

BME:3995 Undergraduate Research in Biomedical Engineering

Syllabus

Student Name: _____ Student ID Number: _____

Mentor Name: _____ Semester/Year: _____

Project Title: _____

Hours Enrolled (s.h.): _____ Date Form Submitted: _____

Note: University [policy](#) states that 1 s.h. of academic credit represents a minimum of 3 hours of work each week or 45 hours over the full 15-week semester. To receive academic credit, the student cannot receive financial compensation for their work. The form must be received in workflow by the BME Director of Undergraduate Studies by the first Friday of the semester in order to be considered for focus area elective credit. After approval has been made, the student will receive special permission to register for BME:3995 from the BME department.

SUMMARY: In 150 words or less, describe the goal of your project and the work that you plan to complete this semester.

Project Deliverables (at least one is required):

- Primary poster presenter at Fall/Spring Undergraduate Research Festival
- Primary poster presenter at College of Engineering Research Open House (Spring semester only)
- Primary author of a written report

Mentor Signature: _____ Date: _____

A-F Grading Rubric for BME:3995

Category	Description	Score 1	Score 2	Score 3	Points Given
Knowledge and understanding of research significance.	Demonstrates good understanding of research significance	Significance of question or engineering technology is vague.	Identifies a question or engineering technology.	Identifies a highly significant question or engineering technology.	
	Demonstrates good understanding of research goals	Goals of research are vague or unclear.	Goals of the research are stated, but not very clearly.	Goals of research are clearly stated.	
	Displays proper understanding of prior research	Unaware or confused about several areas of prior research. No understanding of limitations and assumptions of prior research.	Some understanding of limitations and assumptions of prior research but could have done more.	Displays adequate knowledge and understanding of prior research in the field, including limitations and assumptions of prior research.	
Knowledge and understanding of methodology	Completes data collection using proper techniques	Struggles to utilize the required techniques and/or instruments to collect data.	Needs some assistance with the required techniques and/or instruments to collect data.	Accurately and thoroughly utilizes the required techniques and/or instruments to collect data.	
	Understands appropriate experimental design	Struggles to articulate the different groups of data, such as experimental treatments versus controls, including whether multiple data sources were analyzed.	Needs some assistance to articulate the different groups of data, such as experimental treatments versus controls, including whether multiple data sources were analyzed.	Can articulate the different groups of data, such as experimental treatments versus controls, including whether multiple data sources were analyzed.	
Knowledge and understanding of results	Provides accurate explanation of results	Results are not very clearly explained, level of detail is insufficient, and there are more organizational issues.	Results are explained but not as clearly, level of detail is not as sufficient.	Results are clearly explained in a comprehensive level of detail and are well-organized.	
	Provides understanding of statistical analysis	Statistical analyses are inappropriate; tests are not accurately interpreted.	Statistical analyses are appropriate; tests are not accurately interpreted.	Statistical analyses are appropriate; tests and are accurately interpreted.	
	Conveys results clearly and accurately	Tables/figures are absent or not clear/concise in conveying the data.	Tables/figures are not as clear/concise in conveying the data.	Tables/figures clearly and concisely convey the data, including examples and summaries.	

Conclusions/ Future work	Appropriately interprets results	Interpretations/ analysis of results lacking in thoughtfulness and insight, are not clearly informed by the study's results, and do not adequately address how they supported, refuted, and/or informed the hypotheses.	Interpretations/ analysis of results are sufficient but somewhat lacking in thoughtfulness and insight, are not as clearly informed by the study's results, and do not as thoroughly address how they supported, refuted, and/or informed the hypotheses.	Interpretations/ analysis of results are thoughtful and insightful, are clearly informed by the study's results, and thoroughly address how they supported, refuted, and/or informed the hypotheses.	
	Demonstrates knowledge of connection with prior research	Discussion of how the study relates to and/or enhances the present scholarship in this area is limited.	Discussion of how the study relates to and/or enhances the present scholarship in this area is adequate.	Insightful discussion of how the study relates to and/or enhances the prior knowledge in this area.	
	Provides appropriate suggestions for further work	Suggestions for further research in this area are very limited.	Suggestions for further research in this area are adequate.	Suggestions for further research in this area are insightful and thoughtful.	
Documentation of sources; quality of sources	Appropriately documents sources	Few figures and sources are cited correctly.	Most figures and sources are cited correctly.	All figures and sources are cited correctly.	
	Utilizes high quality sources	Cited sources are of mediocre quality.	Cited sources are relevant and of acceptable quality.	Cited sources are highly relevant and of high quality.	
Communication (poster or paper)	Organizes final deliverable appropriately	Information is presented in a confusing manner.	Information is explained clearly in a logical order.	Information is explained clearly in a logical order, in well-formed paragraphs.	
	Uses high quality visual aids	Visual aids are present but distract or do not enhance the presented information.	Visual aids clearly demonstrate the information.	Visual aids are appropriate and easily understood; they complement and enhance the presented information.	
Organization & Lab Habits	Maintains good documentation practices	Only has few documentations of work, is not organized with samples/files.	Has good lab notebook documentation of work, is slightly disorganized with sample/files.	Has good documentation of work, good sample organization, and has left work in a readable and transferrable condition for incoming researcher.	

	Maintains an organized workspace and completes required safety trainings.	Messy workspaces, some major safety infractions.	Sometimes messy workspaces, no major safety infractions.	Keeps workspaces clean, no major safety infractions.	
Research proficiency and skill development	Demonstrates good lab/computational proficiency and increasing independence over the semester	At end of semester: cannot complete tasks, lacks understanding of fundamental topics, little understanding of future direction.	At end of semester: requires some supervision to complete tasks, beginning to understand fundamental topics and future directions.	At end of semester: independently accomplish assigned tasks, has clear understanding of fundamental topics, propose future directions.	
	Has demonstrated growth in research and lab skill development	Has less than average proficiency in one or more lab instruments/ techniques.	Has average proficiency in one or more lab instruments/ techniques.	Has above average proficiency in one or more lab instruments/ techniques.	
TOTAL POINTS (out of 57):					

Grading Scale:

A = 48-57 points

B = 38-47 points

C = 29-37 points

D = 19-38 points

F = 0-18 points