

## **BME 4883 Senior Design, Professionalism and Ethics II**

**Lecture:** Tuesday 3:00pm – 6:00 pm in Turlington L005

**Lab Location:** Nuclear Science Building, room 410

**Academic Term:** Spring 2019

### **Course Syllabus and Outline**

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#### **Instructor:**

Dr. Lakiesha N. Williams

[lwilliams@bme.ufl.edu](mailto:lwilliams@bme.ufl.edu)

All communications in Canvas (messaging and emails)

(352)273-8125

Office Hours: By Appointment, New Engineering Building rm. 359

Website: [UF course Canvas web site](#)

#### **Student Teacher:**

Please contact through Canvas website

[Smit Patel](#)

#### **Teaching Lab Specialist:**

Mr. Ismael Arroyo- [iarroyo@bme.ufl.edu](mailto:iarroyo@bme.ufl.edu)

Nuclear Sciences Building rm. 410

#### **Course Description:**

(3 credit hours) – Design of custom strategies to address real-life issues in the development of biocompatible and biomimetic devices for biotechnology or biomedical applications. Teams work with a client in the development of projects that incorporate various aspects of biomedical engineering including instrumentation, biomechanics, bio-transport, tissue engineering and others. Emphasizes formal engineering design principles; overview of intellectual properties, engineering ethics, risk analysis, safety in design and FDA regulations are reviewed. Prototypes are developed in BME 4882. BME 4883 focuses on full product implementation and testing.

#### **Course Pre-Requisites / Co-Requisites:**

BME 4503, BME 4503L, BME 4882, and senior standing.

#### **Course Objectives:**

- a) To become proficient with basic components of experimental design
- b) To set goals, develop plans and meet deadlines while working on teams
- c) To build, and test a working prototype of design developed in BME 4882
- d) To effectively present a working prototype to various audiences

The objective of the senior capstone is for teams to develop tangible, validated, engineering design solutions by the end of the academic year. Passing BME 4882 required proof of adequate progress toward this yearlong goal in the form of a written project proposal, a semester progress report, and a prototype. **Passing BME 4883 requires the development and validation of a final solution, which will be presented in the form of a scaled up working prototype. A poster, final presentation, and a written report will be submitted with the aforementioned working prototype.**

**Materials and Supply Fees:** [None](#)

**Professional Component (ABET):** [3 credits of engineering topics with a design component](#)

**Relation to Program Outcomes (ABET):**

[Senior Design, Professionalism, and Ethics II](#)

[BME 4883](#)

[Dr. Lakiesha Williams, PhD](#)

- **Criteria 2:** An ability to apply both analysis and synthesis in engineering design process, resulting on designs that meet constraints and specifications. Constraints and specifications include societal, economic, environmental, and other factors as appropriate to the design.
- **Criteria 4:** An ability to communicate effectively with a range of audiences through various media.
- **Criteria 7:** An ability to establish goals, plan tasks, meet deadlines, manage risk and uncertainty, and function effectively on teams.

Outcome	Coverage
1. Apply knowledge	High
2. Engineering design that meets constraints	High
3. Conduct experiments	High
4. Communicate with range of audiences	High
5. Demonstrate ethical principles in context	High
6. Continuous learning	High
7. Function on teams	High

**Required Textbooks and Resources:** None

**Recommended Materials:**

- a) Textbook: Product Design and Development, 3rd Edition  
Ulrich, Eppinger Boston : McGraw-Hill/Irwin, c2004. ISBN number: 0072471468 Web:  
<http://www.ulrich-eppinger.net>
- b) Textbook: Biodesign: The Process of Innovating Medical Technologies  
Zenios, Makower, Yock Cambridge University Press, 2009, 1st Ed. ISBN number: 9780521517423  
Web: <http://ebiodesign.org>
- c) Nuts & Bolts of Great Business Plans:  
<https://warrington.ufl.edu/centers/cei/docs/NutsAndBoltsOfGreatBusinessPlans.pdf>

**Tentative Class Schedule:** Meeting locations- Williams in Turlington L005 ; Arroyo in NSB 410. Written Progress reports should be **signed by all group members** and hardcopies submitted at time of meeting. Meeting attendance is included in grade. Credit is not given if signature is not included. Late in-class reports are not accepted. Note that class may be called on any lab date. Set number for respective teams can be found on Canvas.

Week	Topic	Assignment
1/8/19	Syllabus, Reporting and Meeting Format	Update/Progress Report (see template) <b>DUE on CANVAS 1/15</b>
1/15/19	Team Labs Meetings (15 mins/team) Williams (set 1 Turl L005 ) Arroyo (set 2 NSB 410)	Verbal update and submit team goals, tasks, and associated timeline for 2 weeks <b>DUE 1/15 at meeting</b>
1/22/19	Team Labs Meetings (15 mins/team) Williams (set 1) Arroyo (set 2)	Verbal update and submit hard copy of updates/memo with changes to prototype from previous weeks <b>DUE 1/22 at meeting</b>
1/29/19	Team Labs Meetings (15 mins/team) Williams (set 2) Arroyo (set 1)	Verbal update and submit team goals, tasks, and associated timeline for 2 weeks <b>DUE 1/29 at meeting</b>
2/5/19	Team Labs Meetings (15 mins/team) Williams (set 2) Arroyo (set 1)	Verbal update and submit hard copy of updates/memo with changes to prototype from previous weeks <b>DUE 2/5 at meeting</b>
2/12/19	Team Labs Meetings (15 mins/team) Williams (set 1) Arroyo (set 2)	Verbal update and submit team goals, tasks, and associated timeline for 2 weeks <b>DUE 2/12 at meeting</b>
2/19/19	Class (Turlington L-005)	ALL
2/26/19	Midterm Presentations (15 mins each )	Presentation and Prototype
3/5/19	Spring Break	no class
3/12/19	Midterm Presentations (15 mins each)	Presentation and Prototype
3/19/19	Fab Lab and Open Meetings	ALL
3/26/19	Class (Turlington L-005)	ALL
4/2/19	<b>Poster Expo (bring preliminary prototype)</b>	<b>BMS Atrium</b>
4/9/19	Fab Lab and Open Meetings	ALL
4/16/19	<b>Final Presentations, Report &amp; Demo Pt 1</b>	<b>Turlington L005</b>
4/23/19	<b>Final Presentation, Reports s &amp; Demo Pt 2</b>	<b>Turlington L005</b>

#### Important Course Dates

April 2: Poster Expo BMS Atrium (with preliminary prototype) 3:00pm-5:00pm

April 16: Final Presentations with Prototypes

April 23: Final Presentations with Prototype

### Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is required for all scheduled lectures unless announced by instructor, graduate assistant, or Lab Technician. To successfully meet the objectives of this course, teams must meet outside of scheduled class periods to stay on track with prototyping. Professor must be notified in advance if assignments are to be made up.

### Evaluation of Grades:

Meeting Attendance-In-class reports	20%
Peer Assessment	15%
Final Written Report	25%
Final Presentation	15%
Final Prototype	20%
Final Poster Display	5%

**\*\*IMPORTANT NOTE\*\* To obtain an A grade your design must function as intended.**

### Grading Policy:

Percent	Grade	Grade Points
93.4 – 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	S	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

## University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

## Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

## Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

## Campus Resources:

### Health and Wellness

#### **U Matter, We Care:**

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

**Counseling and Wellness Center:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

#### **Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

## Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

**Writing Studio, 302 Tigert Hall**, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>

**Student Complaints Campus**: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**On-Line Students Complaints**: <http://www.distance.ufl.edu/student-complaint-process>.

## Commitment to a safe and inclusive learning environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination.

It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, [rbielling@eng.ufl.edu](mailto:rbielling@eng.ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@ufl.edu](mailto:nishida@ufl.edu)

### *Sexual Discrimination, Harassment, Assault, or Violence*

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, [title-ix@ufl.edu](mailto:title-ix@ufl.edu)