

## Course description (topics)

Title of the course: Reflective Robots and connectivity digitalcrafting and microcontrolling performative robots				
Tutors of the course , contact details: Dr. Dezső Renáta – <a href="mailto:dezso.renata@mome.hu">dezso.renata@mome.hu</a> Kalman Tarr - <a href="mailto:ezremek@gmail.com">ezremek@gmail.com</a> Central European Dance Theatre (CEDT): Gerlits Réka ( <a href="https://dancehack.eu/cedt-budapest-dance-hack/">https://dancehack.eu/cedt-budapest-dance-hack/</a> )				
Code: M-KF-301-A-242502-01	Related curriculum (programme/level):	Recommended semester within the curriculum:	Credit: 5	Number of class hours: Student working hours:
Related codes B-KF-401-A-242502-01M-KF-E-301-A-242502-01M-KF-E-301-A-242502-01	Type: (seminar/ <b>lecture/class work/consultation</b> , 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:  <p>This course explores the dynamic intersection of performative robotics and digital craft, emphasizing the integration of analog realities with digital technologies. Students are encouraged to adopt a "maker" mindset while engaging in performative experiments that foster interdisciplinary innovation. Rooted in hands-on learning, experimentation, and interdisciplinary collaboration, the course integrates technological advancements with creative exploration. It is led by two researchers from the MOME Robotika Studio(<a href="https://www.momerobotics.com/">https://www.momerobotics.com/</a>), whose artistic practices and ongoing research directly inform the curriculum. Kálmán Tarr, participated in the Budapest Dance Hack event (<a href="https://dancehack.eu/cedt-budapest-dance-hack/">https://dancehack.eu/cedt-budapest-dance-hack/</a>).</p> <p>Special Guest: The Central European Dance Theatre (CEDT), a pioneer in Hungarian contemporary dance and one of the most renowned independent dance companies in the region, will be a key collaborator in this course. With its origins dating back to 1978 as part of the Népszínház ('People's Theatre'), CEDT has a rich history and a tradition of innovation. Learn more about CEDT here.</p> <p>This course delves into the innovative possibilities of robotics and focuses on exploring movement through the Dance Hack concept, exploring how flexible forms can emerge from the fusion of analog and digital technologies. Participants will work with experimental prototypes inspired by Digital Craft, leveraging tools such as Arduino microcontrollers and versatile development environments to create interactive, movement-based projects.</p>				

Learning outcomes (professional and general competences to be developed):

Knowledge:

Develop a deep understanding of the principles and techniques of reflective robotics. Gain experience in using microcontrollers like Arduino.

Ability:

Design and create robots that integrate analog and digital elements.  
Implement interactive forms of movement in robotic systems.  
Collaborate with professional dancers 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.  
Foster a proactive approach to 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:

- Robotics Fundamentals
- Digital Craft Prototyping
- Microcontroller Integration
- Interactive Movement Design
- Design and Technology's Role in Performance
- 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.

- 1- February 21: Early registration and introduction to the course theme.
- 2- February 28: Detailed introduction to the main topics covered. Learn more directly from CEDT about Budapest Dance Hack.
- 3- March 3: Demo Day – showcasing initial ideas and concepts.
- 4- March 14: Deepening technological understanding and forming project groups.
- 5- March 21: Concept development and refinement.
- 6- March 28: Dance input and immersive technology integration; workshop with the Central European Dance Theatre (CEDT).
- 7- April 4: Project development phase.
- 8- April 11: Finalisation of projects and preparations for presentations.
- 9- May 9: Closing day – final project presentations and reflections.

Course structure, nature of the individual sessions and their timing:

Sessions are led by Renáta Dezső on digital crafting and Kálmán 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.  
Write two blog posts documenting the project.

<p>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.</p>
<p>Assessment:  Assessment is based on individual and group performance.</p> <p>Requirements to be met:  Successful completion of assignments, projects, and assessments.</p> <p>Method of assessment:  Assessment methods include tests, practical demonstrations, and project evaluations.</p> <p>Assessment criteria:  Assessments consider project quality, innovation, collaboration, and understanding of course topics.</p> <p>How is the mark calculated:  Class participation: 30%  Written assignments and reflections: 30%  Group projects and presentations: 20%  Final Design project: 20%</p>
<p>Required Literature:</p> <p>Recommended Literature:</p>
<p>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. (<a href="https://www.momerobotics.com/">https://www.momerobotics.com/</a>)</p>
<p>Recognition of knowledge acquired elsewhere/previously/validation principle:</p> <ul style="list-style-type: none"> <li>• No exemption from attending and completing the course will be granted,</li> <li>• Exemptions from the acquisition of certain competences and the completion of certain tasks may be granted,</li> <li>• some tasks may be replaced by other activities,</li> <li>• full exemption may be granted.</li> </ul>
<p>Out-of-class consultation times and location</p>