The Graduate School Experience

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

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Twitter (@CRAWomen)

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This session for:

Undergraduate/MS students

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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

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More information on programs at CRA-Women booth in exhibit hall

Booth: 1122

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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

1981 MS CS, 1984 PhD CS, 1984 Visit. Assist. Prof, Univ. Mass, Amherst

-- 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)

1997 Assoc. Prof., 1998 Full Prof., 2003-7 CSE Dept. Chair, Mich. State Univ.

-- 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

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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

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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)

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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? http://archive.cra.org/reports/why.cs.phd.pdf
- Online discussion: ‘What makes a Master's in Computer Science (MS CS) degree worth it and why?’ at https://www.quora.com

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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!

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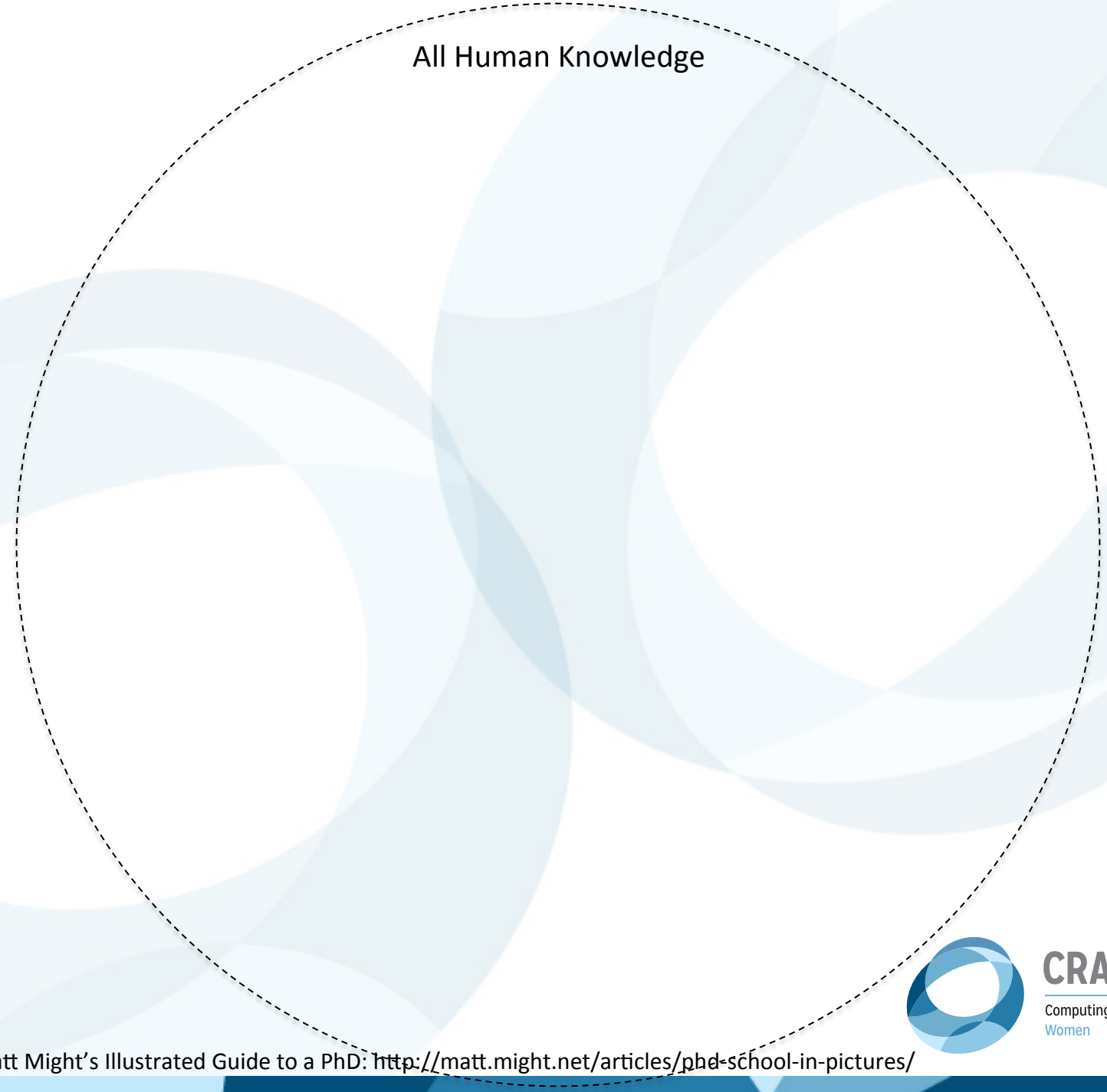
All Human Knowledge

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



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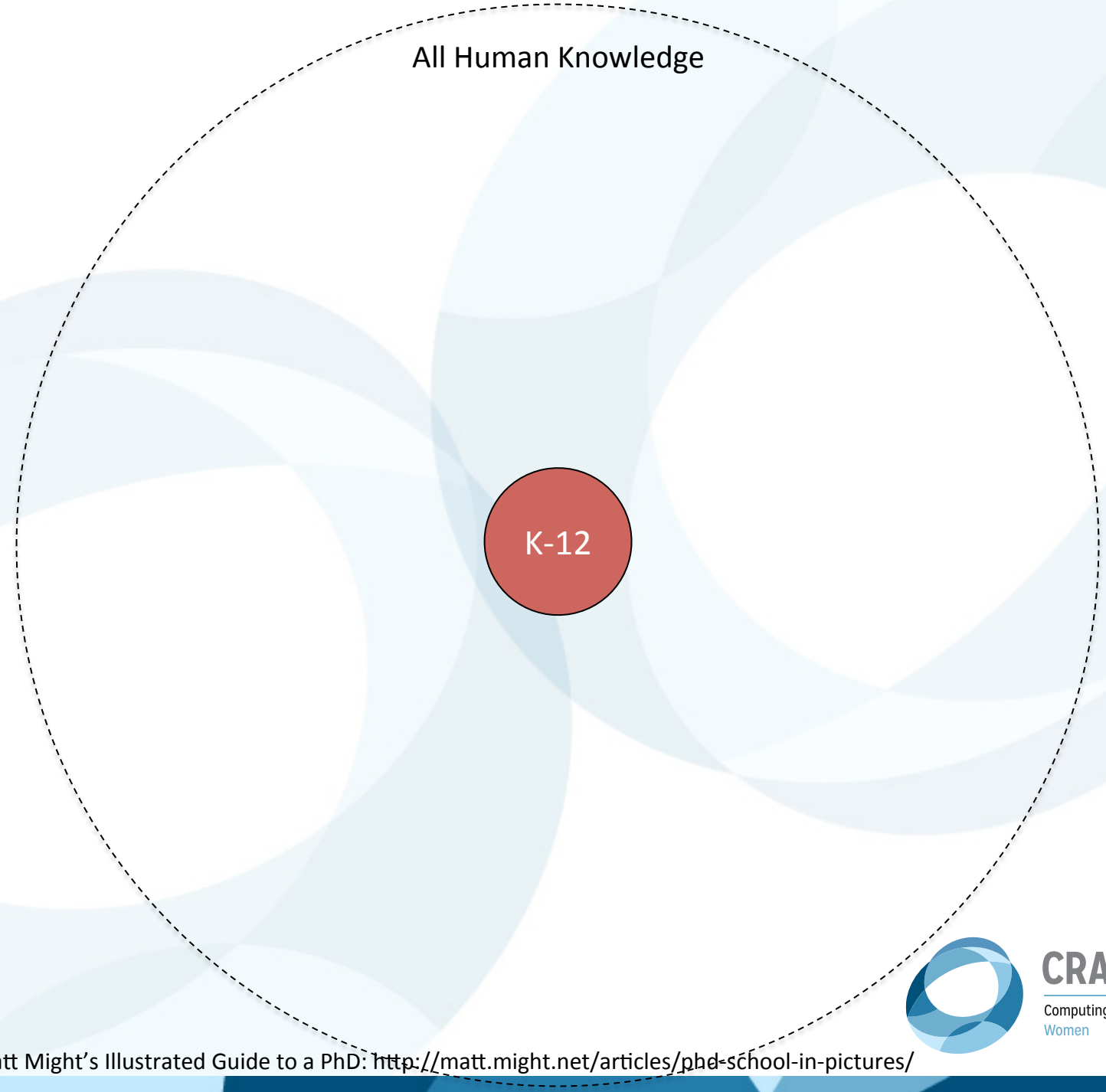

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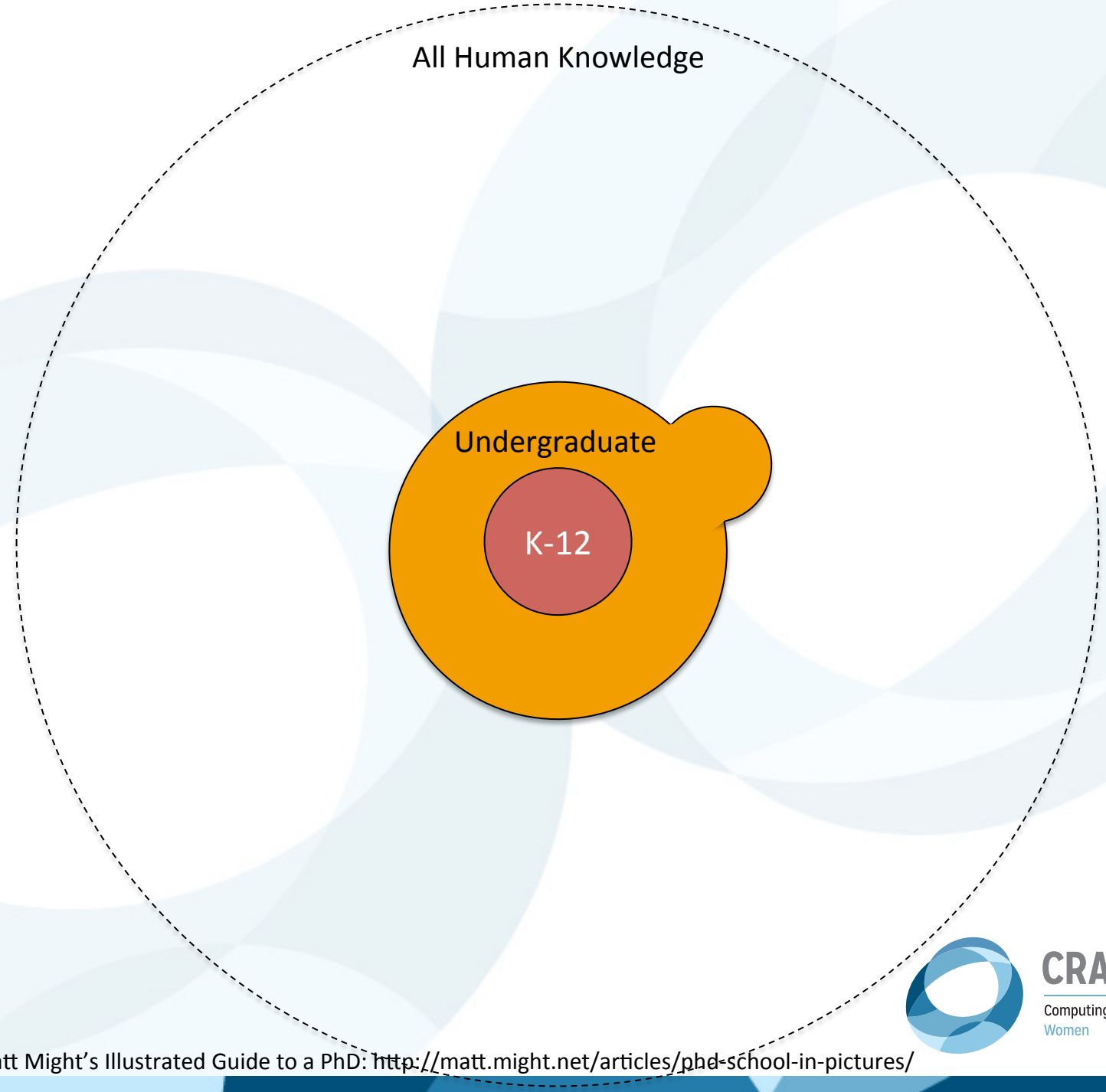

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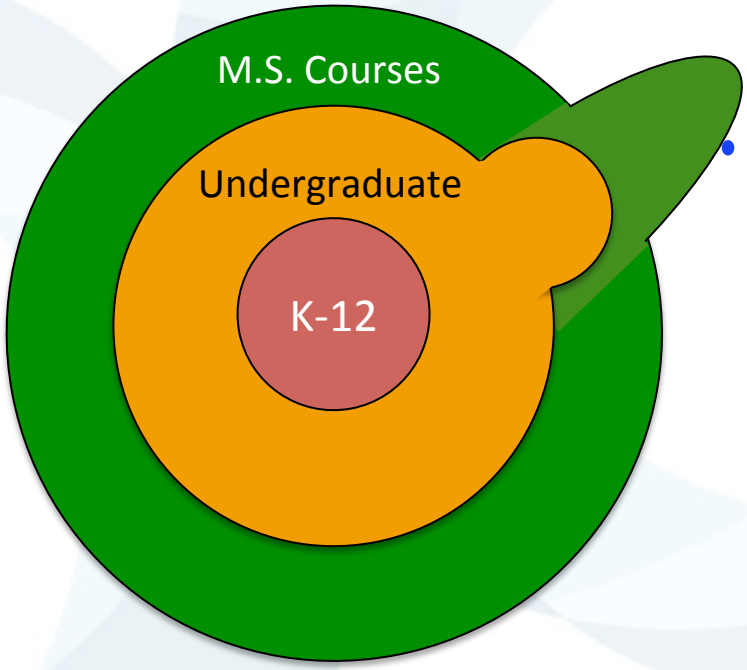

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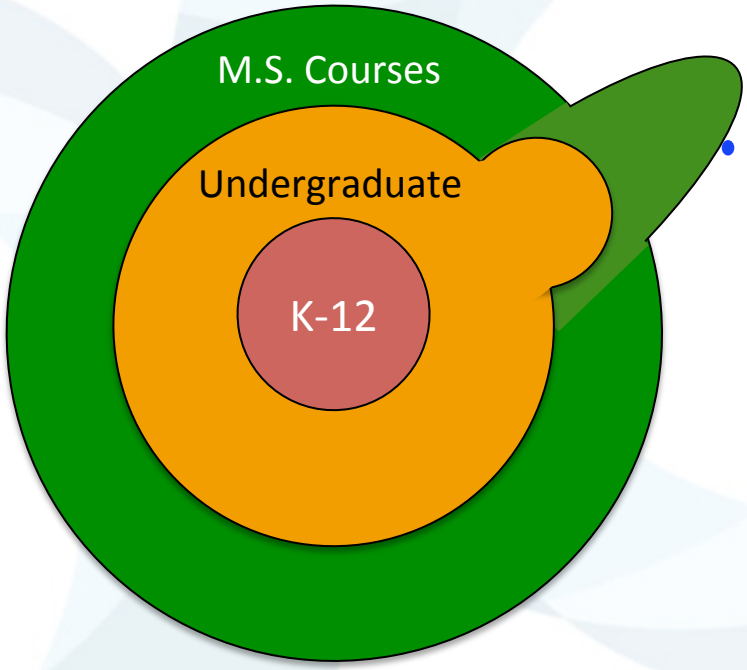
Why an M.S.?

- Specialize in area of interest
- Develop professional skills
- Build relationships with innovators
- See if research is a good fit



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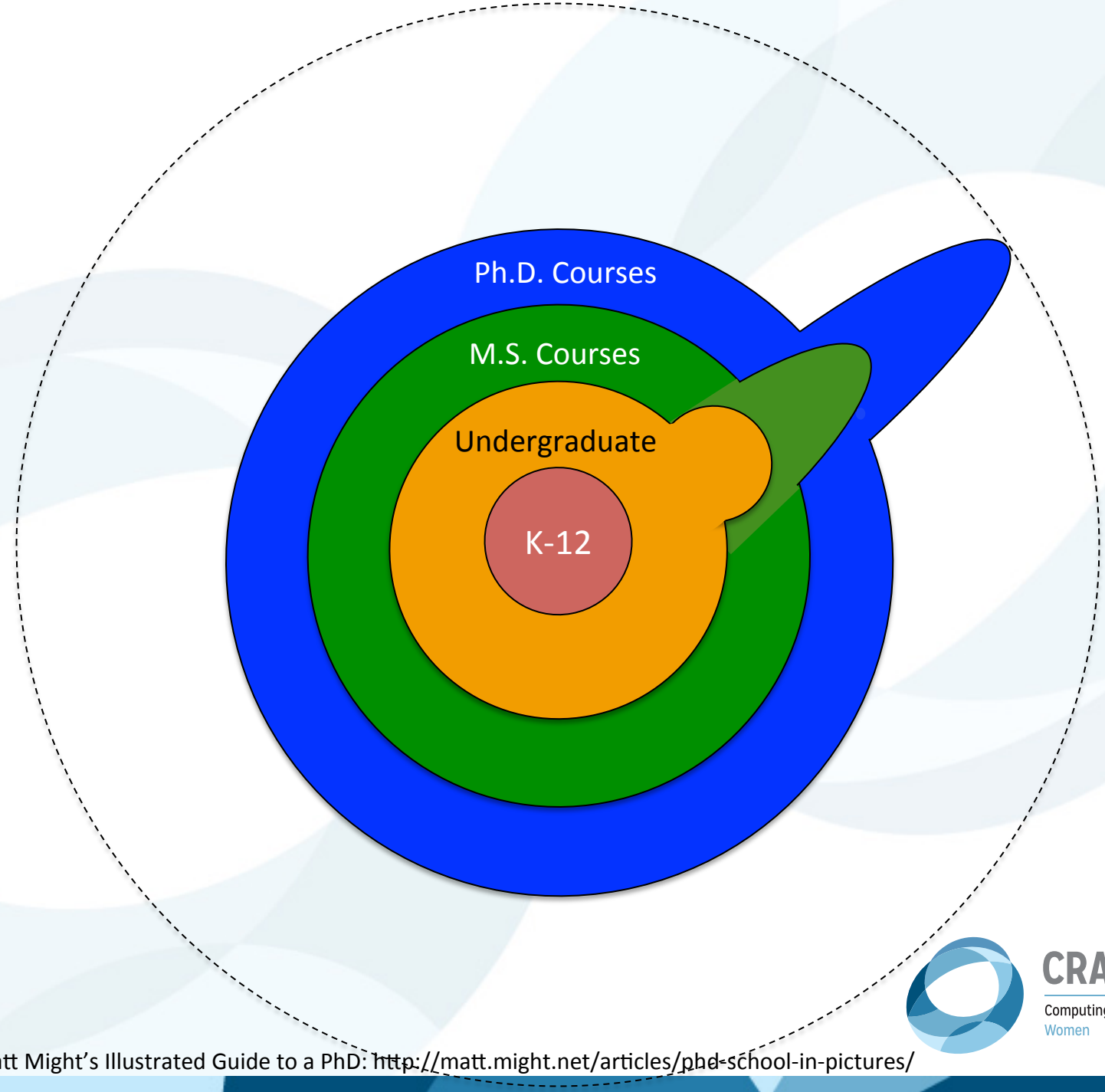

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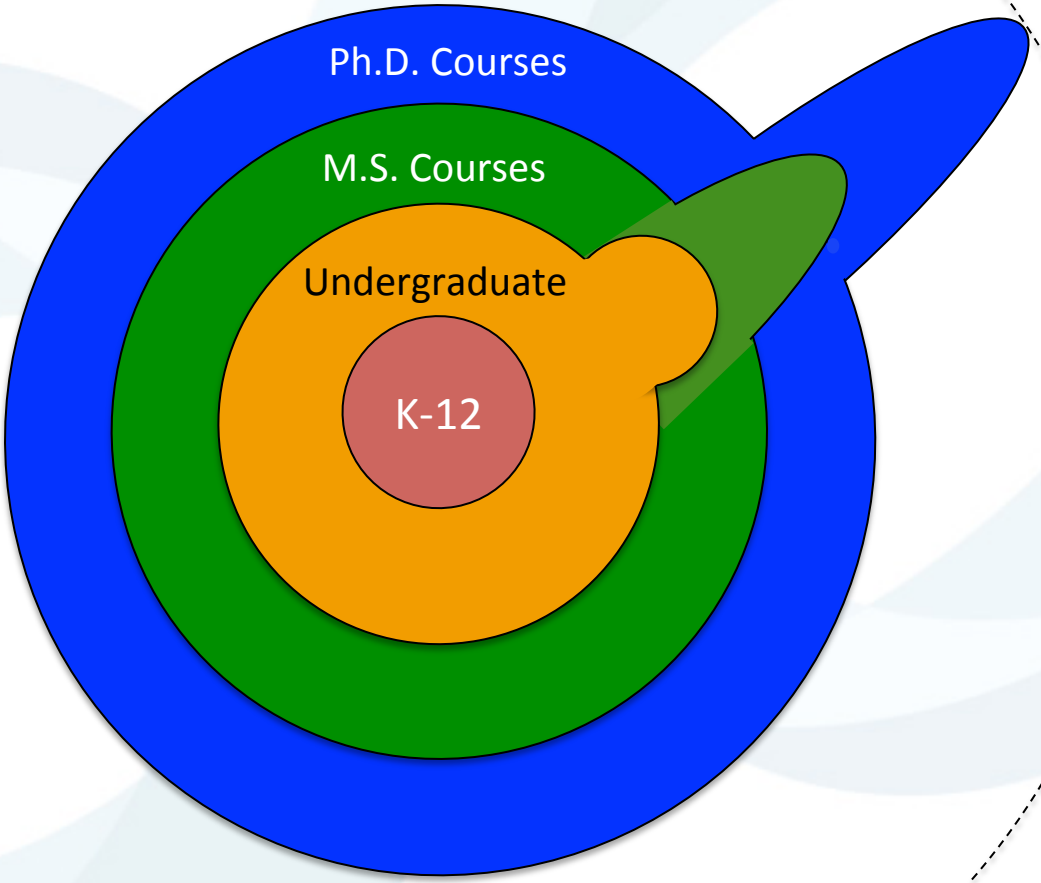
Adapted from Matt Might's Illustrated Guide to a PhD: http://matt.might.net/articles/phd-school-in-pictures/

Why a Ph.D.?

- Conduct *useful* research
- Make a significant impact on society
- Required for career in research



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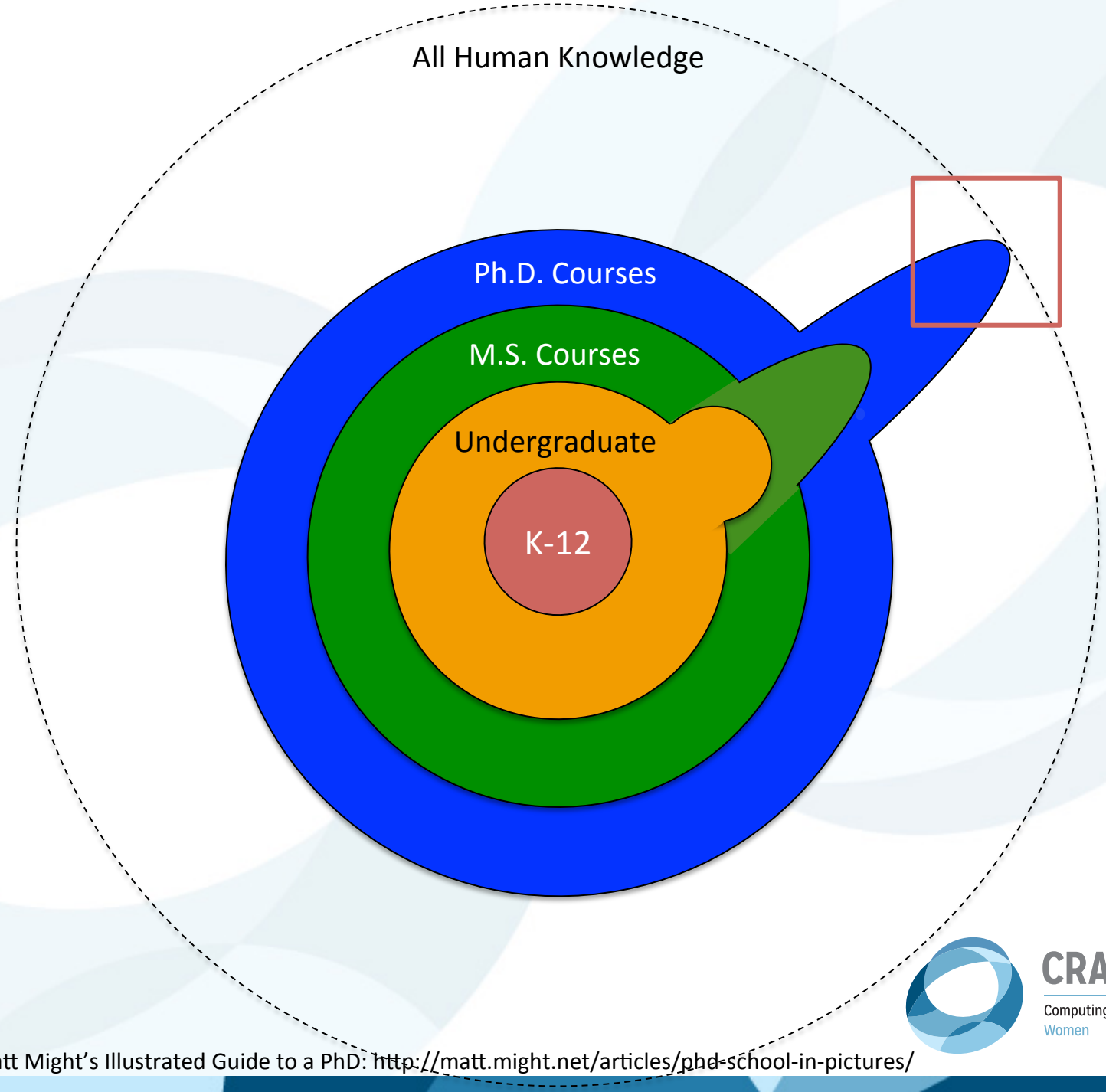

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“You push at the boundary for a few years”

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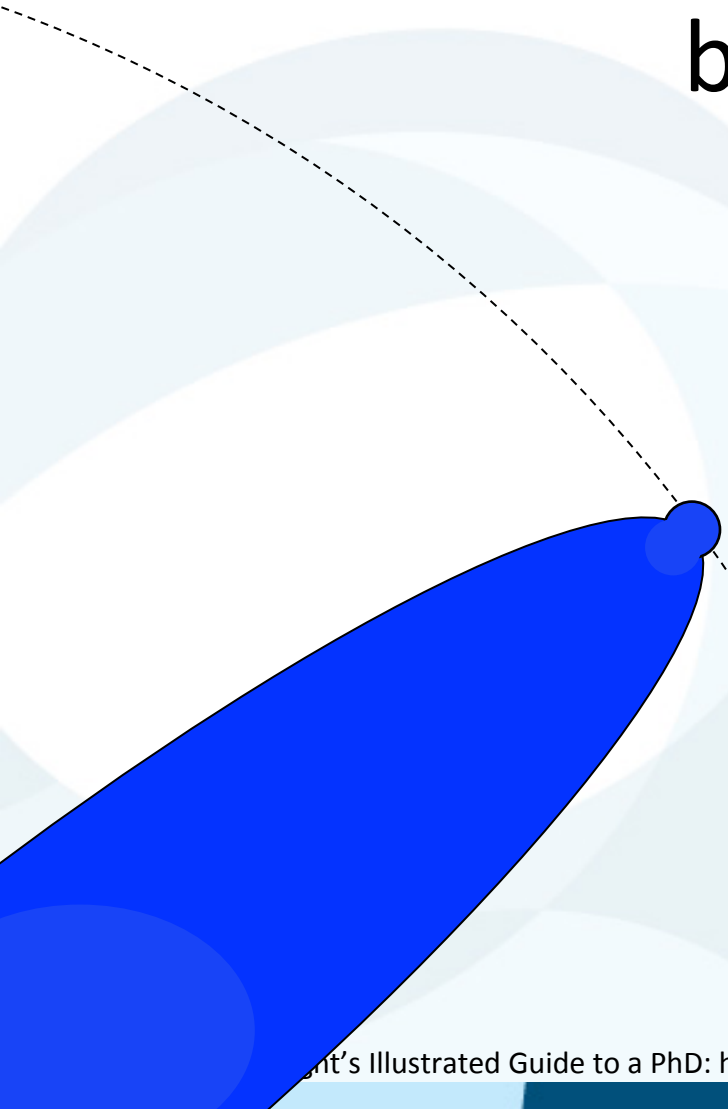
ght’s Illustrated Guide to a PhD: http://matt.might.net/articles/phd-school-in-pictures/

“Until one day, the boundary gives way”



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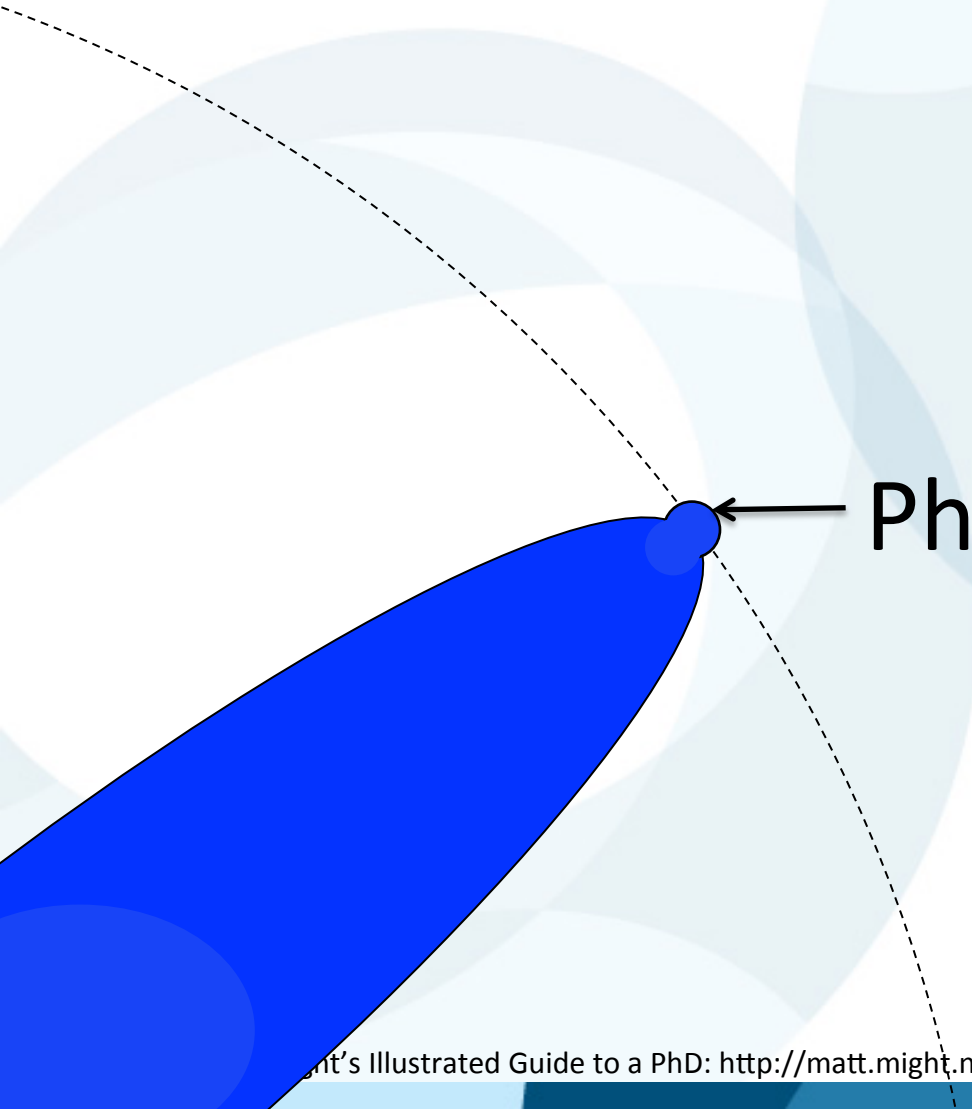

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“Of course, the world looks different to you now”

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"So don't forget the *bigger picture*"

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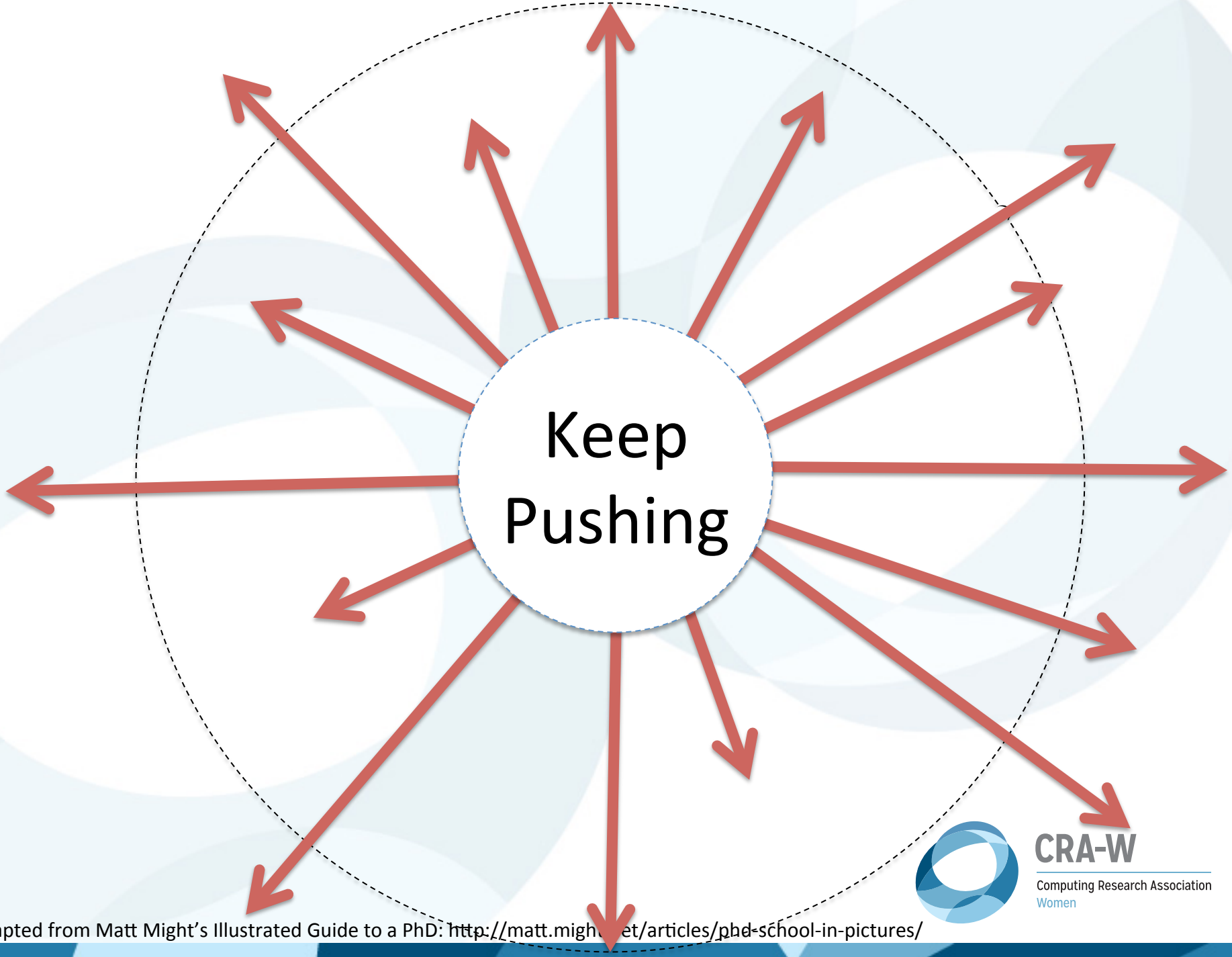

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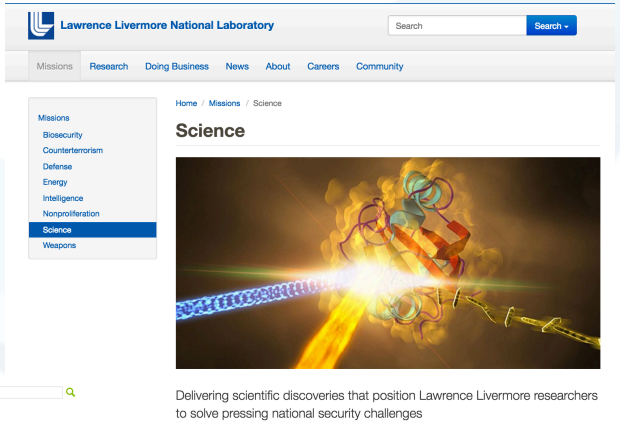
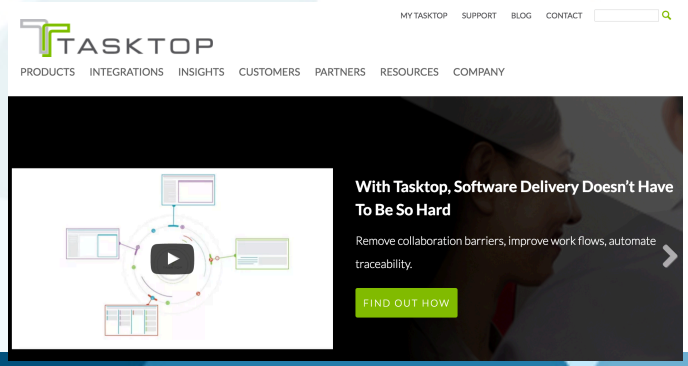
PhD Opens Career Options

- 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





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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

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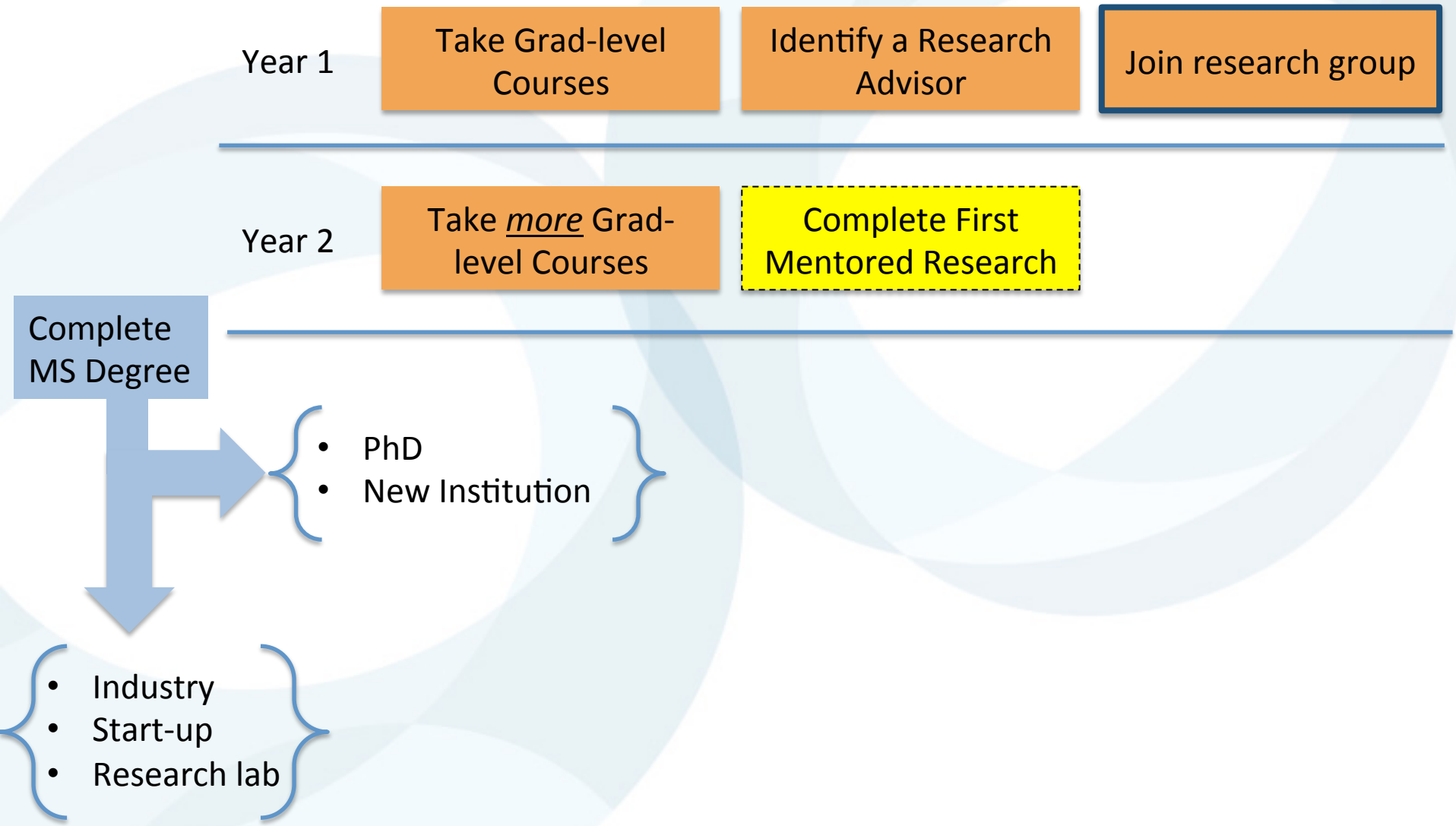
- Click on Student Login
- Type: PROFSIEK in the classroom box
- Keep it open!

Typical Graduate Study Timeline

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

Typical Graduate Study Timeline



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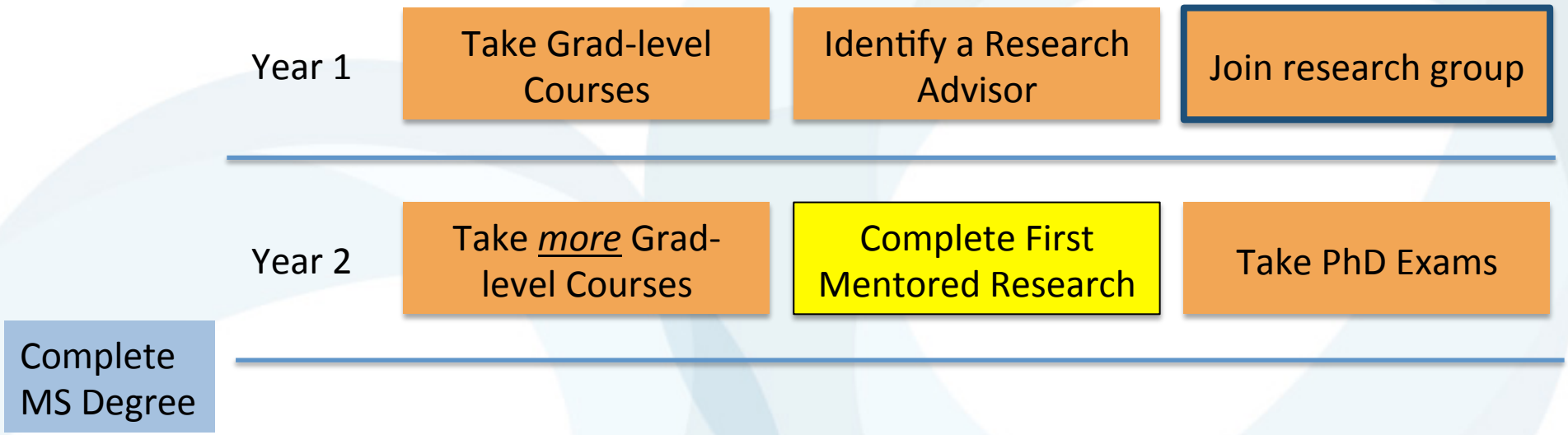

Typical Graduate Study Timeline

	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	Years 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?

- Go to socrative.com
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How different is this from undergrad?

Activities	Undergraduate	Graduate
Curriculum	Variety of Classes	All CS classes + Others related to research training
Deliverables	Exams & Class Projects	Research contributions, papers, posters, presentations, proposals, dissertation
Daily Schedule	Course Schedule	Flexible hours and open-ended deadlines
Modes of Working	Studying, absorbing, solving known problems	Innovating, experimenting, presenting, writing
Evaluation of Success	Exam scores, project grades	Research contributions, PhD Degree deliverables, publications

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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

Check funding model

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

National Science Foundation
WHERE DISCOVERIES BEGIN

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REU Sites

REU Sites: Computer and Information Science and Engineering

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

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80 items found, displaying 1 to 20.

[First/Prev] 1 2 3 4 [Next/Last]

Site Information	Site Location	Contact Information	Additional Information
Auburn University Research Experience for Undergraduate on Smart UAVs Center for Smart UAVs	Auburn, Alabama	**Primary:** Saad Biaz (334) 844-6307 biazsaa@auburn.edu **Secondary:** Richard O. Chapman (334) 844-6314 chapmro@auburn.edu	**Research Topics/Keywords:** Unmanned Aerial Vehicles (UAVs), Autonomous Flight Abstract of Award **Cofunded:** Department of Defense (DoD)
Boise State University REU Site: Software Security Computer Science	Boise, Idaho	**Primary:** Dianxiang Xu (208) 426-5734 dianxiangxu@boisestate.edu **Secondary:** Jyh-Haw Yeh	**Research Topics/Keywords:** Secure software development,detection/prevention of software vulnerability,assurance of access control,data privacy

https://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=5049

ProHealth REU SITE

Indiana University

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

- Multi-disciplinary 10 week research experience
  - May 21 – June 28
- Students receive
  - $5000 stipend
  - Room and Board
  - $600 travel exp.
- How to apply
  - Fill out online application
  - Submit:
    - Personal statement
    - Resume
    - Transcript
    - 2 references

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Increasing the success and participation of women in computing research.

ABOUT | PROGRAMS | SCHOLARSHIPS & AWARDS | RESOURCES | QUICK LINKS | SIGN UP FOR EMAILS | DONATE!

Distributed Research Experiences for Undergraduates (DREU)

SIGN UP FOR DREU UPDATES!

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 are 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

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All People Alumni & Giving News

Calendar of Events

SCHOOL OF

INFORMATICS AND COMPUTING

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Home > Faculty & Research > Student Research > Summer Research Opportunities in Computing

- Faculty Directory
- Centers & Areas
- Research Support
- Academic Positions
- Faculty Affairs
- Student Research
  - Undergraduate Research Opportunities in Computing
    - Summer Research Opportunities in Computing
    - Completed Project Posters

FACULTY & RESEARCH

Summer Research Opportunities in Computing

IU-SROC (Summer Research Opportunities in Computing) is a ten-week summer research program in the School of Informatics and Computing designed to attract high potential minority and majority students into graduate school in the fields of computer science, bioinformatics, human centered computing, computer vision, health informatics, security, cloud computing, [illegible] performance computing. Available projects will be listed

Summer Research Opportunities in Computing (SROC)

Project Options

Project options coming soon

For more information about this program, contact:
Dr. Lamara Warren
ldwarren@indiana.edu

Also see »

Undergraduate Research Opportunities in Computing (UROC)

Universities may also have Summer Research Programs

http://www.soic.indiana.edu/faculty-research/student-research/sroc/

Laura

https://www.egr.msu.edu/academics/graduate/ensure

HOME

engineering ENSURE summer undergraduate research experience

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 appy 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 eightEngineering 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 (@CRAWomen), or Linked In

www.cra-w.org

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