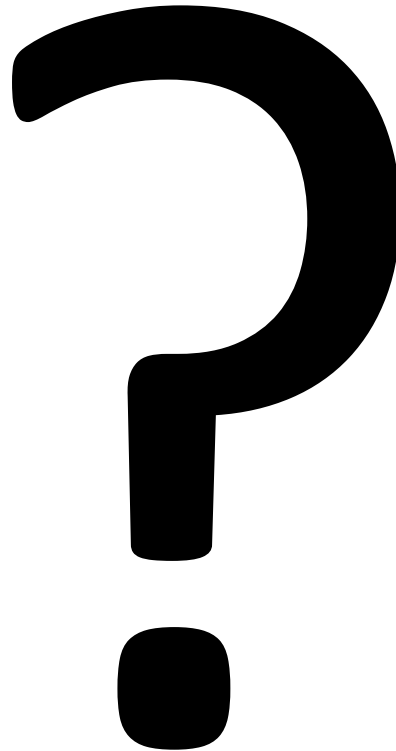


ME-410

Jamie Paik

Reconfigurable Robotics Laboratory

EPFL, Switzerland



Motivation

- Study and nurture the creativity and decision-making processes in constructing solutions by being immersed in A to Z of product development. In-depth analysis of the operation principles, advanced meso-scale technologies, and production for their applications in wearables.

Content

- Study and explore design principles of the different mechatronic components and systems.
- Study and model meso-scale actuators and integration, construction methods.
- Understand design and working principles of various smart systems and 3D architectures in the current state-of-the-art.
- Understand established engineering design process that dictate various product design processes.
- The final report and presentation should reflect the considerations made toward the covered methodologies.

Objectives

- To design and to prototype a new product.
- The goal is to learn principles and methods of product development in a realistic context.

- COURSE PREREQUISITES
 - ME 302 (aka ME212) or Microstructures technology I and II
- Evaluation
 - 70 % Project (report, presentation and prototype)
 - 30 % Participation
- Course makeup
 - 3hr / week contact hours, 5 credits

Grading

- Students are expected to work in groups of 5-6 to solve the chosen open-ended problem.
- Everyone in the group will receive the same final grade for the report / presentation / prototype but participation grade may vary.
- Each group is expected to produce update slides prior to the class for presenting to the instructor during the individual group meeting.
- Written report should follow the sample report format

Grading (see program)

- Final poster
- Working Prototype Demo for the Public Presentation on **6th Dec** at 9-15h.
- A budget of 150 CHF + Arduino kit + mechanical assembly tool kit are allocated toward building a prototype for each group
- High importance on the creative solution, working concept, and a functioning prototype
- **Poster + flyer + Screen + Prototype presentation with apero** on the 6th Dec. 12h-15h

Grading

Final Presentation in class

- Starts at 8h15, 13th December.
- Soft copy of presentation : upload to Moodle on the 13th Dec.
- 1 representative from each group will present for total of 15 min and followed by a Q&A session.
- All members should be present.
- 5-7 min question period should be answered by anyone from the group

Final report (format on Moodle)

- Due 20 December
- Soft copy: uploaded on the Google drive on MOODLE
- Late submission will lose 50 % of the grade.

Schedule

See ME 410 schedule on moodle for class info.

Teaching Assistants



Yuhao Jiang
(Yuhao)



Hwayeong Jeong
(Hwayeong)



Ziqiao Wang
(Ziqiao)



Serhat Demirtas
(Serhat)



Alexander Schüssler
(Alex)



Alihan Bakir
(Alihan)



Shaopeng Jiang
(Jaspor)

Material Boxes

- Arduino Starter Kit
 - Arduino UNO, USB A/B, Arduino Handbook
 - Breadboard, Motors (servo & DC), LCD display
 - Jumper Wires + Small electronic components (resistors, condensers, ...)
- General Tools:
 - Multimeter + Roll Meter
 - Pliers, String/Wire Cutters, Usual Cutters
 - Tape, glue, glue gun + 3 silicone tubes
- Return Date: December 15th! (Last class in person)
- Choose a representative to get the Material Boxes
 - The name will be written!

Ordering materials

- Groups are allotted a budget of **150** CHF
- Ordering happens on three dates (week 4, 6, 9)
- Orders done via Google Sheets