Mechanical Engineering
Junior Year (ETM 2014)
New Student Orientation
Sunday August 24, 2014
Orientation Agenda

1. Mechanical Engineering Program Overview (4:00 – 5:00 PM)
   • Advising
   • Curriculum
   • Computing
   • Student Organizations

2. Mentoring Program (5:00 – 6:00 PM)

3. Picnic – Foundry Park (6:00 – 7:30 PM)
Department of Mechanical and Nuclear Engineering

Welcome

Dr. Karen Thole
Professor of Mechanical Engineering
Department Head
Students

• Mechanical Engineering
  – University Park
  – Commonwealth Campus

• Mechanical & Nuclear Engineering
  – Nuclear Engineering Orientation
  – 5:00 PM, 125 Reber Building

• International Study Abroad
What makes Penn State Great?

• Students and Faculty
  – Educational opportunities
  – Professional opportunities
Mechanical and Nuclear Engineering Faculty
Internationally Recognized Faculty

Faculty mission
– Creation and dissemination of knowledge

Accomplished Faculty
– Distinguished researchers
– National and international society fellows
– Authors
– Teachers
  • 6 University teaching awards in 5 years!
Faculty Member Characteristics & Duties
“Creation and Dissemination of Knowledge”

• Ph.D. in Mechanical or Nuclear Engineering
• Leaders
  • University, College & Department levels
  • Professional societies
    • Fellows
    • Officers
    • Journal Editors
• Knowledge Creation - Research
  • Managing 3-4 Research Contracts
  • Supervise 5 graduate students
  • $25 M/year departmental expenditures
• Knowledge Dissemination - Teaching
  • 1 or 2 courses/semester
  • Graduate and undergraduate levels
  • Advising
    • 30 undergraduates
Computer model shows “road” through human stomach
Tractor Roll-Over Safety
Refreshable Braille Display for the blind. Pins are raised by electroactive polymer actuators.
Acoustic Tailoring

Liberty Bell

Liberty Bell: Uncracked

Acoustic Tailoring
Research Opportunities for Undergraduates

**Undergraduate Teaching and Research Experience in Engineering**

- **Nate Michaluk (ME/NUC E)** developed a hybrid RC car
- **Katie Briggs (ME)** works with a bomb disposal robot
- **Matt Barnes (ME)** started his own company to market his electric bicycle
Advisor

• All entering students have been assigned
  – eLion

• Advise
  – Academic
  – Professional
Student-Advisor Meetings

Student Duties

• Treat as professional meeting
• Updated Academic Plan
• Be prepared!
  • Degree Audit - eLion
  • Know the curriculum
  • List of questions
• Visit each semester
  • After 2nd week is best

Advisor Duties

• Know program requirements
  • Steer you in the right direction
• They can help you with ‘big picture’ issues
• Professional/career guidance
• When?
  • Scheduled Office Hours
  • Make an appointment
  • Do not assume you can ‘drop in’ at your convenience
Undergraduate Program Guide

• Information and forms: 
  www.mne.psu.edu/Undergraduate/

• DO NOT use your freshmen guide.

• Graduation requirements defined when you enter the major - 2014
Department of Mechanical and Nuclear Engineering
Undergraduate Programs Office

• **Lori Yarger** - Undergraduate Students Assistant
  – First point of contact – triage and direction
  – Coordination of petitions, degree audit, changes, drop/add, …
  – Certifies degree candidates for graduation by ensuring they have fulfilled all requirements

• **Ken Swidwa** - Curriculum Adviser
  – Academic advising issues
  – Academic planning and course scheduling

• **Eric Marsh** – Professor of Mechanical Engineering
  – Special advising situations (i.e., co-op, Study Abroad, etc.)
  – Academic issues

• **Angie Lesko** - Undergraduate Programs Assistant
  – Departmental scholarship awards

• **Martin W. Trethewey** - Professor-in-Charge of Mechanical and Nuclear Engineering Undergraduate Programs
  – Program administration
  – Program oversight
  – Academic issues
139/140 Reber Building

Two access doors
MECHANICAL ENGINEERING

1st SEMESTER
17 Credits

CHEM 110

2nd SEMESTER
17 Credits

CHEM 112

3rd SEMESTER
17 Credits

E-MCH 241

4th SEMESTER
16.5 Credits

E-MCH 242

5th SEMESTER
16.5 Credits

E-MCH 315

6th SEMESTER
15 Credits

M-E 360

7th SEMESTER
16 Credits

M-E 450

8th SEMESTER
16 Credits

M-E 440W + (CAPSTONE OPTION 1) (3)

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* BIOL 141 may be substituted for CHEM 112.
* CAPSTONE OPTION 1 - M-E 440W can be taken after completing M-E 360, M-E 340, M-E 370, I-E 312, and ENGL 2020. M-E 440W can be taken 7th or 8th semester.
* CAPSTONE OPTION 2 - M-E 441W can be taken after completing M-E 340, M-E 410, and ENGL 2020. M-E 441W can be taken 7th or 8th semester.
* CAPSTONE OPTION 3 - Both M-E 442W and M-E 443W must be completed if selecting this option to satisfy Senior Design (CAPSTONE) requirement.
* AHS Cultures and IL Cultures requirements are satisfied in conjunction with AHS courses.

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= Prerequisite

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= Prerequisite or Concurrent
Technical Specialization Tracks

• Vehicle Engineering for the 21st Century
  – ME 400 – Thermodynamics
  – ME 455 – Automatic Control Systems
  – ME 431 – Internal Combustion Engines
  – ME 445 – Applications of Microcomputers
  – ME 461 – Finite Elements in Engineering
  – ME 446 – Reliability Concepts in Design
  – ME 452 – Vehicle Dynamics

• Mechanical Engineering in Aerospace Applications
• Vehicle Engineering for the 21st Century
  – Off-Road Equipment Minor
• Biomedical Device Engineering
• Combustion Based Energy Conversions
• Control of Mechanical Systems
• Turbomachinery Based Energy Conversions
• Mechatronics and Robotics Engineering
• Power Engineering
• Global Engineering via Study Abroad
• New Product Design and Manufacturing
  – Product Realization Minor
2015 Spring Semester

• Course Registration
  – Begins: September 18, 2014

• Nominal 3\textsuperscript{rd} Year Engineering Student
  – 65 credits (Earned and Current)
  – Begins: October 11, 2014
General ME Academic Plans

http://www.mne.psu.edu/Undergraduate/Curriculum.html
# Personalized Academic Plan

## Plan A: No Internship

<table>
<thead>
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<th>Course</th>
<th>Credits</th>
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<td>NUC E 309</td>
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<td>CAS 100A/B</td>
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Total: 16

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<td>M E 440W/441W</td>
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<tr>
<td>M E/ NUC E Elective</td>
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Total: 9

## Plan B: Internship 4th Semester

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<td><strong>INTERNSHIP/CO-OP</strong></td>
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<tr>
<td>MATH 220</td>
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<td>M E 320</td>
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<td>CAS 100A/B</td>
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Total: 16.5

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<tr>
<td>M E 450</td>
<td>3</td>
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Total: 12
Mechanical & Nuclear Engineering
Concurrent Major

• Receive two BS degrees
  • Mechanical Engineering
  • Nuclear Engineering
• 23 credits beyond the ME degree
• Careful planning
  • NucE courses offered once a year.
• Nominal 9 semester program
  • If NucE courses in Fall of junior year.
Departmental Computing

- Matthew Lindenberg, Computer Administrator
  - 201 Reber Building
- Open lab doors using student ID
  - Available 24/7
- Computer account application [http://www.mnelabs.mne.psu.edu/ApplyAccount.html](http://www.mnelabs.mne.psu.edu/ApplyAccount.html)
Professional Opportunities
### Student Societies of Interest to MNE Students

<table>
<thead>
<tr>
<th>Society Name</th>
<th>URL</th>
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<tbody>
<tr>
<td>Alpha Nu Sigma</td>
<td><a href="http://www.mne.psu.edu/Undergraduate/StuSocDirectory.html">Alpha Nu Sigma</a></td>
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<tr>
<td>Engineers Without Borders</td>
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<tr>
<td>National Society of Black Engineers</td>
<td><a href="http://www.mne.psu.edu/Undergraduate/StuSocDirectory.html">National Society of Black Engineers</a></td>
</tr>
<tr>
<td>PSU Robotics Club</td>
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<tr>
<td>Pi Tau Sigma</td>
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</tr>
<tr>
<td>Society of Automotive Engineers</td>
<td><a href="http://www.mne.psu.edu/Undergraduate/StuSocDirectory.html">Society of Automotive Engineers</a></td>
</tr>
<tr>
<td>Society of Hispanic Professional Engineers</td>
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<tr>
<td>Society of Women Engineers</td>
<td><a href="http://www.mne.psu.edu/Undergraduate/StuSocDirectory.html">Society of Women Engineers</a></td>
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Mechanical and Nuclear Engineering
Student Involvement

American Nuclear Society

American Society of Mechanical Engineers

Lunar Lion

Penn State Racing

Engineering Ambassadors

Advanced Vehicle Team

EcoCar

Engineers Without Borders
The American Society of Mechanical Engineers

First Meeting
Wednesday, September 3rd at 8 PM
135 Reber
General Body Meetings

THON

Design Competitions

Football Games
Do you want to:
– work real cars in a real-world environment?
– operate the coolest high tech toys around?
– develop new **GREEN** technologies?
– gain valuable **networking** opportunities?
– meet interesting people?
– Prepare for your capstone design course

Volunteers always welcome

www.hev.psu.edu
www.ecocar3.org

Questions contact team leaders:
Benjamin Sattler - bzs5258@psu.edu
Mohamad Wahba - mhw128@psu.edu
Engineers Without Borders

- International Projects
- Local Projects
- Spring Break Trip
- Fund Raising

http://www.engr.psu.edu/ewb/
What EWB does

- International project with communities without basic needs for life
- Golf Fundraising Tournament
- Spring Break Service Trips
- Engineering outreach to high schools and children
- Open to new ideas

http://www.engr.psu.edu/ewb/
What is Formula SAE? Design Build Compete Test
First Meeting

WHEN?
Tuesday September 2nd at 8PM

WHERE?
The Learning Factory

Contact Us
pennstateracing@gmail.com
What is Ahead Academically?

• Junior year
  • Most difficult in any engineering program

• Keep up with the coursework and assignments
  • Visit Faculty during office hours
  • Visit Graduate Teaching Assistants
  • Participate in study groups
  • Attend Help Sessions
Professionalism

• State of Transition
  Student  Engineering Professional

• Many professional activities

• Professional interactions
  – Responsiveness
  – Appearance & Dress
  – Communication
    • Greetings
    • Composition, punctuation, vocabulary, ...
  – Be polite
What is Ahead Professionally?

• My dream job is .....!
What is Ahead Professionally?

• My dream job is .....!

• Start planning to get there!
  • Professional workforce
  • Graduate School
Real World Experiences
Co-ops, Internships, Study Abroad...

Cassie Niebel
Delphi Electronics
DOW Chemical

Ryan Carley
Disney
Germany, Ireland and Singapore

[Logos and images of companies]
Career Days

September 17, 2014

11:00 AM - 4:00 PM

Career Days
Bryce Jordan Center
  • Co-op, Internships, Full Time employment

Evening
MNE Corporate Networking Reception
Nittany Lion Inn
  • Co-op, Internships, Full Time employment

http://careerfairs.psu.edu/fall/
In Closing…

• Once again, welcome to Penn State’s Department of Mechanical and Nuclear Engineering

• Questions?
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