COURSE SYLLABUS AND COURSE REQUIREMENTS
2024/25/1

Course title	*Basics of Anthropometry*
Course Code	MSM611ANEG
Hours/Week: le/pr/lab	1/0/2
Credits	3
Degree Programme	Biomedical Engineer (MSc)
Study Mode	*full-time*
Requirements	Mid-semester grade
Teaching Period	Autumn 1st semester
Prerequisites	-
Department(s)	3D Printing and Visualisation Centre
Course Director	
Teaching Staff	*Szőke András*

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).
Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

Ability of creating basic parametric and organic 3D models in the Blender modelling environment. Understanding and practical acquisition of the 3D scanning workflow. Generating new models using 3D scanned surfaces.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.
Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

During the course we aim to develop the spatial vision capabilities of students. They get to know the basics of 3D modelling via a mesh editing 3D graphics program called Blender. During the semester, we also create parametric and organic models in this environment. Additionally, students receive an insight into the world of 3D scanning and acquiring work with entry-level and industrial handheld scanners. Furthermore, we create new models using scanned surfaces that can accurately fit to the human body.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE	1. *The very basics of 3D printing and the classification of the existing printing technologies. The details of FDM printing.*
	2. *the basics of 3D scanning and the classification of the existing digitizing technologies.*
LABORATORY PRACTICE	1. *Introduction to Blender.*
	2. *the toolset within "edit mode" and the collections in the outliner.*
	3. *The usage of accessory items such as the 3D cursor for positioning elements in space. Aligning elements by snapping and setting the orientation of faces by the normals. And lastly setting the units.*
	4. *Modelling a grip based on a reference image and a drawing. Exporting the completed model to a slicing software.*
	5. *Parametric modelling of technical parts.*
	6. *Designing a custom phone stand in Blender, adding text on the surface, checking 3D printability*

7. *Introduction to sculpting in the Blender environment. Creating the first organic sculpt model which will be a fish. Applying texture paint onto the surface of the model.*
8. *Scan our forearm and perform post-processing on it. The result will be imported into Blender for further modelling.*
9. *Designing custom 3D printable wrist braces based on the scanned models.*
10. *Creating the base structure of a human upper limb using sculpting in Blender.*
11. *Continuing the sculpting of the upper limb with detailing the muscles.*
12. *Finishing the sculpting of the upper limb with constructing the hand.*

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic
1.	The very basics of 3D printing and the classification of the existing printing technologies. The details of FDM printing.
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	**Autumn break**
10.	The basics of 3D scanning and the classification of the existing digitizing technologies.
11.	
12.	
13.	
14.	

PRACTICE

week	Topic
1.	
2.	Introduction to Blender
3.	Blender seminar about the toolset within edit mode and the collections in the outliner.
4.	The usage of accessory items such as the 3D cursor for positioning elements in space. Aligning elements by snapping and setting the orientation of faces by the normals. And lastly setting the units.
5.	Modelling a grip based on a reference image and a drawing. Exporting the completed model to a slicing software.
6.	Parametric modelling of technical parts.
7.	Designing a custom phone stand in Blender, adding text on the surface, checking 3D printability.
8.	Introduction to sculpting in the Blender environment. Creating the first organic sculpt model which will be a fish. Applying texture paint onto the surface of the model.
9.	**Autumn break**
10.	
11.	Designing custom 3D printable wrist braces based on the scanned models.
12.	Creating the base structure of a human upper limb using sculpting in Blender.
13.	Continuing the sculpting of the upper limb with detailing the muscles.
14.	Finishing the sculpting of the upper limb with constructing the hand.

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance *(e.g.: attendance sheet / online test/ register, etc.)*

Attendeance sheet.

Course resulting in mid-term grade (PTE TVSz 40§(3))

Mid-term assessments, performance evaluation and their ratio in the final grade (The samples in the table to be deleted.)

Type	Assessment	Ratio in the final grade
Home assignment (project documentation)	*30 points*	*100 %*

Opportunity and procedure for re-takes (PTE TVSz 47§(4))

The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Home assignment can be repeated/improved at least once in the first two weeks of the examination period according to the TVSz 47§(4).

Grade calculation as a percentage

based on the aggregate performance according to the following table

Course grade	Performance in %
excellent (5)	85 % …
good (4)	70 % … 85 %
satisfactory (3)	55 % … 70 %
pass (2)	40 % … 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY
1. Videos and guided materials on the PTE Moodle's portal
2. Blender Reference Manual: https://docs.blender.org/manual/en/latest/

RECOMMENDED LITERATURE AND AVAILABILITY
3. The 3D Printing Handbook – Ben Redwood, Filemon Schöffer, Brian Garret
4. Blender 2.9: The beginner's guide – Allan Brito
5. Blender 3D By Example (2nd Edition) – Oscar Baechler, Xury Greer
6. Handbook of Anthropometry, Physical Measures of Human Form in Health and Disease - Victor R. Preedy