

Course description (topics)

Title of the course: SoftRobots and connectivity digitalcrafting and microcontrolling softrobots				
Tutors of the course , contact details: Dr. Dezső Renáta – dezso.renata@mome.hu Kalman Tarr - ezremek@gmail.com				
Code: B-KF-401-A- 232402-01	Related curriculum (programme/level): BA/MA, preferably Design or Media Institute students	Recommended semester within the curriculum: BA2, BA3, MA1, MA2	Credit: 5	Number of class hours: 40 Student working hours:
Related codes: M-KF- 301-A- 232402-01 M-KF-E-101- 232402-01	Type: (seminar/ lecture/class work/consultation , etc.)	Can it be an elective course?	In case of elective what are the specific prerequisites:	
Course connections (prerequisites, parallelis): Basic knowledge of 3D modelling and 3D printing, programming and electronics is suitable but not required.				
Aim and principles of the course: Aim: The aim of the course is to explore the field of soft robotics, digital craft, and their intersection. It focuses on blending analog reality with digital technology, fostering a "maker" attitude, and addressing societal challenges through interdisciplinary innovation. Principles: The course is rooted in the principles of hands-on learning, experimentation, interdisciplinary collaboration, and technological development. In this course, we delve into the exciting field of soft robotics, where the possibilities of flexible forms are unlocked through the fusion of analog and digital technologies. We harness the power of experimental prototypes from Digital Craft, along with cutting-edge microcontrollers like Arduino, and explore versatile development environments to bring interactive forms of movement to life.				
Learning outcomes (professional and general competences to be developed): Knowledge: Develop a deep understanding of soft robotics principles and techniques. Gain experience in using microcontrollers like Arduino. Ability: Design and create soft robots that integrate analog and digital elements. Implement interactive forms of movement in robotic systems. Collaborate across disciplines to tackle complex challenges. Attitude: Cultivate a "maker" mindset, actively participating in technological development. Embrace the role of design and technology in shaping the future. Develop a proactive attitude towards contributing to a sustainable future. Autonomy and responsibility: Take responsibility for personal learning and project development.				

Demonstrate autonomy in problem-solving and innovation.

Topics and themes to be covered in the course:

- Soft Robotics Fundamentals
- Digital Craft Prototyping
- Microcontroller Integration
- Interactive Movement Design
- Design and Technology's Role in Society
- Interdisciplinary Innovation
- Research through Design (RtD) Methodology

Specificities of process organisation / organisation of learning:

The course emphasizes hands-on learning through practical projects.
It includes lectures, workshops, and collaborative project work.
Interdisciplinary teamwork and research through design are encouraged.

Course structure, nature of the individual sessions and their timing (in case of several teachers' involvement, please indicate the distribution of their teaching input:

The course spans a semester and comprises lectures, workshops, and project development.
Sessions are led by Rnata Dezso on digital crafting and Kalman Tarr on arduino and microcontrollers

Students' tasks and responsibilities:

Actively participate in class discussions and workshops.
Engage in group projects and collaborate effectively.
Complete assignments and projects within specified timelines.

Learning environment: (e.g. classroom, studio, off-site, online, in-company placement, etc.)

The course is conducted in a combination of classroom and studio settings.
Students must also engage in off-site activities and online learning.

Assessment:

(in case of more teachers are involved and they evaluate separately, separate assessments per teacher needed)

Assessment is based on individual and group performance.

Requirements to be met:

Successful completion of assignments, projects, and assessments.

Method of assessment: (what methods are used for assessment {test, oral question, practical demonstration, etc.})

Assessment methods include tests, practical demonstrations, and project evaluations.

Assessment criteria (what is taken into consideration in the assessment):

Assessments consider project quality, innovation, collaboration, and understanding of course topics.

How is the mark calculated (how is the result of each assessed requirement reflected in the final mark? {e.g. proportions, points, weights}):

Class participation: 30%

Written assignments and reflections: 30%

Group projects and presentations: 20%

Final Design project: 20%

Required Literature:

Recommended Literature:

Other information:

The course aligns with the goals of the MOME Academy, focusing on scientific research and technological development in the field of soft robotics.

The laboratory activity aims to bridge the gap between the material and digital worlds and address the challenges of the future.

The "maker" attitude is integrated into the course, empowering students to become active developers and contributors to a sustainable future.

Recognition of knowledge acquired elsewhere/previously/validation principle:

- No exemption from attending and completing the course will be granted,
- Exemptions from the acquisition of certain competences and the completion of certain tasks may be granted,
- some tasks may be replaced by other activities,
- full exemption may be granted.

Out-of-class consultation times and location