



## COURSE SYLLABUS – FALL 2017

|                        |   |                |              |
|------------------------|---|----------------|--------------|
| <b>CLASS TIME:</b>     | Tuesday/Thursday, 3:00-4:30, 1123 LBME                              |                |              |
| <b>INSTRUCTOR:</b>     | Aileen Huang-Saad   | <b>OFFICE:</b> | 2228 LBME    |
| <b>EMAIL:</b>          | aileenhs@umich.edu  | <b>PHONE:</b>  | 734.647.9737 |
| <b>OFFICE HOURS:</b>   | Tu 10 am -12 pm (use <a href="#">office hours link</a> to schedule) |                |              |
| <b>CO- INSTRUCTOR:</b> | Kelley Arnold   | <b>OFFICE:</b> | G355 NCRC    |
| <b>EMAIL:</b>          | kbarnold@umich.edu  | <b>PHONE:</b>  | 734.763.5230 |
| <b>IA:</b>             | Jacqueline Handley  | <b>OFFICE:</b> | 2247 LBME    |
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**Course Description:** Interested in changing the BME curriculum? Interested in creating meaningful student learning experiences? BME499/599 is looking for upper level BME undergraduates and graduate students for Fall 2017. This is a 1 semester (3 credit) instructional innovation incubator that will co-create and design a NEW sophomore level BME250 course to be launched in 2018. This course is part of a new initiative to revolutionize BME education @ U-M to address the dynamic landscape of biomedical engineering practice. Be a part of the change!

Students and a BME instructional faculty team will apply the principles of engineering design, informed by evidence-based instructional practices and student learning principles, to explore relevant content and instructional approaches to engage underclassmen in cutting edge biomedical engineering practice. Student and faculty teams will interview current students, alumni, and employers to identify critical skills and best practices that should be incorporated in a sophomore-level BME course. Teams will use this information to identify course content and create exercises and projects to will be used in the three, new 1-credit BME sophomore level courses for Winter 2018.

**Learning Objectives:** Upon the end of this course, students will be able to:

1. *Apply* the design process to experiential development
2. *Critique* current experiential learning curriculum in BME
3. *Design* introductory BME experiential courses in the context of student learning theory
4. *Identify and Communicate* with potential BME stakeholders to identify tangible, post-graduate skills and knowledge.

**Course Format:** This course is designed to integrate real-time course design and active discussions of student learning theory and pedagogy. Each week, Tuesdays will be dedicated to course design, while Thursdays are discussion sections.



1. **Tuesdays:** Tuesday sessions are divided into three phase over the course of the term:
  - a. *Customer Discovery:* During the customer discovery phase, students will be responsible for talking to BME “stakeholders” to identify critical skills and knowledge BME students should have upon graduation from an undergraduate BME degree. Students will also be responsible for observing at least one college-level class and document their observations of student-instructor engagement.
  - b. *Class Redesign:* Students will be asked to redesign a single class and assignment based on their personal experience with the class and understanding of student learning.
  - c. *Course Development:* Students will work in teams to develop a 1-credit hands-on -course for sophomore level BME students. The course must use a skill (Autofusion 360, Labview/Arduino, synthetic biology or Matlab, unless otherwise discussed with the instructor), involve a real-world problem, and combine two different disciplines (e.g. Math and Biology, Electrical Engineering and Molecular Biology, etc.)
2. **Thursdays:** Discussion sections will be devoted to group discussions of at least 3 scholarly education readings, guided by several thought provoking questions. Group discussions will be student led. Each student is required to lead group discussions at least 2x during the semester (see signup sheet).

***Note:** Unlike traditional engineering courses, this course requires a significant amount of reading and discussion. There are pre-readings for most classes. These readings are critical to support your assignments and class discussion. Not completing the readings is not an option for success in the course.*

**Course Assignments:** Students are responsible for a series of individual and group assignments to complete the course. All assignments must be submitted electronically to the canvas course site.

1. **Pre/Post Surveys:** Students will be required to complete a pre and post course survey for course assessment and iteration. We will also be conducting a research student on student experiences in the course. Students that do not wish to have their anonymous survey results included in the study are welcomed to indicate that they are opting out of the study when completing the survey.
2. **Individual Assignments:** Individual assignments are during the Customer Discovery phase and include: Student reflections of BME education, BME Curriculum Today and It’s Students, BME Stakeholders, and MasterClass Report. (See Detailed Syllabus for details)
3. **Group Assignments:** There are two group assignments: a) Class Redesign and b) 1-Credit Course Development

**Grading: TBD**



**General Class Policies:** The success of this class is dependent on the quality of in-class interaction between the students and speakers, and students themselves. It is critical that everyone be engaged and prepared for each session. The utmost respect is expected at all times. Students should be aware of the following:

- You are expected to attend every class session and to be on time. Late entries and early departures from class are a sign of disrespect to your fellow classmates and more importantly, the guest speakers that have taken time out of their valuable schedules to come and speak.
- Course readings are provided to help you prepare and become fully engaged in class discussions. You are expected to complete all reading assignments and assignments on time.
- You will NOT need your laptop during Thursday Meetings. Laptops, cell phones and any other electronics must be turned off and put away throughout the class unless otherwise indicated.

**Plagiarism:** This course will draw on numerous resources and on-going initiatives at universities across the country. It is critical to be mindful of crediting others through proper citations and avoiding plagiarism. Plagiarism violates the College of Engineering's Standards of Conduct of Engineering Students and Honor Code (<https://bulletin.engin.umich.edu/rules/>). Students suspected of plagiarism or a Honor Code violation will be reported to the College of Engineering Honor Code Representative. Additional information on academic integrity and plagiarism for students can be found here: <https://www.lib.umich.edu/academic-integrity/resources-students>.

**Religious Observance Policy:** While the University of Michigan, as an institution, does not observe religious holidays, it is our policy to work with students to avoid negative consequences when religious obligations conflict with academic requirements. If you find that you must miss class, exams or assignments because of a religious observance, it is your obligation to let me know all of the days you will be absent within 2 weeks of the first absence and no later than the drop/add deadline of the term. With this guidance, you and possibly your team will be given the opportunity to make up the work without penalty, unless it interferes with course delivery. More information can be found at: [http://www.crlt.umich.edu/gsis/p10\\_3](http://www.crlt.umich.edu/gsis/p10_3)

**Student Health and Well-Being:** Student health and wellbeing is of critical importance. Michigan offers significant resources to support our students. If you or someone you know is suffering from depression, feeling overwhelmed or in need of support, you can contact Counseling and Psychological Services (<https://caps.engin.umich.edu/>). Additional campus resources can be found at <http://umich.edu/~mhealth/>.