Getting Involved in Undergraduate Research:

Sciences, Technology, Engineering & Math

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Who are you?

- Name, Major
- Year
- Most interesting research topic
Undergraduate Research (UR) Workshop Goals

- Define UR and why it is important for you
- Things to consider when you look for and find an opportunity
- Introduce Undergraduate Research (UR) Opportunities website
- Discuss how you can get involved and fund your project
- Discuss timelines for each year
Undergraduate Research (UR)

is an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline. ([www.cur.org](http://www.cur.org))
UR in Every Division

- Arts
- Humanities
- Social Sciences
- Engineering
- Physical & Biological Sciences
Important Benefits for Students

- Participate in the university community
- Engage in the practice of your discipline
- Create knowledge, not just consume
- Complement coursework
- Help get into graduate school or job
- Career exploration
- Develop important traits: creativity, curiosity, ability to focus, verbal and written fluency, and respect for others’ contributions
Finding a Research Opportunity

- Networking
  - Friends, TAs, professors, etc.
  - Student groups
  - Informational interviews (CAN)
  - Ask at ACE, MEP, Academic Advisers

- Web resources
  - UCSC UR webpage
  - Career Center
  - Databases & Online Lists (more later)
Interests, Goals, & Practical Issues

- What classes/topics inspire you?
- What career involves your interests?
  - Does it require research training?
- What are the practical issues?
  - Do you have the time?
  - Do you need a paid position or credits?
  - Does the position require transportation?
Goals:
- Assist UCSC undergraduates to get involved in research
- Increase awareness of the important contributions of UCSC UR
- Educate faculty, staff, prospective students, and the community about UR at UCSC
Physical and Biological Sciences Division

Undergraduate Research in Physical and Biological Sciences

Select one of the topics below:
Preparing for Undergraduate Research
Finding a Research Opportunity
Join a Lab or Research Group
Funding Your Research
Presentation Opportunities—where and when
Communicating Your Results—posters and papers
Student Organizations

Finding a Research Opportunity
Finding a research opportunity is a process that will take a considerable amount of time and commitment. The suggestions below may help.

Consider your interests

http://ugr.ucsc.edu/PbSci
UNDERGRADUATE RESEARCH OPPORTUNITIES

Undergraduate Research Opportunities
Database

UCSC, regional, federal and selected multi-site programs.
Also see Other Research Opportunities

Filter by Program Name
Filter by Description, Keyword, or Contact

Major(s)
- Anthropology
- Applied Physics
- Art
- Biochemistry and Molecular Biology
- Bioengineering
- Bioinformatics
- Biology
- Business Management Economics

Hold shift (PC) or command (Mac) to select multiple majors. If no majors are selected, then all programs are displayed.

http://ugr.ucsc.edu/database
Other Research Opportunities

Please note that the accuracy of the information on these sites cannot be guaranteed.

Select one of the following topics:
- Databases & Lists that Include UR Positions
- Federal Agency Programs
- Additional Programs (cross-discipline)
- Summer Schools & Workshops

Databases & Internship Lists

Databases
- Pathways to Science
- UCSC Undergraduate Research Opportunities Database

Lists that Include UR position
- Cross-discipline Lists
- Opportunities Listing (cross-discipline) from UC Irvine
- Chisme Special Edition: Professional Opportunities 2014 (includes STEM, social sciences & humanities)
- Internship Resources from the UCSC Career Center
• UR Opportunity: Programs

• Multiple students
• A formal application/evaluation process
• Extra activities and/or benefits
• May involve placement in a lab
• Stipend and research expenses
UR Opportunity: Positions

- Are often negotiated directly with a professor/mentor/supervisor
- May be volunteer, for credit, or paid (not credit and paid)
- May be flexible
How Do I Get Involved?
Programs & Positions

- Be focused and assertive
- You are here, you can do it!
- Get an overview of the work
- Read web information thoroughly
- Apply to everything!
- Don’t take the process personally
How Do I Get Involved in a Program?

- Make sure you meet the eligibility requirements
- Meet/E-mail the contact person/coordinator well before the deadline, ask questions and for suggestions
- Notify your mentor about your application and when you’ll be asking for letters
Summer Programs

• Chance to focus on research
• Often include travel and housing
• Start looking for programs now-deadlines in winter/spring
• See Other Research Opportunities
  • Federal programs
  • Databases
  • Links to lists of programs
UCSC Programs of Interest

- Some classes include research
- Be sure to check your department for additional options
  - UCSC Forest Ecology Research Plot (academic year)
  - Impact Designs: Engineering and Sustainability through Student Service (IDEASS)
UCSC Programs of Interest

• **STEM Diversity Programs** - Feb. deadlines
  • Most are 2 years
  • CAMP (California Alliance for Minority Participation) is one year
  • Programs involve research, preparation for graduate school, tutoring, journal club, social activities and more

• **Research Mentoring Institute (RMI) for working on any aspect of the human genome** - Rolling deadline
UCSC Programs of Interest

- UCSC NSF Research Experience for Undergraduates (spring deadlines)
- Undergraduate Research in the Biological Effects of Climate Change
- Summer Undergraduate Research Fellowship in Information Technology (SURF-IT)
- The Lamat Summer Research Program on High Performance Computing in Astrophysics
Some Other Fun UCSC Programs

• Digital Arts and New Media (DANM) Call for Undergraduate Researchers
  • Programmers, computer graphics, application development, etc.

• Pinniped Cognition and Sensory Systems Laboratory

From http://pinnipedlab.ucsc.edu/multimedia/
UCSC Programs of Interest

- College Fellowships (see each college)
- UCDC - UC Washington Center
- UCCS - UC Center at Sacramento
Preparing Your Application

- Fill out application completely
  - Curriculum Vitae (CV) or resume
  - A personal statement
  - Reference letters from professors, not TAS
- Review by others for grammar, style, relevance, etc.
  - Give reviewers plenty of lead time
- Submit it on time
- If there are issues, contact the coordinator
- RELAX!!
Application Tips & Deadlines

Application Tips

- Help for every step of the process from Pathways to Science
- How to effectively obtain a letter of recommendation (from UCSC STEM Diversity)
- Writing a Curriculum Vitae (CV) (from UCSC STEM Diversity)
- Writing the Curriculum Vitae (from Purdue Owl Online Writing Lab)
- Writing the Personal Statement (from Purdue Owl Online Writing Lab)
- Summer Research–Applying and Getting in (from UCSC STEM Diversity)

Application Deadlines

April, 2013

- Psychology UR Funding due 4/5
- Deans' and Chancellor's Awards due 4/8
- Arts Division Internship Application due 4/12
- UCIRA Undergraduate Action Research Grant due 4/15
Getting Involved in a Position in a Lab/Research Group

• Identify a group you are interested in
  • Friends, classes, seminars, talks, etc.
  • List of Professor’s research interests
  • Don’t overlook industry, non-profits, government

• Contact the professor/group leader
  • E-mails should:
    • Be formal (Dear Dr. or Professor)
    • Be specific to group (refer to paper, webpage, etc.)
    • Explain why research is critical for your goals
    • Have correct spelling and grammar
    • See examples on UR webpage
Hi Joe,

My name is (Name) and I am a major in (name major). Is there space in your lab for an undergraduate? If so, what is the pay rate?

Thanks,

Name
Dear Dr. Professor,

I am a (year, major) at (university) and I am writing to ask about opportunities for undergraduate research in your lab beginning (time period). I am especially interested in your work on (describe a paper or talk). I would appreciate the chance to meet with you to discuss (the topic) and possible opportunities for me to become involved in the project. I am eager to develop my research skills while an undergraduate to help me (career goal).

I have attached my CV and unofficial transcript. Please let me know if I can provide any additional information.

Sincerely,
Ambitious Student
Email address
Getting Involved in a Lab/Research Group (cont.)

- Go to office hours
  - Go right after a test
- Be considerate
- Show genuine interest
- Ask about research and for advice
- Ask to go to lab/group meetings
- Credit may be possible
Join a Lab or Research Group

There are many research opportunities for undergraduates at UCSC, but unfortunately not enough for every student who is interested. You will need to be dedicated and focused to find and keep a position. The advice below can help you, but does not guarantee that you will get into a lab or research group.

If you have any questions or would like to have more information, please contact:

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To find out additional information for your field of study, go to the related webpage for the division/school:

- Engineering
- Humanities
- Physical & Biological Sciences
- Social Sciences

The pdf of the general work can significantly modify it based on your interests.

http://ugr.ucsc.edu/join_a_lab
Funding Sources

- See “Funding Your Research” for each division’s webpage
  - UR Award in the Sciences, due 11/3
- Summer internships pay for housing, travel, research expenses and a stipend
- Contact Financial Aid to see what you are eligible for
- Ask the professor, your academic adviser, and other students for suggestions
- Many colleges have funding - contact your college academic adviser
Funding Sources- Pivot

- Database of external funding sources
- Free for UCSC students but you need to register

http://pivot.cos.com/
What Can I Do Now?

Frosh- Step 1

- Get good grades!
- Plan to use Academic Support Programs
  - Learning Support Services Tutoring and MSI
  - Departmental tutoring
  - RAD (join all year) and/or MESA/MEP (join in fall)
- Go to TA and/or professor office
  - Email for an appointment if you can’t go to scheduled hours
- Study in groups
- Use on-line resources, like Youtube, for alternate explanations or more examples
Academic Support Programs

Check with your academic advisor for department specific programs.

**General Academic Support**

**Career Center**– The Career Center is dedicated to providing comprehensive, quality career development and employment/internship programs and resources that prepare a diverse student/alumni community to successfully meet today's and tomorrow's challenges.

**Disability Resource Center**– The DRC's goal is to assist the UCSC campus with equal educational access for students with disabilities.

**Educational Opportunity Program**– EOP provides a variety of academic and personal support programs designed to improve the retention and academic success of first-generation, low-income, or educationally disadvantaged college students. EOP serves to enhance undergraduate experiences by helping students acquire the skills to prepare for graduate programs, professional school, and future leadership roles. The Pre-Graduate Program hosts workshops every quarter.

**Learning Support Services**– Peer guided group sessions called Modified Supplemental Instruction (MSI) are available for selected lower and upper division undergraduate courses. Content related tutoring is available for all classes that are not supported by MSI.

**Services for Transfer and Re-entry Students**– STARS provides the extra academic and personal support transfer, re-entry and readmitted students may need to benefit fully from their education at UCSC whether they are full-or part-time. STARS is here to assist students with their pre-admissions questions, transfer and graduation planning.

http://ugr.ue.ucsc.edu/node/93
What Can I Do Now?

Frosh- Step 2

- Go to office hours often for major classes
- Ask for advice about how to prepare to do UR
- Read professor’s website and ask questions
- Plan to get LOR
- Find and talk to professor’s with interesting research, ask how to prepare NOW
What Can I Do Now?

Sophomores & Juniors

- Keep your grades high and keep going to office hours for your major classes
- Identify professors and contact them after reading their websites carefully
- Be persistent and assertive
- Network with friends, professors, TAs
- Research summer programs in early fall
  - Plan to apply to multiple summer programs
What Can I Do Now?

Seniors & Super-Seniors

• You can still try - some professors will take seniors

• Some students stay to take a light academic load and volunteer to do research

• Look into senior capstone/thesis programs

• Consider overseas research opportunities

• Look into post-baccalaureate programs

• Look into jobs, like being a tech, to get experience

• Consider a master’s degree
What's Next?

Participating in undergraduate research is excellent preparation for graduate school or employment. Remember that your interests may evolve during and after college, and that preparation for one career will provide skills that you can use even if you end up pursuing other options later in your life.

Select one of the topics below:
- Graduate School
- Post-baccalaureate positions
- Non-profit or Industry Positions

If you are considering graduate school:
- Talk to your research mentor about options early
- Talk to your mentor and graduate students in the department about how the process works in your discipline. You might ask:
  - What schools are strongest in your field? The best researchers in your field may be at a school you haven't heard of.
  - Where does your mentor think it would be best for you to apply?
- What schools have students in your lab?
- What schools offer the best support for students?

http://ugr.ucsc.edu/what_next
For More Information:

• Visit the UCSC Undergraduate Research Opportunities website, ugr.ucsc.edu

• E-mail rlanders@ucsc.edu to schedule an appointment

• Join the list-serve on the website

• Drop-in Office Hours, Baskin 153B
  • Monday, 3-5 PM
  • Wednesday 12-2 PM
  • Friday 10 AM-12 PM
Please fill out the evaluation and leave it up front.

Thanks!