

COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences										
Field of study								Degree level and programme type		
Specialization/ diploma path	-							Study profile	Academic profile	
Course name	M-2. Structures and building materials							Course code	IS-FCEE-00271W	
								Course type	Erasmus	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	V	Semester	winter	
					15			No. of ECTS credits	1	
Entry requirements	No requirements									
Course objectives	<p>The aim of the activities included in this unit is to make students aware of the innovative technologies and building materials, to form an understanding of the possibilities and use of structural modeling in the BIM environment. To form practical skills of working with specialized programs, modeling building constructions from existing library and newly created elements, to be aware with sustainable development in the context of elements of circular economy, and to be able to apply this knowledge to the design of a green bus stop shelter designed by a team of 3 students, one from other university</p>									
Course content	<p>Activities included to reach this aim are very different. They include: The aim of the SW classes (lectures, project) is to give a basic approach to understand the general knowledge needed for the course and the team design for the project of a bus stop shelter in different European cities locations. The goal is achieved through: SW- Lecture:</p> <ul style="list-style-type: none"> - Innovative technologies and building materials for public space - Presentation of the concept of structural modeling in the BIM environment. - Sustainable development in revitalisation (renovation, revaluation) of public area. Circular economy - Transport shelters and bus stops, (example: Madrid) - NEW SMALL OBJECTS IN HERITAGE CONTEX <p>Presentation and discussion of basic knowledge of the contents related to it.</p> <p>- Project and discussion:</p> <ul style="list-style-type: none"> - Calculation of structures - Guid how to create Trimble ID and download and install Tekla Structures - New small objects in heritage context. <p>The aim of the project is to provides knowledge about the structural concept of BIM in the environment and elements of existing structures, the ability to model, analyze structural elements and generate drawings in the BIM environment and to import and export BIM projects using information technologies is formed.</p> <p>The goal will be achieved through:</p>									

	<ul style="list-style-type: none"> - the concept of structural modeling in the BIM environment. - structural elements. - BIM model opening, information entry, model images, image creation tools, representation of elements in images. -library elements and catalogs of materials. - construction modeling. - detailing of structural elements. - drawing generation in the BIM environment. - BIM project import and export options to other formats. <p>The goal is achieved through: .Assessment: Test + the developed team solution used for Final Oral Presentation of the 3 students team project.</p>	
Teaching methods	Lectures and project classes (P), individual study carrying out a design work for bus stop shelter in a team of 3 students from different universities	
Assessment method	Final test and Final Oral Presentation of the team for design work defence and evaluation of design work (Face-to Face part)	
Symbol of learning outcome	Learning outcomes	Reference to the learning outcomes for the field of study
L01	The graduates show general understanding of sustainable development in revitalization (renovation, revaluation) of public urban areas and understand the main concepts related to Circular Economy	GLOCAL-M2_K05 (K_GP1_W08, K_GP1_W10)
L02	The graduates show understanding of the English basic terminology related with the Sustainable development in revitalization (renovation, revaluation) of public urban areas and understand the main concepts related to Circular Economy and the scientific texts related with them.	GLOCAL-M2_K06 (K_GP1_W08, K_AK1_W07, K_AK1_W06)
L03	The graduates show general understanding of the main concepts related to introducing new small elements in the historic urban spaces of European cities.	GLOCAL_M2_K07 (K_GP_W08)
L04	The graduates show understanding of the English basic terminology related with introducing new small elements in the historic urban spaces of European cities and the scientific texts related with them.	GLOCAL_M2_K08 (K_GP1_W15, K_AK1_W16)
L05	The graduate knows basics of innovative technologies and building materials for public space	GLOCAL_M2_K09 (K_AK1_W12, K_GP1_W11)
L06	The graduate knows basics of calculation of structures of small architecture objects	GLOCAL_M2_K10
L07	The graduates can apply the scientific knowledge related with small modern elements in historic public spaces of an European city to the analysis of their suitability and integration in an urban heritage context.	GLOCAL_M2_S03 (K_GP1_U02)
L08	The graduates can apply the innovative technologies and building materials for public space to the design for a small architecture object	GLOCAL_M2_S04 (K_GP1_U15)
L09	The graduates can analyze basic structure problems and makes basics calculation of structures of small architecture objects (BIM elements)	GLOCAL_M2_S05

LO10	The graduates can use engineering knowledge to shape the awareness of society, professional and ethical, and take responsibility for their activities	GLOCAL_SC01 (K_GP1_K05)	
LO11	The graduates can communicate effectively in a variety of intercultural contexts, reflect critically on stereotypical cultural perceptions of reality, Sustainable development in revitalization (renovation, revaluation) of public urban areas, and thus, are able to accept cultural diversity and differing points of view	GLOCAL_SC03 (K_AK1_U16, K_AK1_U17)	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
LO1	Defence of the completed project (final oral presentation), test	SW	
LO2	Defence of the completed project (final oral presentation), test	SW	
LO3	Defence of the completed project (final oral presentation), test	SW	
LO4	Defence of the completed project (final oral presentation),	SW	
LO5	Defence of the completed project (final oral presentation),	SW	
LO6	Defence of the completed project (final oral presentation),	SW	
LO7	Defence of the completed project (final oral presentation), test	SW	
LO8	Defence of the completed project (final oral presentation),	SW	
LO9	Defence of the completed project (final oral presentation),	SW	
LO10	Defence of the completed project (final oral presentation),	SW	
LO11	Defence of the completed project (final oral presentation),	SW	
Student workload (in hours)		No. of hours	
Calculation	Participation in the SW lecture.	10	
	Preparation of the SW project.	5	
	Preparation and participation test.	4	
	Individual work	6	
	TOTAL:	25	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		15	0,5
Student workload – practical activities		10	0,5
Basic references	<p>Urban public spaces: Madrid, Bialystok, Klaipeda. A guide to their functions and meaning (2022) María Aurora Flórez de la Colina Pilar Cristina Izquierdo Gracia, Dorota Gawryluk Editors, Wydawnictwo Ekonomia i Środowisko (available on: https://glocal.pb.edu.pl/en/results/) Future of the City (2021, 2022) Dorota Gawryluk, Dorota Anna Krawczyk Editors, Oficyna Wydawnicza Politechniki Białostockiej (available on: https://glocal.pb.edu.pl/en/results/) Small Glossary of Technical Terms for English–Polish–Spanish–Lithuanian Languages (2020) Dorota Gawryluk, Jurga Kucinskiene, Sausdino UAB „Vita Litera” (available on: https://glocal.pb.edu.pl/en/results/) Urban public spaces: Madrid, Bialystok, Klaipeda. A guide to their functions and meaning (2022) María Aurora Flórez de la Colina</p>		

	<p>Pilar Cristina Izquierdo Gracia, Dorota Gawryluk Editors, Wydawnictwo Ekonomia i Środowisko (available on: https://glocal.pb.edu.pl/en/results/)</p> <p>Future of the City (2021, 2022) Dorota Gawryluk, Dorota Anna Krawczyk Editors, Oficyna Wydawnicza Politechniki Białostockiej (available on: https://glocal.pb.edu.pl/en/results/)</p> <p>Kultermann, E., Spence, W. (2016) Construction materials, methods, and techniques: building for a sustainable future; Boston: Cengage Learning.</p> <p>Billington, M. J. (2017) The building regulations : explained and illustrated. Chichester: Wiley Blackwell.</p> <p>WEB-1 https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/inspired/smart-cities, 2020.</p> <p>WEB-2 https://www.sciencedirect.com/science/article/pii/S1110016815000447, 2020</p> <p>WEB-3 https://www.letsbuild.com/blog/10-innovative-construction-materials.</p> <p>WEB-4: https://tiltwall.ca/blog/tilt-up-construction-the-past-the-present-and-the-future/ Tilt-Up Construction: The Past, The Present, And The Future (06.03.2020)</p> <p>WEB-5 The basics of Tilt-Up construction: https://www.korteco.com/construction-industry-articles/basics-tilt-construction/ (06.03.2020). Yasubumi Furuya, in Comprehensive Composite Materials, 2000.</p> <p>specific materials for this unit are available on www.glocal.pb.edu.pl</p>	
Supplementary references		
Organisational unit conducting the course	BUT, FCEES, Department of Building Structures and Structural Mechanics	Date of issuing the programme
Author of the programme	Barbara Sadowska-Buraczewska, PhD, Eng., Marcin Gryniewicz, PhD, Eng.	12.11.2022

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work,

V-virtual part , S – seminar