Academic Advising Day:
Advice for ECE Freshmen Students

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What is Academic Advising at WPI?

- Advice about majors, courses, project selection
- Broader educational mentoring, career counseling
- An advocate to help you succeed, learn about opportunities
- A designated contact—paid by your tuition—to help you ...
  - ... find educational, social services on campus
  - ... learn good study habits, form study groups
  - ... deal with problem students, student teams, faculty!
  - ... find resources for personal problems (roommates, partners, mental/emotional health)
- Someone who might write recommendation letter
High School vs. University Advising

• High School advisors/counselors
  – Tend to seek out students in need
  – Often dedicated to the task of advising/counseling

• “Academic” Advisors at WPI
  – Primarily classroom teachers and researchers—in ECE
  – Usually do NOT seek out students in need
    ▪ Trained to RESPOND to student needs (but not find the students in the first place!)
    ▪ Non-academic issues: Refer students to campus expert staff
      o Student Development & Counseling Center, Office of Disability Services, MASH, etc.

– YOU MUST ADVOCATE FOR YOURSELF!!!!!
Mental/Emotional Health Awareness

- Mental/emotional health disorders increasingly common in college students
  - Better child, high school supports allow more diverse students to succeed into college

- College students at common age for initial/ongoing mental health needs
  - Depression, anxiety, etc.

- Mental health counseling & consultation can be integral to many student’s education
  - Paid by your tuition!!!! Use it !!!!
Academic Advising is **MORE IMPORTANT** at WPI !!!

- **WPI: More course flexibility than most schools**
  - Less prescribed curriculum
    - More opportunity to tailor your own curriculum, and
    - More opportunity to make *really bad course selections!!*

- **Freshman Academic Advice #1**
  - Understand the meaning of: “WPI courses have no prerequisites” (Hint: It’s a myth ....)

- **Freshman Academic Advice #2**
  - Most should follow our general ECE “Entry Sequence”
WPI Course Prerequisites

• Prerequisite definition:
  – “required as a prior condition”

• Most colleges: Computer registration system prevents registration if prerequisites not satisfied
  – Can be over-ridden manually by administration

• WPI: Computer registration not restricted
  – In WPI catalog must learn WPI-speak:
    ▪ “Recommended background” translates to “REQUIRED”
    ▪ “Suggested background” translates to “HELPFUL” (not required)
WPI Course Background Philosophy

• WPI “Recommended” translates to **REQUIRED**

• Faculty will teach course as if you understand the “recommended” background
  – In the same way other colleges do so for “prerequisite” courses

• WPI permits exceptions without administrative approval
  – For students who attained background from other means
    ▪ Course in another department, work experience, project experience, life experience, previous NR (occasionally !), etc.
    – **Wield this power wisely !!!**
    ▪ Consult with course instructor
## ECE Course Selection—Tracking

- **Start with the ECE Tracking Sheet, from:**
  - Academic Advising web
    - [http://www.wpi.edu/offices/advising/student-resources.html](http://www.wpi.edu/offices/advising/student-resources.html)
  - ECE Web (fillable ?)
    - [http://www.wpi.edu/academics/ece/resources.html](http://www.wpi.edu/academics/ece/resources.html)

- **Major Areas:**
  - Humanities/Arts
  - Phys. ed., Social science
    - Save one SS for IQP!
  - Math/Science
  - IQP
  - ECE & MQP
  - Electives

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### ELECTRICAL AND COMPUTER ENGINEERING MAJOR

Program Tracking Sheet based on AY 2013–2014 Degree Requirements and Course Offerings

<table>
<thead>
<tr>
<th>Name: Last, First (Middle)</th>
<th>Class Year</th>
<th>Expected Graduation Date: Month 20?7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student ID # ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advisor ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Major ?</td>
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</tbody>
</table>

#### NOTES
- Minimum total academic credit = 15 units
- Residency Req.: Min. 40 units must be completed at WPI

#### HUMANITIES AND ARTS REQUIREMENT (3 units)
- Breadth Component: Students must take at least one course outside the grouping in which they complete their depth component.
- To identify breadth, courses are grouped in the following manner:
  - i. Literature, film studies, and music (AR, ENTH, MU)
  - ii. Foreign language (SP, CN, AR, CIN)
  - iii. Literature and writing (EN, WR, RH)
  - iv. History and international studies (HIS, INT)
  - v. Philosophy and religion (PY, RE)

#### PHYSICAL EDUCATION (4.0 units for 2013–2014)

#### SOCIAL SCIENCE (3/3 units)

#### MATHEMATICS AND BASIC SCIENCE REQUIREMENT (6 units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Year</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 1202 (Differential Calculus)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MA 1203 (Integral Calculus)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MA 2501 (Differential Eqns)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MA 2502 (Probability)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MA 2503 (Statistics)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MA 3504 (Analysis)</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>MA 3505 (Linear Algebra)</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

#### PHYSICS (2/3 units)

#### CHEMISTRY or BIOLOGY (4/3 units)

#### FREE ELECTIVES (2/3 units)
ECE Course Selection—Math Core

• Recommend all ECE students sequence directly through:
  – **Differential Calculus** (e.g., MA 1021)
  – **Integral Calculus** (e.g., MA 1022)
  – Calculus III (e.g., MA 1023; series, vector algebra)
  – Calculus IV (e.g., MA 1024, Multivariate Calc)

• **Sequence directly** ➔ Take as sequence, starting earliest course first semester at WPI
  – Many students start at 2\textsuperscript{nd}, 3\textsuperscript{rd}, course (AP credit/placement)

* ➔ Required course (yes, we have a few!!)
ECE Course Selection—General

• **Physics core:** Again, recommend *sequence directly*:
  – PH 1110/1111, Mechanics
  – PH 1120/1121, Electricity & Magnetism (E&M)
    ▪ Helps to complete E&M 1st semester, prior to initial ECE courses

• Plan to complete **CS requirement** early
  – Increasing (introductory) software use in early ECE classes
  – One, 2000-level CS course required (usually CS 2301)
    ▪ Note: CS 2301 requires CS 1101/1102/equivalent

• Complete at least one **phys. ed.** per year
• Save (most) electives for future years
ECE Course Chart

Solid lines ➔ Required background
ECE Entry Sequence

- **Common Sequence:**
  - ECE 2010  C Fresh
  - ECE 2029  D Fresh
  - ECE 2019  A Soph
  - ECE 2311  B Soph
  - ECE 2049  C Soph
  - ECE 2799  D Soph

  **Note the math, physics, CS prerequisites**

  Other ECE courses branch off of this entry sequence
WPI Project-Based Curriculum

• **Great Projects Seminar**—Usually as Freshman
• **Humanities/Arts**—Six courses (last=practicum)
  – Many complete sophomore year (not required)
  – Plan practicum enrollment (limited terms per topic)
  – Off-campus opportunities possible
• **IQP**—Usually junior year
  – **NOT** related to your major
  – Off-campus:
    ▪ A-term IGSD Project Fair
    ▪ Apply B-term, sophomore year
    ▪ Each site has own character, strengths, culture
    ▪ ~70% of WPI students complete off-campus
  – Also many on-campus opportunities
WPI Projects—ECE MQP

• Recruiting starts fall of junior year

• Off-campus:
  – IGSD-coordinated recruiting (A-term Project Fair)
  – One term (3/3 units)
  – MIT Lincoln Lab (A), MITRE (A), Silicon Valley (C), China (E, B), Wall Street (B)

• On-campus:
  – Faculty- and corporate-sponsored
  – Student initiated
  – Sponsored by other WPI majors

  ▪ **ECE MQP REQUIRES AN ECE-APPROVED ADVISOR**
Possible Career Paths of U.S. Citizens and Permanent Residents Receiving a B.S. in Engineering in 1996
(Adapted from Shepard and Silva, FIE Conference, 2001)

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- **B.S.**
  - 31% Non-engineering jobs
  - 56% Work closely engr. related
  - 44% Work *not* closely engr. related

- **M.S.**
  - 38% Engineering jobs/ more engr. degrees
  - 54% Industry
  - 15% Government

- **M.S., Ph.D.**
  - 8% Industry
  - 8% Educ. Institution
  - 32% Government

- **Eventually**
  - 67% Engineers
  - 33% Non-Engr.

- **“Non-engineering” work is most likely in technical management.**

Assumes
- No one leaves the workforce
- Averages across all engineering majors, all schools, etc.
ECE BS/MS and “More in Four”

**BS/MS:** Complete BS & MS in five years

- For academically “strong” students
- Double-count up to 40% of BS towards MS
  - Three 4000-level courses (6 grad credits), two grad courses
  - Or, three grad courses
  - Other unused grad credit from BS is applicable
  - Meet full BS and MS requirements

**More in Four**

- Complete BS/MS requirements in four years
- More common when student enters with AP credit
What to Bring on Advising Day

• Updated ECE Program Tracking Sheet

• Proposed schedule—For at least the next year

• Questions: About ECE major, academic success strategies, career paths, etc.
Other

• Get to know your peers—Can be your best learning resources

• Department IEEE student branch is very active
  – Consider joining

• Many students make use of summer session (E-term)