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

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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

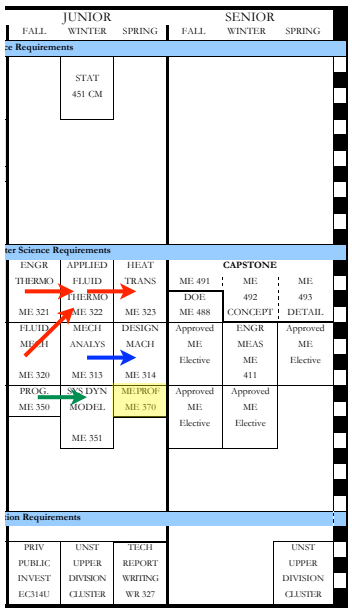
FRESHMAN			SOPHOMORE			JUNIOR			SENIOR		
FALL	WINTER	SPRING	FALL	WINTER	SPRING	FALL	WINTER	SPRING	FALL	WINTER	SPRING
Math / Science Requirements											
CALCULUS		**LINEAR**	**CALC**	**DIF**							
MTH	**MTH**	**ALG**	**IV**	**EQ I**			STAT				
251	**252**	**MTH**	**MTH**	**MTH**			451 CM				
		261	**254**	**256**							
CHEM	CHEM		**PHYSICS**								
CH	CH		**PH**	**PH**	**PH**						
221	222		**221**	**222**	**223**						
CH 227	CH 228		**PH 214**	**PH 215**	**PH216**						
Engineering / Computer Science Requirements											
Freshmen Engineering			**STATICS**	STREN	**DYNAM**	ENGR	APPLIED	HEAT	**CAPSTONE**		
				OF MAT	**-ICS**	THERMO	FLUID	TRANS			
ME 120	**ME 121**	**ME 122**	**EAS**	EAS	**EAS**		THERMO		ME 491	ME	ME
			211	212	**215**	ME 321	ME 322	ME 323	DOE	492	493
			PROP	**ELECT**	MFG	FLUID	MECH	DESIGN	ME 488	CONCEPT	DETAIL
			OF MAT	**CIRC**	PROC	MECH	ANALYS	MACH	Approved	ENGR	Approved
			ME	**ECE**	ME				ME	MEAS	ME
			213	**241 &**	241	ME 320	ME 313	ME 314	Elective	ME	Elective
				24IL		PROG.	SYS DYN	ME/PROF		411	
						ME 350	MODEL	ME 370	Approved	Approved	
									ME	ME	
							ME 351		Elective	Elective	
General Education Requirements											
FRESHMAN INQUIRY			SOPHOMORE INQUIRY			PRIV	UNST	TECH			
						PUBLIC	UPPER	REPORT			UNST
UNST	**UNST**	**UNST**	UNST	UNST	UNST	INVEST	DIVISION	WRITING			UPPER
1X1	**1X2**	**1X3**	2XX	2XX	2XX	EC314U	CLUSTER	WR 327			DIVISION
											CLUSTER

Upper Division BSME Curriculum

JUNIOR			SENIOR		
FALL	WINTER	SPRING	FALL	WINTER	SPRING
e Requirements					
	STAT				
	451 CM				
ter Science Requirements					
ENGR	APPLIED	HEAT	**CAPSTONE**		
THERMO	FLUID	TRANS	ME 491	ME	ME
	THERMO		DOE	492	493
ME 321	ME 322	ME 323	ME 488	CONCEPT	DETAIL
FLUID	MECH	DESIGN	Approved	ENGR	Approved
MECH	ANALYS	MACH	ME	MEAS	ME
			Elective	ME	Elective
ME 320	ME 313	ME 314		411	
PROG.	SYS DYN	ME/PROF	Approved	Approved	
ME 350	MODEL	ME 370	ME	ME	
			Elective	Elective	
	ME 351				
ion Requirements					
PRIV	UNST	TECH			
PUBLIC	UPPER	REPORT			UNST
INVEST	DIVISION	WRITING			UPPER
EC314U	CLUSTER	WR 327			DIVISION
					CLUSTER

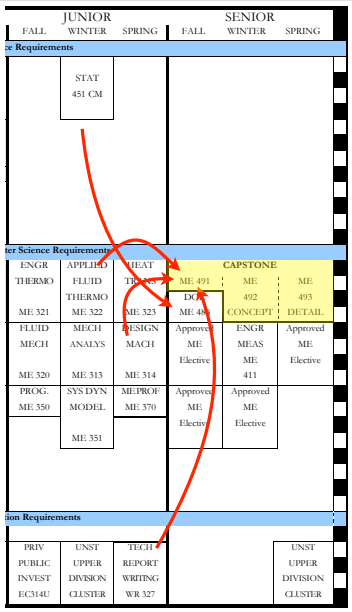
Upper Division BSME Curriculum

Junior year prerequisites



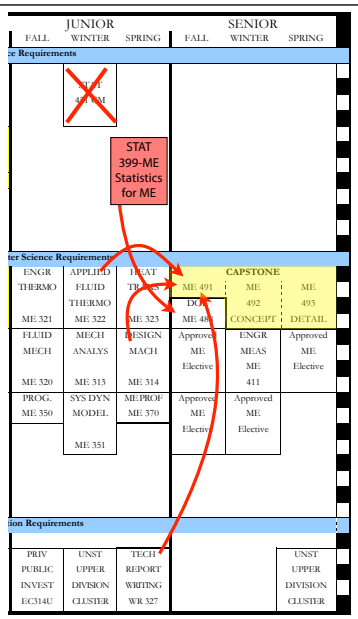
Upper Division BSME Curriculum

Key senior year prerequisites

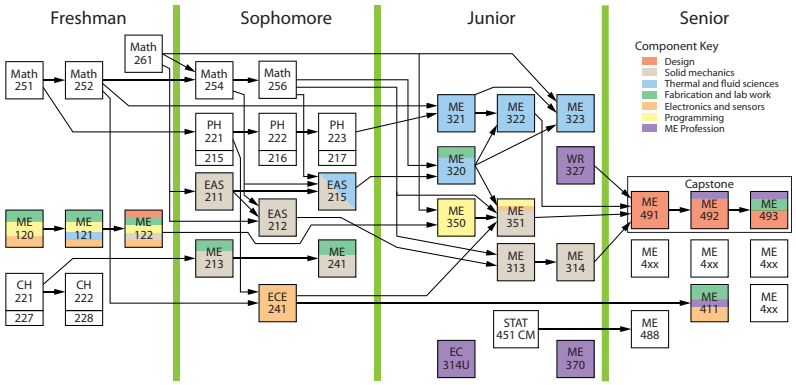


Upper Division BSME Curriculum

Key senior year prerequisites

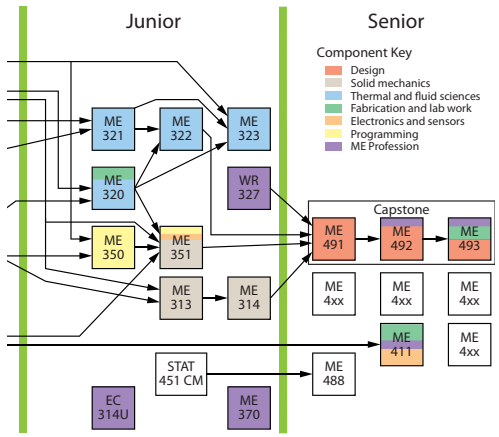


BSME Prerequisite Map



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

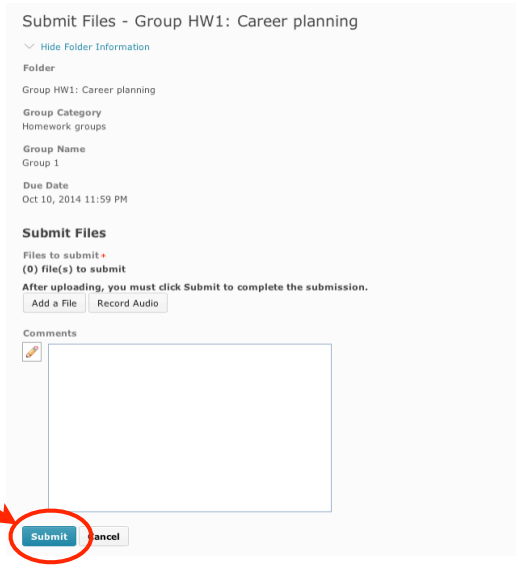
- Log on via http://d2l.pdx.edu
- Enter your "odin" credentials
- Select ME 370

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

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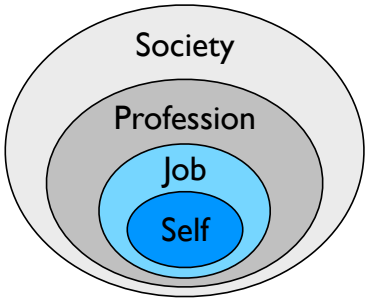
ME 370 Progression of Ideas

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?

Meet with your assigned group to discuss your answer. A whole-class discussion will follow