The Proposed EE& EP Undergraduate Curriculum

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It is 9 years since current curriculum has been put in place. It is timely to consider if the changes have improved the quality of our graduates and tune-up the curriculum.

Lower division and breadth courses are now offered 2-3 times a year because of the dramatic increase in the number of incoming students.

- In the current curriculum, some material is covered repeatedly and some not covered sufficiently.
- Grading policy is not uniform. A large number of un-prepared students; who are mostly in trouble (GPA < 2.5).
- Instructors of the follow-up courses face students with different degree of preparation and quality.
- A sizeable minority of un-prepared students forces the instructor to repeat the material needed for the course in depth. This is the current student body perception, setting a strong feedback loop.
Plan for the Review of Undergraduate Curriculum (From Last year Retreat)

Lower Division/Breadth Courses:

- A group consisting undergraduate affairs committee and additional faculty will be formed.
- We will obtain detailed syllabus of Math/Physics/Chemistry pre-requisites.
- This group should produce:
  - Detailed syllabi for all lower division/breadth courses;
  - Recommendations for elimination and/or addition of courses;
  - Guidelines for difficulty level of exams and grading policies;
  - Ways to enforce uniformity of instruction and grading for these courses.

- A new curriculum as well as a policy document is produced (discussed and approved by the Undergraduate Affairs Committee).
The Proposed Undergraduate Curriculum

Replace

Combine

Modify to

Reflect Changes

in the Core

MAE9/CSE11
ECE20A
ECE20B
ECE60A
ECE60B
ECE30
ECE60L
ECE10x

ECE15
ECE25
ECE35
ECE45
ECE30
ECE65
ECE10x
The Proposed Undergraduate Curriculum
Course Changes- ECE 25/35/45

• Replace 20 A/B and 60 A/B with New ECE 25-35-45
  ◦ Net reduction of one quarter

• Motivation
  ◦ Current courses have large degree of overlap
  ◦ Integration of 35/45 and existing ECE 101 as combined three quarter circuits/systems foundation

• Material
  ◦ ECE 25 - similar to 20B (digital) but w/lab based on CPLD
  ◦ ECE 35 - similar to 20A - first order circuits but w/new labs
    ▪ Engineered system for both classes based around processing digital music
  ◦ ECE 45 - Transition from circuits to systems
    ▪ Analysis of 1st and 2nd order systems
  ◦ ECE 101 - similar to existing course w/modified syllabus
Course Changes- ECE 15

• Replace intro programming (MAE 9 or CSE 8B or CSE 11) with new course - ECE 15

• Motivation
  ◆ Current courses (mostly JAVA based) not designed for ECE students

• Material
  ◆ Basics of C
  ◆ Basics of high-end language (Matlab)
    ▪ Interfacing C to high-level language

• Pre-requisites
  ◆ General computer skills
Course Modifications

• ECE 100 Series (101-103, 107-109)
  ✷ All 100 series course directors contacted
  ✷ Courses revised/modified to reflect changes in core

• Major changes in core that affect 100 series
  ✷ Known exposure to Matlab in ECE 15 (for all)
  ✷ Known exposure to linear system concepts in ECE 35/45 (applies to 101, 107, and 109)
  ✷ Known exposure to Verilog in ECE 25 (for 108)
  ✷ Known exposure to Spice in ECE 15 (for 102)
Policies for the Proposed Undergraduate Curriculum
Key Components for Lower Division and Breadth Courses

• A consistent set of course materials

• A consistent grading policy

• Strict enforcement of prerequisites
Course Materials

• Establish a course coordinator
  – Maintain standard syllabus (post on Web)
  – Maintain historical grading patterns (with ugrad staff)
  – Meet with instructors each time course is taught
Uniform Grading

• Helps identify weaker students, reduces instructor “shopping” by students

• Set consistent grading guidelines for each course. Two possible methods are to
  – use the historical record as guide
  – Set rough guidelines (example: 20% A, 30% B, 30% C, …)
Enforce Prerequisites

- Instructors refer exemption requests to ECE ugrad office.
- Ugrad subcommittee will meet to consider requests a few times each term.
- Students who do not meet pre-reqs will be de-enrolled.