

Engaging Undergraduate Students in Research and Discovery

Benefits to Faculty and the Role of the Undergraduate Research Center



Annaliese Franz, Faculty Director; Tammy Hoyer, Associate Director

website: <http://urc.ucdavis.edu>

Email: urc@ucdavis.edu

URC Mission - Our mission is to inspire and facilitate students' engagement in research, scholarship and creative activities in all disciplines. We empower students to find research opportunities working alongside faculty and provides them with resources to hone the skills that are vital to success as a researcher and in their future careers.

Overview - The Undergraduate Research Center represents a campus-wide collaboration that promotes undergraduate research as a high-impact student experience to enhance learning and readiness to succeed in future careers. Getting involved with research and discovery experiences enhances students' interactions with faculty, teaches students to think independently, develops critical analysis skills, and promotes leadership, teamwork and communication skills. The URC offers various awards and provides professional development and training activities and workshops to support skill development appropriate to the discipline (e.g., abstract writing, preparation for oral and poster presentations), and encourages student participation in research conferences and publication opportunities.

Role of faculty - Faculty guidance and mentoring is paramount to a positive and enriching undergraduate research experience. For all of our programs, fellowships and awards, faculty are required to be involved in the research process and must give their signature approval. A faculty member is also required to sponsor students for the Undergraduate Research, Scholarship & Creative Activities Conference. Additionally, faculty serve as PI's to our grants for CAMP and MURPPS, serve on the awards and prizes selection committees, serve as moderators for the conference, lend their expertise on the URC Faculty Advisory Board, and often lead many of our workshops/seminars.

What are different ways that faculty can have an impact?

There are many ways that faculty can have an impact, ranging from 2 hour as a poster judge to a lifelong mentor.

- Serve as a moderator/poster judge at the Undergraduate Research, Scholarship & Creative Activities Conference in spring quarter (April 29-30, 2018) - *only a 1-2 hour time commitment*
- Mention research methods and benefits of participating in undergraduate research in your classes
- Serve on a faculty panel sharing about your own experiences participating in undergraduate research
- Mentor an undergraduate student in a discovery experience and positively impact them early in their academic and professional career
- Mentor undergraduate students to co-author publications and present their research at national conferences
- Request a supplement for an undergraduate research stipend from the NSF (or other agencies)
- Include or support outreach and programs for undergraduate students in new grant proposals
- Develop and teach a First Year Seminar Course-based Undergraduate Research Experience (FYS-CURE) related to your research

Research credit via 99, 199 and 194H course codes - Every department on campus offers the course codes 99 (lower div) or 199 (upper div) "Special Study for Advanced Undergraduates", and also 194H (Honors Research). Students enroll in these courses when conducting research under the supervision of a UC Davis faculty member. Students must have permission of a faculty member and obtain a "Permission to Add" (PTA) number and CRN to enroll.

Supporting Letters for Grant Proposals - The URC can provide letters of support for NSF or other granting agencies. The URC faculty director can also offer ideas, suggestions and assistance for requesting NSF supplements to provide stipends to undergraduate researchers, or developing outreach and research activities in new grant proposals.

Don't Cancel Class! URC staff are readily available to make presentations about URC services in classes, workshops, orientations, and recruitment events. We can present a seminar on "How to Get Involved in Research" to your class that overviews the importance of research experiences in career development and provides valuable tips on how to find and secure a faculty-mentored research position. Contact us at urc@ucdavis.edu to make arrangements for your class. Short notice requests can be considered if staff are available at the desired date/time.

<http://urc.ucdavis.edu>

URC Resources and Awards/Funding for Undergraduate Research

The URC administers or collaborates to provide several award programs and research related opportunities for undergraduate students. All require faculty involvement and signature approval.

Chancellor's Award for Excellence in Undergraduate Research - Each year up to two graduating seniors who have completed outstanding research, scholarship or creative activities at UC Davis are selected for the Chancellor's Award for Excellence in Undergraduate Research. The award is announced and \$500 is awarded at the Chancellor's Award Reception and at commencement ceremonies. The deadline for applications is Wednesday, April 11, 2018 at 5 p.m. http://urc.ucdavis.edu/awards/chancellors_award/index.html

Chancellor's Award for Excellence in Mentoring Undergraduate Research - Each year a faculty member is awarded the prestigious Chancellor's Award for Excellence in Mentoring Undergraduate Research to recognize the importance and profound impact on students. There is also an award recognizing a postdoc/graduate student for excellence in mentoring undergraduate research. The deadline for applications is Wednesday, April 11, 2018 at 5 p.m. http://urc.ucdavis.edu/awards/chancellors_award/index.html

Provost's Undergraduate Fellowship (PUF) - Provides funding to cover research costs for undergraduate students doing research or creative projects under the guidance of UC Davis faculty members. Students from all discipline areas are eligible to apply. The maximum award is \$1,800 toward approved costs directly related to the project (no stipends). The deadline for applications is November 6, 2017 and April 16, 2018. <http://urc.ucdavis.edu/awards/puf/index.html>

Undergraduate Travel Award - The URC provides travel awards (up to \$500) to help undergraduate students pay for their registration fees, travel, etc., when presenting their research at a conference. Deadline dates for applications: November 6, 2017; February 5 and April 16, 2018. http://urc.ucdavis.edu/awards/travel_awards/index.html

Norma J. Lang Prize for Undergraduate Information Research - First, second and third-place prizes (ranging from \$500-1000) are awarded every year to undergraduate students in each of these two areas: (1) Arts, Humanities and Social Sciences as well as (2) Science, Engineering and Math. Types of entries accepted include creative works, empirical research, and interpretive analysis. Submission deadline is April 9, 2018. <https://www.library.ucdavis.edu/news/langprize/>

Undergraduate Research Publication Award - *New in 2018!*

The URC has a new award to recognize the accomplishments of undergraduate students who publish their faculty-sponsored UC Davis research in a peer-reviewer journal. Up to two undergraduate students who have co-authored a research paper will be selected each year. <http://urc.ucdavis.edu/awards/>

The Green Initiative Fund (TGIF) Grants - TGIF promotes sustainable development by providing monetary resources to the UC Davis community. Any student, staff, or faculty member of the University community can submit a project proposal to the TGIF Committee. The proposal needs to improve sustainability and benefit undergraduates. In the first granting year (2017-18), the committee hopes to award over \$200,000 to projects and research. Questions about grants may be directed to TGIF@ucdavis.edu. <http://sustainability.ucdavis.edu/students/TGIF/index.html>

Undergraduate Research, Scholarship & Creative Activities Conference - Open to UC Davis undergraduates in all academic fields, this year's conference will be held on Friday, April 27 and Saturday, April 28, 2018. Eligible students must submit an abstract and register to participate in the conference. The deadline date for registration/abstract submission is Tuesday, February 20, 2018 at 4 p.m. The conference is designed to acquaint undergraduates with the process and academic rigors of presenting research in a scholarly manner. In 2017, more than 700 undergraduate students presented their research, 383 faculty served as sponsors, and approximately 4,000 people attended the two day event! <http://urc.ucdavis.edu/conference/index.html>

FREE Poster Printing for Undergraduate Students Presenting their Research at Conferences

The URC offers FREE poster printing for undergraduates who are *presenting* research posters at a professional conference. Students should contact the URC office for details, urc@ucdavis.edu

<http://urc.ucdavis.edu>

Sponsored Undergraduate Research Programs at UC Davis

Selected examples, also see <http://STEM.ucdavis.edu>



Beckman Scholars Program

The purpose of the Beckman Scholars Program is to help stimulate, encourage and support research activities by exceptionally talented, full-time undergraduate students who have the potential to be outstanding leaders of the next generation of researchers. Includes stipend and professional development activities.

<http://urc.ucdavis.edu/programs/beckman.html>.

BUSP: Biology Undergraduate Scholars Program

BUSP is an intensive enrichment program for undergraduates who have a strong interest in undergraduate research in biology. Includes lab placement and professional development activities.

<http://eeop.ucdavis.edu/BUSP/index.html>.

CAMP: California Alliance for Minority Participation

The NSF-funded CAMP program aims to recruit and retain students in STEM majors, facilitate their academic success, and encourage their transition to graduate study. Faculty-mentored research experiences play a large role in the program and CAMP Scholars participate in research for 40 h/week during the summer and 10 h/week during the academic year. Includes stipend and professional development activities.

<http://urc.ucdavis.edu/programs/camp.html>.

McNair Scholars Program

The UC Davis McNair Scholars Program is a two-year program funded by TRIO and the U.S. Department of Education. It is designed to encourage students from groups often underrepresented in graduate programs to pursue doctoral degrees. Includes stipend and professional development activities. <https://mcnair.ucdavis.edu>.

Mentor/Mentee Program in Humanities, Arts, Cultural Studies and Social Sciences

The Mentor/Mentee Program pairs graduate student mentors with second year undergraduates in the humanities and social sciences to introduce students to academic research and build research and analytical skills. This will prepare undergraduate students to approach and work with professors, or pursue an independent research project or honors thesis. <http://urc.ucdavis.edu/programs/mmpshs.html>.

MURALS: Mentorships for Undergraduate Research in Agriculture, Letters and Science

MURALS aims to encourage students to further their education beyond the baccalaureate by conducting research with faculty mentors and participating in program activities. Includes stipend and professional development activities. <http://murals.ucdavis.edu>.

MURPPS: Mentorships for Undergraduate Research Participants in Physical & Mathematical Sciences

MURPPS is an undergraduate mentoring program designed to increase the number of underrepresented students who pursue graduate studies in the physical and mathematical sciences by offering students the chance to work with professors on research projects relevant to their major. Includes stipend and professional development activities.

<http://urc.ucdavis.edu/programs/murpps.html>.

UC LEADS: UC Leadership Excellence through Advanced Degrees

Students who are enrolled in a UC undergraduate degree program in the physical, life, or computer sciences; engineering; or mathematics will engage in 8 weeks of research during the summer for two summers, one summer on their home campus and one summer at a participating UC. Includes stipend and professional development activities. <http://ucleads.ucdavis.edu>.

VIP: The Vertically Integrated Projects

The VIP program integrates undergraduate education and faculty research in a team-based environment. It provides an immersive, collaborative, and flexible learning environment in which undergraduate students earn academic credits by participating in a research project for up to three years.

<http://vip.ucdavis.edu>.

<http://urc.ucdavis.edu>

15 Reasons to Engage Undergraduate Students in Research and Discovery

There are numerous benefits to faculty! Faculty and program coordinators who have experience mentoring undergraduate students helped compile the following list of reasons:

1. Undergraduates are inexpensive and talented research assistants that can often be as productive as new graduate students. Although undergraduates take an investment of time and energy to train, they can often be as productive in lab as new graduate students (especially if they are included in meaningful work) by the time they are upper division students. This investment is best started when the students are sophomores.
2. Undergraduates have not yet developed bad lab habits!
3. Mentoring undergraduates can be fun and rewarding; Faculty mentors gain personal satisfaction from working with their research students.
4. Mentoring undergraduates can be included as part of your "Teaching" (in MyInfoVault) and in the candidate "diversity statement" for merits & promotions.
5. Developing a vibrant culture of mentoring (especially of undergraduates and diverse people) establishes a foundation for including outreach and diversity aspects in new grant proposals.
6. To increase diversity in academia through mentorship of underrepresented minority students.
7. Including undergraduates in the lab creates a healthy atmosphere of inclusion for all people (PI, lab techs, post-doc, and graduate students).
8. Including undergraduates in lab provides opportunities for graduate students, post-docs and lab techs to develop their mentoring skills, which is very important for their career development.
9. You can positively impact students at an early stage in their academic/professional career. Student researchers value a unique bond with their faculty mentors.
10. Mentoring is a great way to keep in touch with undergraduate vernacular, preferences and trends. Undergraduates are like walking urban dictionaries!
11. Students' questions and inquiring minds can give you a fresh perspective, and may help recharge your academic batteries.
12. Educating undergraduates on the experience of research reaffirms your own interests in research.
13. Engaging undergraduates helps faculty to better articulate their research interests and practice communicate the importance of what they are doing.
14. You can win faculty awards and other recognition for mentoring; student accolades also directly reflect on the faculty mentor.
15. It's fun to see students experience the process of science; Faculty find it more effective to teach science and critical thinking skills through the lenses of research.



"I enjoy mentoring undergraduates and find that they invigorate my lab with their enthusiasm. I had such a great undergraduate experience myself and want to help educate the next generation of scientists with an undergraduate research experience."

Prof. Susan Kaulzarich

Chancellor's award for Excellence in Mentoring Undergraduate Research, 2016-17