Utah Valley University
Undergraduate Research Graduation Distinction

Undergraduate research is recognized as a high-impact experience for learning and mastery within the undergraduate college experience here at UVU. You have the opportunity to learn about the principles of scientific research, literary analysis, and experimental design and follow your own curiosity toward innovation of new knowledge and contributions within your specific discipline. This experience provides opportunities to specialize in a specific area, connect with faculty, and prepare for career and/or graduate education in the sciences. This packet provides information about the Graduation Distinction in Undergraduate Research and Creative Works – with this packet specifically geared towards research. **Please read through this packet thoroughly – after that, questions may be addressed by contacting the chair of your department's Graduation Distinction Committee (auGDC). Contact information for each auGDC can be found on the graduation distinction website.**

DEFINITION OF RESEARCH ----------

Scholarly creative work for the distinction means student-driven, coursework-independent endeavors that add new knowledge or creative works to the student's field (including useful replication or validation studies). This work can be either individual or part of a research or creative team as defined by the distinction committee but must be independent of course deliverables. This work must be under the supervision or direction of a faculty advisor. Collaborative projects could occur within UVU or with external partners but would not include solely an internship or capstone experience. While the work does not have to be the student's own idea, the project must illustrate student's own implementation of the concepts and creative addition to their field. This work includes that which demonstrates advanced understanding and use of skills and methods within the specific and creative disciplines and will usually result in a product such as a creative piece, a scholarly article or manuscript, a presentation or other professional communication in the discipline, or an engineering or technology innovation. This definition aligns with both UVU's mission and national broad-based definitions of undergraduate research, such as that long-espoused by the Council on Undergraduate Research (CUR) which reads: "An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline."

The vital element of research is the generation of new knowledge. The research process includes key stages: 1) gathering information about current knowledge of the topic/problem/question produced by previous investigators (literature review); 2) formation of a question/hypothesis (research objective); 3) development/design of a means to address/test the research objectives (methods); 4) carry out the observations, testing, data gathering, and/or data analyses (enact the research); 5) analyze and interpret the research outcomes/results (inference/draw conclusions); 6) place this new body of knowledge into the context of existing knowledge, including assessment of limitations (contextualize); 7) communicate the outcomes through scientific presentations and/or publication.

Some purposes of research include:

- Developing or testing a theory, new method, or new device
- Predicting an outcome
- Making historical observations and inferences through modeling
- Systematic review, metanalyses, and critical analysis of former works

As an undergraduate researcher, you may not go through all stages of the research process. However, you must demonstrate critical engagement with the research process, contribution to a body of new knowledge individually or as part of a team, hold a foundational understanding of what is currently known about the topic, develop and/or enact a plan for scientific inquiry that is objective, and gather and analyze data towards the goal of creating new knowledge. You must then draw conclusions, infer limitations, and place your work within the context of others through scientific communication. **In sum, you must make a meaningful contribution to the body of knowledge within your discipline and demonstrate knowledge of your topic area.**

RESEARCH DISTINCTION ----------

Students who complete the requirements of this distinction will have **"Graduation with Research Distinction"** added to their transcript and diploma, and honorary cords bestowed at graduation. Students may participate in undergraduate research in the absence of earning the distinction – both are rewarding and valuable experiences for learning and contribution.

RESEARCH DISTINCTION REQUIREMENTS ----------

To earn graduation distinction in research at UVU, a student must:

- Declare intent to participate in the distinction through a formal letter of intent.
- Establish a formal mentor relationship with a UVU faculty member, including a signed mentor agreement/recommendation form.
- Complete a minimum of 9 credits from courses designated by the auGDC as providing foundation for scholarly work (see website for list of acceptable courses in your unit).
- Complete and certify an Undergraduate Research Proposal/Prospectus.
- Complete Progress updates at the end of each semester.
- Disseminate their work through one or more of the following:
    - a minimum of two presentations and/or demonstrations regarding the project (e.g., UVU Showcase, college/school equivalent, UCUR, NCUR, national or international academic, clinical or field venues).
    - Active participation in co-authoring a professional manuscript that is submitted (regardless of publication decision).
- Defend/Certify their mastery and project through mentor certification and auGDC approval.
- Student has submitted appropriate materials to the UVU Library for archiving (abstract, poster slides, presentation, manuscript, etc.).
- Engage with the distinction program for a minimum of 2 semesters and more commonly 3 or 4.

Students may decide to pursue a line of inquiry in a topic outside of their major department. If the proposed research is fully outside the major, distinction assessment will be determined by the department hosting the faculty mentor. Students may also choose to be co-advised by faculty in more than one department. In this case, both mentors should provide written documentation regarding support, mentorship, and assessment of the student and their work, with both department auGDC's communicating and outlining respective roles at the outset of student involvement in the program.

SUGGESTED TIMELINE ----------

First Semester	Second Semester	Third Semester	Fourth Semester	Final Semester

Identify a research Mentor or Professor and begin research project Begin taking research credits	Submit research prospectus for review Continue taking research credits	Continue taking research credits First presentation	Finish taking research credits Second Presentation	Present Findings Submit final application for certification to auGDC Submit request for graduation cord

UNDERGRADUATE RESEARCH PROPOSAL/PROSPECTUS----------

An undergraduate research project and proposal must include

- **Title page** (including abstract, 1 page maximum)
    - Project topic/title, name, date, department, advisor
    - Abstract (summary of the problem statement, objectives, and methods)
- **Body** (including figures)
    - Background and Motivation
        - Define a problem statement and objectives within general area of inquiry
        - Outline shortcoming of current knowledge base or approach
        - Discuss previous research in the area
        - Highlight importance of addressing your objective/hypotheses
        - Significance
    - Research Goals
        - Discuss the hypothesis/question or overall research objective(s)
        - Include what you aim to resolve through your work
        - If working as part of a team, outline your role in the overall project
    - Methodology
        - Provide specific details of your work, including such topics as
            - Study system
            - Data collection
            - Data analyses, including how, why, and what analyses and what programs/instrumentation you may use
    - Brief Personal Statement
        - Discuss your background in the field
        - Work completed to date, if applicable
        - Statement concerning arrangement for use of specialized equipment, data, samples, etc
        - Planned outputs/deliverables, including presentations, manuscripts, etc.
- **Project Timeline** (including all tasks, from courses to research completion).
- **Bibliography** (including all sources cited, formatted in appropriate scientific style).

Research proposals should be formulated in conjunction with a faculty mentor, but must represent the work of the student. Proposals will be vetted by the auGDC from your department, or the department hosting your mentor, and will assess the clarity of presentation, research contribution, and feasibility of the proposed work. Submission of the proposal does not guarantee acceptance into the distinction

program. Committee approval is required for pursuit of the distinction, but not for pursuit of the research independent of the distinction.

GETTING STARTED ----------

A challenging part of undergraduate research is to find a project. Begin by thinking about what aspects of your discipline interest you. Consider learning about faculty in your department or discipline at UVU by researching about what science they do by reading faculty profiles and their publications or websites, chat with other students you know are doing research or attend a student research showcase. You can also talk with your academic advisor, many of whom have a list of faculty actively doing research. The next step is to reach to a faculty member with whom you are interested in working. Email and ask for time to chat but be formal and respectful. Once you have done this – be patient – and be aware that faculty may not have room in their labs for more students or may not feel that they are a good fit for your needs or interests.

An overview of expectations – Conducting research takes time – both on you and your mentor. It is expected that students will work 10-12 hours or more per week in pursuit of their research. This will likely include lab and instrument trainings, weekly mentor and/or lab group meetings, etc. Plan this time into your schedule! Faculty are busy and they give their time and efforts to mentor you – be respectful of this by putting in the requisite effort on your part! Good and timely communication with your mentor is pivotal to your success. Note that insufficient progress at semester assessments may mean termination from the program.