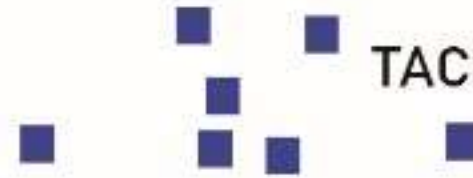




Co-funded by the
Erasmus+ Programme
of the European Union



TACEESM 2020-23



618883-EPP-1-2020-1-IT-EPPKA2-CBHE-JP

**Transforming Architectural and Civil Engineering Education towards
a Sustainable Model (TACEESM)**

**«Ճարտարապետության և քաղաքացիական ճարտարագիտության
կրթության վերափոխումը կայուն մոդելի» (TACEESM)**

*Ջեկուցող՝ Իրինա Վանյան, TACEESM Erasmus+
նախագծի որակի ապահովման պատասխանատու*

28-ը սեպտեմբերի, 2021 թ.

TACEESM Erasmus+ նախագծի նպատակներ:

- Ապահովել բարձր մակարդակի կրթության որակը գործընկերերկրներում ճարտարապետության և քաղաքացիական շինարարության ոլորտներում և ընդլայնել դրա արդիականությունը աշխատաշուկայի կարիքներին համահունչ:
- Ձևավորել պրոֆեսիոնալ ճարտարապետներ և ճարտարագետներ Բոսնիայում և Հերցեգովինայում, Հայաստանում և Բելառուսում, որոնք կունենան եվրոպական ուղղվածություն ունեցող մտքեր , կբերեն գործընկեր երկրներին եվրոպական արժեքներ, թարմացում կլինեն այս երկրների աշխատաշուկաների հզամար:
- Կապել շրջանավարտներին ընկերությունների հետ, քանի որ նրանք կմասնակցեն անհրաժեշտ դասընթացների հետ կապված քննարկումներին, որոնք կընդլայնեն շրջանավարտների հնարավորությունը աշխատանք գտնելու գործում:





PARTNERS



Code	Acronym	Title	Country
P1	Ud'A	University G. D'Annunzio	Italy
P2	UM	University of Maribor	Slovenia
P3	UMA	The University of Malaga (School of Architecture and of Engineering)	Spain
P4	HTWK	LEIPZIG UNIVERSITY OF APPLIED SCIENCES (Faculty of Architecture and Social Sciences, Faculty of Civil Engineering)	Germany
P5	IBU	INTERNATIONAL BURCH UNIVERSITY Architecture	BiH
P6	UNBI	University of Bihać	BiH
P7	UNMO	Dzemal Bijedic University of Mostar	BiH
P8	NUACA	National University of Architecture and Construction of Armenia	Armenia

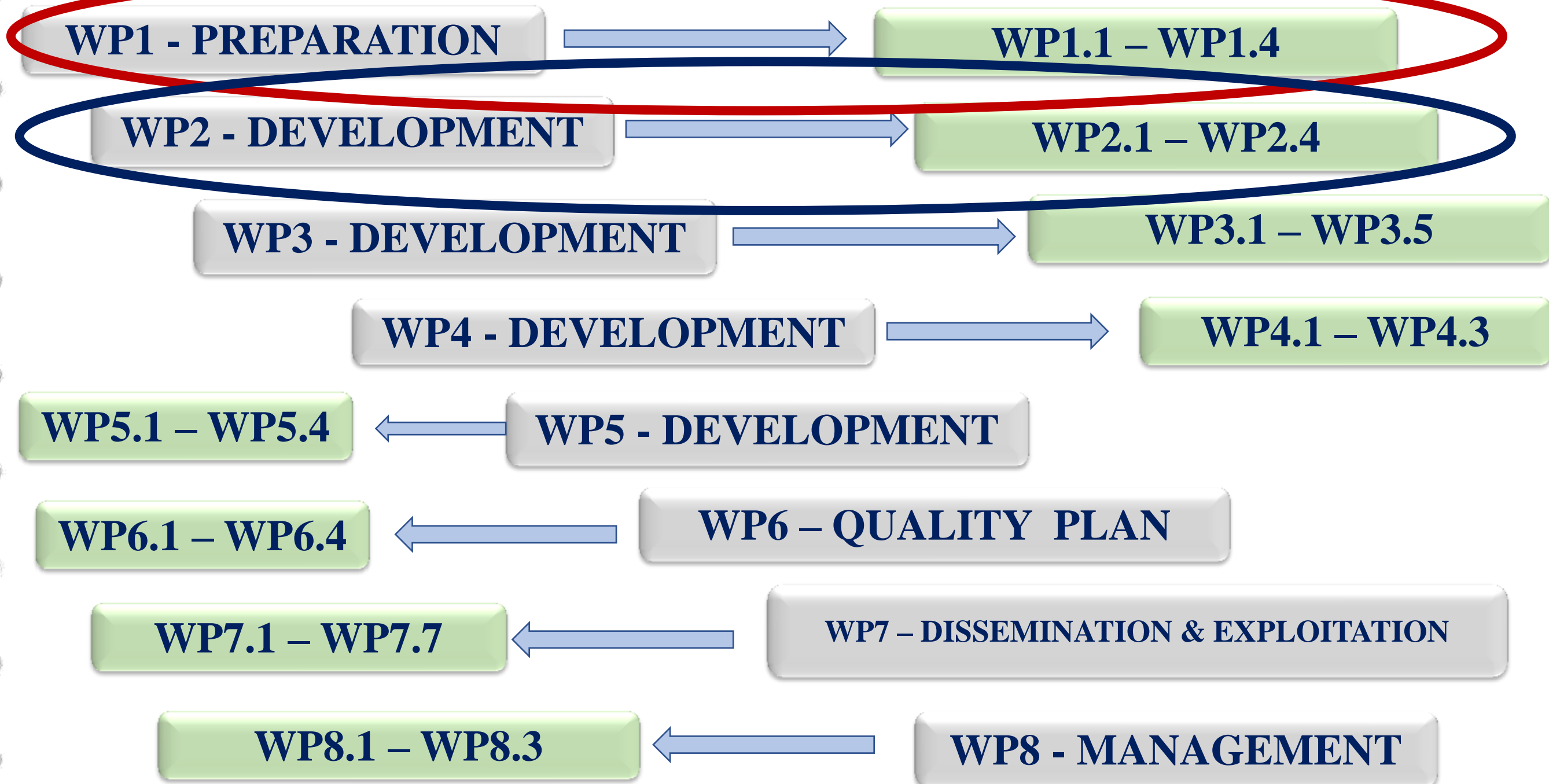


PARTNERS



Code	Acronym	Title	Country
P9	NPUA	National Polytechnic University of Armenia	Armenia
P10	BNTU	The Belarussian National Technical University	Belarus
P11	BrSTU	Brest State Technical University	Belarus
P12	CD doo	CUBE DESIGN d.o.o. Sarajevo (Cube Design is an inter disciplinary, research-based studio of architecture, based in Sarajevo, Bosnia and Herzegovina)	BiH
P13	KF	“KF Gradnja” doo (KF Gradnja doo is a limited company for trade, civil engineering and services registered in 2014. The company is licensed for civil engineering in high and low-rise construction)	BiH
P14	CARA	Chamber of Architects of Armenia	Armenia
P15	NIPTIS	State Enterprise “Institute of Housing-NIPTIS named after Ataev S.S.”	Belarus
P16	BUA	The Belarussian Union of Architects	Belarus

Work Packages of TACEESM Erasmus+



WP1 - Current programmes in EU and partner HEIs

Lead Organization



**University of Maribor (Faculty of Civil Engineering,
Transportation Engineering and Architecture) - UM
(FGPA), Slovenia**



Co - Leader

Brest State Technical University, Belarus

ACT 1.1 Analysis of related courses/programmes and practices at **EU universities**
(Italy, Slovenia, Spain, Germany)

ACT 1.2 Analysis of related programmes and practices at **partner universities**
(Bosnia and Herzegovina, Armenia, Belarus)

ACT 1.3 Analysis of market needs in **partner countries**
(Bosnia and Herzegovina, Armenia, Belarus)

ACT 1.4 Creation of the learning outcomes based on the needs from labour market and industry

Date	Activity	Activity	Contet
20.1.2021	Meeting		TACEESM WP1 tasks and deadlines meeting
3.02.2021	Deadline		Q&A – clearing of additional questions about WP1 tasks
12.02.2021	Deadline	ACT 1.1 ACT 1.2	Completion of REPORTS: - ACT 1.1 Analysis of related courses/programmes and practices at EU universities - ACT 1.2 Analysis of related programmes and practices at partner universities
26.02.2021	Deadline		Draft completion: - ACT 1.3 Analysis of market needs
1.03.2021- 5.03.2021	Local workshop (LP1)	ACT 1.3	Choose one day for a local workshop (LW1) where the market needs and created matrix of competences will be discussed locally by each partner country. Completion of REPORT: - ACT 1.3 Analysis of market needs - Report / matrix of competences
10.03.2021	Workshop 1		Presentation and discussion of the reports ACT 1.1, ACT 1.2 and ACT 1.3 on MS TEAMS at University of Maribor. Provision of context for the learning outcomes and ACT 1.4. Completion of the joint reports ACT 1.1, ACT 1.2 and ACT 1.3.
15.04.2021	Deadline	ACT 1.4	Completion of: ACT 1.4 Creation of the learning outcomes based on the needs from labour market and industry

ACT 1.2 Analysis of related programmes and practices at **partner universities** (Bosnia and Herzegovina, Armenia, Belarus)

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«073101.01.7 – Ճարտարապետություն» մագիստրատուրայի կրթական ծրագիր

«073201.01.6 – Արդյունաբերական և քաղաքացիական շինարարություն» բակալավրիատի կրթական ծրագիր

«073102.02.7-Ջերմագազամատակարարում և օդափոխություն» մագիստրատուրայի կրթական ծրագրի

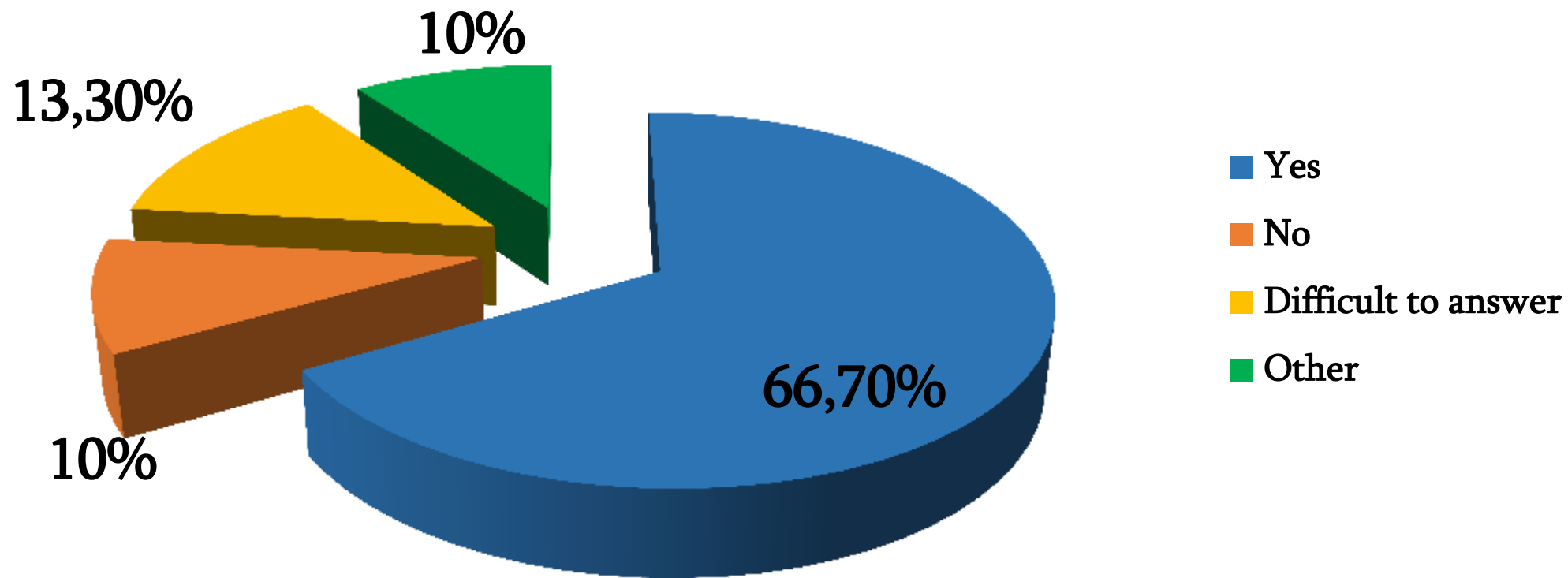
ACT 1.3 Analysis of market needs in **partner countries** (**Bosnia and Herzegovina, Armenia, Belarus**)

The online Questionnaire has been spread by the NUACA team of TACEESM Erasmus+ project within the network of employers in the field of architecture and civil engineering. The employers of companies/organizations was informed preliminary about the survey, and the agreement on the engagement in the survey was confirmed by the employers. **32 employers** have been involved in the online survey by these principles.

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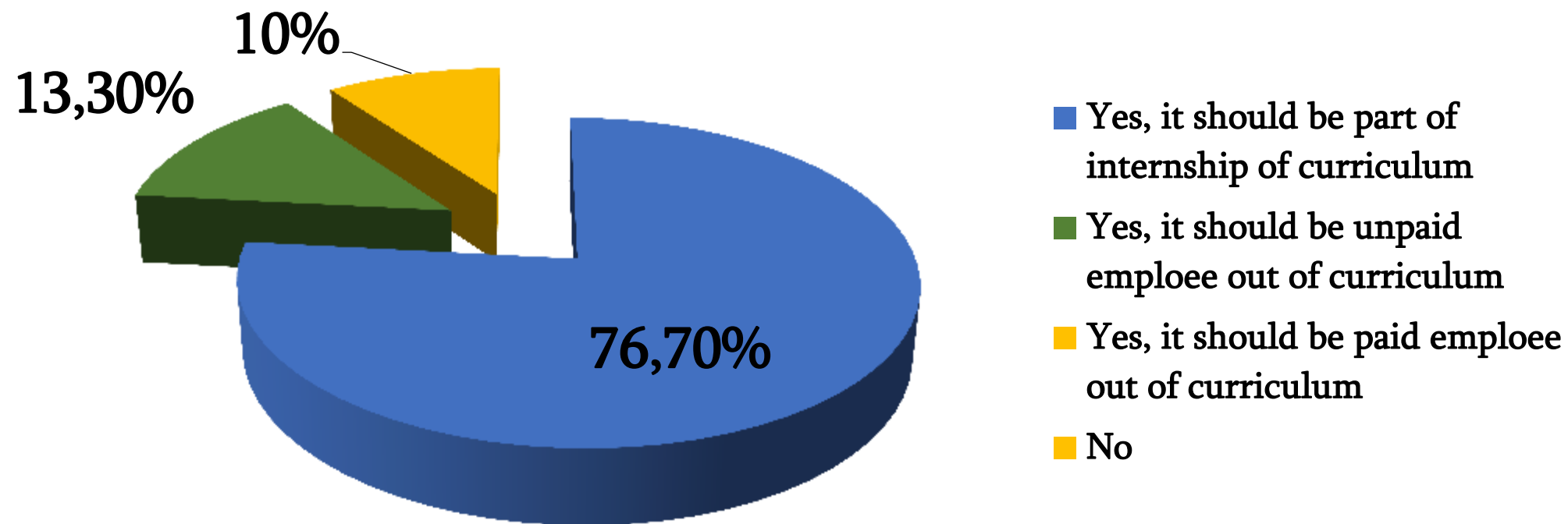
ACT 1.3 Analysis of market needs in **partner countries**
(Bosnia and Herzegovina, Armenia, Belarus)

Q11. Do you think that architecture/civil engineering studies prepare students well for their professional life?



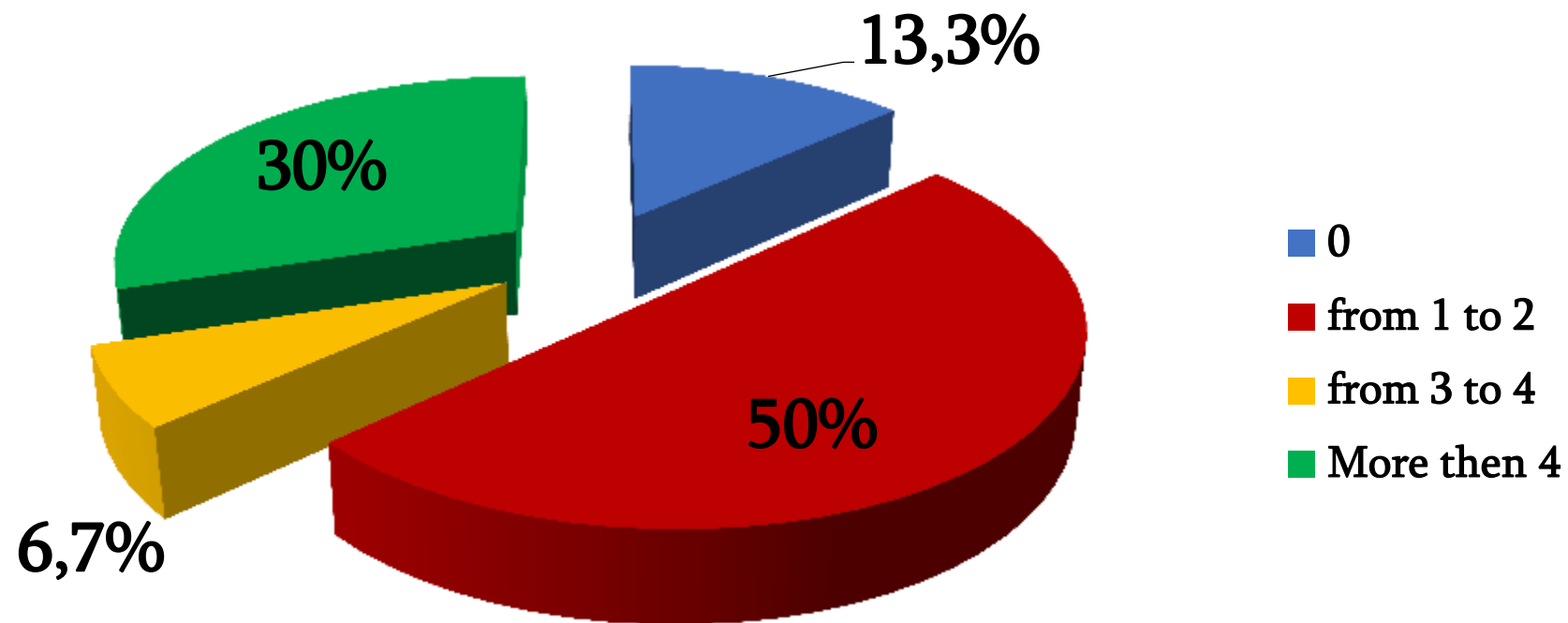
ACT 1.3 Analysis of market needs in **partner countries**
(Bosnia and Herzegovina, Armenia, Belarus)

Q17. Do you think that students should gain some work experience in architecture/civil engineering practice during their studies?



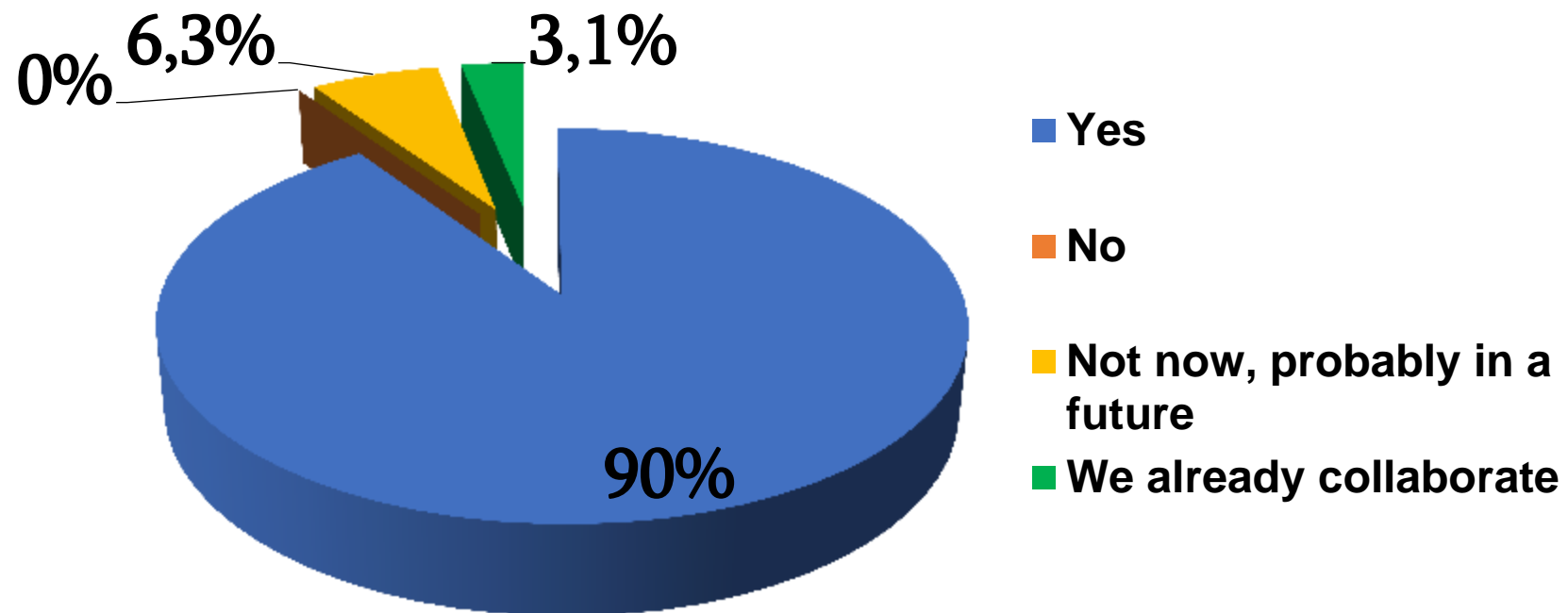
ACT 1.3 Analysis of market needs in partner countries
(Bosnia and Herzegovina, Armenia, Belarus)

Q18. With how many universities have you established collaboration?



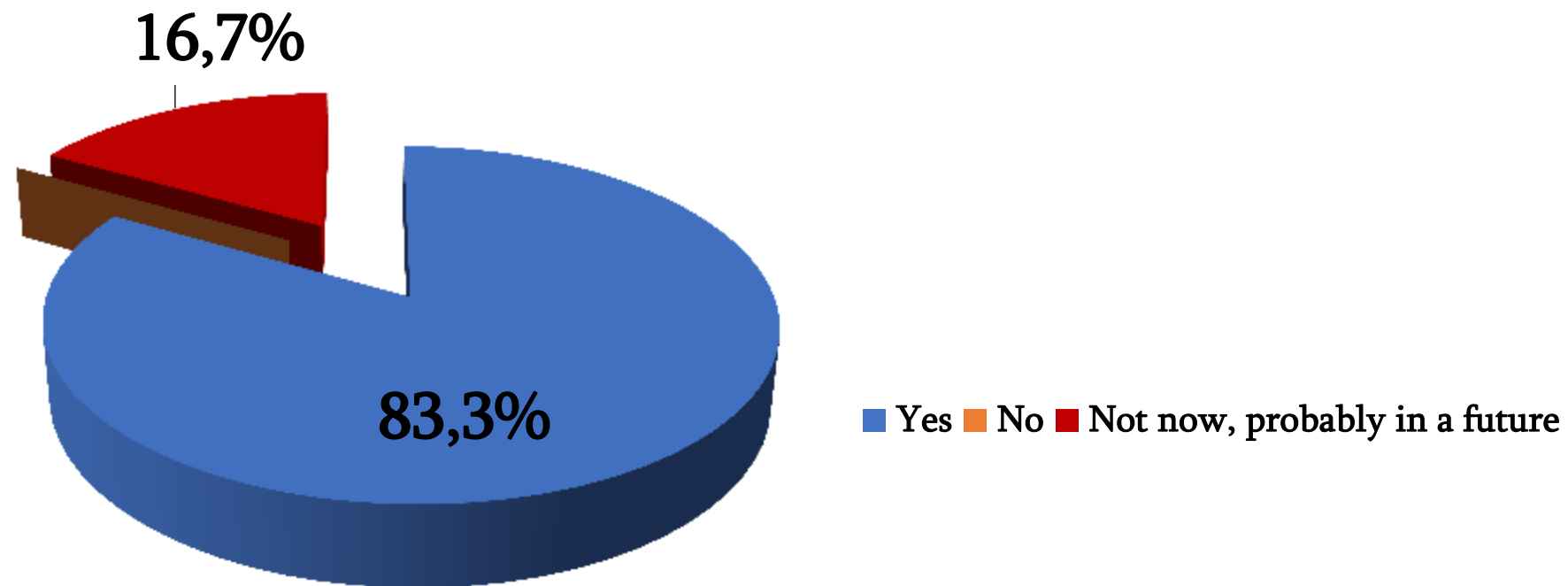
ACT 1.3 Analysis of market needs in **partner countries**
(Bosnia and Herzegovina, Armenia, Belarus)

Q19. Would your company be interested in collaborating with the university?



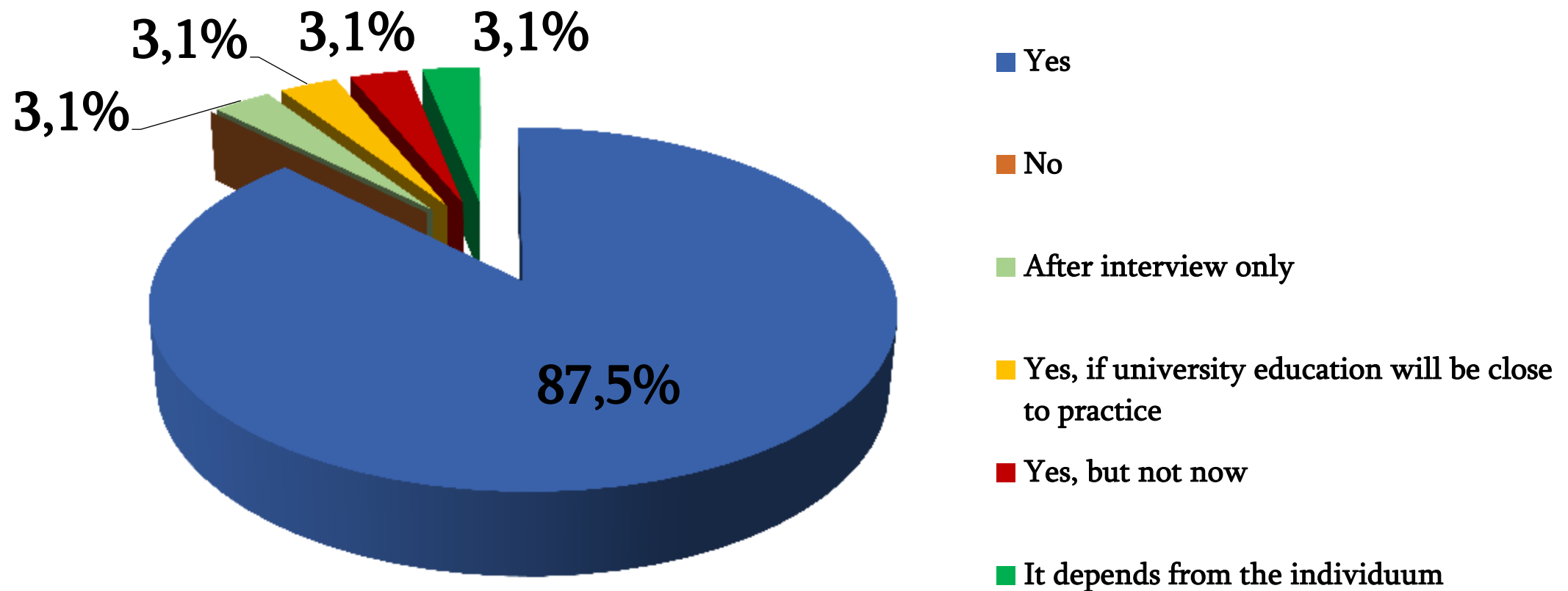
ACT 1.3 Analysis of market needs in **partner countries**
(Bosnia and Herzegovina, Armenia, Belarus)

Q22. Would your company be interested in offering placements for student internships?



ACT 1.3 Analysis of market needs in partner countries
(Bosnia and Herzegovina, Armenia, Belarus)

Q24. Would you be interested in hiring university students?

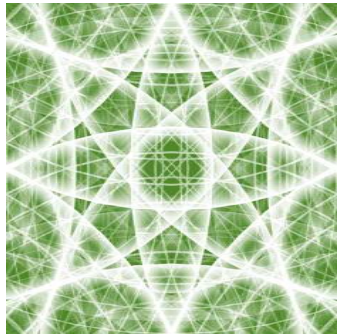


ACT 1.4 Creation of the learning outcomes based on the needs from labour market and industry

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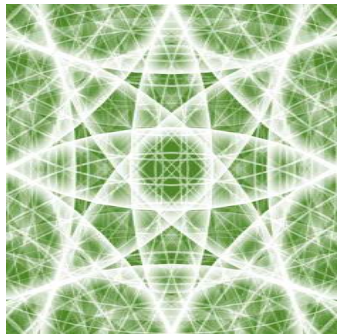
General	Professional
Critical thinking	Digital skills
Dealing with complexity	Research skills
Decision making	Professional knowledge, skills and abilities
Endurance (e.g. working under pressure, handling stress and deadlines)	Acquisition of BIM technology
Work ethic (e.g. self-discipline, willing to work hard)	Qualified design development
Dealing with uncertainty	Acquisition of IT technologies
Determination (e.g. commitment, persistence, willingness to achieve)	Business ethics
Handling criticism	Design norms knowing
Working with clients	Computer skills
Working with clients	Economic fundamentals in design
Business management skills	Foreign languages for architecture and civil engineering
Collaboration skills/team work	
Presentation skills	
Mediating skills (e.g. negotiation, conflict mediation)	
Project management skills	

WP2 - Development of new courses in the field of architecture and civil engineering



Lead Organization

University G. D'Annunzio - Chieti-Pescara, Italy



Co - Leader

University of Bihać (UNBI), BiH

WP2 - Development of new courses in the field of architecture and civil engineering

MODERNIZED COURSES

ARCHITECTURAL

1. Computer Literacy in Architecture
2. Architectural Structures
3. Construction material science
4. Architecture
5. Freehand Drawing
6. Contemporary Architectural Discourse
7. Urban Design
8. Architecture Landscape and Technology
9. Multifunctional Space Design
10. Critical Theory/ Culture and Architecture

CIVIL ENGINEERING

1. Construction materials
2. Introduction to engineering informatics
3. Statics in civil engineering
4. Planning and construction of specific road facilities
5. Construction modeling
6. Reinforced concrete and masonry structures
7. Timber and plastic structures
8. Advanced Structural Analysis
9. Advanced Construction Technology and Management`
10. Civil Engineering Materials

WP2 - Development of new courses in the field of architecture and civil engineering

DESIGNED COURSES

ARCHITECTURAL

1. Professional Practice
2. Studies in light and materials
3. Ornament Theory and Design
4. Contemporary Architectural Discourse
6. Techno-Sensation Architecture
7. Green Design and Interior
8. BIM Technology
9. Architectural projection of contemporary construction systems
10. Territory Improvement and engineering development of area
11. Sustainable architecture
12. Project management for architects
13. Contemporary methods of preservation of historical environment

CIVIL ENGINEERING

1. Structural Stability
2. Advanced Structural Analysis
3. Construction Machinery and Equipment's
4. Road maintenance and repair
5. Construction plant and equipment
6. Waste management
7. Operations Research and Linear Programming
8. Computer-Aided Design for Construction
9. Applied Hydraulics
10. Actions on Structures

WP2 – New Courses suggested by the NUACA in Application for Architecture speciality

DESIGNED COURSES

ARCHITECTURAL

- 1. BIM (Building Information Model) technologies (systems) – Bachelor - 4 credits**
- 2. Architectural projection of contemporary construction systems – Bachelor - 3 credits**
- 3. Territory Improvement and engineering development of area – Bachelor – 2 credits**
- 4. Sustainable architecture – Master – 2 credits**
- 5. Project management for architects – Master – 2 credits**
- 6. Contemporary methods of preservation of historical environment – Master – 4 credits**

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<https://drive.google.com/drive/u/0/folders/1lg8nsc-lyc4z4nGsw1kfJMKC6TBCBnzX>

1. BIM (Building Information Model) տեխնոլոգիաներ (բակալավրիատ, 4 կրեդիտ)
2. Ժամանակակից շինարարական համակարգերի ճարտարապետական նախագծում (բակալավրիատ, 3 կրեդիտ)
3. Տարածքների բարեկարգում և ինժեներական զարգացում (բակալավրիատ, 2 կրեդիտ)
4. Կայուն ճարտարապետություն (մագիստրատուրա, 2 կրեդիտ)
5. Նախագծի կառավարում ճարտարապետների համար (մագիստրատուրա, 2 կրեդիտ)
6. Պատմական միջավայրի պահպանման ժամանակակից մեթոդները (մագիստրատուրա, 4 կրեդիտ)

“PROJECT MANAGEMENT FOR ARCHITECTS”

The goal of the discipline is to form the students' knowledge and skills in the field of project-oriented management in the process of developing and implementing design solutions, as well as investment and construction activity based on applying modern techniques and methods of project management that will meet the requirements of consumers and society as well as requirements for students earning a *Bachelor degree* within the framework of the RA National Qualifications Framework (NQF), which will ensure their effective professional activity in the future or at the next stage of study.





Learning Outcomes

As a result of discipline study, the master must:

Know:

- a/ the theoretical fundamentals of project management,
- b/ basic concepts, definitions, functions and methods of project management.



learning
Outcomes



Learning Outcomes

As a result of discipline study, the master must:

Be able to:

- a/ use project management methods in the design and implementation of design solution,
- b/ apply modern models of project management in investment and construction activities,
- c/ organize of research and design work,
- d/ manage the project team,
- e/ work with a computer as a means of managing project information,
- f/ use information and computer technologies as a tool in design and scientific research,
- g/ work with information in global computer networks,
- h/ develop a strategy for the actions of the creative team in specific market conditions,
- i/ monitor the project situation,
- j/ use of methods of administrative and managerial and communication work,
- k/ coordinate design and approval work,
- l/ interact with related specialists, public and state organizations.



Suggested Background knowledge



The discipline "Project Management for Architects" is based on the bachelor's competencies in mastering the disciplines "Architectural Design" - Level 6 of the NQF, and project practices related to the "primary" knowledge of the students in architecture.

Teaching Methods



Teaching methods are chosen in alignment with this discipline objectives and students' needs. For this discipline is appropriate merging of student and teacher directed methods including the following elements: lecture showing by use of slide show presentations and other visible materials (videos, photos, documents, templates, etc.), worked examples, interactive lecture.

Teaching Methods

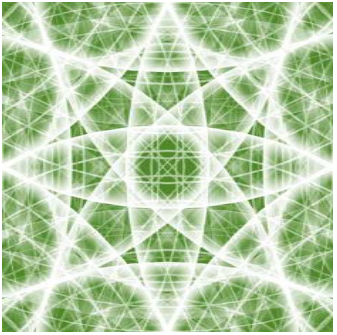


Lectures will help students organize extensive readings. Lectures should be crafted so that students are intentionally active as much as it is reasonable. Lecture teaching should be mandatory combined with other teaching methods. Some topics of this discipline will require the online teaching by using videos for the modeling stage and discussion group.

Teaching Methods

Worked examples will provide an opportunity to demonstrate the real problem, ways of their solving, way of impart information. Students will actually work their way through the examples in order to strengthen their knowledge obtained from the lecture.

Interactive lecture assumes to use interactive techniques, particularly writing exercises, quick pairings or small group discussions, individual or collaborative problem solving, or drawing for understanding.

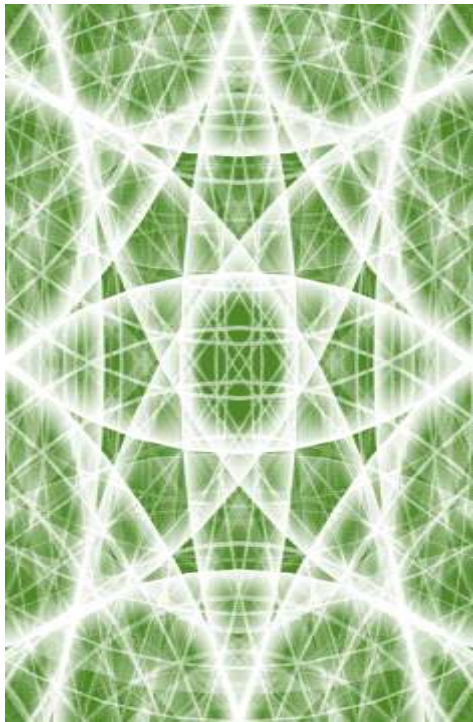


Assessment Methods

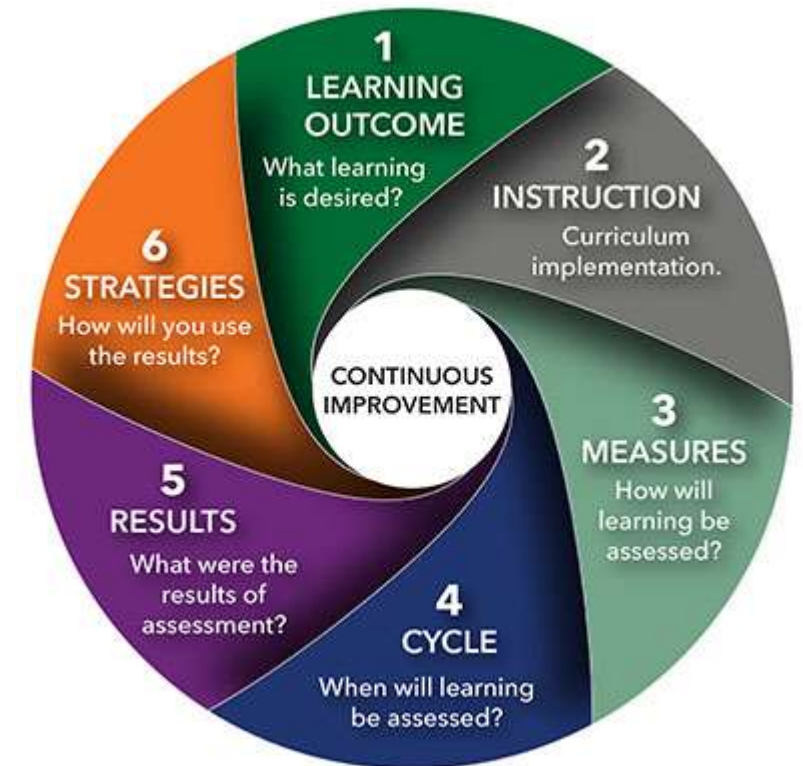
By the end of module learning the summative (final) assessment will be done. It is aimed at assessing the extent to which the most important outcomes at the end of the module teaching have been reached. At the final assessment, the student takes the exam, which is conducted with questionnaires that fully represent the course. The exam questionnaire as well as the knowledge assessment procedure are presented to the students at the beginning of the academic year.



Assessment Methods



The final grade of the student's knowledge is given based on the results of written answers to the questions included in the exam questionnaire, using the scale of the points given.



Content of Course

Chapter 1. Conception of Management in Architectural Design

- 1.1. Specificity of architectural design
- 1.2. Basic concepts and definitions
- 1.3. Life cycle of an architectural project
- 1.4. The project and its "environment"
- 1.5. Participants of an architectural project

Chapter 2. Pre-project preparation and development of an architectural project



2.1. Preparation of pre-project documentation

2.2. Basic requirements for the form and content of an architectural project

2.3. Fundamentals of Design Analysis

2.4. Environmental expertise of the project

Chapter 3. Basic functions of architectural project management

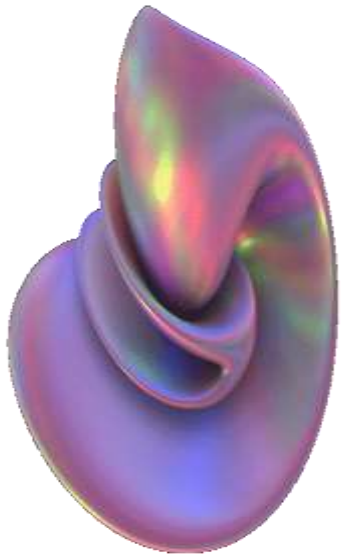
3.1. Management of target functions of an architectural project

3.2. Project quality management

3.3. Project Change Management

3.4. Project development time management

3.5. Project Risk Management



Chapter 4. Organizational and methodological foundations of architectural project management



- 4.1. Control and regulation in project management**
- 4.2. Normative base for project management**
- 4.3. Automation of project management processes**
- 4.4. Legal regulation in the field of architectural design**
- 4.5. Project team management**
- 4.6. Construction Management Project Management (Optional)**

Required Texts and Reading

1. Alharbi, M., Emmitt, S. and Demian, P. (2015a). Transferring architectural management into practice: A taxonomy framework. *Frontiers of Architectural Research*, 4(3), pp.237- 247.
2. Alharbi, M., Emmitt, S. and Demian, P. (2015b). What is architectural management? Towards a pragmatic definition. *Engineering, Construction and Architectural Management*, 22(2), pp.151-168.
3. Besteiro, É., Pinto, J. and Novaski, O. (2015). Success Factors in Project Management. *Business Management Dynamics*, [online] 4(9), pp.19-34. Available at: <http://www.bmdynamics.com/>. [Accessed 10 Jul. 2016].
4. Emmitt, S. (2014). *Design Management for Architects*, 2nd Edition. John Wiley & Sons.
5. Kerzner, H. (2013). *Project Management: A Systems Approach to Planning, Scheduling and Controlling*, 11th Edition. Hoboken, New Jersey: John Wiley & Sons
6. Bielefeld, B., Rusch, L.-P., and others. (2013). *Basics Project Management Architecture*. Publisher: Birkhouser. ISBN 9783038214625. 376 pages.
7. Этенко В.П. Менеджмент в архитектуре. Основы методики управления архитектурным проектом. – М.: Издательство «Ленанд», 2019. – 224 с.
8. Этенко В.П. Управление архитектурным проектом: учебник для студентов высших учебных заведений. – М.: Издательский центр «Академия», 2008. – 352 с.



WP3 - Capacity building - 40 academic staff from partner countries will be trained, new equipment and online platform installed.

Lead Organization

University of Maribor (Faculty of Civil Engineering, Transportation Engineering and Architecture) - UM (FGPA), Slovenia

Co - Leader

National Polytechnic University of Armenia Foundation – NPUA



WP4 - University Enterprise Collaboration - Network between industry and universities, internship program and joint projects will be created.



Lead Organization

University of Malaga, Spain

Co - Leader

UNMO, Mostar, BiH

WP5 - Implementation of new programmes - Modernized and designed BSc and MSc courses implemented, internship and online platform functioning.

Lead Organization

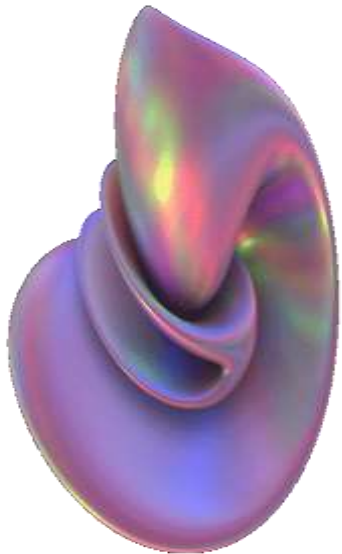
**LEIPZIG UNIVERSITY OF APPLIED SCIENCES –
HTWK Leipzig, Germany**

Co - Leader

The Belarussian National Technical University (BNTU)



WP6 - Quality Control and Monitoring - creation of procedures for quality control and monitoring, internal quality control activities, external quality assurance activities, external financial audit.



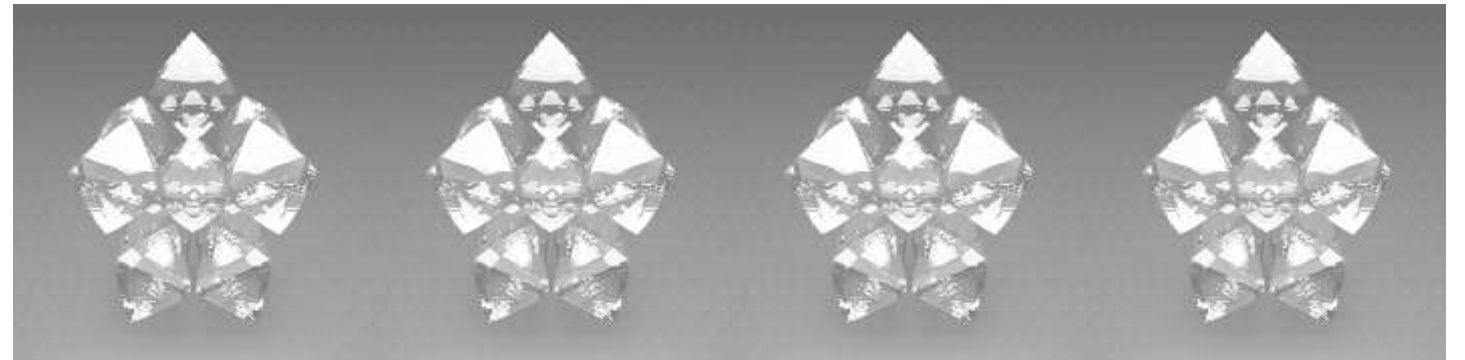
Lead Organization

**LEIPZIG UNIVERSITY OF APPLIED SCIENCES –
HTWK Leipzig, Germany**

WP7 - Dissemination & Sustainability - establishing of dissemination plan, setting up and maintaining project Web site, dissemination activities, final conference, financial and institutional sustainability plan.

Lead Organization

IBU Architecture, Sarajevo, BiH



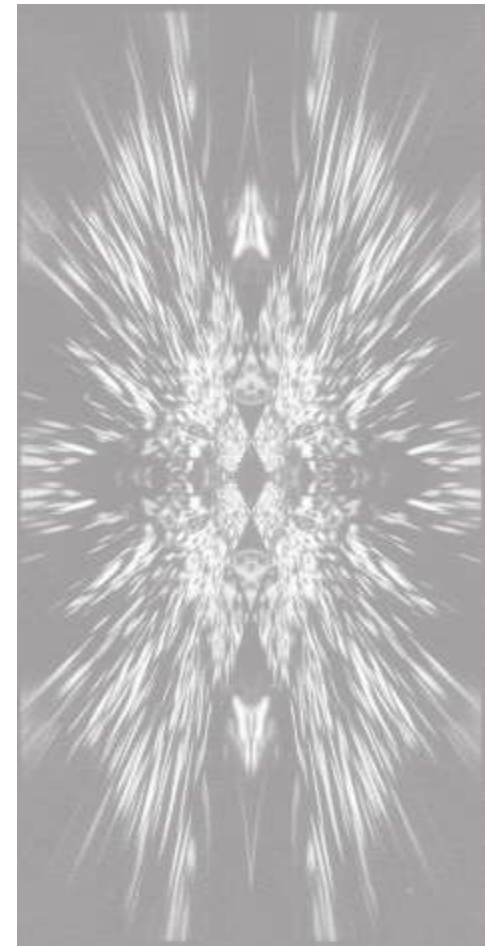
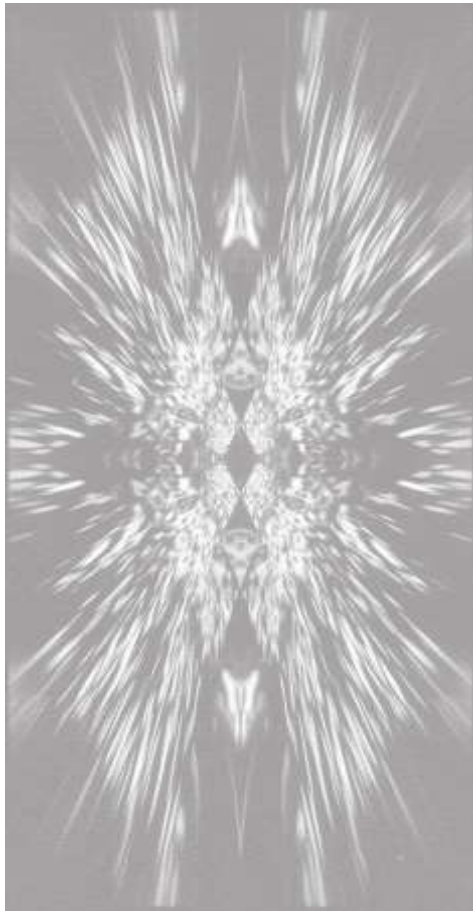
Co - Leader

**National University of Architecture and Construction of Armenia
Foundation, NUACA**

WP8 - Project management- led by Ud'A, PM and SC

Lead Organization

**University G. D'Annunzio - Chieti-Pescara,
Italy**



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ՀԱՌՇԱԿԱԼՈՒԹՅՈՒՆ
ՈՒՇԱԴՐՈՒԹՅԱՆ
ՀԱՍԱՐ



Թ. Բ. Բ.