



The Hebrew University of Jerusalem

Syllabus

Future Xreaities - VR/XR - New Technologies and Design for the Metaverse Age - 67468

Last update 29-08-2023

HU Credits: 6

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Computer Sciences

Academic year: 0

Semester: Yearly

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof Yair Bartal

Coordinator Email: yair_bartal@hotmail.com

Coordinator Office Hours: With advance coordination

Teaching Staff:

Prof Yair Bartal

Course/Module description:

"Future Realities" is a course of the Hebrew University, with support of the Jerusalem Development Authority.

The appearance of new "reality changing" technologies, which place us within different worlds, modifying the world around us, and enable creation of new and familiar realities, is opening unlimited possibilities for applications, as well as raising question regarding their influence on humanity and human perception.

The course deals with these issues which lie in the border of the fields of science and technology and art and design, among many others.

The course will mainly focus on understanding novel aspects of XR (Extended Reality) technologies - VR/AR/MR (Virtual Reality/Augmented Reality/Mixed Reality), and the Metaverse.

As necessary, the course will expose the students to complementary topics such as Artificial Intelligence and HCI technologies that enable creating a full multi-perceptual experience.

A Unity Workshop will be given s part of the course for Unity VR SDK, AI tools for VR/XR development, and other advanced topics.

The course is guided by Prof. Yair Bartal in collaboration with guest lecturers from academia and industry.

The main goal of the course is the creation of a joint art/design work by collaboration in an interdisciplinary group, where each student contributes from their own expertise.

The final projects are planned to be presented in an exhibition. Additionally, the best projects of the course will be given opportunities to participate in prestigious conferences and exhibitions, and advancement of projects with entrepreneurial potential.

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The course deals with these issues which lie in the border of the fields of science and technology and art and design.

The course will mainly focus on understanding novel aspects of XR (Extended Reality) technologies - VR/AR/MR (Virtual Reality/Augmented Reality/Mixed Reality), and additionally the course will expose the students to complementary topics such as Artificial Intelligence and technologies that enable creating a full multi-perceptual experience, such as EEG, 3D printing, interactive internet technologies, human-machine interfaces, sensors, etc.

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Course/Module aims:

Exposing the students to advanced technologies and their applications through art and design, programming in Unity environment, and create high quality multi-disciplinary projects.

Learning outcomes - On successful completion of this module, students should be able to:

Understand various aspects of XR - VR/AR/MR technologies

Work in an advanced Unity environment

Create innovative, high-level multi-disciplinary projects in Unity using advanced AI tools.

Attendance requirements(%):

90

Teaching arrangement and method of instruction: Lecture & Practice/Lab

Course/Module Content:

*Advanced Spatial Computation - XR - AR, MR, VR:
Interactive Experience design and Storytelling, Embodiment, Multiuser Network
Environment, Hybrid Virtual and Real World Experiences, HCI aspects.*

Workshops - Unity

NPC AI, Cinematics in Unity, advanced AI tools for creative VR/XR.

Required Reading:

N/A

Additional Reading Material:

Grading Scheme:

*Essay / Project / Final Assignment / Home Exam / Referat 50 %
Active Participation / Team Assignment 5 %
Submission assignments during the semester: Exercises / Essays / Audits / Reports
/ Forum / Simulation / others 15 %
Personal Guide / Tutor / Team Evaluation 20 %
Presentation / Poster Presentation / Lecture 5 %
Attendance / Participation in Field Excursion 5 %*

Additional information:

<https://futurexrealities.wixsite.com/2019>

The course is joint with Bezalel and a number of classes will be held there as necessary.

Course Hours: 14:30 - 18:30.

In the second half of the semester, two mini-hackaton events will be held for concentrated work on the final projects.

Submissions in the course will include interim submissions throughout the semester, and submission of a concluding project at a later date after the exam period. Exact dates will be announced at the beginning of the semester.

For deepening it is recommended to register also to the course 67879 (lab for students in 3rd year and over or grad).

For further info please contact:

futureXrealities@gmail.com