THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES
COLLEGE OF ENGINEERING
Biosystems Engineering

DIRECTED RESEARCH PROPOSAL FORM

This form is for departmental records and is used to process enrollment. Students MUST complete this form and obtain signatures of approval for enrollment. **BAT and BE student must** upload the completed form into the appropriate BED2L Assignment box before the first week of the semester. **Non-BAT/BE majors must** return the form to Ms. Dava Jondall for enrollment before the first week of the semester. Students who complete this form after the first week of the semester, must also complete a Change of Schedule from to enroll in the course.

Reminder: The last day to register for courses without a $250 late charge in the Fall/Spring Semesters is the 21st day after the first day of classes; for **Winter/Summer Sessions** (to avoid a $50 late charge) register by the day before the last day to drop with deletion from the record.

Student Name _____ **Student ID #**_____

Student Phone #_____ **Student E-mail**_____

Course Number BE 492 or BE 592 **Faculty Section Number**_____

Number of Units_____ [Note: The University and Board of Regents have set a standard of 45 hours of course work for each unit of credit awarded.]

Semester_____ **Year**_____

Project Advisor_____

Title of Project (if known)_____

Estimated hours per week Student will spend on project _____

Estimated Project Advisor/Student contact hours per week _____

Date(s) for mid-semester evaluation of student performance _____

[Note: At least one mid-semester evaluation should be completed before the second drop deadline and a copy must be submitted to Ms. Dava Jondall, Shantz 425]

Description of project, including anticipated product (project plan may be attached)

How will the student summarize the research performed? (e.g., written summary, poster presentation, oral presentation). Please provide details (e.g., 10-page literature review).

* *

Scheduling of Directed Research

Before meeting with a potential project advisor, students should print out their semester schedule in block format from UAccess Student Center and highlight the possible time blocks available per week for directed research. Each unit of credit translates to three hours per week dedicated to research. For example, three units translate to approximately nine hours per week throughout the semester for a total of 135 hours. With the project advisor, identify which blocks of time will be used to fulfill the time requirement. Attach the highlighted schedule to this form, initialed by the project advisor.

Form Attached: _____

* *

REQUIRED SIGNATURES

STUDENT_____ **DATE**_____

FOR PROJECT ADVISOR USE ONLY

The student's grade for this course is based upon the level to which they meet the criteria listed in the description of the project and the intended learning outcomes.

PROJECT ADVISOR_____ **DATE**_____

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ACADEMIC CREDIT FOR DIRECTED RESEARCH

The Biosystems Engineering Department strongly encourages undergraduates to become involved in research. Participation in research provides exposure to potential careers, develops mentoring relationships with faculty and other members of research groups, and promotes understanding of science and engineering. Students may register for research credit at any stage of their academic career.

Intended Learning Outcomes

There are many tangible benefits to participating in a directed research experience as an undergraduate student. Joining a research group allows students to move beyond the traditional classroom environment into an atmosphere of discovery and collaboration and to focus on projects with broad impacts to the modern world. Undergraduate research provides the opportunity to integrate and strengthen comprehension of engineering principles; develop engineering, scientific, and professional skills; gain a greater understanding of scientific inquiry; and contribute to the generation of new engineering and scientific knowledge. Additionally, undergraduate research should facilitate the formation of a mentor/mentee relationship between the faculty advisor and the student. Although students may engage in a variety of activities under the title of Directed Research (including literature-based independent study), projects should generally be well-defined, have a high likelihood of completion during the undergraduate career of the student, use a variety of instrumentation or engineering/scientific techniques, promote awareness of safety practices, and improve familiarity with scientific literature. Additionally, courses with graded units should include a comprehensive report at the end of each semester. With these requirements in mind, please provide below a brief description of the planned activities for the semester, especially including those that are amenable to evaluation for grading purposes.

Students are responsible for making their own arrangements, which should be completed before the first week of each semester in which the student wishes to receive enrollment credit. This includes completion of the attached form and completing the BE Department steps for enrollment.

BE Department ENROLLMENT REQUIREMENT Steps:
Students MUST complete this form and obtain signatures of approval for enrollment.

- **BAT and BE** student must upload the completed form into the appropriate BED2L Assignment box before the first week of the semester for enrollment.
- **Non-BAT/BE** majors must return the form to Ms. Dava Jondall for enrollment before the first week of the semester.
- **All Students who complete this form after the first week of the semester**, must also complete a Change of Schedule from to enroll in the course.

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Policies for Independent Study and Directed Research

Updated with policies & guidelines approved by Faculty Senate, 5/5/08, with link to Honors Guidelines, 5/19/09

492 & 592 Directed Research:
(Credit varies) Individual or small group research under the guidance of faculty associated with research centers in the Biosystems Engineering Department. Students may receive credit for a maximum of 12 directed research units over the career. Grades available: A, B, C, D, E. Offered Fall, Spring, Summer.

1. **Determination of credit:** The University and Board of Regents require a minimum of 45 hours of course work for each unit of credit awarded.

2. **The number of credits of Directed Research** must lie within the approved credit range listed in the catalog course description.

3. **Students should not serve as simply another pair of hands for another lab member. Specific learning outcomes should be discussed.** The instructor or project advisor must provide either a course syllabus or a project plan detailing: (1) learning outcomes, (2) expected reading, or lab or field work, (3) expected meetings, (4) expected work products, and (5) criteria to be used for evaluation and grading.

4. **All proposal forms and project plans** must be signed by the instructor and the student and filed in the department or program office within a week after the term commences.

5. **At the end of the term,** or whenever the student completes the project, the instructor or project advisor must complete a record of the outcome that explains the grade submitted. The record of outcome form with the instructor's signature should be filed in the department or program office when the course grade is submitted.

6. **If students are paid in association with an Individual Studies course, academic credit can be awarded only for faculty-approved academic work as defined by department policy. BE department policies** students enrolled in Directed Research credit, may also receive pay research for their work with the approval of the BE Faculty mentor.

7. **If a grade of Incomplete is awarded** for a Directed Research course at the end of the term, another Project Advisor must be identified who agrees to evaluate the student's work, should the original Project Advisor become unavailable.

8. **Tuition resulting from enrollment** is the responsibility of the student.

9. **ENROLLMENT REQUIREMENTS:** Students **MUST** complete this form and obtain signatures of approval for enrollment. **BAT and BE student must** upload the completed form into the appropriate BED2L Assignment box before the first week of the semester for enrollment. N**on-BAT/BE majors must** return the form to Ms. Dava Jondall for enrollment before the first week of the semester.

10. All Students who complete this form after the first week of the semester, must also complete a Change of Schedule from to enroll in the course.

11. **To avoid a late fee for adding units**, students must register prior to the 22nd calendar day (following the first day of the semester). Any student who increases units -- including a student who has already paid full-time fees -- will be charged a $250.00 Late Registration Charge (see UA policy at http://www.bursar.arizona.edu/students/fees/latereg_charge). This late charge cannot be waived. To avoid the $250.00 Late Registration Charge, registration must be completed prior to the 22nd day of the semester.

12. For questions, contact: Ms. Dava Jondall; davaj@email.arizona.edu; 621-1753