Name	Designing Accessible VR Controllers
Codes	**M-KF-E-301-FS-252602-06,** M-KF-301-FS-252602-06, B-KF-401-FS-252602-06, ER-MOME-MA-252602-07
Host	Future School Integrated Course by Future Care Lab X Design MA X Design Maker MA
Location	Classroom

Course info			**Subject info**			
Course Type	Contact hours	Home study hours	Comprehensive Subject	Subject type	Semester	Subject credit value
Lecture, seminar, studio practice	48	110 (research, prototyping, documentation)	Comprehensive Subject; subject type and placement per programme map year.	Compulsory Elective	Spring semester	5 credits

Recommendation

For MA-level designers who want to create inclusive XR products and assistive interfaces. You will design, prototype, and evaluate a VR controller tailored to older adults' abilities and contexts. Relevant for interaction/industrial designers, design makers, and students pursuing healthcare, accessibility, or product entrepreneurship. Course recommended for Design MA, Designer Maker MA and Interaction Design MA student especially.

Short description

This course presents a one-semester design challenge focused on creating more accessible VR controllers for elderly people.
The aim is to rethink the controller itself, mainly its shape, materiality, interaction logic, and affordances by focusing on embodied experience and inclusive design.

Instead of framing ageing bodies as "problems to be fixed," the course approaches ageing, vulnerability, and interdependence as fundamental human conditions and as valuable sources of knowledge for design.

Throughout the semester, students will work alongside elderly participants and invited experts to co-design alternative VR controller concepts. The focus is on developing controllers that emerge from real, situated use: redesigning how the body meets the device,

how materials support grip and comfort, and how interaction modalities adapt to variable abilities.

The course includes expert sessions on embodied knowledge, sensory and motor changes in ageing, inclusive interaction design, and the politics of technological accessibility. Students will critically examine the limitations of existing VR controllers, study how diverse ageing experiences shape interaction possibilities, and prototype new controller forms, gestures, materials, and feedback modalities.

Rather than optimizing for speed or efficiency, students are encouraged to develop relational, context-aware controller prototypes that honor the lived experience of elderly users.

Teachers				
Name	Contact information	Teaching hours	Short BIO	Open hours
Sam Chovanec	chovanec.sam@mome.hu	25	Future Care Lab Researcher	by appointment
Beáta Sosity	beatasosity@mome.hu	25	Future Care Lab Researcher	by appointment
Péter Molnár	molnar.peter@mome.hu	20	Designer www.molnaar.co	by appointment
Flóra Vági	vagi.flora@mome.hu	4	Design Maker program Leader	by appointment
Ágnes Bakk	bakk@mome.hu	20	Future Care Lab Leader	by appointment
Pál Szabó	szabo.pal@mome.hu	20	Future Care Lab Researcher	by appointment

Course scheduling	
Course format	Weekly class appointments
Weekly lecture + studio; group and individual consultations.	Friday (preferably 11.20 or 14.10) afternoon because of other teachers existing courses are in the morning)
Details of each session's type and schedule, showing the teacher's role	

Weeks	Date	Weekly educational content	Studio/workshop
Week	**Date**	**Weekly educational content** **Studio / workshop**	Studio, Classroom and at the external site
1	**20 Feb**	Course goals, safety & ethics; framework: Shape–Material–Interaction; methods overview. Team formation	
2	**27 Feb**	**XR for older adults**—capabilities, constraints, and common pitfalls. **Review: VR Input Methods for Frail Users**	
3	**6 Mar**	**Peter Molnar Lecture : Shape Studio**: handles, reference grips, wrist neutrality. **Vági Flóra Lecture: Material Lab**: texture tiles; grip tests (dry/sweaty); **Hygiene plan** (cleanability; replaceable parts).	
4	**13 Mar**	**External Expert (DIY controller maker)**: case study, tooling, iteration pitfalls. Space to work in groups or consult	
5	**20 Mar**	**Open Expert (TBD)** — options: OT/hand therapist; haptics/accessibility; infection control.	
6	**27 Mar**	Group work, Consultation from University experts, prototyping.	
7	**10 Apr**	Visit at the hospital, prototyping	
8	**17 Apr**	Visit at the hospital, reduction of options	
9	**24 Apr**	Group work, consultations, finalisation of the prototype	
10	**8 May**	Critique **Final presentation & demo**.	

Course completion requirements, prerequisites, and evaluation				
Students' duties				
Requirements, assignments	Form of evaluation	Evaluation criteria	Deadline	% in evaluation
Evidence-based **Concept** (problem, users, risks, principles)	Submission + oral walkthrough	Clarity, grounding in literature, creativity	Week 4	25%
Form & Material Package (handles, texture, hygiene plan)	Submission + oral walkthrough	Ergonomic rationale, cleanability	Week 6	25%
Evaluation Report (metrics + interviews + iteration)	Written report	Decisions tied to evidence from visits, inclusion of user insights and co-design encounters,	Week 9	25%
Final Pitch (5-min demo + 1-pager)	Jury presentation	Communication, coherence across shape/material/interaction,	Week 10	25%

		quality and clarity of the controller design, reflexive documentation of the design process, and functional and conceptual strength of the final prototype.		
General requirements: attendance (≥90%), timely deliverables				

Course materials and literature
Mandatory literature
- Walter R. Boot, Andrew Dilanchian, Saleh Kalantari, Sara J. Czaja. Extended Reality Solutions to Support Older Adults - David M. Cook, Derani Dissanayake, and Kulwinder Kaur. 2019. Virtual Reality and Older Hands: Dexterity and accessibility in hand-held VR Control.
Course notes and presentations
Slide decks, lab sheets, and checklists provided weekly via Teams.
Recommended literature
- Catherine Holloway, Giulia Barbareschi. Disability Interactions - Czaja, S. & Lee, C. *The Aging of the Population and Technology*. - ISO 9241-210: Human-centred design for interactive systems

Learning outcomes	
Knowledge	Understands age-related motor/sensory/cognitive changes; ergonomic principles for handles and grips; material selection for skin-safety, grip, and hygiene; interaction patterns for low effort, low error, and clear state feedback.
Skills	Translates capabilities and tasks into form, material, and interaction requirements; prototypes and tests multiple forms; selects and justifies textures/coatings; instruments interaction slices; conducts brief evaluations and makes evidence-based iterations.
Attitude	Adopts inclusive, ethically aware, and context-responsive design stance; values co-design and empirical validation; documents assumptions and limits transparently.
Autonomy and Responsibility	Plans and executes a small design study end-to-end; collaborates with stakeholders; leads a lightweight evaluation and communicates next-step validation needs.

Exemption
No exemption may be granted from participation in or completion of the course.

Curricular connections		
Unit	Parallel courses	Course proportion in unit
KFI course as a thematic integrated course prototype	Single KFI course	No connected course units
Course prerequisites	Special subject prerequisites	Is it available as an elective?
This course is for students from: Design MA, Object Design MA, Interaction Design MA	If the subject is also offered as an elective, specify the conditions for enrollment, e.g., completed prerequisite courses, the student's program/major.	KFI course

Guidelines and rules for the use of artificial intelligence in the course
Use of AI follows MOME's AI & Plagiarism Regulations. Disclose any AI assistance in a short note per deliverable (what/why/how edited)

Materials needed for the course	**Who provides the materials?**
Foam/clay/PLA or resin for handles; access to FDM/SLA printers	Tech Park
Hand tools, adhesives, PPE; disinfectant wipes	Programme
Laptop with CAD + slicing	Student

Other information, comments