SPACE GEOMETRY WITH COMPUTERS

2022/23 SEMESTER 2

Course description			
COURSE NAME	**Space Geometry with Computers**		
COURSE CODE(S)	YCRSZGMBNF		
DEPARTMENT	Óbuda University, Ybl Miklós Faculty of Architecture and Civil Engineering, Institute of Civil Engineering		
PROGRAMME, TRAINING	BSc		full time
COURSE COORDINATOR	Dr. István Talata PhD, Associate Professor	talata.istvan@ ybl.uni-obuda.hu	
INSTRUCTOR	Dr. Gyula Nagy PhD, Associate Professor	nagy.gyula@ ybl.uni-obuda.hu	
PRE-REQUIREMENT	none		
HOURS OF LECTURES (WEEKLY)	–		
HOURS OF CLASSROOM PRACTICE/ LAB EXERCISE (WEEKLY)	2 hours		
FIELD AND TRAINING (WEEKLY)	–		
ASSIGNMENT	A homework assignment and a Test		
CREDITS	5 credits (ECTS)		
AIM OF THE COURSE, BRIEF DESCRIPTION	3D geometry problem solving, and 3D geometric constructions with AutoCAD, and GeoGebra.		
RECOMMENDED LITERATURE	See Elearning course materials and links.		
REQUIRED TECHNICAL APPLIANCES/ SOFTWARE	AutoCAD, and GeoGebra. All software available for students for free.		

SCHEDULE OF THE SEMESTER	
WEEK	**PROGRAM OF PRACTICE SESSIONS**
1	Harpenodaptai: rope strechers or engineers
2	Greek geometry
3	Euler's polyhedron theorem
4	Platonic solids
5	Vaults, Cavalieri's principle
6	Domes, catenary (chain curve)
7	Matrices of transformations
8	Rigid structures by Maxwel
9	Tensegrity framework
10	Transformation groups, symmetry of textures
11	Tiling, packing, covering
12	Geometric algorithms
13	Parametric and algorithmic design

REQUIREMENTS FOR THE COMPLETION OF THE SEMESTER		
MID-SEMESTER TASKS AND TESTS		
Requirement	**Description**	**Value** *(point, %, grade)*
PARTICIPATION AT LESSONS	The practice lessons can be missed up to three times (see § 46 of the Regulations of the Studies and Examinations of Óbuda University).	-
IN CASE OF ABSENCE FROM LESSONS AND EXAMINATIONS	Absence is considered to be justified with a medical certificate presented.	-
Short description of the TASKS	A Homework project of creating a virtual model of a predetermined object, and a presentation (or a paper) describing the construction steps with corresponding screenshots.The Homework is assigned during Week 7, and its deadline is the class of Week 12.	50 points
Midterm exam	A Test in Week 11 on the course topics covered during the classes.	50 points
TOTAL		100 points

To obtain a grade, both the Homework project should be submitted before its deadline and the Midterm exam should be written in class.

SEMESTER CLOSING REQUIREMENTS					
COURSE GRADE	0-55 points	56-65 points	66-75	76-85	86-100
	1 - FAIL	2 - PASS	3 - SATISFACTORY	4 - GOOD	5 - EXCELLENT