Biology Department Criteria for Research Distinction – auGDC guidelines

List of Biology Graduation Distinction Committee Members:

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The Research distinction requires 9 credits of courses that include a knowledge and/or experience that provide a foundation for how to do research. For Biology,

- 3 of the 9 credits must come from BIOL/BOT/BTEC/MICR 4890R
- 6 credits must come from courses listed below:

BIOL 2950R Independent Studies in Life Sciences
BIOL 3100 Introduction to Data Analysis for Biologists
BIOL 3150 Bioinformatics Data Skills (CURE)
BIOL 3200 Guided Research Experience (CURE)
BIOL 3515 Advanced Genetics Lab (CURE)
BIOL 3555 Experiments in Molecular Biology (CURE)
BIOL 3690R Introduction to Undergraduate Research
BIOL 4300 Bioinformatics and Genome Analysis (project based)
BIOL 4600 Bioinformatics Capstone (Project based)
BIOL 4890R Student Research
BIOL 4990R Senior Thesis
BOT 2050 Field Botany (project based)
BOT 2100 Flora of Utah (project based)
BOT 3210 Controlled Environment Experiments in Horticulture (Project based)
BOT 3500 Mycology (CURE)
BOT 3710 Plant Propagation (Project based)
BOT 3800 Ethnobotany (Project based)
BOT 4200 Plant Systematics (CURE)
BOT 4600 Plant Physiology (CURE)
BOT 4650 Greenhouse Management (Project based)
BOT 4700 Plant Tissue Culture (CURE)
BOT 4890R Student Research
BOT 4990R Senior Thesis
BTEC 2030 Cell Culture Techniques (CURE)
BTEC 2040 Advanced Nucleic Acid Laboratory (CURE)
BTEC 4890R Student Research
BTEC 4990R Senior Thesis
MICR 3150 Microbial Ecology (CURE)
MICR 3550 Microbial Physiology (CURE)

MICR 3650 Microbial Genetics (CURE)
MICR 4300 Pathogenic Microbiology (CURE)
MICR 4505 Applied Virological Methods (CURE)
MICR 4890R Student Research
SCIE 2400: Measurement and Analysis for Science Teachers (CURE)

BIOL/BOT/MICR/ZOOL 4900R/4910R Courses accepted on a case-by-case basis

Courses are not limited to courses within the Biology Department and can come from complementary disciplines, provided they are approved by the Biology GDC.

Guidelines and procedures for student-mentor relationships

Mentors will meet with the student regularly throughout the entire project. It is recommended that the meetings occur weekly or more frequently if needed. When the student has decided to seek a Distinction in Undergraduate Research or Creative Works, they should inform their advisor who will share with them the department's Declaration of intent form. The student completes the Declaration of Intent to initiate their inclusion into the program.

Initially, the student may need to conduct research with their advisor to become familiar with the research techniques. As soon as possible, the mentor and the student should collaboratively decide on a research goal. The student will then develop a proposal in line with the university's research distinction guidelines. The advisor will provide feedback, and the student will make revisions until the advisor is satisfied with the proposal.

At this point, the student will submit the written proposal and give an oral presentation on the proposed work to an audience that includes the advisor, a member of the department committee, and others as desired by the student and approved by the advisor (this could include other students conducting research in the lab, etc.). The research proposal will be approved if the project is deemed sufficient for distinction, is attainable and if the student is adequately prepared to carry out the proposed work. If the proposal is rejected, the student and the advisor can work together to produce a revised or different proposal and repeat the process.

In addition to advising the student, the mentor will assist in obtaining any resources needed to complete the research. The mentor will provide guidance and help the student find opportunities to present their work at conferences or through written manuscripts. Mentors will also assist in securing funds for conference registration, travel, publication fees and other related expenses.

An undergraduate research proposal should include the following elements:

- Project goal statement including objectives and significance of the problem.
- Background information
- Summary of the methodology
- Work completed to date (if applicable)
- Planned outputs
- Detailed budget
- Project timeline
- Literature cited

It is strongly recommended that students apply for a grant (College of Science SAC, URSCA, etc.) to fund the project.

A suggested timeline based on the general timeline for the Graduation Distinction in Undergraduate Research and Creative Works:

First semester	**Second semester**	**Third semester**	**Fourth semester**	**Final semester**
Identify a research mentor and begin your research project. Begin taking qualifying courses. Begin writing research proposal.	Submit the research proposal for funding. Continue taking qualifying courses. Present your progress to your lab members	Continue taking qualifying courses Present your progress at one of the UVU research symposia.	Finish taking qualifying courses. Present your progress at one of the UVU research symposia or another scientific meeting.	Present/Defend your final findings. Submit your final application for certification to auGDC. Submit request for graduation cord.