Undergraduate Research
2020

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Associate Director, Undergraduate Research
Director, Illinois Scholars Undergraduate Research (ISUR)
WHAT TYPES OF CAREERS HAVE YOU EXPLORED?
Why do research?
Thinking about Research

• How do you view research?

RESEARCH is...
RESEARCH

ANALYSIS  LEARNING  SCIENCE
FACTS  BUSINESS  PRODUCT  EXAMINE
MARKET  SYSTEMATIC  METHODS
KNOWLEDGE  DIRECTION  RESULTS
PLAN  SUBJECT  MARKETING
DEVELOPMENT  SAMPLE  ANALYZE
FACTORS
Learning Through Inquiry

- Case 1: Undergrad works collaboratively with a faculty member on a faculty-determined project and is responsible for a piece of the greater project.

- Case 2: Undergrad works as a research assistant to a faculty member to learn discrete skills and advances to more complex tasks.

- Case 3: Undergrad researcher works alone on a self-selected project, meeting regularly with a faculty mentor.
Benefits of Doing Undergrad Research

- Apply what you learn in the classroom
- Understand how to conduct research
- Develop confidence in research skills
- Develop interpersonal, communication, and presentation skills
- Build a network in the research community
- See a better picture of STEM careers
- Gain an awareness of what graduate school entails
GRAINGER ENGINEERING

UNDERGRADUATE RESEARCH

Be part of a research community

Engage in mentored research

Connect with undergraduate researchers

http://grainger.illinois.edu/research/undergraduate
GETTING STARTED WITH RESEARCH
List down 3 things that you are passionate about.
YOUR INTEREST FUNNEL

- Broad interests
- Interests that can be related to science
- Specific area of interest
- Topics
- Current issues

Diagram featured by http://slidemodel.com
Do research in something you are passionate about or interested in!
Getting Started

CHOOSE A TOPIC

• What are you interested in?
• Look at the research literature in your subject area
• Select a topic which is not too big nor too small
Getting Started

DON’T HAVE A TOPIC YET?

- Ask around
- Think of your other interests
- Do some reading in your field or discipline

Check out:
Engineering Faculty Research Matrices
Departmental Research Webpages
### Faculty Research Matrix

<table>
<thead>
<tr>
<th>Materials Science</th>
<th>Nuclear Power</th>
<th>Plasma Physics and Fusion</th>
<th>Radiological Science</th>
<th>Reliability and Risk</th>
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<tr>
<td>S. Abbaszadeh</td>
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<td>J. P. Allain</td>
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<td>D. Curreli</td>
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<td>A. Di Fulvio*</td>
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<td>B. J. Heuser</td>
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<td>K. Huff</td>
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<td>T. Kozlowski</td>
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<td>L. J. Meng</td>
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<td>M. Ragheb</td>
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<td>D. N. Ruzic</td>
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<td>J. F. Stubbins</td>
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<td>R. Uddin</td>
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<td>Y. Zhang</td>
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*New faculty

**NUCLEAR, PLASMA, AND RADIOLOGICAL ENGINEERING**

[https://grainger.illinois.edu/research/undergraduate/get-involved/how-to](https://grainger.illinois.edu/research/undergraduate/get-involved/how-to)
Getting Started

**GROUP RESEARCH**
- Shared responsibility
- Specialize in best suited aspect of work
- Experience of teamwork
- Tackle large-scale topics
- Ready-made support network

**INDIVIDUAL RESEARCH**
- Sole ownership
- Sole responsibility
- More focused project
- You determine overall quality
- Carry out entire research process on your own
Time You Have Available
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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Additional Benefits of Undergrad Research

- Learn to manage your time/attention
- Potential to co-author a poster or paper for a conference
- Perhaps co-author an article for publication
- Gain work experience in a research environment
- Establish work history worthy of a recommendation to a graduate program
Research On- and Off-Campus

UNDERGRADUATE RESEARCH OPPORTUNITIES
UNDERGRADUATE RESEARCH

RESEARCH FOR CREDIT

RESEARCH FOR PAY

FALL

SPRING

Summer
Independent Research

- Receive course credit for the research work you do
- Independent or Individual Study courses
- Work directly with a professor on solving advance engineering problems
Promoting Undergraduate Research in Engineering (PURE)

- Student-run organization
- Created for first- and second-year students interested in research
- Pairs students with graduate students to work on semester long research projects
Illinois Scholars Undergraduate Research (ISUR) Program

- Offers a two-semester research experience with scholarship and optional course credit
- Undergraduate Research Seminar (ENG 199 UGR/ISR)
- Work closely with graduate and faculty mentors
- Research Scholarship
DARIN BUTZ
FOUNDATION
RESEARCH SCHOLARS

CLARE BOOTHE LUCE PROGRAM
Supporting women in science, mathematics and engineering

CLARE BOOTHE LUCE
Playwright, journalist, Ambassador, and member of Congress, Clare Boothe Luce was one of the most accomplished women of the twentieth century. She appreciated how many women face obstacles in their chosen professions. With her brilliant bequest establishing this program, she sought “to encourage women to study, graduate and teach” in fields where there have been barriers to their advancement, the sciences, mathematics and engineering.
The IBM-ILLINOIS Center for Cognitive Computing Systems Research (C3SR) is partnering with the ISUR program to launch Undergraduate Research in Artificial Intelligence (URAi). The new initiative, ISUR C3SR-URAi, will provide two-semester research experiences to domestic and international students. C3SR-URAi scholars will be assigned to research projects focusing on fundamental cognitive computing and AI science, applied AI engineering and technologies, and practical AI solutions and systems. They will receive the same benefits as any ISUR scholar, such as $1000 research scholarship for the academic year.
Mentoring Undergraduates in Science and Engineering (MUSE) Program

- Facilitates and fosters mentoring relationships between undergraduate students and grad students based on a common research interest.
- Participants define own goals and direction of mentoring relationship.
Research Abroad

- Through the International Programs in Engineering (IPENG)
- Increase global awareness
- Expand your engineering education
- Global Research Scholars – Summer Program
Get Involved!

RESOURCES
Learn about undergraduate research-related events and opportunities

**Engineering Undergraduate Research**

December 2018

For more information about undergraduate research, please visit our website: [http://engineering.illinois.edu/research/undergraduate/](http://engineering.illinois.edu/research/undergraduate/)

For more postings of off-campus undergraduate research opportunities, please check out previous issues of our newsletter in your email inbox.

**DECEMBER 2018**

Upcoming Events and Dates

<table>
<thead>
<tr>
<th>Event</th>
<th>Date/Place</th>
<th>Website</th>
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</thead>
<tbody>
<tr>
<td>Lecture: Physical and Spatial Interaction with Robotic Displays</td>
<td>December 3 4:00 - 5:00 PM 205 Siebel Center</td>
<td>Event Info</td>
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<tr>
<td>Seminar: The Hacker Within - Containerization</td>
<td>December 5 12:00 PM 2100 NCSA</td>
<td>Event Info</td>
</tr>
<tr>
<td>Lecture: Frontiers in Miniature Brain Machinery</td>
<td>December 5 4:00 PM 2059 Beckman Institute</td>
<td>Event Info</td>
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**Engineering Research Fair**

**Spring Undergraduate Research Workshop**
Undergraduate Research Website

http://grainger.illinois.edu/research/undergraduate/
College Relations Committee (CRC)

- Watch out for event announcements
- Attend meetings for updates
- Participate in sponsored activities to know about research across the college
Engineering Research Fair (Fall and Spring)

- Learn more about research in the various research groups, centers, and institutes
- Connect with representatives from the different research groups and programs
- Inquire about openings and application periods
- Know what resources are available
Virtual

Fall 2020 Engineering Research Fair
September 24 and 25
With Live Q&A 4 – 6 PM
Undergraduate Research Workshop (Spring Semester)

- Learn more about participating in research from undergraduate researchers
- Panel discussion format
- Ask your questions
Undergraduate Research Portals

- Pathways to Science
  - https://www.pathwaystoscience.org/

- National Science Foundation Research Experiences for Undergraduates (REU)

- Federal Opportunities for STEM Undergrads
  - https://stemundergrads.science.gov/
FOR INQUIRIES OR TO SCHEDULE A VIRTUAL APPOINTMENT

Contact:
engr-ugr@Illinois.edu