

# 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

Department of Mechanical and Materials Engineering  
 Mechanical Engineering Program

pdx.edu/mme/undergraduate-mme

**Possible 4 Year Course Plan**

# Blue Sheet Curriculum Guide

FRESHMAN			SOPHOMORE			JUNIOR			SENIOR		
FALL	WINTER	SPRING	FALL	WINTER	SPRING	FALL	WINTER	SPRING	FALL	WINTER	SPRING
<b>Math / Science Requirements</b>											
CALCULUS		LINEAR	CALC	DIF			STAT				
MTH 251	MTH 252	ALG MTH 261	IV MTH 254	EQ I MTH 256			451 CM				
CHEM	CHEM		PHYSICS								
CH 221	CH 222		PH 221	PH 222	PH 223						
CH 227	CH 228		PH 214	PH 215	PH216						
<b>Engineering / Computer Science Requirements</b>											
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 & 241L	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
			PROG. ME 350			SYS DYN MODEL ME 351	MEPROF ME 370	Approved ME Elective	Approved ME Elective		
<b>General Education Requirements</b>											
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						

**EXPLANATION**

CREDIT HOURS		
1	ME 491 & 492 FULFILL UNST CAPSTONE	STUDENTS MAY SUBSTITUTE PHYSICS 211-213
2	SHADED AREA = CORE ADMISSION REQUIREMENTS	FOR PHYSICS 221-223
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
<b>Core Requirements</b>					
	<del>STAT 451 CM</del>				
	Stat 399- M01	Stat 399- M01			
<b>Upper Science Requirements</b>					
ENGR THERMO ME 321	APPLIED FLUID THERMO ME 322	HEAT TRANS ME 323	ME 491 DOE ME 488	<b>CAPSTONE</b> ME 492 CONCEPT ME 493 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	
<b>Communication Requirements</b>					
PRIV PUBLIC INVEST EC314U	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

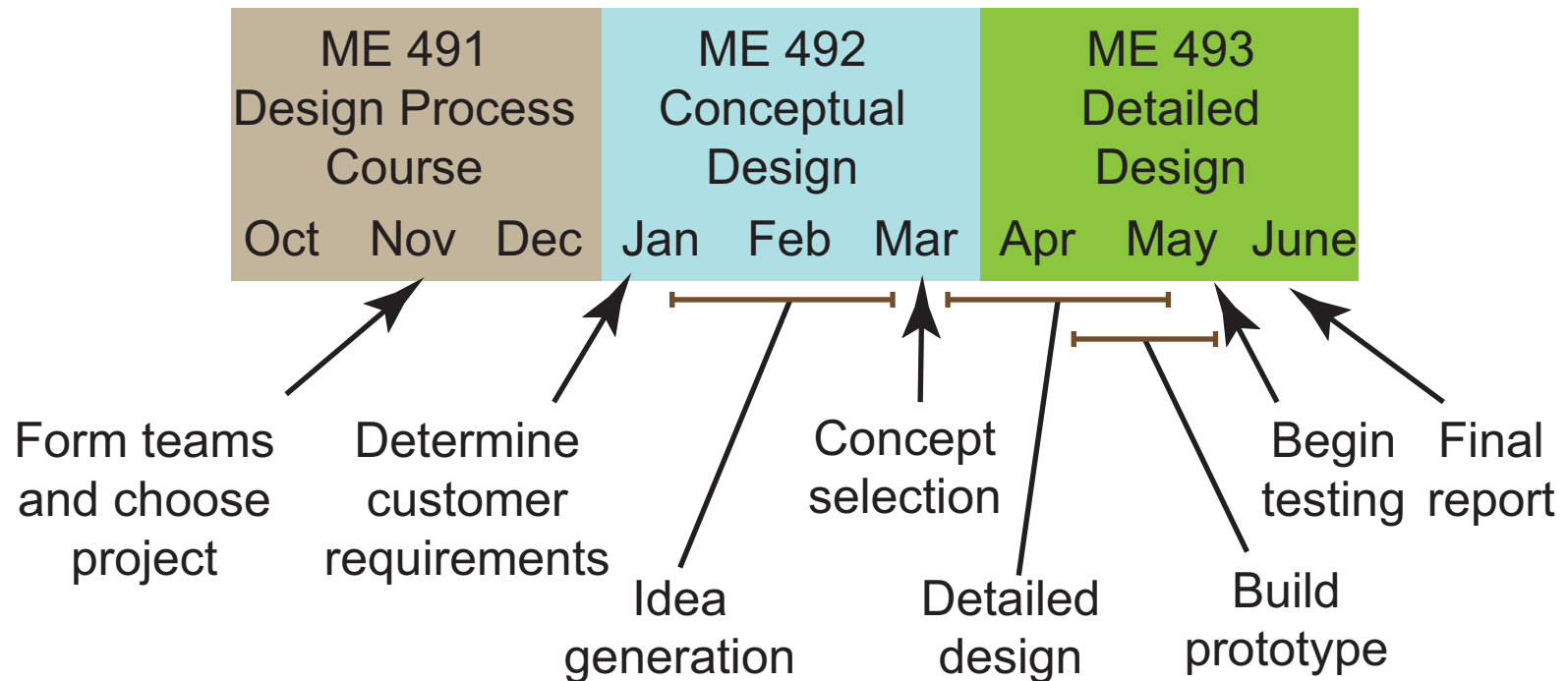
### ***Scheduled Meeting Times***

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 ME 488	CONCEPT	DETAIL
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

# Engineering Grand Challenges

Can we do it?

# Greatest Engineering Achievements of the 20th Century

Electrification

Automobile

Airplane

Water Supply and Distribution

Electronics

Radio and Television

Agricultural Mechanization

Computers

Telephone

Air Conditioning and Refrigeration

Highways

Spacecraft

Internet

Imaging

Household Appliances

Health Technologies

Petroleum and Petrochemicals

Laser and Fiber Optics

Nuclear Technologies

High-performance Materials

# 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>