

ME 370: The Mechanical Engineering Profession

Lecture 09: What's Next?

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Purpose

Link ME 370 to the next classes
in the BSME Curriculum and to
continued professional growth

Blue Sheet Curriculum Guide

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 MTH 281	LINEAR ALG MTH 282	CALC IV MTH 284	DIF EQ 1 MTH 286			STAT 451 CM					
CH 221	CH 222	PHYSICS PH 214 PH 215 PH 216									
Engineering / Computer Science Requirements											
Freshman Engineering ME 120 ME 121 ME 122	STATICS EAS 281	STRUC OF MAT EAS 282	DYNAM- ICS EAS 285	ENGR THERMO ME 321	APPLIED FLUID THERMO ME 322	HEAT TRANS ME 323	CAPSTONE ME 491 ME 492 ME 493 CONCEPT DETAIL				
	ELECT OF MAT ME 213	MFG PROC ME 241	FLUID MECH ME 330	MECH ANALYS ME 313	DESIGN MAGI ME 314	Approved ME 411	ENGR MEAS ME 411	Approved ME 411	Approved ME 411		
			PROG- ME 310	SYSDYN MODEL ME 315	ME 370	Approved ME 411	Approved ME 411				
General Education Requirements											
FRESHMAN INQUIRY UNST 1X1 UNST 1X2 UNST 1X3	SOPHOMORE INQUIRY UNST 2XX UNST 2XX		JUNIOR PUBLIC INVEST UNST 3XX		SENIOR UPPER DIVISION UNST 4XX		TECH REPORT WRITING WR 327		UNST UPPER DIVISION UNST 4XX		
EXPLANATION											
1	ME 491 & 492 FULL UNST CAPSTONE					STUDENTS MAY SUBSTITUTE PHYSICS 211-213					2013-2014
2	SHADED AREA = CORE ADMISSION REQUIREMENTS					FOR PHYSICS 221-225					
3	Refer to the PSU Bulletin for General Education Requirements										
4											

Upper Division Curriculum

Take Stat 399-M01 instead of Stat 451

- Designed for BSME
- Taught by Eisenhauer
- Learn R
- Will satisfy Stat 451 CM requirement

JUNIOR			SENIOR		
FALL	WINTER	SPRING	FALL	WINTER	SPRING
Math Requirements					
	Stat 451				
	Stat 399-M01	Stat 399-M01			
Engineering Science Requirements					
ENGR THERMO ME 321	APPLIED FLUID THERMO ME 322	STAT TRANS ME 323	ME 491	ME 492	ME 493
			DOE	CONCEPT	DETAIL
FLUID MECH ME 320	MECH ANALYS ME 313	DESIGN MACH ME 314	Approved ME Elective	ENGR MEAS ME 411	Approved ME Elective
PROG. ME 350	SYS DYN MODEL ME 351	ME PROF ME 370	Approved ME Elective	Approved ME Elective	
Other Requirements					
PRIV INVEST EC314C	UNST UPPER DIVISION CLUSTER	TECH REPORT WRITING WR 327		UNST UPPER DIVISION CLUSTER	

Listing in class schedule for Stat 399 - M01

SPST: PROB & STAT FOR MME - 45121 - STAT 399 - M01

This is a course in applied statistics with an emphasis is on interpreting and using data from mechanical engineering. The elements of probability are also presented as necessary for applications. Statistical tools including graphical methods, regression, and experimental design will be treated in connection with data and applications.

Associated Term: Winter 2015 Quarter
Levels: Undergraduate
Attributes: Permit reg - multiple sections

Institutional (PSU) Campus
4.000 Credits
[View Course Description](#)

- Course is grade differentiated (A-F) only
- Course has additional fee(s) above standard tuition

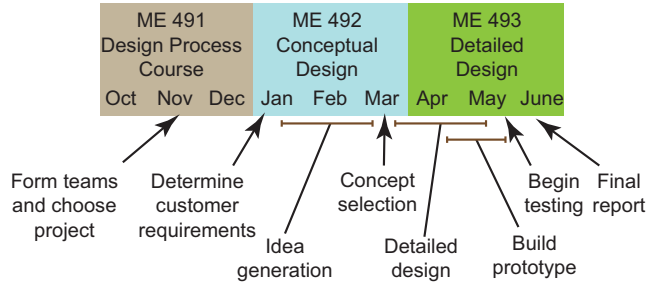
Scheduled Meeting Times

Type	Time	Days	Where	Date Range	Schedule Type	Instructors
Class	14:00 - 15:50	TR	Neuberger Hall 96	05-JAN-2015 - 21-MAR-2015	Lecture	William D Eisenhauer (P) @

Senior Year Curriculum: Capstone

CAPSTONE		
ME 491	ME 492	ME 493
DOE	CONCEPT	DETAIL
ME 488		
Approved ME Elective	ENGR MEAS ME 411	Approved ME Elective
Approved ME Elective	Approved ME Elective	
UNST UPPER DIVISION CLUSTER		

Senior Year Curriculum: Capstone



Beyond the BSME

Current and future technological challenges

- Global competition
- Environmental limits
- Energy
- Automation and loss of work
- Loss of privacy
- Health/medical technology
- Water

Engineering Grand Challenges

National Academy of Engineering

<http://www.engineeringchallenges.org/>

14 areas awaiting engineering solutions

Engineering Grand Challenges

Make solar energy economical
Provide energy from fusion
Develop carbon sequestration methods
Manage the nitrogen cycle
Provide access to clean water
Restore and improve urban infrastructure
Advance health informatics
Engineer better medicines
Reverse-engineer the brain
Prevent nuclear terror
Secure cyberspace
Enhance virtual reality
Advance personalized learning
Engineer the tools of scientific discovery

<http://www.engineeringchallenges.org/>

Engineering Grand Challenges

Can we do it?

<http://www.engineeringchallenges.org/>

Greatest Engineering Achievements of the 20th Century

Electrification	Highways
Automobile	Spacecraft
Airplane	Internet
Water Supply and Distribution	Imaging
Electronics	Household Appliances
Radio and Television	Health Technologies
Agricultural Mechanization	Petroleum and Petrochemicals
Computers	Laser and Fiber Optics
Telephone	Nuclear Technologies
Air Conditioning and Refrigeration	High-performance Materials

<http://www.greatachievements.org/>

What's possible when we mobilize

Franklin Roosevelt set bold goals for the military production after the bombing of Pearl Harbor in 1942

- Ban on the production and sale of cars for private use
- Halt construction of residential and highway construction
- Ban driving for pleasure

Goal: Production of 60,000 planes

Achieved 229,600 planes by 1944

Ships: 5000 added to 1000 in US Merchant fleet

Lester Brown, Plan B 4.0, 2009, Norton
<http://www.earth-policy.org/books/pb4>

What's possible when we mobilize

Brown:

"This mobilization of resources within a matter of months demonstrates that a country and, indeed, the world can restructure the economy quickly if convinced of the need to do so"

Lester Brown, Plan B 4.0, 2009, Norton
<http://www.earth-policy.org/books/pb4>