SuperUROP: Advanced Undergraduate Research Program for EECS Students

Prof. Anantha Chandrakasan
Department Head, MIT EECS

(anantha@mtl.mit.edu)
SuperUROP Overview

• A research program for EECS undergraduates with the goal of providing a deeper experience – year-long UROP experience working on a challenging problem.
• The research can result in publication(s) and/or prototypes
• Goal is to help prepare students better for graduate school, creating startups, and industrial jobs
• Proposals will be initiated by undergraduate EECS students (juniors and seniors), working with an approved supervisor
• Fostering industrial connections
• Create a strong sense of community through an academic component (6.UAR)
• Certificate in advanced undergraduate research with specific focus areas from a menu list
Certificate in Advanced Undergraduate Research

- **6.UR**
  - Conventional UROP

- **6.UAR**
  - (A/B/C/D/F)
  - 6 units

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- **6.URN**
  - Pay (10hrs/week)
  - Proposal and Poster

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  - Pay (10hrs/week)
  - Report & Presentation

* Possible to do this component for credit (6.URS)

- Certificate in Advanced Undergraduate Research with focused areas will be awarded for completion of 6.UAR (12 units) plus advanced research project.
6. UAR Goals

- How to select a research project (including background research)
- Learn about “hot” research topics related to EECS including devices, circuits, information systems, bio-medical, AI, theory, systems
- Metrics used in the different fields
- Ethics in engineering
- Student entrepreneurship
- Selling a research project to a sponsor (DARPA/NIH/NSF, VC)
- Industry strength design methodologies
- Writing a high quality research paper and conference/journal review process
- Giving an effective research presentation
- Help your research project (6. URN/6. URS)
6. UAR Deliverables

- Fall: 4 page detailed proposal (October) including:
  - Problem statement
  - Previous work
  - Proposed technical approach and relation to previous work
  - Block diagram / architecture of the system you are building
  - Metrics including previous work
  - Expected outputs
  - Other goals: publication, demonstrating a system, etc.

- Fall: Poster session (December)
- Spring: Brief “elevator pitch” in-class (April)
- Spring: Poster book with final results (April)
- Grading based on deliverables and class participation
Undergraduate Research and Innovation Scholar Program (RISP)

• Prestigious named scholar program - awards will be made to students as named scholars
  • MIT EECS- company name Undergraduate Research and Innovation Scholar
  • MIT EECS- donor Undergraduate Research and Innovation Scholar
  • MIT EECS- Undergraduate Research and Innovation Scholar

• Each selected project will receive $10k in funding – the student will receive $3k/term ($6k/year) and the advisor will receive $4k/year in discretionary funding to support the student

• Payment distributed in six $1k installments – three each in the Fall and Spring

• To be eligible for scholar recognition and funding, the EECS student must have an advisor in the approved list (posted on the website). Includes EECS faculty members, EECS Lecturers, PRS and SRS at EECS-affiliated labs (CSAIL, MTL, RLE, LIDS) and EECS undergraduate advisors
Access to Nanotechnology

• SuperUROP students can access advanced Nanotechnology through the MTL Microsystems Technology Laboratories
• Access to advanced foundry technology
• Same access as graduate students!
Selecting Projects/Advisors

- List of project ideas generated by faculty – students can contact advisors to refine the idea

Introducing the EECS ‘Super’ UROP Program and the Research and Innovation Scholars Program (RISP)

100+ ideas in 2012

- Students can propose ideas to faculty and create a joint proposal
- Research idea from sponsors – students should build on these suggestions with the MIT supervisor
- Student application deadline – 4/30/13 (funding decision by 6/15/13). Must have the approval from the supervisor before applying.
Student Eligibility

- Only open to rising EECS juniors and seniors (double major is fine)
- Must have previous UROP experience
- EECS students who do not receive the Research and Innovation Scholar funding can still do SuperUROP (direct funding from UROP office or sponsored research from supervisor)
- Students can have supervisors from outside the approved list; however, they are not eligible for RISP funding
- Cannot repeat the program for second year – but we encourage students to continue in the group to build up the research towards an MEng project
Schedule

• Supervisors to post research opportunities (strongly encourage including graduate student mentors):
  • Deadline: March 31, 2013
  • Format: paragraph and picture

• Students apply (with approval from supervisor):
  • Deadline: April 30, 2013
  • Proposal is short (a figure and a couple of paragraphs)
  • Recommendation needed from the primary supervisor

• Announcements on funding for AY2014
  • June 15, 2013
SuperUROP Team

Anantha Chandrakasan (Primary Contact)

Denny Freeman (UG Officer)

Agnes Chow (Financial Coordinator)

Jessica Kraus (Events Coordinator)

Dorothy Curtis (Web Site Coordinator)

Jarina Shrestha (Payroll Coordinator)

Ted Equi (Industry Coordinator)

Anne Hunter (EECS UROP Coordinator)

Maura Ridge (Resource Development)