

# FAQs ABOUT ENROLLMENT IN BE 4085, 4990, OR 4995

## BIOL\_EN 4085 Problems in Biological Engineering

## BIOL\_EN 4990 Undergraduate Research in Biological Engineering

## BIOL\_EN 4995 Undergraduate Honors in Biological Engineering

| EXAMPLE Structured Abstract<br>for<br>BE 4990: Undergraduate Research in Biological Engineering<br>OR<br>BE 4995 Honors Thesis Research in Biological Engineering   |   |
|---|---|
| Student:  | Jane Doe  |
| Supervising faculty:  | Dr. Mark Smith  |
| Title:  | Flow pattern imaging using shear-sensitive molecular rotors |
| Semester: Spring 2011   | Credit hours: 3   |
| Summary:  |   |
| <p>The goal of this project is to generate images of flow patterns in various flow channels and flow chambers. Rather than conventional techniques, such as particle tracking, a novel class of fluorescent molecular rotor characterized by an increase of fluorescent intensity in areas of elevated fluid shear stress will be used. The student will design and fabricate flow chambers, setup and use a precise flow apparatus, and acquire images of each chamber at various flow rates. In addition, the student is responsible for image processing, image analysis, and the quantitative analysis of the results (i.e. analysis of computed flow <i>versus</i> intensity).</p> |   |
| Engineering content:  |   |
| <p>The student will design a suitable flow chamber including the estimate or computerized simulation of flow behavior to achieve geometries that can easily be analyzed. The design component (flow chambers, precision flow system, fluorescent image acquisition system) is an important part of the engineering content.</p>   |   |
| <p>The study of fluid dynamics (including computed fluid dynamics) is a traditional engineering science. Data will be taken via image techniques and analyzed to determine the validity of the design and suggest improvements.</p>   |   |
| Approved by: (printed and signature) John Naismith  |   |
| Approved by: (printed and signature) Betty Shay   |   |

### Will a section in BE 4085, 4990, or 4995 fill up?

No. Independently-mentored sections have no enrollment cap AND can be enrolled in past your enrollment date.

### How many credit hours should I sign up for?

Using the permission number you are provided with, you can sign up for three (3) credit hours. A total maximum of six (6) credit hours can be earned with your faculty mentor in their section of the course. There are some exceptions to the credit hour rule.

### Do you have a faculty mentor/supervisor?

Your BE 4085, 4990, or 4995 mentor should have the same research interest as you. You should find a mentor one year before graduation, or a mentor must be found no later than the next-to-last semester before graduation.

### How do I enroll in BE 4085, 4990, or 4995?

BE 4085: A **summary is required** that describes what you will be doing to receive credit. It is not an abstract.

BE 4990: A **structured abstract** (sample at left) is required to show *engineering content (engineering science and engineering design)* that will be gained from the student experience. It is like the syllabus or topic outline for your experience. **The abstract needs TWO faculty signatures.**

BE 4995: A **structured abstract** (sample at left) is needed to show *engineering content (engineering science and engineering design)* that will be gained from the student experience. It is LIKE the syllabus or topic outline for your experience. **The abstract needs TWO additional signatures** besides your supervising faculty mentor/instructor.

### Have you provided Dr. Borgelt with:

1. A summary for BE 4085, or a structured abstract to for BE 4990 or 4995? AND
2. Obtained 2 faculty signatures? THEN....

YES, then you will receive a consent number (permission number) to enroll in a specific section of your course.

### Have you submitted an abstract elsewhere?

We still need a copy of all of the forms plus a copy of the abstract for your files. College or campus administrators sometimes ask about research.

### Did you submit an abstract last semester?

Please let us know. One abstract can cover two semesters.

