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

Possible 4 Year Course Plan

FRESHMAN
SOPHOMORE
JUNIOR
SENIOR

FALL
WINTER
SPRING
FALL
WINTER
SPRING
FALL
WINTER
SPRING

Math / Science Requirements

CALCULUS
LINEAR CALC
DIFF EQU I
STAT
MTH
MTH
MTH
MTH

CHEM

PHYSICS

PH
PH
PH

CH
CH
CH

221
222
PH 214
PH 215
PH216

CH 227
CH 228

Engineering / Computer Science Requirements

Freshmen Engineering

STATICS
EAS 211
STREN
DYNAMICS
EAS 215
ENGR APPLIED
APPLIED HEAT
CAPSTONE OF MAT THERMO
FLUID TRANS
ME 491
ME
ME
ME
ME 120
ME 121
ME 122
EAS THERM DOE 492

ME 321
ME 322
ME 323
ME 488
CONCEPT DETAIL PROP ELECT MFG FLUID MECH DESIGN Approved

ENGR Approved

OF MAT CIRC PROC MECH ANAL Y S MACH ME MEAS ME ECE ME
ME 313
ME 314
411
241 & 241 ME 3
20
ME 313
ME 314
411
241L PROG.

SYSTEMS

ME 350
MODEL ME 370
ME
ME

Elective

Elective

ME 351

General Education Requirements

FRESHMAN INQUIRY
SOPHOMORE INQUIRY

PRIV UNST TECH

PUBLIC UPPER REPORT

UNST
UNST
UNST
UNST
UNST
INVEST DIVISION
DIVISION WRITING

1X1
1
X2
1
XX
2
XX
2
XX
2

EC314U CLUSTER EXPLANATION

CREDIT HOURS

1
ME 491 & 492 FULFILL UNST CAPSTONE

STUDENTS MAY SUBSTITUTE PHYSICS 211 - 213 20 1 3 - 201 4 2 2 SHADED AREA = CORE

ADMISSION REQUIREMENTS FOR PHYSICS 221 - 223

REFER TO THE PSU BULLETIN FOR GENERAL EDUCATION REQUIREMENTS

www.me.pdx.edu/programs/undergrad 2 - 22 - 2013 GWR Maseeh College of Engineering and Computer Science
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

Listing in class schedule for Stat 399 - M01

Senior Year Curriculum: Capstone
Senior Year Curriculum: Capstone

Form teams and choose project
Determine customer requirements
Idea generation
Concept selection
Detailed design
Begin testing
Build prototype
Final report

ME 491 Design Process Course
Oct Nov Dec
ME 492 Conceptual Design
Jan Feb Mar
ME 493 Detailed Design
Apr May June

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