BME 180A BME Engineering Design
EngrMSE 189A Senior Design Projects
Fall 2021

Course Descriptions

BME 180A – Design strategies, techniques, tools, and protocols commonly encountered in biomedical engineering; ethics, economic analysis, and FDA product approval. Materials fee.

EngrMSE 189A – Group supervised senior design projects that deal with materials selection in engineering design and that involve case studies in ethics, safety, design, failure modes, new products, and patents. Activities conclude with a presentation of the projects. Materials fee.

Instructional Team

BME 180A Instructors

Prof. William C. Tang, 3113 Natural Sciences II, **wctang@uci.edu (mailto:wctang@uci.edu) (mailto:wctang@uci.edu)**
Prof. Christine King, 3410 Engineering Hall, **kingce@uci.edu (mailto:kingce@uci.edu)**

CBEMS 189A Instructor

Dr. Chris Hoo, 621 Engineering Tower, **cmhoo@uci.edu (mailto:cmhoo@uci.edu)**

Teaching Assistants

Yasaman (Yassi) Fatapour, **yfatapou@uci.edu (mailto:yfatapou@uci.edu)**

Joanne Ly, **joannl6@uci.edu (mailto:joannl6@uci.edu)**

Jie Shen, **shenj8@uci.edu (mailto:shenj8@uci.edu)**

Office Hours: By appointment via E-mail

Unofficial project teaming spreadsheet: Unofficial 180a Project/Group - Google Sheets (https://docs.google.com/spreadsheets/d/19W8g2vSTjFSmYNgmR2j3uQ6NRNa17JS-0gPsneSRuHA/edit#gid=0)

Lectures

Tuesdays, Thursdays 5:30PM to 6:50PM

Location: Donald Bren Hall (DBH), Room 1100 **ZotPass (https://students.uci.edu/zotpass.html) is Required to Enter the Space

Live Zoom Link for Remote Students: https://uci.zoom.us/j/98527311038 (https://uci.zoom.us/j/98527311038)

A Note on Zoom:

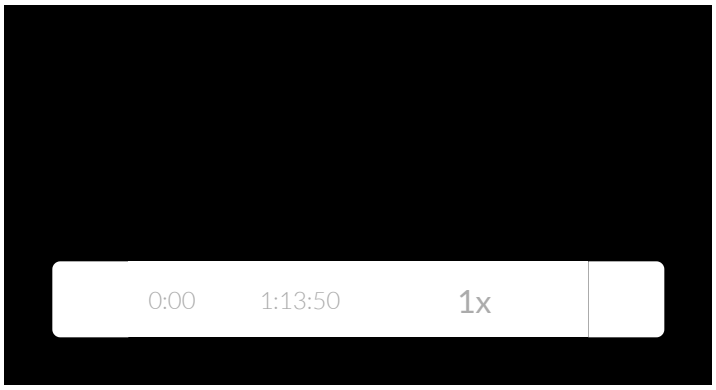
As the instructor, I will be recording the lecture and posting the recording. I will be posting this session to the course's website. If you have privacy concerns and do not wish to appear in the recording, you may turn video off (click "stop video") so that Zoom does not record you. If, when you disable live video, you also want to use a profile image (other than a picture of you) instead of your name, please let me know which image you will be using so that I know who you are during the session. If you would like to ask a question, you may do so privately through the Zoom chat by addressing your chat question to me only (and not to "everyone"), or you may contact me by another private method. If you have questions or concerns about this, please contact me.

Syllabus and Course Information (https://canvas.eee.uci.edu/courses/38367/pages/syllabus-and-course-information)

Resources (https://canvas.eee.uci.edu/courses/38367/pages/resources)

Schedule:

Week #	Date	Day	Lecture
0	9/23	Thu	Introduction, expectation, goals, logistics, design process Lecturers: Dr. Christine King, Dr. Chris Hoo, Dr. William Tang
1	9/28	Tue	Sharief Taraman – Pediatrics Unmet Needs, Dept. Neurology, CHOC Hospital 2:00- 4:50pm - Speed Dating Session, Location: Colloquium Room (1200) Interdisciplinary Science and Engineering Building

			(ISEB)
1	9/30	Thurs	Identifying Unmet Clinical Needs – ICU Lecturer: Dr. Yama Akbari, Dept. Neurocritical Care & Neurology, UCI School of Medicine ---------- MSE Students: Separate Lecture on 9/30 via Zoom Topic: Identifying Unmet Needs in Materials Science Time: Sep 30, 2021 05:30 PM Pacific Time (US and Canada) Join Zoom Meeting https://uci.zoom.us/j/96861843105?pwd=U3hadW0ybVNncDlmVlk0QUQ1cUxwQT09 Meeting ID: 968 6184 3105 Passcode: 533649  ---------- ***HW 1: DISC Assessment*** **(https://canvas.eee.uci.edu/courses/38367/assignments/820585)**
2	10/5	Tue	Unmet Clinical Needs Project Reverse Pitch Night **REMOTE via GATHER TOWN **Pitch Night Gather Town Invite and Getting Started Guide.pdf** **(https://canvas.eee.uci.edu/courses/38367/files/15760097?wrap=1)** ⬇ **(https://canvas.eee.uci.edu/courses/38367/files/15760097/download?download_frd=1)**

			Project Pitch Lineup (https://canvas.eee.uci.edu/courses/38367/files/15846678?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/15846678/download?download_frd=1) **NextGenPort Slides** (https://canvas.eee.uci.edu/courses/38367/files/15861461?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/15861461/download?download_frd=1)
2	10/7	Thu	Peter Chang, Artificial Intelligence, Center for Artificial Intelligence in Diagnostic Medicine, Radiological Sciences School of Medicine *****Virtual on Zoom*** (https://uci.zoom.us/j/98527311038) 2:30- 4:30pm - Speed Dating Session Part II, Location: 2430 Engineering Hall (Colloquia Room) ***Team and Project Selection due FRIDAY (10/8) 11:59pm*** (https://canvas.eee.uci.edu/courses/38367/assignments/820584)
3	10/12	Tue	Evaluating Unmet Clinical Needs Lecturer: Daniel Hahn, Medtronic
3	10/14	Thu	**Writing a Winning Research Proposal** (https://canvas.eee.uci.edu/courses/38367/files/16000133?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/16000133/download?download_frd=1) Lecturer: Christine King (https://canvas.eee.uci.edu/courses/38367/assignments/820586)
4	10/19	Tue	The Patent Search Lecturer: Sara Heimann and Julia Gelfand, UCI Library
4	10/21	Thu	Managing a Project Lecturer: Hamid Rafi, Inari Medical

			HW 2: Team info, team building brainstorm session, Student Participation form from each team member (https://canvas.eee.uci.edu/courses/38367/assignments/820586)
5	10/26	Tue	Business Canvas part 1; Writing a Winning Business Plan Lecturer: Dr. Ray Liu, CEO and Co-Founder, Vena Vitals
5	10/28	Thu	Commercializing IP **IP 101.pdf** (https://canvas.eee.uci.edu/courses/38367/files/16278464?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/16278464/download?download_frd=1) Lecturer: Alvin Viray, Senior Licensing Officer, UCI
6	11/2	Tue	Design Control and FDA Process Lecturer: Brad Sargent, Omnica Inc. **Design Controls 2021.pptx** (https://canvas.eee.uci.edu/courses/38367/files/16317197?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/16317197/download?download_frd=1) *Discussion and Lab Sections: Team Assessment 1, ISEB 4020*
6	11/4	Thu	Business Leadership – Influence, Conflicts, Project Management Lecturer: Sean Chow, Edwards LifeSciences **2021-11-04 UCI Project Management Talk.pptx** (https://canvas.eee.uci.edu/courses/38367/files/16317200?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/16317200/download?download_frd=1) ***HW 3: Patent and background search*** (https://canvas.eee.uci.edu/courses/38367/assignments/820588) *Discussion and Lab Sections: Team Assessment 2, ISEB 2020*

7	11/9	Tue	Project Management Lecturer: John Wainwright, PhD Mivi Neuroscience
7	11/11	Thu	NO CLASS: VETERANS DAY HOLIDAY
8	11/16	Tue	Lean Six Sigma Part 1 Lecturer: Chris Hoo Lecture via Zoom ONLY. No in person lecture. Please use the class Zoom link. ***HW 4: Business Canvas to Course Dropbox and UROP Proposal to UROP Website and Course Dropbox*** (https://canvas.eee.uci.edu/courses/38367/assignments/820587)
8	11/18	Thu	**Preliminary Design Review (8 min presentation each team)** (https://canvas.eee.uci.edu/courses/38367/assignments/820591)
9	11/23	Tue	**Preliminary Design Review (8 min presentation each team)** (https://canvas.eee.uci.edu/courses/38367/assignments/820591) ***Poster due at 5pm to Dropbox Drive and Canvas Assignment*** (https://canvas.eee.uci.edu/courses/38367/assignments/820583)
9	11/25	Thu	NO CLASS: THANKSGIVING HOLIDAY
10	11/30	Tue	**Preliminary Design Review (8 min presentation each team)** (https://canvas.eee.uci.edu/courses/38367/assignments/820591)
10	12/2	Thu	**Preliminary Design Review (8 min presentation each team)** (https://canvas.eee.uci.edu/courses/38367/assignments/820591) ***Team Evaluations due at 11:59pm to Course Dropbox*** (https://canvas.eee.uci.edu/courses/38367/assignments/820592)
10	12/3	Fri	10am - 12pm, 2pm – 4pm Engineering Fall Design Review – Poster Exhibition, *Engineering Plaza*

Final	12/6	Mon	***HW #5: Design, Materials Selection, Project and Business Plan to Course Dropbox*** (https://canvas.eee.uci.edu/courses/38367/assignments/820589)

Projects:

Projects and Teams List (as of 10/21/2021) (https://canvas.eee.uci.edu/courses/38367/files/16106559?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/16106559/download?download_frd=1)

Project List - Final Draft 10/5/2021 (https://canvas.eee.uci.edu/courses/38367/files/15861566?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/15861566/download?download_frd=1) (https://canvas.eee.uci.edu/courses/38367/files/15846663?wrap=1)

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(https://canvas.eee.uci.edu/courses/29380/files/11463620/download?wrap=1)

Project Roles and Expectations (https://canvas.eee.uci.edu/courses/38367/files/15657686?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/15657686/download?download_frd=1)

Educational Effectiveness Study Information Sheet (https://canvas.eee.uci.edu/courses/29380/files/10722349/download?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/29380/files/10722349/download?download_frd=1)

Purchasing Materials for Projects:

Please use the below template and instructions to submit purchase requests:

Step 1): Fill out the below form for EACH vendor:

Purchase Request Template Form (https://canvas.eee.uci.edu/courses/38367/files/16582263?wrap=1) ⬇ (https://canvas.eee.uci.edu/courses/38367/files/16582263/download?download_frd=1)

Step 2) Email your Purchase Request Form (separated by vendor) to **bioengineundergrad@gmail.com (mailto:bioengineundergrad@gmail.com)** with the following Title/Subject Line:

"Vendor Name_Purchase Request_BME 180_Group #"

Step 3) Keep track of your purchases for your final report. You have $2,000 as a budget for the entire project. You can use this starting 9/23/2021.

For more information on purchasing and reimbursement, please see:

http://engineering.uci.edu/faculty-staff/purchasing-reimbursement/purchasing-requests (http://engineering.uci.edu/faculty-staff/purchasing-reimbursement/purchasing-requests)

COVID-19 Related Teaching Information and Policies:

ZotPass to Enter Classrooms and UCI Spaces:

https://students.uci.edu/zotpass.html (https://students.uci.edu/zotpass.html)

General Resources:

https://sites.uci.edu/teachanywhere/home/fall-2021-resources/ (https://sites.uci.edu/teachanywhere/home/fall-2021-resources/)

What happens if someone tests positive?

https://uci.edu/coronavirus/testing-response/contact-tracing.php (https://uci.edu/coronavirus/testing-response/contact-tracing.php)

Face Coverings in Class are REQUIRED:

UCI Policy on Face Coverings in Class (https://canvas.eee.uci.edu/courses/38367/files/15596116?wrap=1) (https://canvas.eee.uci.edu/courses/38367/files/15596116/download?download_frd=1)

Job Opportunities:

Illumina:

Internship Page:
https://emea.illumina.com/company/careers/illumina-careers/interns.html (https://emea.illumina.com/company/careers/illumina-careers/interns.html)
Fall Event Series:

https://app.joinhandshake.com/employers/illumina-28554 (https://app.joinhandshake.com/employers/illumina-28554)

Tesla:

Internship Page:

https://www.tesla.com/careers/search/job/materials-engineering-internship-spring-2022-100894?source=LinkedIn (https://www.tesla.com/careers/search/job/materials-engineering-internship-spring-2022-100894?source=LinkedIn)

Funding Opportunities:

AAP Pediatric Pipeline Innovation Program

The American Academy of Pediatrics (AAP) is seeking applications for the Pediatric Pipeline Innovation Program focused on increasing interest in pediatrics, especially among those who are under-represented in medicine (URiM). The program will offer mini grants to up to 6 medical schools or organizations working to improve diversity in the pediatric pipeline, by supporting opportunities that enhance and/or expand existing pipeline activities and programs. Activities can be geared towards primary school, high school, undergraduate or medical students. Up to $3,500 of grant funds are available per funded site. For more information, viewed attached pdf and to apply, please visit **https://www.surveymonkey.com/r/G6FM3HS (https://www.surveymonkey.com/r/G6FM3HS)** .

Questions can be directed to Olamide Kolawole, Program Manager, Equity Initiatives, at **okolawole@aap.org (mailto:okolawole@aap.org)** .

Upcoming Workshops & Fellowships:

UCI I-CORPS *** Highly Recommend, Orientation Oct 6!*

https://innovation.uci.edu/i-corps/ (https://innovation.uci.edu/i-corps/)

Have a great idea?

NSF I-Corps is the perfect opportunity to focus on market research and quickly validate your idea. NSF I-Corps is a four week, immersive boot camp that guides researchers through the market research process to help them product-market fit. This program meets once a week (virtually unless circumstances change) and is designed for researchers doing work in the STEM (Science, Technology, Engineering, and Mathematics) fields.

I-Corps is designed to help you:

- Kick start your innovation with up to $2000 in funding for customer discovery
- Successfully translate university research to technologies in the market
- Obtain skills and training essential for professional development
- Explore alternative career paths (entrepreneurship, business, marketing)

October 6, 2021 – orientation

Cost: FREE!

For more information and dates: **http://innovation.uci.edu/programs/i-corps/ (http://innovation.uci.edu/programs/i-corps/)**

Any questions, and if you schedule conflicts with the virtual orientation, please contact: **sophia.lin@uci.edu (mailto:sophia.lin@uci.edu)** or **doug.crawford@uci.edu (mailto:doug.crawford@uci.edu)**

Y-Combinator Startup School:

Y Combinator is launching Startup School for Future Founders, a course specifically for founders who are interested in starting a company in the future! You can **register (https://ycombinator.cmail20.com/t/t-l-xtddhht-sirjyttdk-j/)** for the new course today.

This course will start November 9th and run for 6 weeks. We designed it for you: students, engineers, creatives, and anyone thinking about founding a startup at some point, but not actively working on one right now.

The course will cover important topics for this early stage, such as generating good startup ideas, finding/vetting a co-founder, and validating your idea with potential customers. Each week, you'll be able to watch lectures from YC partners and other industry experts, and then complete high-impact exercises to put those learnings into practice.

We hope you'll join us by **signing up (https://ycombinator.cmail20.com/t/t-l-xtddhht-sirjyttdk-t/)** today and **spreading the word (https://ycombinator.cmail20.com/t/t-l-xtddhht-sirjyttdk-i/)** with anyone else who might be interested.

Competitions:

ANSI Competitions (Standards):

https://www.ansi.org/news_publications/news_story?menuid=7&articleid=713eb799-ab8b-403b-9d36-2b53dc98109c&utm_campaign=OO_EML_20September-21-2020-whatsnew_BG&utm_medium=email&utm_source=whatsnew (https://www.ansi.org/news_publications/news_story?menuid=7&articleid=713eb799-ab8b-403b-9d36-2b53dc98109c&utm_campaign=OO_EML_20September-21-2020-whatsnew_BG&utm_medium=email&utm_source=whatsnew)

VentureWell Competitions and Resources

ASPIRE (https://venturewell.org/aspire/)
BMEidea (https://venturewell.org/bmeidea/)
Cleantech University Prize (https://venturewell.org/cleantech-university-prize-cleantech/)
DEBUT (https://venturewell.org/debut/)
E-Teams Grants (https://venturewell.org/student-grants/)
Inventing Green Toolkits (https://venturewell.org/inventing-green-toolkits/)
NSF I-Corps (https://venturewell.org/i-corps/)

Other Competitions and Resources

ACC InVenture Prize (http://accinventure.gatech.edu/)
Baylor New Venture Competition (https://www.baylor.edu/business/newventurecompetition/)
Collegiate Inventors Competition (http://www.invent.org/challenge/)
James Dyson Award (https://www.jamesdysonaward.org/)
MIT Clean Energy Prize (http://cep.mit.edu/)
MIT Water Innovation Prize (http://www.mitwaterinnovation.org/)
Rabobank-MIT Food and Agribusiness Innovation Prize (http://food-ag.squarespace.com/innovation-prize/)
Rice Business Plan Competition (https://rbpc.rice.edu/)
Westly Prize (https://westly.org/westly-prize/)
Pitch Launch Grow (https://www.universitylabpartners.org/our-events/pitch-launch-grow-2021)

https://ucinnovationchallenge.org/ (https://ucinnovationchallenge.org/)

Join Us on Social Media!

BioENGINE LinkedIn: https://www.linkedin.com/groups/13533228/ (https://www.linkedin.com/groups/13533228/)

BioENGINE Instagram: @bioengine

BME Discord Channel: https://discord.gg/y37NkV5f (https://discord.gg/y37NkV5f)