

What is undergraduate research?

The Council on Undergraduate Research, a national organization in US founded in 1978 which represents more than 900 colleges and universities, defines undergraduate research as ***“any inquiry or investigation conducted by an undergraduate student that makes an original, intellectual, or creative contribution to the discipline.”*** This sets a high mark for success. Undergraduates may not attain this goal, but they and their faculty mentors work together in a process that improves the student’s learning and contributes significantly to new understandings of important issues.

Scientific Research Skills for Undergraduate Students

1. How to analyze previous research work (How to Analyze Work in the Literature).
2. Writing a Literature Review.
3. Ethical Issues in Research.
4. Learn about current state of knowledge.
5. Review journal papers that provide overview of literature.
6. How to Conduct Scientific Research.
7. Write proper proposals, progress or final reports.
8. Give excellent presentations appropriate for your audience (course-related presentation, conference, symposium, etc.)
9. How to publish research paper.

What should a student expect from a faculty research mentor?

1. Students should expect a clear statement of the mentor's expectations for them. This can include expectations for time spent on research, meetings with the mentor, intermediate and final deadlines for the submission of work, and any other scheduling issues of importance. And, students should understand clearly how the mentors are going to provide feedback to them.
2. Students should expect that their mentors will assign work that is challenging for the students but also reflective of their level of preparation. For example, a student who is newly involved in research may be asked to do bibliographic work or data entry. An advanced undergraduate researcher can be a partner in the formulation of interpretations and conclusions. Whatever the specific assignments, students and mentors understand that research is part of the student's learning.
3. Students should expect that their mentors will help them to see the "big picture" of which their work is a part.
4. Students should expect their mentors to make available any specific training necessary for the students to do what is expected of them. For example, this may involve instructions in how to safely use pieces of equipment.
5. Additionally, facilitate and encourage student engagement in this research activity.

How is research conducted and what students are expected to do?

There are significant differences in how research is organized and carried on in different disciplines. One of the exciting benefits of undergraduate research is the introduction that it offers to the research culture of a student's chosen field of study.

1. Undergraduate student researcher begins with an important question that is without satisfactory answers.
2. He then reviews the previous research, figures out an approach that he thinks will provide new and more accurate understandings, gathers and analyzes evidence, formulate interpretations, draw conclusions, and share those conclusions.
3. Undergraduate student can share ideas with faculty in small seminars that often provide the starting point for research projects of mutual interest
4. He can also pursue a research experience through Independent study (Credited Research Course). ***He can then publish a paper or participate in an academic event (conference, symposium, etc.)***
5. He can conduct research through individual arrangements with a faculty member (or individually arranged projects with a professor). ***He can then publish a paper or participate in an academic event (conference, symposium, etc.)***

References

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3. Purdue University, Undergraduate Research (<http://www.purdue.edu/research/Ugrad/getstarted.php>)
4. The University of Alabama, Undergraduate Research (<https://undergraduateresearch.as.ua.edu/students/research-program/faqs-2/>)