

2025 ME-410 Course Program

Lecture MED 0 1418
work room SPOT

	Date	lecture topic	lec / demo title	lec / demo description	Hand-ins before the class	homework	room
1	12-Sep	Intro to the course / group formation / project ideation	JP (lec 45): General wearable tech and project introduction, product development, fabrication methods, project brainstorming, and project and presentation requirements for the course Ziqiao (admin 10): purchasing, printing, machining protocols Serhat (lec 25): Project Management and Cost Estimation in Robotics Shaopeng (lec 45): Wearable Robotics Design	Students make groups of 5 : select 3 product ideas and post on moodle by the end of the day - update the group name on moodle		Learn + create account + download tinkercad	MED 0 1418
2	19-Sep	Core components for wearable tech	JP (lec 45): Product selection Ekrem (lec 45): Introduction to Hardware and Closed-Loop Systems Alex (lec 45): Introduction to Automated Actuation and Sensing in Robotics	Choose 3 potential solutions: for each define functionality of product, quantifiable metrics, motor and sensor choices.	3 min presentation on the 3 project ideas / group	Install Arduino IDE	MED0 1418
3	26-Sep	Performance & Challenges for wearable tech	JP (lec): Core challenges for each technology + Performance metrics (qualitative and quantitative measures) Ziqiao (lec 45): Microcontroller Applications in Robotics Ziqiao (demo 15): ESP32	Choose the final design (w sensors and actuator choices), revisit the state-of-the-art and update the references, rough sketch of the product, back hand calculations of the bench mark metrics and show how the 3 solutions compare in class assignment to choose a motor based on the function	3 min presentation on the chosen product and the choice of functionality, metric definitions and values for 3 options		MED0 1418
		SPOT visit 10h15	VISIT SPOT facilities & Equipment				SPOT visit @ 10h15
4	03-Oct	Functionality considerations of wearable tech	JP (lec) overview on the choices of design and performance, evaluation metrics Theo (lec 45): Introduction to Robotic Sensing, Communication, and Computation ZW + SD+AS (demo 30' x 2) SMA Demo in SPOT	pick a parameter in the chosen solution and improve the functionality/ engineering specification by iterating the value. Demo online: Signal processing, communication, and onboard computations SMA: loading & bidirectional movement	3 min presentation on the final product design solution. Download and install Tinkercad		MED0 1418 SPOT
5	10-Oct	Considerations for prototyping and demos	JP (lec) Core components of automated product functionality and considerations Yuhao (lec 45): Dynamic Modeling and Simulation-based Optimizations Alihan (lec 30): Electric Motor Selection and Transmission Design for Robotics Alihan (demo 15): Servo Demo	test actuator and sensor solutions. Plan out the demo (actual use / proof of the concept)	3 min presentation on the iteration of the chosen product design		MED0 1418
6	17-Oct	project progress comments / group	Hwayeong (lec 45): Electronics and Circuit Design for Robotics Hwayeong (demo 30'): Tinkercad Demo	controller for the sensor and actuator "close loop" control	3 min presentation on the demo scenario		MED0 1418 SPOT
7	24-Oct	Fall Break					
8	31-Oct	project progress comments / group	finalize the platform design Hwayeong + Serhat (60'): Academic writing and scientific data collection		submission of A3 flyer + prototype rendering image(submit both color and black/white) with a single sentence caption + 1 group photo with names + 3 min presentation on the progress		MED0 1418 SPOT
9	07-Nov	project progress comments / group	polish demo scenario		3 min presentation on the progress		MED0 1418 SPOT
10	14-Nov	NO CLASS (SWISS ROBOTICS DAY) 1 to 1 in-depth sessions with each group at the fixed time slot	1 to 1 sessions for project evaluation		3 min presentation on the progress		
11	21-Nov	project progress comments / group	check the flyer, poster, presentation, report formats and contents		each group is responsible for producing their own A0 poster + A3 flyer and upload all the files (presentation in ppt format): A0 Poster, A3 flyer		MED0 1418 SPOT
12	28-Nov	project progress comments / group					MED0 1418 SPOT
13	04-Dec	demo public presentations (ME410 + ME420) prep for 13:00	Public presentation + apero		presentation files+ videos for all groups		MED atrium
14	12-Dec	Final Technical Presentations private grading (all groups)					MED0 1418 SPOT
15	19-Dec	Recap and feedback to all the projects, presentations, prototypes (quality, demo) - online			the final report is due at 8h15.		Zoom