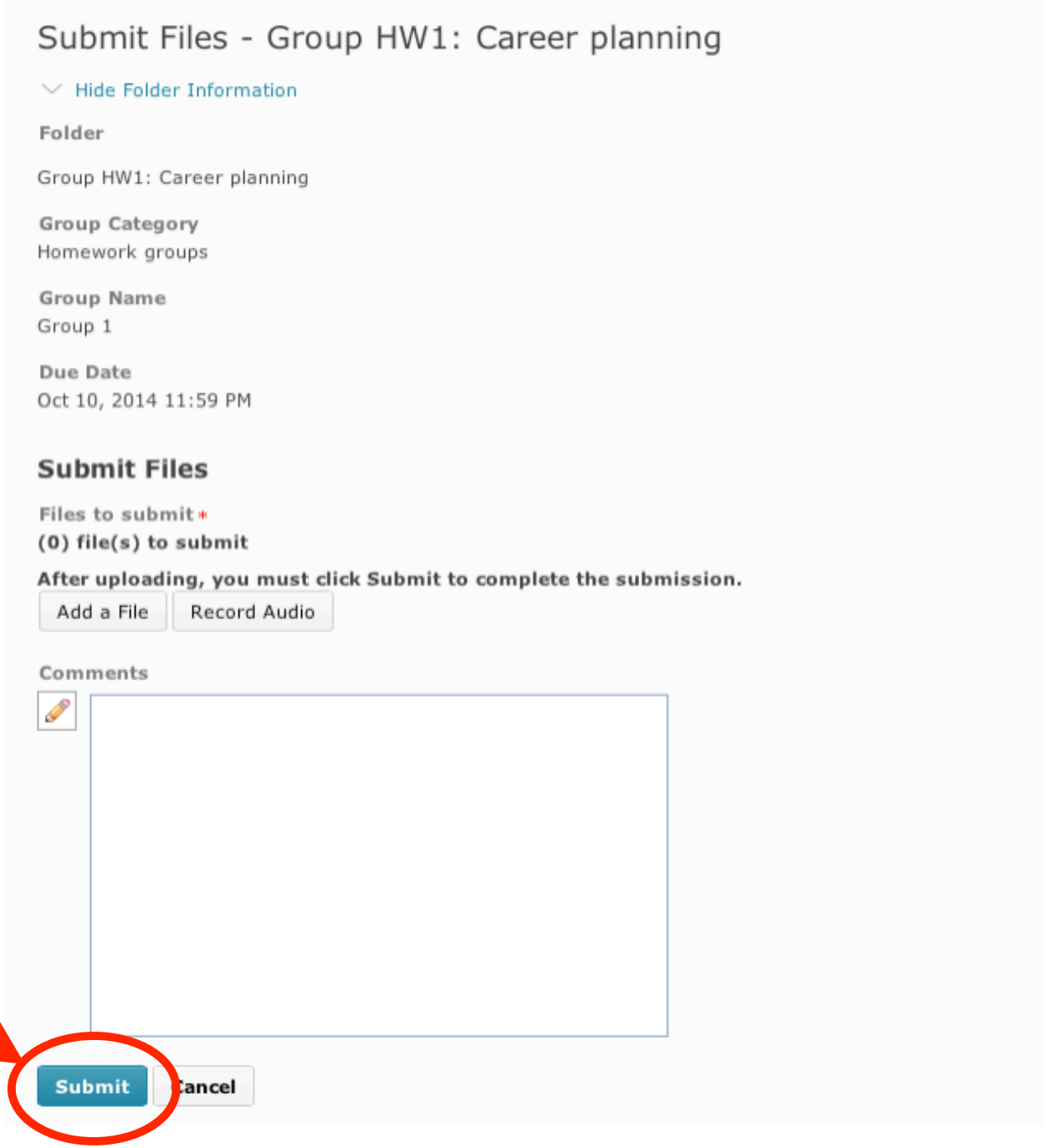
- Log on via http://d2l.pdx.edu
- Enter your “odin” credentials
- Select ME 370

Drop box assignments

Include this information

- Your name
- The date
- Department and course number, i.e. “ME 370”
- Short title or tag for the assignment, e.g. “HW 3: Individual Project Proposal”

Drop box Submissions



Don't forget to click "Submit"

ME 370 Topics

Career planning

Business practices

Engineering ethics

Intellectual property

Current issues in technology and society

Sustainability

Career Planning

Upon completing this course you will be able to

- Define "professional" in the context of an engineering career
- List career paths for individuals with a BSME
- Describe your professional strengths and weaknesses
- Describe your professional interests
- Write a 5 year career plan

Values and Expectations

You are all free to chose how to act

1. We all have personal values
2. We (PSU, MME Faculty, society) cannot control what you think or choose to do
    a. We can inform you of standards
    b. We can expect to to conform to those standards as a condition of being a student
    c. We cannot force you to have certain values

Values and Expectations

In this class I expect you to demonstrate knowledge of common standards of behavior

1. What are those standards? e.g. ASME Code
2. What standards are expected of PSU students?
3. What behaviors are consistent with those standards?
4. What behaviors are personal decisions outside of those standards

Why choose engineering?

What are the necessary attributes of a good job?

What are the desirable, but not necessary aspects of a good job?

Why would you make a distinction between necessary and desirable?

What are your personal strengths?

How does engineering match your strengths?

Why worry about non-technical stuff?

The Engineer of 2020, p. 27

... Both on a macro scale, where the world's natural resources will be stressed by population increases, to the micro scale, where engineers need to work in teams to be effective, consideration of social issues is central to engineering. Political and economic relations between nations and their peoples will impact engineering practice in the future, probably to a greater extent than now. Attention to intellectual property, project management, multilingual influences and cultural diversity, moral/ religious repercussions, global/international impacts, national security, and cost-benefit constraints will continue to drive engineering practice.

The Engineer of 2020: Visions of Engineering in the New Century, 2004, National Academy of Sciences, Washington, DC

Why worry about non-technical stuff?

The Engineer of 2020, p. 27

... Both on a macro scale, where the world's natural resources will be stressed by population increases, to the micro scale, where engineers need to work in teams to be effective, consideration of social issues is central to engineering. Political and economic relations between nations and their peoples will impact engineering practice in the future, probably to a greater extent than now. Attention to intellectual property, project management, multilingual influences and cultural diversity, moral/ religious repercussions, global/international impacts, national security, and cost-benefit constraints will continue to drive engineering practice.

The Engineer of 2020: Visions of Engineering in the New Century, 2004, National Academy of Sciences, Washington, DC

ME 370 Progression of Ideas

Self:

career awareness & planning

Job:

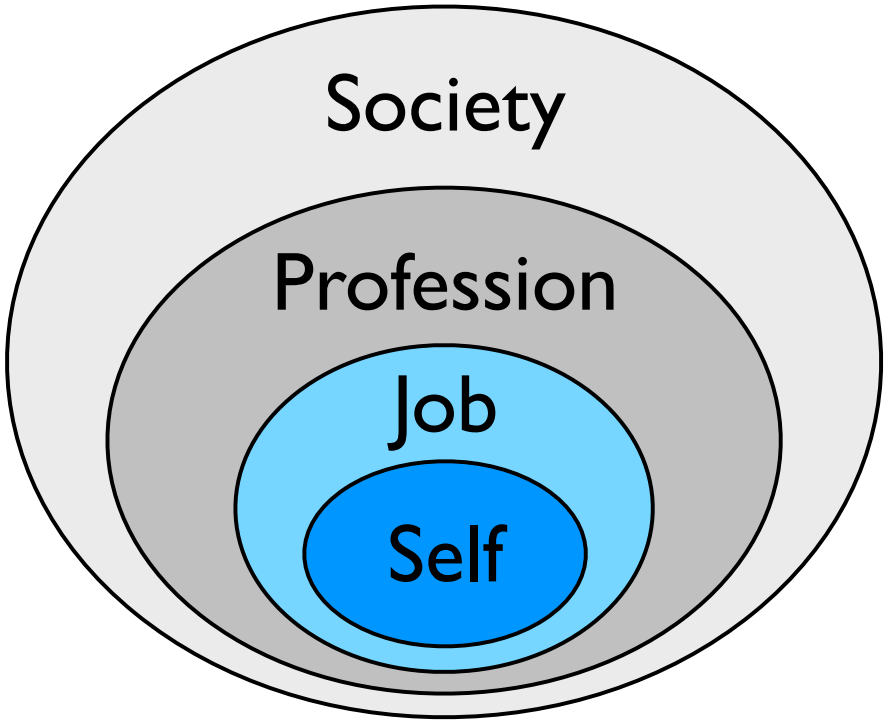
- Business practices, email
- Intellectual property

Profession:

- What is a professional?
- Ethics

Society:

- Economics
- Law
- Politics
- Environment
- Sustainability



What is a professional?