The Graduate School Experience

Laura Dillon (ldillon@msu.edu)
Michigan State University
Katie Siek (@katiesiek)
Indiana University Bloomington

Sign-Up for CRA-Women Updates: www.cra-w.org

Twitter (@CRAWWomen)
This session for:

Undergraduate/MS students
What does CRA-W do?
Individual & Group Research Mentoring

Undergrads: Undergraduate Research Experiences
Undergrads: Distinguished Lecture series/role models
Grad Cohort: Group mentoring of graduate students
Grad Students: Discipline Specific Research workshops
Academics/PhD Researchers: Group mentoring for early and mid career @ CMW, Grace Hopper, and Tapia

600+ students & PhDs a year
More information on programs at CRA-Women booth in exhibit hall

Booth: 1122
Laura Dillon, Professor, Comp. Sci & Engr, Michigan State University

Research: formal methods in SE; specification, testing and analysis of concurrent software systems.
Teaching: intro to programming; formal methods.
Major Interest: mentoring and outreach to women in CS
   MSUWIC, MICWIC, AiC, TechKobwa, GHCs, Tech Workshops for Girls, …
My Journey:
   1974 BS Math, 1976 MS Math, Univ. Michigan (via Kalamazoo College)
   -- 1st marriage; PhD exams (math); year “off”; instructor E. Montana College
   -- Re-married; birth of 1st child (year 3); birth of 2nd child (3 days after last interview)
   1985 Assist. Prof., 1991 Assoc. Prof., 1997 Full Prof., UC, Santa Barbara
   -- First 3 NSF grants; Best paper award; ISSTA general chair;
      5-year search for 2 tenure-track positions (Infamous 2-Body Problem)
   -- 4 BODY PROBLEM SOLVED! Spouse: Asst. Prof, Fisheries & Wildlife, MSU; Son: Okemos HS; Daughter: Kinawa MS ==> Spouse: Full Prof at MSU; Son: BS MSU, Game Designer, NYC; Daughter: BA, Oberlin College, Performance Artist in LA
Katie A. Siek, Associate Professor, Informatics, Indiana University, Bloomington

Research: health informatics, human computer interaction (HCI), pervasive computing. 
Teaching: large project based classes; HCI; Pervasive Computing, Health Informatics 
Major Interest: diversifying computing; bringing together computing and health communities; 1st generation college students; low SES communities
Katie A. Siek, Associate Professor, Informatics, Indiana University, Bloomington

Research: health informatics, human computer interaction (HCI), pervasive computing.

Teaching: large project based classes; HCI; Pervasive Computing, Health Informatics

Major Interest: diversifying computing; bringing together computing and health communities; 1st generation college students; low SES communities

My Journey:
2000 BS Computer Science, Eckerd College (Small Liberal Arts)
   – National Physical Science Consortium Fellowship (Sandia National Lab)
2000-2002 University of Notre Dame
   – TA Award; Advisor did not get tenure
2000, 2001, 2002 Summer Intern Sandia National Lab
   – Mentor helped me get acceptances from multiple graduate programs in June!
2002-2006 Indiana University
   – MS 2004 – GHC Best Poster New Investigator; Married 2005; PhD 2006
2006-2013 Assistant Professor, University of Colorado Boulder, Computer Science
   – Job Search 2006-2007 for two tenure track positions; 1st pregnancy (interviewed pregnant)
   – Heavily recruited 2009-2013 (2009 NSF CAREER Award; 2010 SICSA Fellow; 2012 Borg ECA); Interviewed with nursing infant
2013 – Present Associate Professor, Indiana University, Informatics (2015 SICSA Fellow)
   – 2014 – Present - Undergraduate Chair for Informatics
   – 2015 – Present - Associate Professor, DePauw University (liberal arts)
The Graduate School experience

Acknowledgments:

• Presentation at GHC 2012 by L. Pollack, Univ. of Delaware, and A.J. Brush, Microsoft
• CRA resource: Why get a PhD in CS? [link]
• Online discussion: ‘What makes a Master's in Computer Science (MS CS) degree worth it and why?’ at [link]
The Graduate School experience

• Why go to graduate school in CS?
  • MS
  • PhD

• Go to socrative.com
• Click on Student Login
• Type: PROFSIEK in the classroom box
• Keep it open!
Adapted from Matt Might’s Illustrated Guide to a PhD: [http://matt.might.net/articles/phd-school-in-pictures/](http://matt.might.net/articles/phd-school-in-pictures/)
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Why an M.S.?
- Specialize in area of interest
- Develop professional skills
- Build relationships with innovators
- See if research is a good fit

Adapted from Matt Might’s Illustrated Guide to a PhD: http://matt.might.net/articles/phd-school-in-pictures/
Why a Ph.D.?
• Conduct *useful* research
• Make a significant impact on society
• Required for career in research

Adapted from Matt Might’s Illustrated Guide to a PhD: http://matt.might.net/articles/phd-school-in-pictures/
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“You push at the boundary for a few years”
“Until one day, the boundary gives way”
Ph.D.
“Of course, the world looks different to you now”
“So don’t forget the bigger picture”
Keep Pushing

Adapted from Matt Might’s Illustrated Guide to a PhD: http://matt.might.net/articles/phd-school-in-pictures/
PhD Opens Career Options

- Academic career
  - Research University
  - Undergraduate teaching emphasis
- Research in corporate, national, and university labs
- Advanced product development
- Start-up company based on your PhD research
What is it like to pursue PhD?

With a partner, give estimates for

1. How long it should take to get
   a. MS in CS
   b. PhD in CS

Just joined us?
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Typical Graduate Study Timeline

Year 1
- Take Grad-level Courses
- Identify a Research Advisor
- Join research group
Typical Graduate Study Timeline

Year 1
- Take Grad-level Courses
- Identify a Research Advisor
- Join research group

Year 2
- Take more Grad-level Courses
- Complete First Mentored Research

Complete MS Degree

• PhD
• New Institution

Industry
• Start-up
• Research lab
Typical Graduate Study Timeline

**Year 1**
- Take Grad-level Courses
- Identify a Research Advisor
- Join research group

**Year 2**
- Take *more* Grad-level Courses
- Complete First Mentored Research
- Take PhD Exams

Complete MS Degree
Typical Graduate Study Timeline

Year 1
- Take Grad-level Courses
- Identify a Research Advisor
- Join research group

Complete MS Degree

Year 2
- Take more Grad-level Courses
- Complete First Mentored Research
- Take PhD Exams

Year 3
- Identify Specific PhD Topic
- Complete Initial PhD Research
- Draft PhD Proposal

Year 4
- Defend Proposal
- Complete More Research
- Write/Present Research Papers

Complete PhD Degree

Year 5+
- Complete More Research
- Write/Present Research Papers
- Write and Defend PhD Dissertation
How different is this from undergrad?

With a partner, list some differences you can foresee.

• Curriculum?
• Deliverables?
• Daily Schedule?
• Modes of working?
• Evaluation of success?

Just joined us?
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# How different is this from undergrad?

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Graduate Student Stipends

- Almost all PhD students and many MS students in CS receive free tuition and a stipend.
- Research Assistant – typically on project related to your PhD or MS thesis
- Teaching Assistant – grading, holding office hours, running problem sessions, possibly teaching a class
- Fellowships are also available
- Travel stipends support trips to conferences
How to Start?

• Talk with faculty
• Go to the University Booths too!
  • Ask about research opportunities and internal graduate fellowships
• Get involved in research experiences
  • CRA-W, NSF
• Look for external fellowships
  • Standard – NSF, DoD, DoE
  • NPSC, GEMS
# REU Sites

**REU Sites: Computer and Information Science and Engineering**

Please report errors in the list below by writing to reu.cise@nsf.gov.

## Search Again

Export results: CSV | Excel | XML

80 items found, displaying 1 to 20.

<table>
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<tr>
<th>Site Information</th>
<th>Site Location</th>
<th>Contact Information</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>Auburn University</td>
<td>Auburn, Alabama</td>
<td>Primary: Saad Biax (334) 844-6307 <a href="mailto:biazsaa@auburn.edu">biazsaa@auburn.edu</a></td>
<td>Research Topics/Keywords: Unmanned Aerial Vehicles (UAVs), Autonomous Flight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary: Richard O. Chapman (334) 844-6314 <a href="mailto:chapmro@auburn.edu">chapmro@auburn.edu</a></td>
<td>Abstract of Award</td>
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<td>Cofunded: Department of Defense (DoD)</td>
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<tr>
<td>Boise State University</td>
<td>Boise, Idaho</td>
<td>Primary: Dianxiang Xu (208) 426-5734 <a href="mailto:dianxiangxu@boisestate.edu">dianxiangxu@boisestate.edu</a></td>
<td>Research Topics/Keywords: Secure software development, detection/prevention of software vulnerability, assurance of access control, data privacy</td>
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<td>Secondary: Jyh-Haw Yeh</td>
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10-Week Research Experience for Undergraduates

- GRE Preparation (optional)
- Dates: Friday, May 19 2017 – Friday, July 28, 2017
- Students receive:
  - $5000 Stipend
  - Free room and board

How to Apply:

- Fill out online application
- Email ksiek@indiana.edu
  - Unofficial transcripts
  - 2 letter writers
  - (optional) a link to online website/portfolio

More Information: http://prohealth.soic.indiana.edu/reu/

Research supported by the National Science Foundation (CNS-1560276); PI: Katie A. Siek
Advanced Computational Research Experience

About ACRES
iCER ACRES is a 10-week summer Research Experience for Undergraduates (REU) in computational and data science. This REU is coordinated by Michigan State University’s Department of Computational Mathematics, Science and Engineering (CMSE), in partnership with the Institute for Cyber-Enabled Research (ICER).

Research projects provided through iCER ACRES focus on the development and enhancement of algorithms, models, and software for applications in multiple research areas that require high-performance computing resources. Research areas include: computational chemistry, biology, astrophysics, mathematics, big data science, and computational electromagnetics.

The program is sponsored by the National Science Foundation (NSF) with funding from the U.S. Department of Defense (DoD) ASSURE program. The REU site directors are Professors Kenneth M. Merz, Jr. and Brian W. O’Shea.

Important Dates
- REU Dates: May 21-July 28, 2017
- Application opens October 1, 2016
- Application closes February 28, 2017

MSU Sponsoring Colleges
College of Engineering
College of Natural Sciences

How to apply
- Fill out online application
- Submit:
  - Personal statement
  - Resume
  - Transcript
  - 2 references

Multi-disciplinary 10 week research experience
- May 21 – June 28

Students receive
- $5000 stipend
- Room and Board
- $600 travel exp.

iCER ACRES is an REU Site funded by a National Science Foundation grant to Michigan State University. The program also receives funding from the Department of Defense ASSURE program and Michigan State University.
Distributed Research Experiences for Undergraduates (DREU)

Overview

Eligibility
Application
Evaluation Criteria
FAQs
Compare to CREU
Program Procedures & Requirements

Are you an undergraduate student from an underrepresented group interested in exploring research in computer science?

Or are you a faculty member interested in being a research mentor?

Distributed Research Experiences for Undergraduates (DREU) might be the program for you!

DREU is a highly selective program that matches students with a faculty mentor for a summer research experience at the faculty mentor's home institution.

The objective of the DREU program is to increase

http://cra.org/cra-w/dreu/#overview
Universities may also have Summer Research Programs.
Universities may also have Summer Research Programs.

The EnSURE program has filled for 2016. Students who are interested in being notified when applications are available for the 2017 EnSURE program may CLICK HERE.

The EnSURE (Engineering Summer Undergraduate Research Experience) program at Michigan State University offers summer research opportunities for high achieving undergraduates who are studying at institutions in the United States or Puerto Rico. (Students from international institutions may wish to apply for the InGEAR program.)

During Summer 2016, the EnSURE program will take place on the MSU campus from May 23 through July 29, 2016.

EnSURE is an “internship in graduate school” and provides participants with an early opportunity to become involved in research by working with faculty mentors in one of eight Engineering departments:

- Biomedical Engineering
- Biosystems & Agricultural Engineering
- Chemical Engineering & Materials Science
- Civil & Environmental Engineering
- Computational Mathematics, Science & Engineering
- Computer Science & Engineering
- Electrical & Computer Engineering
- Mechanical Engineering

Curious about what the undergraduate research experience is all about? Check out this video, featuring an EnSURE program alumna and other undergraduates from MSU.

Expectations and Eligibility
As part of EnSURE, students work full-time on a substantive, faculty-guided research project and participate in professional development activities, including attending weekly seminars and completing periodic writing assignments. Due to the intensive nature of this program, it is expected that students will not enroll in summer coursework or accept other employment during the work week. At the discretion of the faculty mentor, it may be possible for students to enroll in limited (4 credits or less) online coursework or independent study; the student is responsible for any enrollment fees.

Applicants must meet all of the following criteria:
- current undergraduate student, studying at an institution in the United States or Puerto Rico, from any institution or major
- eligible for employment in the USA
What should you do next?

Complete the GHC survey
Apply and Share your new knowledge
Follow up with someone you met here
Visit CRA-Women web site and Sign-Up for CRA-Women Updates
Participate in CRA-W via Facebook, Twitter (@CRAWWomen), or Linked In

www.cra-w.org