GE1000 - Intro to the Study of Engineering

Preparing for Summer Research Opportunities

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The National Science Foundation (NSF) has funded these programs for over 10 years.

10 week summer programs providing experiences in STEM (Science, Technology, Engineering and Math) fields.

Full-time (35 hours per week) engagement.

Participating students can receive stipend, housing assistance, travel costs and other support.
Goals of NSF REU Programs

- NSF Goals for REU Programs:
  - Attract talented undergraduates to, and retain them in careers in, science and engineering, including careers in teaching and education research.
  - Provide high-quality interaction among students, faculty and/or other research mentors and access to professional development opportunities.
  - Provide for a more diverse population of scientists and engineers by increasing the numbers of women, underrepresented minorities, and persons with disabilities involved in research.
NSF REU Programs - How to Apply

  - Search for opportunities by location or research area
  - Provide links to websites and contact information

- Application deadlines vary – usually between January and March

- Programs begin in May/June

- Must be US Citizen or Permanent Resident

- 50% of students from outside host university

- Many only seek upperclassmen

- Review Application requirements so that you can plan for transcript and recommendation requests
In 2010 and 2011, a total of 17 BIOSENSE participants worked on research involving the use of subsurface sensing and imaging techniques for real-world biomedical applications.

In 2011, Prof. Charles DiMarzio worked with 4 REU students on projects including:

- Scanning Methods for hand-held confocal microscope for skin cancer detection
- The use of Graphical Processing Units to speed up algorithmic processing for computational modeling of the lungs for more efficient treatment of cancer
• Government Funded (NSF, DHS, NIH), Multi-Disciplinary, Multi-University

• Collaboration among Academia, Industry and Government

• An Education and Research Mission to build a specialized and talented workforce, create innovative products and processes and address specific societal needs
Engineering Research Centers and Programs at NU – All Seek Undergraduate Involvement

- For list of NU Centers and Programs
  [http://www.coe.neu.edu/coe/research/centerdepartment.html](http://www.coe.neu.edu/coe/research/centerdepartment.html)

- NSF Centers include:
  - CHN – The Center for High-rate Nanomanufacturing
  - CURENT – The Center for Ultra-wide-area Resilient Electric Energy Transmission Networks (also supported by DOE)
  - CHOT – The Center for Health Organization Transformation
  - Gordon-CenSSIS – The Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems

- Other Centers Include:
  - ALERT – Awareness and Localization of Explosives-Related Threats
  - NE-VERC - New England Veterans Engineering Resource Center
  - PROTECT – Puerto Rico Testsite for Exploring Contamination Threats
  - VOTERS – Vehicle Onboard Traffic Embedded Roaming Sensors
In 2009, 2011 and 2011, a total of 26 ALERT participants worked on research related to the emerging technology of explosives detection.

In 2011, Prof. Carey Rappaport and Richard Moore worked with 2 REU students on projects including:

- The development of inexpensive, high resolution radar allowing for standoff detection of concealed explosives
- The design and construction of a hardware platform to facilitate reconfigurable sensor placement in a multi-static imaging radar system
Other Summer Research Experience Resources

- National Institutes of Health Undergraduate Scholarship Program - [https://www.training.nih.gov/programs/ugsp](https://www.training.nih.gov/programs/ugsp)
REU Program Benefits

- Work on State of the Art Research
- Direct Interaction with Faculty and Graduate Students
- Gain skills and experience to add to resume in preparation for co-op
- Learn about career options and graduate study possibilities
REU Program Success Factors

- Find research that you are interested in
- Be engaged
- Be respectful of others time and manage your own
- Establish relationships that will continue after the summer ends
Prepare to Apply to REU Programs

- Opportunities at ERCs – review the list of ERCs to see if their areas of research interest you and go to their websites to get more info on possible internships or graduate study funding options - [http://www.erc-assoc.org/](http://www.erc-assoc.org/)
- Review NU research centers and faculty research projects - [http://www.coe.neu.edu/coe/research/centerdepartment.html](http://www.coe.neu.edu/coe/research/centerdepartment.html) to learn about research on campus.
  - Attend seminars and presentations to learn more
  - Volunteer to work in labs
  - Work on projects for course credit
  - Explore internship/co-op assignments with industry partners
Any Questions????