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

WORKSHOP 2 (WP2)

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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

“PROJECT MANAGEMENT FOR ARCHITECTS”

The goal of the discipline

To form the students knowledge and skills in the field of project-oriented management in the process of developing and implementing architectural design solutions.

Learning Outcomes

Know:

a/ the fundamentals of project management,

b/ basic concepts, definitions, functions and methods of architectural project management.

Learning Outcomes

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.

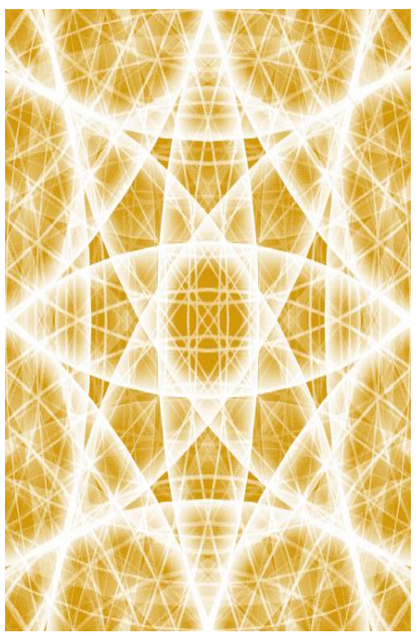
Suggested Background knowledge

- bachelor's competencies in the disciplines "Architectural Design"- Level 6 of the NQF,
- project practices related to the "primary" knowledge of the students in architecture.

Teaching Methods

- lecture showing by use of slide show presentations and other visible materials (videos, photos, documents, templates, etc.),
- practical examples/case studies analysis,
- interactive lecture (accompanied by discussions).

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

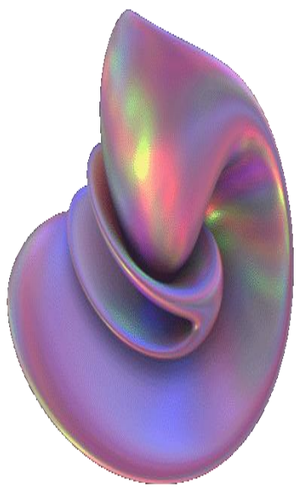
2.1. Preparation of pre-project documentation

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

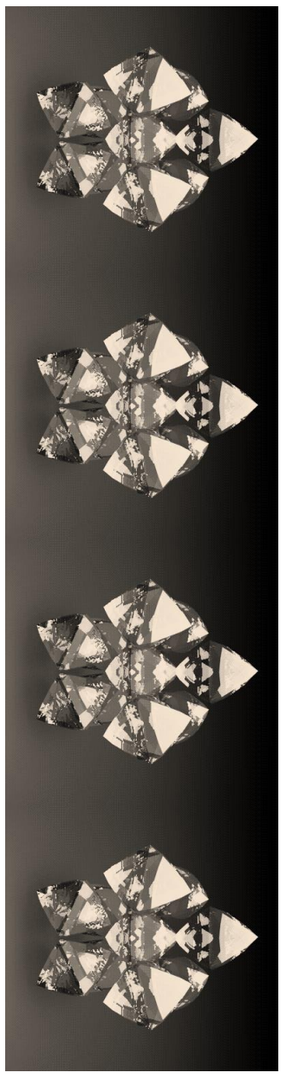
3.2. Project quality management

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 архитектурнум проектом: учебник для студентов высших учебных заведений. – М.: Издательский центр «Академиа», 2008. – 352 с.

“CONTEMPORARY METHODS OF PRESERVATION OF HISTORICAL ENVIRONMENT”
Master – 4 credits”

The goal of the discipline

To bring knowledge and professional skills to students through theoretical and practical work in the field of preservation of historical structures.

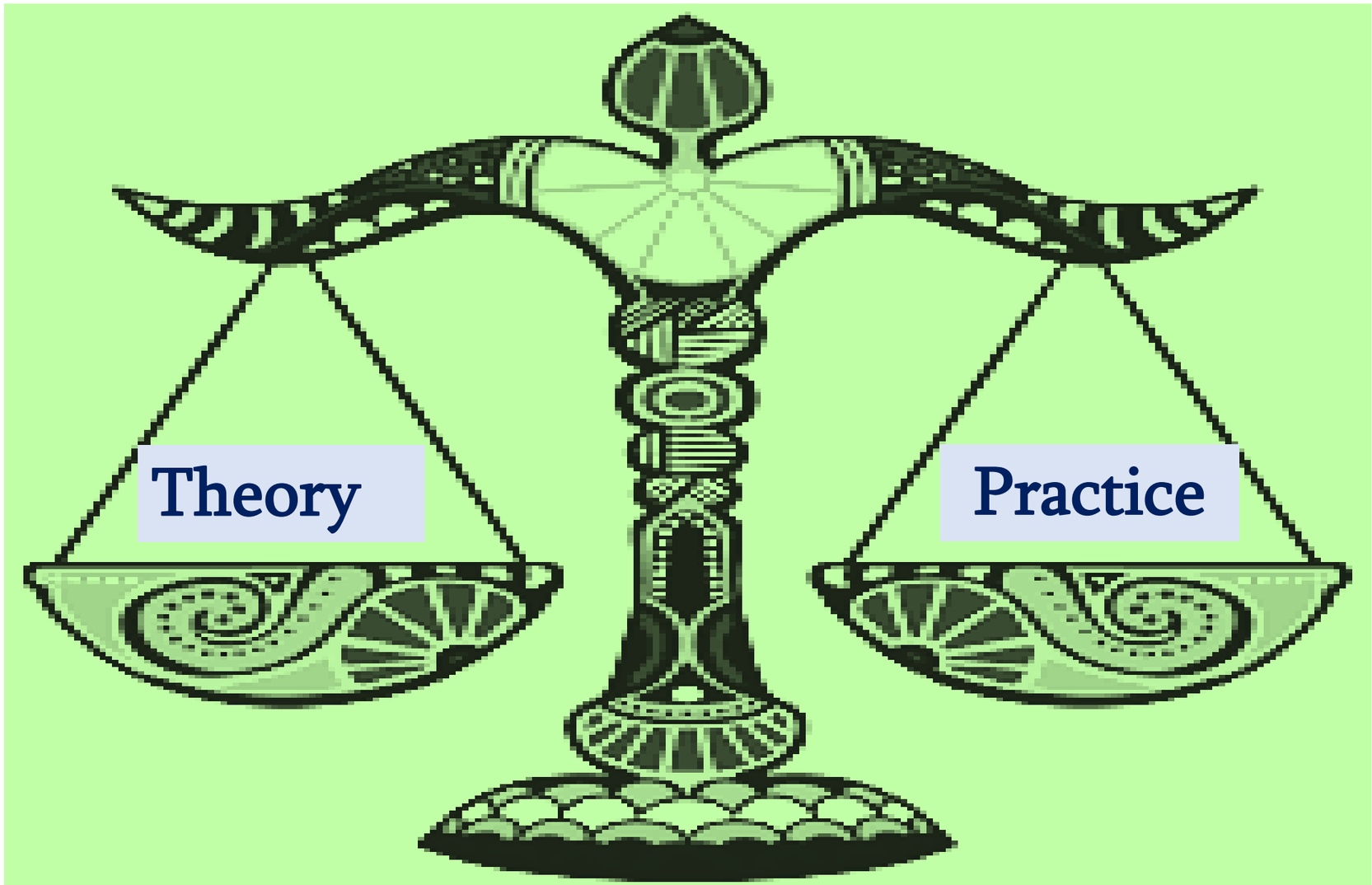
Learning Outcomes

- Research of bibliographic and archival materials.
- Research of the historical environments
- Geometrical survey of monuments.
- Study and documentation of all construction phases in a structure.
- Examination and documentation of all construction materials used in the buildings.
- Research and documentation of all the damage and decay that has been caused over time.
- Design of solutions to prevent, if not eliminate, further degradation.
- Development of a plan for further protection of structures.
- Calculation of expected workloads.

Suggested Background knowledge

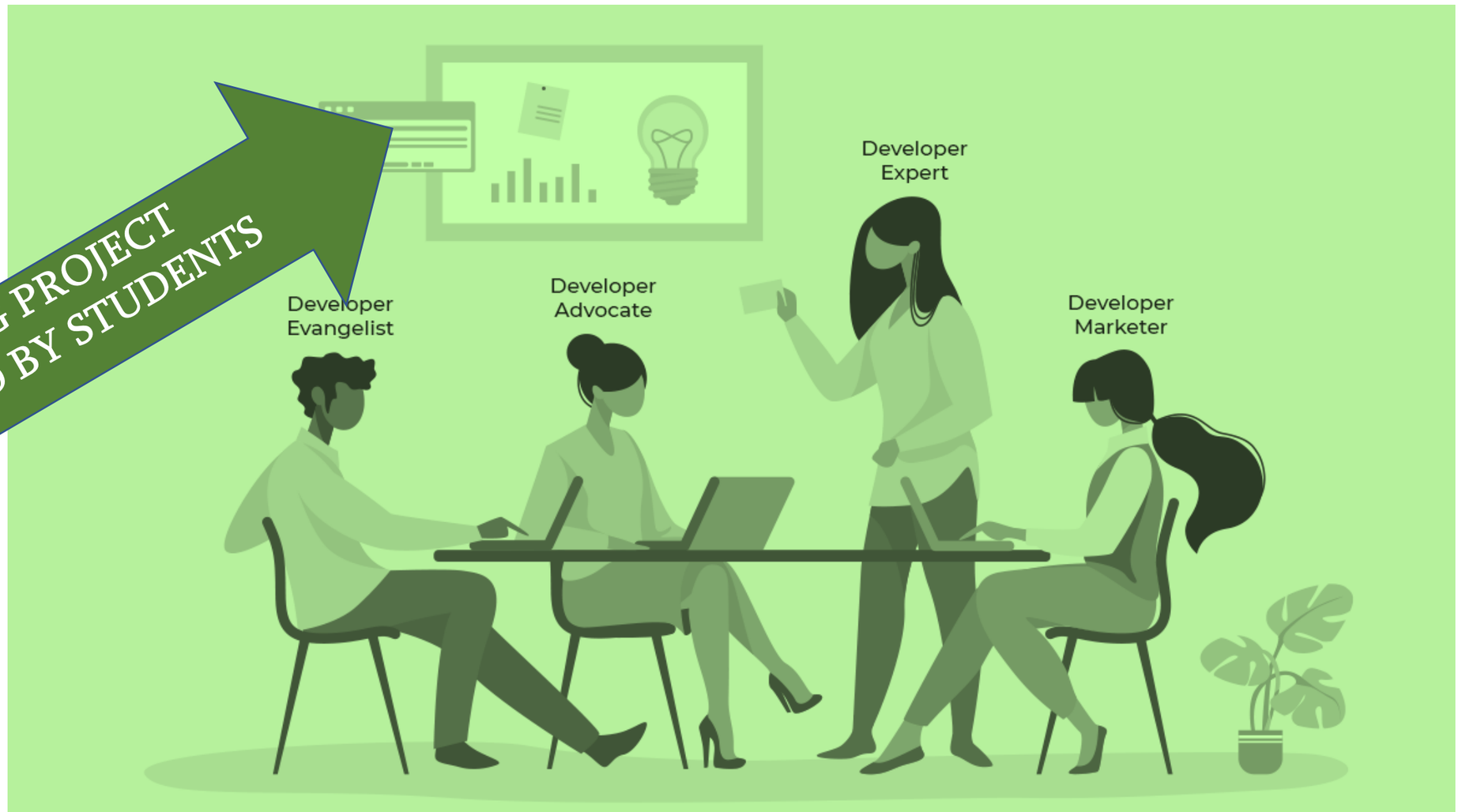
- Theory of the history of architecture and documentation of bibliographical materials.
- Geometrical survey and design.
- Presentation of the design with the appropriate tools.
- Recognition and distinction of construction materials.
- Research of the construction technology of architectural historical structures.
- Ability to test, analyze data and experiences.
- Knowledge of the RA legislation and RA ratified international conventions in the field of cultural heritage.

Teaching Methods



Assessment Methods

ASSESSING PROJECT
DEVELOPED BY STUDENTS



Required Texts and Reading

- Publication “Competences for access to the conservation- restoration profession”.
- Slides, which will include approaches from international experience.
- quotes from conventions and charters.
- The prepared didactic materials will be provided to the students.

“BIM (Building Information Model) technologies (systems) – Bachelor - 4 credits”

The aim of the course is to endow the future Armenian architects with such sustainable and fundamental knowledge which is BIM technologies from the very beginning stage of design up to the construction end and **exploitation/operation**.

Learning Outcomes

Mastering these technologies, they will acquire skills so as to contribute to the following important factors:

- Improving of the design process quality and efficiency, quick and harmonious application of design changes as a result of collaboration with engineers of different professions
- Improving the quality and efficiency of the construction process itself, optimization of workflows
- Notable reduction of construction duration and cost price
- Preliminary removal of design errors (clash detection)

Teaching Methods

- The theoretical and practical classes in closed classrooms, with the participation of 7-8 masked students at the most,
- Seminars,
- On-line webinars.

Assessment Methods

The evaluation / assessment methods for BIM courses will be refined in due course taking into consideration the number of students involved, individual progress, complexity degree of the experimental projects.

Required Texts and Reading

1. "BIM Teaching and Learning Handbook – Implementation for Students and Educators" (M. Reza Hosseini, Farzad Khosrowshahi, Ajibade Aibinu, Sepehr Abrishami) ISBN 9780367427955.

2. "BIM Handbook: A Guide to Building Information Modelling for Owners, Designers, Engineers, Contractors and Facility Managers" (John Wiley and Sons, by Raphael Sacks) ISBN-10: 9780470541371.

3. "BIM and Beyond: Digital Transformation in the Built Environment - A BSI White Paper for Business" (PDF version – www.bsigroup.com).

4. "BIM Design – Realizing the Creative Potential of Building Information Modeling" (John Wiley and Sons, by Richard Garber).

5. "Mastering Autodesk Revit 2020" (Sybex, by Robert Yori, Marcus and Lance Kirby).

6. "BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors" (John Wiley and Sons, by Chuck M. Eastman, Paul Teicholz, Raphael sacks and Kathleen Liston).

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