We will post these slides on our website:
https://umaine.edu/mecheng/undergraduate-program/
Mechanical Engineering Facilities

We are here now

MEE Labs

Boardman Hall

Crosby Lab

MEE Offices
Engineering Education and Design Center
A Multi-Use Academic and Laboratory Building

• Total Space ~100,000 ft²
• State-of-the-Art Classrooms, Labs, Project Spaces, Student Hubs, Offices,…
• Currently finishing the design phase (starting construction in 2020)
• Move-in Date: Fall 2022

New Home for Mechanical Engineering
Full-Time MEE Faculty and Staff

Vince Caccese  Sheila Edalatpour  Alex Friess  Andy Goupee  Babak Hejrati

Zhihe Jin  Aaron Joy  Bashir Khoda  Eric Martin  Olivier Putzeys

Masoud Rais-Rohani  Rick Sayles  Mohsen Shahinpoor  Justin Lapp  Senthil Vel

Qian Xue  Yingchao Yang  Xudong Zheng  Karen Fogarty  Stephen Abbadesa

Three additional part-time faculty and staff
Your Faculty Advisor:

• Provides academic and professional advice

• Meets with you every semester for pre-registration advising

• Reviews course selections and monitor progress toward graduation

Additional advising support available in the MEE main office (Karen Fogarty)
Whom Should You Contact for Inquiries?

- Academic/professional matters → Faculty Advisor
- Course-specific matters → Course Instructor
- Computer / IT matters → IT (umaine.edu/it/)
- Club membership → Club Officers / Advisor
- Crosby Lab access → Mr. Abbadessa

- First-semester registration
- Routine questions about MEE
- Accounting questions
- Or if you are facing a deadline and cannot reach your advisor

Karen Fogarty
karen.fogarty@maine.edu
Mechanical Engineering Curriculum

Curriculum Summary

<table>
<thead>
<tr>
<th>Credits</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>Mechanical Eng. Courses &amp; Labs</td>
</tr>
<tr>
<td>19</td>
<td>Mathematics &amp; Statistics</td>
</tr>
<tr>
<td>12</td>
<td>Physics &amp; Chemistry</td>
</tr>
<tr>
<td>18</td>
<td>Humanities &amp; Social Sciences</td>
</tr>
<tr>
<td>3</td>
<td>Electric Circuits</td>
</tr>
<tr>
<td>3</td>
<td>Tech. Communication for Eng.</td>
</tr>
<tr>
<td>12</td>
<td>M.E. Technical Electives</td>
</tr>
</tbody>
</table>

- **129** Total Credits for a BS Degree

15-17 cr. / semester  
→ Graduate in 4 years!

[umaine.edu/mecheng/ugcurriculum/](umaine.edu/mecheng/ugcurriculum/)
Mechanical Engineering Curriculum

**Pick four MEE Technical Electives**

- MEE 433  Solar-Thermal Engineering
- MEE 434  Thermodynamic Design of Engines
- MEE 444  Robot Dynamics and Control
- MEE 448  Fixed Wing Aircraft Design
- MEE 450  Mechanics of Composite Materials
- MEE 452  Aircraft and Automobile Structures
- MEE 453  Experimental Mechanics
- MEE 455  Advanced Strength of Materials
- MEE 459  Engineering Optimization
- MEE 462  Fluid Mechanics II
- MEE 463  Applied Computational Fluid Mechanics
- MEE 475  Fuel Cell Science and Technology
- MEE 480  Wind Energy Engineering
- MEE 483  Turbomachine Design
- MEE 484  Power Plant Design and Engineering
- MEE 486  Refrigeration and Air Conditioning System Design
- MEE 489  Offshore Floating System Design
- MEE 490  Modern Control Theory and Applications

[umaine.edu/mecheng/ugcurriculum/](http://umaine.edu/mecheng/ugcurriculum/)
Mechanical Engineering Curriculum

Human Values and Social Context (HVSC) Electives

umaine.edu/mecheng/ugcurriculum/
Human Values and Social Context (HVSC) Electives

- You must complete **18 credits** in the HVSC areas
- Each of the 5 HVSC categories must be satisfied at least once
- Some courses satisfy more than one category
- You must also take one course that satisfies the Ethics requirement.
- List of HVSC electives:
  - HVSC (“Gen. Ed.”) courses: studentrecords.umaine.edu/home/academics/
  - In the Orientation materials you were mailed.

**Example:**

<table>
<thead>
<tr>
<th>Course</th>
<th>HVSC credits</th>
<th>Grade</th>
<th>Western Cultural Tradition</th>
<th>Social Contexts &amp; Institutions</th>
<th>Cultural Diversity &amp; International Perspectives</th>
<th>Population &amp; Environment</th>
<th>Artistic &amp; Creative Expression</th>
<th>Ethics (not part of HVSC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 320</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTY 103</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANT 101</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART 120</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAS 101</td>
<td>3</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHI 232</td>
<td>3</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Students must complete 18 credits in the HVSC areas, and each of the five HVSC areas must be satisfied at least once. Students must also take a course that satisfies the Ethics requirement. Note that some courses satisfy more than one category (e.g., Ethics and one of the HVSC areas).
### Mechanical Engineering Curriculum

#### Your First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 101</td>
<td>3</td>
<td>College Composition</td>
</tr>
<tr>
<td>MAT 126</td>
<td>4</td>
<td>Calculus I</td>
</tr>
<tr>
<td>MEE 101</td>
<td>1</td>
<td>Intro to Mech. Eng.</td>
</tr>
<tr>
<td>MEE 120</td>
<td>2</td>
<td>Eng. Graphics &amp; CAD</td>
</tr>
<tr>
<td>PHY 121</td>
<td>4</td>
<td>Physics for Eng. &amp; Sci. I</td>
</tr>
</tbody>
</table>

**HVSC Elective**

Most of you still need to select an HVSC Elective for this Fall.
Study Abroad in Valencia, Spain

- MEE majors can attend La Universidad Politècnica de València (through USAC) in Fall semester of 2nd year.
- Classes in English
- Contact Olivier Putzeys (olivier.putzeys@maine.edu) if interested
- https://umaine.edu/international/

https://usac.edu/study-abroad-programs/spain,valencia
# 4-Year Program with Study Abroad in Valencia

## 2nd Year – FALL in Valencia

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHY 121/3 Intro to Chemistry/Lab</td>
<td>4 cr.</td>
<td></td>
</tr>
<tr>
<td>MAT 228 Calculus III</td>
<td>4 cr.</td>
<td></td>
</tr>
<tr>
<td>MEE 230* Thermodynamics I</td>
<td>3 cr.</td>
<td></td>
</tr>
<tr>
<td>MEE 270* Dynamics</td>
<td>3 cr.</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3 cr.</td>
<td></td>
</tr>
<tr>
<td>HVSC Elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Human Values and Social Context (HVSC) areas (18 cr.)

<table>
<thead>
<tr>
<th>Course</th>
<th>HVSC credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 320</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### General Education Requirements

- Western Cultures and Institutions
- Social Contexts & Institutions
- Cultural Diversity & International Perspectives
- Population & Development
- Artistic & Creative Expression

*Note: HVSC is not part of the Elective requirement.*
Concentration in **Aerospace Engineering**

Complete **three** aerospace courses (each counts as a MEE Technical Elective):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEE 448</td>
<td>Fixed Wing Aircraft Design</td>
</tr>
<tr>
<td>MEE 452</td>
<td>Aircraft and Automobile Structures</td>
</tr>
<tr>
<td>MEE 462</td>
<td>Fluid Mechanics II</td>
</tr>
</tbody>
</table>
Expand your skills through a *Minor*!

- A Minor can be selected in addition to a Major (MEE)
- It requires 18 to 21 credit hours (6 – 7 courses)
- Some courses overlap with required or elective courses
- Examples include:
  - Mathematics
  - Innovation Engineering
  - Nanotechnology
  - Ocean & Marine Engineering
  - Robotics
  - Renewable Energy
- Earning a Minor can improve your career opportunities
Honors College

• To graduate with Honors, a student must successfully
  – complete Honors Civilizations four-semester sequence (HON 111, 112, 211, 212)
  – complete one Honors Tutorial (HON 308-347) or Tutorial Alternative (HON 349)
  – complete HON 170: Currents & Contexts
  – complete HON 180: A Cultural Odyssey or HON 188: Cultural Connections
  – complete the Honors Thesis: HON 498 and HON 499 including the thesis defense
  – attain an overall cumulative GPA of 3.30 or greater at the time of graduation.

• The Honors curriculum satisfies the HVSC and ENG 101 requirements.

• Note: You will need to do an Honors thesis in your senior year in addition to your Mechanical Engineering Capstone Design project.

• For additional information: honors.umaine.edu/
Laptop Requirement

- The MEE Dept requires that you own a laptop computer (Windows PC).
- Minimum and recommended specs: [umaine.edu/mecheng/computer-policy/](http://umaine.edu/mecheng/computer-policy/)
- The video card needs to be compatible with SolidWorks.
- You can purchase a laptop that is specifically configured for Mechanical Engineering students from the University Bookstore.
- We will provide more info about accessing SolidWorks (for MEE 120) at the beginning of Fall semester.
Logging into Campus Portal and MaineStreet

• mycampus.maine.edu/
• Username is typically “first.last” e.g. “jane.doe”
• Your email address is first.last@maine.edu
Course Registration

• If you have any AP credits, you must have them sent to the UMaine Office of Student Records via collegeboard.com

• You need to take the Math Placement Exam this summer before we can register you for MAT 126 “Calculus I” (unless you have been notified by the admissions office if you are exempted).

   www.umaine.edu/it/etc/mathplacementtest.php

• Transfer students: Must transfer courses through the Office of Student Records

   Even if prior courses were taken within the University of Maine System (UMS), you must still request a transfer credit evaluation from Office of Student Records
• Distribute forms and pencils
• After presentation, we will explain and give you time to complete it.
American Society of Mechanical Engineers (ASME)

What do we do?
• Regular meetings
• Fundraising drives
• Cardboard canoe
• Bottle rocket challenge
• UNB Coaster Derby

Why is it important for students to be involved in ASME?
• Professional networking
• Internship opportunities
• Job placement information
• And to Have Fun!
Student Organizations

American Institute of Aeronautics and Astronautics (AIAA)

- Activities in aerospace and related fields. Regular meetings, speakers, and events. Participation in national Design-Build-Fly competition.

By participating in exciting activities, students engage with the aerospace industry and develop a professional network.
Student Organizations

3D Printing Club

• Learn how to 3D print, develop your own projects, train other members, and help run the 3D print lab.

Gain experience in additive manufacturing, build interesting things and projects.

www.facebook.com/UM3DPC/
Student Organizations

Black Bear Robotics

- Run the Vex Robotics Competition for Maine
- Maintaining T-Shirt Cannon robot → → → →
- Compete in NASA Robotic Mining Challenge
Student Organizations

Society of Women Engineers

- Volunteer with science activities for schoolchildren
- Attend regional and national SWE conferences
- Networking with professional engineers
- Training, development programs, scholarships
Student Organizations

Society of Automotive Engineers (SAE)

- Design, fabricate, and test a vehicle to compete in a SAE competition
- Previously competed in “Formula SAE”
- Currently designing car for “Baja SAE”
Student Organizations

Engineers without Borders (EWB)

• Partners with developing communities to improve quality of life through the implementation of environmentally sustainable, equitable, and economical engineering projects

• Current Project: El Descanso, Ecuador
  – Rainwater Catchment system with 1000 gallon tank

• https://www.facebook.com/UMaineEWB/
Capstone Design Projects (2018-19)

- Lighter-than-Air Drones
- UAV Drones
- Land Drones
- Hydrofoiling Bicycles
- Human Powered Vehicle
- Robotic Knee Assistive Device
- Ice Core Transport Container
- Self-Cleaning Upweller Device
- Smart Swim Starting Block
- CNC Router
- Infinite 3D printer
- Self-Leveling Infant Car Seat
- Ground Force Test Bench
CNC router

Human Powered Vehicle

Lighter-than-Air Drones
Self-Leveling Infant Car Seat

Hydrofoiling Bicycle

UAV Drone

Land Drone
Infinite 3D Printer
Next Events (on the Mall): 5-6 pm “Hearty Maine Hello” ice breaker
6-7 pm Bear Fare Dinner

We are here now
“My Class Schedule”

- This shows a **typical week** (Mon-Fri)
- Classes start on **Tuesday Sept. 3rd**
- Any **handwriting** indicates something you are missing (e.g. Elective, Math Placement Exam, or Financial Responsibility Statement)

**Please complete the form now**
(can also complete it online: [engineering.umaine.edu/2019orientation/](engineering.umaine.edu/2019orientation/))

- You can find your MaineStreet “ID” at the top of your class schedule
- “Email”: enter both your personal and UMaine email addresses (if possible)
- FRS: Financial Responsibility Statement
  - If we gave you your Class Schedule, then you have completed the FRS.
  - If not, you need complete it on MaineStreet ([mycampus.maine.edu/](mycampus.maine.edu/))
- Math Placement Exam (access through Blackboard: [bb.courses.maine.edu](bb.courses.maine.edu))
  - Need to score $\geq 10$ on “Step 3” to get into Calculus I (MAT 126), which is a co-requisite for PHY 121.
- HVSC Elective: Need to take one this semester (unless you are in Honors College). Rank your top 3 choices.
MaineStreet (mycampus.maine.edu/)
Why are there three parts to the exam? Which part should I take for my course? What score do I need to pass?

The three parts of the exam refer to different course readiness levels:

**Part One**: shows readiness for MAT 111, College Algebra. Passing score is 9/10.

**Part Two**: shows readiness for **MAT 122, Pre-Calculus**. Passing score is 10/20.

**Part Three**: shows readiness for **MAT 126, Calculus I**. Passing score is 10/20.

You will be told by email confirmation which part you will be required to test in.