College of Engineering Undergraduate Research Application

Course Number and Title: EGN 4912, Engineering Undergraduate Research

Catalog Description: Credit Hours: 0-3

The primary purpose of this course is to provide the student an opportunity for firsthand, supervised research. "Research" is defined as mentored, but self-directed, work that enables individual students or a small group of students to explore an issue of interest to them and to communicate the results to others. Projects may involve inquiry, design, investigation, scholarship, discovery, or application, depending on the topic, and the student is aware of how her or his project fits into and contributes to solving the larger problem to which it belongs. The student will usually assist a faculty member with a research project by helping to prepare the study and contributing in a meaningful way in meeting the objectives of the study. The student may work with a graduate student who is performing research supervised by a research faculty member.

Process for Enrollment: Prior to enrolling in this class, a student must receive the permission of a faculty advisor to pursue research in her/his laboratory. In consultation with the faculty advisor, the student must fill out the attached two-page application, sign it, and then have her/his faculty advisor and mentor (if applicable) sign it. The student will provide a copy of the application to the research advisor and mentor (if applicable) and will keep a copy for her/himself. This original signed form then must be taken to the appropriate advisor for registration, and the advisor will keep the form for departmental records.

All students pursuing a research project in UF's College of Engineering must enroll in EGN 4912 with the section number specific to the ***faculty advisor's*** department or to the College of Engineering (for those students pursuing research in a department outside of the College of Engineering). **UF undergraduate students doing research with faculty on the UF campus should not be volunteers (unpaid, unregistered) because of liability and accountability concerns.** If you are pursuing research in a laboratory of a faculty member who is not in the College of Engineering, please go to the College of Engineering Academic Advising Office in 204 Weil Hall to register in the college section.

Pre-requisites and Co-requisites: None. [Note: While no pre-requisites are required in general to enroll in this course, your project may have specific pre-requisites that your research advisor should identify before you enroll in this class.]

Instructor Information: Name, Office location, Telephone number, Email address

- Office hours: Day(s), time(s)

Graduate or Post-doctoral Student Research Mentor: Name, Office location, Telephone number, Email address

Course Website: The College of Engineering will maintain a Sakai web site for all students enrolled in undergraduate research. This web site will house information related

to safety, ethics in research, basic laboratory methods and tips, best practices in recording and keeping data, etc. Please consult with your faculty advisor for the web site.

Course Objectives: After completion of this course, the student will have learned

- to search the literature
- to take proper safety precautions in the laboratory, if relevant, to the project
- to properly keep an accurate record of research performed
- how to approach a research problem and develop a methodology
- how to write a research report
- to work in a team environment, if relevant to the project
- how to conduct herself/himself responsibly and ethically in research

The student will have fully participated in the research process with a desirable outcome of a final written report that synthesizes data collected or gathered and ideally an oral presentation.

Textbooks/Required Materials:

There is no required text in this course. If appropriate to the project, students are required to purchase a laboratory notebook and are encouraged to consult with their research advisor for recommendations on the style of notebook to use. Students should also consult in advance with their research advisor on the necessity of owning a calculator, laptop computer, etc. in order to perform their project tasks.

Recommended reading includes the following or comparable works on the same topics:

- Responsible Conduct of Research, National Science Foundation, available online at http://www.nsf.gov/bfa/dias/policy/rcr.jsp.
- On Being a Scientist: Responsible Conduct in Research, 2nd Edition, National Academy Press, 1995. Available at no cost at http://www.nap.edu/readingroom/books/obas.
- Avoiding Plagiarism Guide, George A. Smathers Marston Science Library, available online at http://www.uflib.ufl.edu/msl/07b/studentplagiarism.html.
- The Craft of Scientific Writing, 3rd Edition, by Michael Alley (1996), Springer-Verlag, NY, NY.
- The Craft of Scientific Presentations: Critical Steps to Succeed and Critical Errors to Avoid, by Michael Alley (2002), Springer-Verlag, NY, NY.

Attendance Policy:

Students conducting undergraduate research are expected to exercise a significant degree of autonomy in their work, completing research tasks with relatively little direct oversight from their research advisor. Nevertheless, the student should dedicate a minimum number of hours on their project that is consistent with the total credit hours sought for the experience. Besides the minimum expectations outlined in the Assessment section of this syllabus, the faculty advisor may also have additional expectations for participation, including attendance at group meetings, individual meetings, etc.

0 Credit Hours: Students can enroll in this course at 0 credit hours. This situation would be preferred by students who are approaching a maximum number of credit hours toward their degree or who are unable to cover the cost of tuition for these credits. Students registering for 0 credit hours should carefully discuss with their faculty advisor the time expectations for completion of the requirements of the class, and these expectations should be clearly articulated on the Engineering Undergraduate Research Form. **NOTE: If a student is not registered for any other course during the semester s/he wishes to enroll in EGN 4912 for 0 credit hours, the University of Florida will charge tuition and fees equaling to one credit hour to cover costs of processing the registration.**

1-3 Credit Hours: Students are expected to devote an equivalent of three hours a week of actual work in this class for each credit in which they are enrolled. Students can enroll in a total of 12 credit hours of this course during their undergraduate study at UF. Students should check with their department on the impact of excess surcharges and whether the credits will count toward their degree. Students should carefully discuss with their faculty advisor the time expectations for completion of the requirements of the class, and these expectations should be clearly articulated in the Engineering Undergraduate Research Form.

The policies for allowable absences and make-up work follow the university attendance policies: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Assessment: Faculty are encouraged to strongly consider the following grading rubric:

70% *Degree to which students meet expectations.* Expectations are to be established by the research advisor and student a minimum of one semester in advance of the student's enrollment in the research course. The agreed-upon expectations will be reflected on the Undergraduate Research Form signed by both the student and research advisor prior to the student's enrollment in the class. The following is a minimum set of expectations for every student enrolled in this class for credit: i.) perform a background literature search and review, ii.) develop a project plan, iii.) perform experimental work or applied experimental work, iv.) write and present a research report. All four of these minimum expectations as well as additional expectations (e.g., attendance at departmental and/or College research seminars, participation in research group meetings, etc.) are to be clearly established and articulated to the student by the research advisor prior to commencement of the research project.

20% *Quality of the final report and oral presentation.* The faculty advisor will provide clear expectations of the desired format, content, and deadlines of the final report. The faculty advisors will grade the final report.

10% *Attendance.*

You will receive a final grade of satisfactory (S) or unsatisfactory (U) in this course. That is, you will not receive a letter grade. A grade of S will be assigned if you achieve at least 70% of the available points by the end of the semester. For more information on grades and grading policies, please visit:
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

In order to provide the students a measure of performance mid-semester, the faculty advisor is expected to complete a mid-term evaluation of the student, accompanied by recommendations for improvement for the remainder of the term. The mid-term evaluation of the student should be accompanied by a one-on-one meeting between the faculty advisor and the student.

Absences and Make-up Work:

Requirements for attendance as clearly established and articulated by the research advisor are consistent with university policies that can be found at the following web site: https://catalog.ufl.edu/ugrad/current/regualations/info/attendance.aspx.

University Support Services:

Besides your departmental advising office, resources available on campus to help students meet academic and professional goals and address personal challenges, include the following:

- Engineering Student Affairs, 312 Weil Hall, 352-392-2177
- UF Center for Undergraduate Research, http://cur.aa.ufl.edu
- Career Resource Center, Reitz Union, http://crc.ufl.edu, 352-392-1601
- Student Mental Health, Student Health Care Center, 280 Fletcher Drive, http://www.shcc.ufl.edu, 352-392-1171
- U Matter, We Care Web Site, http://www.umatter.ufl.edu/, 352-294-CARE
- UF Counseling and Wellness Center, http://www.counsel.ufl.edu/, 3190 Radio Road, Annex in Peabody Hall, 352-392-1575

Honesty Policy:

All students registered at the University of Florida have agreed to comply with the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University." In addition, on all work submitted for credit the following pledge is either required or implied: "On my honor I have neither given nor received unauthorized aid in doing this assignment."

Because of the self-guided nature of the research endeavor, the research student must take

measures to ensure that she or he follows the highest ethical behavior, especially regarding collecting, recording, and reporting of data. If you have any question regarding ethical conduct in your research, first consult your research advisor.

If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: http://www.dso.ufl.edu/judicial/procedures/academicguide.html.

Accommodation for Students with Disabilities:

Students who will require an accommodation for a disability must contact the Dean of Students Office of Disability Resources in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: http://www.dso.ufl.edu/drp/services/. In keeping with UF policy, thestudent, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Office of Disability Resources will work with the instructor to accommodate the student.

UNIVERSITY OF FLORIDA COLLEGE OF ENGINEERING
UNDERGRADUATE RESEARCH APPLICATION

Note: All undergraduate students pursuing research with a faculty member at the University of Florida is required to enroll in 0-3 credit hours of Engineering Undergraduate Research (EGN 4912) under either the section number of the student's degree program or of the College of Engineering (if the student is performing research with a faculty member outside of the College of Engineering).

Once this application is completed, the student should present it to her/his academic advisor prior to enrolling in EGN 4912.

Student Information (to be completed by the student applicant):

Date: _____ Semester/Year of Enrollment: _____

Number of Credit Hours (0*-3): _____

Name (last, first, middle initial):		UFID Number:
Local Street Address:		
City, State, Zip Code		Phone Number:
Major:	Current Class/College:	Expected Graduation Date:
Gatorlink E-mail Address:		

BRIEF DESCRIPTION OF RESEARCH PROJECT:

I have prepared the research description above in consultation with my research advisor. I have read the responsibilities of the student included on this application, and agree to undertake these responsibilities. **Student's Signature:**_____

*** All students registering for 0 credit hours of EGN 4912 and are taking no other course during that semester will be charged for 1 credit hour to cover cost of processing the course.**

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Faculty Advisor Information (to be completed by Faculty Advisor):

Name:	College and Department:
E-Mail Address:	Campus P.O. Box:

Graduate Student/Post-Doctoral Mentor (if applicable):

Name:	College and Department:
E-Mail Address:	Campus P.O. Box:

Will the student's project involve export-controlled research? ___Yes ___No

Will the student's research involve with an infectious agent or clinical samples?
___Yes ___No

Will the student's research involve methods or procedures requiring specific safety training?
___Yes ___No

If yes, describe specific training that the student will receive prior to performing these activities.

What are your expectations for the student's attendance in this project (e.g., estimated hours/week in your laboratory, in seminars, group meetings, etc.)?

I approve of the research description and credit hours submitted by the student applicant. I have read the responsibilities of the research advisor (see next page) and agree to undertake these responsibilities. **Faculty Advisor's Signature: _____**

I have read the responsibilities of the research advisor (see next page) and agree to undertake these responsibilities. **Mentor's Signature: _____**

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RESPONSIBILITIES OF THE STUDENT

1. Seek out a faculty advisor and work with her/him in completing the application form prior to enrolling in EGN 4912.
2. Understand the faculty advisor's expectations of your work (specific research tasks, deliverables, timeline, etc.) on the project.
3. Work actively doing research and participating in other related activities for about 3 hours each week for every credit hour enrolled in the course.
4. Keep clear accurate records of your work.
5. Understand how to conduct research in a responsible and ethical manner. Follow the UF Honor Code at all times.
6. Follow all safety protocols and ask questions about safety protocols before performing any procedure about which you are unsure.
7. Ask for assistance when you need it.
8. Keep your faculty research advisor and/or mentor informed of your results.
9. If required, learn to work on a team while also pursuing independent research on your project.
10. Write and submit a research report following the guidelines and expectations of your faculty advisor and/or mentor.
11. Present your research findings in an oral presentation.
12. Strive to go beyond the minimum expectations of preparing a literature review and project plan, performing the research, and writing a final report. Seek out opportunities for oral presentations at a conference, writing and submitting a journal paper of your work, etc.

RESPONSIBILITIES OF THE FACULTY ADVISOR AND STUDENT MENTOR

1. Determine the appropriate number of credit hours to be assigned to the project. Approve and sign the application form to enable the student to register for 0-3 credit hours.
2. Clearly define your expectations of the student's participation on the project (specific tasks, deliverables, timeline, etc.).
3. Provide support and supervision of the student (either directly or by referring her/him to someone else, e.g., graduate student or postdoctoral mentor).
4. Meet regularly with the student to review her/his progress and to provide guidance in moving forward in her/his project.
5. Arrange for <u>all</u> safety training that is appropriate for the student to ensure her/his safety in your laboratory.
6. Help the student understand the broader context in which her/his research project fits and understand the basis for methods and procedures used.
7. Encouraged to provide a mid-semester evaluation of the student's performance, accompanied by recommendations for improving performance for the remainder of the semester.
8. Provide feedback and establish deadlines on the student's
    - literature review
    - project plan
    - final report
9. Assign the student's final grade (S or U).
10. Encourage the student to go beyond the minimum expectations of preparing a literature review and project plan, performing the research, and writing a final report.