Course Title:
BME 488 Biomedical Engineering Internship

Course Description:
Participation in off-campus biomedical engineering practice. Students are required to submit a proposal to the undergraduate program director at the time of registration that includes the location, immediate supervisor, nature of the project, and hours per week for the project. One mid-semester report and one end of semester report are required. May be repeated up to a limit of 12 credits. *May be taken once for technical elective credit (3 credits).*

Prerequisit: BME 212 and permission of undergraduate program director.

3-6 credits, A-F grading; 3 credits equals 9 hours of onsite work per week.

Specific Information:

ABET (BME) Program Outcomes
3 an ability to communicate effectively with a range of audiences
4 an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5 an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

Outcome Measures:

Proposal
This brief report will contain the location, immediate supervisor, nature of the project, and hours per week for the project. The nature of the project may range from laboratory maintenance (i.e., equipment maintenance and calibration) to participation in engineering design, to project management or marketing. The report must be signed by the immediate supervisor and then approved by the undergraduate program director within 2 weeks of the start of the semester. This begins to address (3), but more importantly provides information for determining the appropriateness of the Internship.

Mid-term report
This report will be 5-7 pages in length, double spaced. It will include a description of the organizational structure of the team including the area of expertise of each team member (5), a description of the techniques, skills and tools the student is using, a description of the impact of this industry on specific biomedical engineering problems (4), and a short description of the actual project geared to a scientific audience (3). This report must be signed by the immediate supervisor and will be due to the undergraduate program director by October 15 for the Fall Semester, and by April 15 for the Spring Semester.

End of semester report
This report will be 5-7 pages in length, double spaced. It will include a detailed description of the project, including a background introduction to the problem (4), methodology or approach taken , the progress the student made independently and the progress of the total project (5), and a final summary statement of the student's perceived experience. Together, this report will also

address (3). This report must be signed by the immediate supervisor and will be due to the undergraduate program director by the last day of regular classes.

Letter from immediate supervisor

At the end of the semester, the immediate supervisor for the industry internship will write a letter evaluating the ability of the student to use techniques, skills and tools for the project, to function on a team (5), to communicate effectively (3), and to understand the broad impact of this project (4). The letter will include the overall performance of the student and whether the supervisor would hire a student with these skills and performance history. This letter will be due to the undergraduate program director by the last day of regular classes.

The undergraduate program director will grade the reports based on how well the reports meet the Program Outcomes and will score the letter from the immediate supervisor. For each item, the instructor will assign a numerical score of 1 through 4 where 1 is unsatisfactory and 4 is excellent. A total of 24 points are possible for these items.

Grading:
A-F

Page 3 contains the rubric that will be used by the UPD in determine the student's performance

Student: PI: Date:

	Unsatisfactory 1	Developing 2	Satisfactory 3	Exemplary 4	Points
Proposal	**Very little** relevant information is included in the proposal. The paper is poorly written and organized.	**Some** relevant information is included. Writing skills need improvement.	**Most** of the relevant information is included. The paper is generally well written but could be written and organized more effectively.	**Almost all** of the relevant information is included. The paper is well written and organized with only minor weaknesses.	____
Midterm Paper	**Very little** relevant information is included in the proposal. The paper is poorly written and organized.	**Some** relevant information is included. Writing skills need improvement.	**Most** of the relevant information is included. The paper is generally well written but could be written and organized more effectively.	**Almost all** of the relevant information is included. The paper is well written and organized with only minor weaknesses.	____
Final Paper	**Very little** relevant information is included in the proposal. The paper is poorly written and organized.	**Some** relevant information is included. Writing skills need improvement.	**Most** of the relevant information is included. The paper is generally well written but could be written and organized more effectively.	**Almost all** of the relevant information is included. The paper is well written and organized with only minor weaknesses.	____
Communication	Student **never** included industry mentor on communication with UPD	Student **rarely** included industry mentor unless prompted by UPD	Student **sometimes** included industry mentor without prompting by UPD.	Student **always** included industry mentor without prompting by UPD.	____
Industry supervisor letter, lab behavior	Student **almost never** functioned well/professionally within the industry setting	Student **occasionally** is functioned well/professionally within the industry setting	Student **usually** functioned well/professionally within the industry setting.	Student **almost always** functioned well/professionally within the industry setting	____
Industry supervisor letter, general	Student **did not** display proactive behaviors of initiative and motivation	Student **rarely** displayed proactive behaviors of initiative and motivation	Student **usually** displayed proactive behaviors of initiative and motivation	Student **always** displayed proactive behaviors of initiative and motivation	____

Grading Scale: **Total Points:**

22-24: A **20-21: A-**
18-19: B+ **16-17: B** **14-15: B-**
12-13: C+ **10-11: C** **8-9: C-**
<8: D