

BioMEMS (Biomedical Microelectromechanical Systems)

Subject area: Biology/Biomedical Engineering

University:	TalTech
Level:	BA4, MA all years, PhD
Teaching mode:	completely online, at specific time
Instructor(s):	Tamas Pardy, Kanwal Ashraf, Immanuel Sanka, Simona Bartkova, Rauno Joemaa

Short description

BioMEMS (Biomedical Microelectromechanical Systems) are compact miniature devices for biological and chemical analyses. An important part of such devices are the handheld fluidic chips (Lab-on-a-Chip) that integrate analytical workflows from sample to result. These novel chips promise to revolutionize preventive medicine and maintenance of chronic medical conditions by bringing medical-grade analyzers closer to homes and local clinics, reducing test to result times.

Full description

<http://ois2.ttu.ee/uusois/subject/IEE1860>

Learning outcomes

After the course the student:

- possesses the necessary theoretical foundation (basics of fluid mechanics, simulations, principles of fabrication etc.);
- understands the working principle of BioMEMS devices (sensors, actuators, their networks and the underlying technology);
- is able to design and fabricate BioMEMS prototypes for research;
- understands the experimental applicability and measurement methodology of BioMEMS and be capable to continue independent specialization in the field.

General information

Contact hours per week: 0-2

Total workload: 156 (in student hours for the whole course)

ECTS credits:	6
Language:	English
Course start date:	30 August 2022
Course end date:	13 December 2022
Add. info about start date:	
Weekly teaching day/time:	Tuesdays 10:00-11:30 EET for consultations & seminars
Time zone:	CET +1 (Estonia, Israel)
Further information:	MOOC link: https://moodle.taltech.ee/course/view.php?id=32189
Prerequisites:	Engineering (mechanical, electrical, biomedical, bio/chemical or similar disciplines) and/or biology/chemistry BSc completed or nearly completed
Activities and methods:	Lectures, Seminars, Exercises, Tutorial sessions
Presence on campus:	not required

Final examination

Form:	4 seminars (mini-reviews on lecture-related topics) + 5 lab exercises during semester
Date:	
Location/format:	online
Re-sit possibility:	
Transcript available:	
Add. info/requirements:	seminars provide 40% of final score, lab reports 60%

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places:	9
Minimum participants:	3
Internal course code:	IEE1860
Contact:	tamas.pardy@taltech.ee

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