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Eco-friendly Built Environment

INTEGRATED JOINT MASTER'S CURRICULM AND MODULE CATALOGUE

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

CONTENT

0. INTRODUCTION

GENERAL BACKGROUND

The ECOBUILT Master's programme responds to an increasing national and Europe-wide demand for professionals in architecture with a focus on sustainability, who can manage the complexities of the design process in various disciplines and at different scales.

The proposal of ECOBUILT Joint Master's Curriculum is based on physical mobility of students and is strictly linked to expert's opinion about skills and knowledge to apply in the world of work, as described in the Programme Statement.

OPERATIVE STEPS

Since the very beginning of the project, the curriculum was discussed among the consortium, and with external experts in different fields of eco-friendly work. In a dedicated chart, the consortium organized all the information that could be useful to prepare a joint master's curriculum, comparing different national specificity, equating them to the European level, with particular attention to the directive of the European Parliament 2005/36/ce on the recognition of professional qualifications

(https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:255:0022:0142:en:PDF).

Each university of the consortium provided standards at national level (in term of ECTS, mandatory classes, elective classes and internship) and examples of active and accredited master programmes at their university.

The consortium tested different possibilities about the curriculum, so the Team of the University of Genoa (UniGe) could prepare scenarios of possible curriculum highlighting opportunities and fragilities of each scenario. The four developed scenarios test the different possibilities of the Joint master's degree curriculum by assigning different semesters to each university. Once decided which semester fits best to national and university's possibilities, the curriculum was organized in a more balanced structure, fixing the number of ECTS for each learning unit and implemented with new classes.

AIMS AND OUTPUTS

The curriculum is structured according to national standards in order to proceed to the accreditation of the programme. The aim of the document is to collect, compare and organize all the material from each University, in order to prepare the ECOBUILT Joint Master's curriculum. In this document, the consortium goes through the organization of each class, defining objectives, learning outcomes and assessment criteria.

The Output of this document is to provide a clear explanation of the ECOBUILT Master's Curriculum and learning units.

1. NATIONAL STANDARDS AND CURRICULUM

The ECOBUILT Master's programme responds to an increasing national and Europe-wide demand for professionals in architecture with a focus on sustainability, who can manage the complexities of the design process in various disciplines

ECOBUILT is a 2-yrs Joint Master Programme in Architecture. The curriculum will allow students to get an understanding of cross-disciplinary issues in the fields of architecture, urban and landscape and restoration in three different cultural, economic and socio-political settings: Latvia, Serbia and Italy. To this scope, Italy is the perfect place to start theoretical-critical and historian studies, because of the importance that critical thinking and architecture literature culturally has in architecture schools. Serbia is the place for application and tools definition and in-depth studies, because of the possibility of application given by the context and the structure of the university. Latvia is the perfect context to find strategies of interaction between natural and human environment and at the same time to focus technical studies on materials and building techniques, because of the double nature of the University.

Each country of the consortium has different curriculum's standard to obtain the Master degree in Architecture and then to obtain the Architect licence, but have points in common that make possible to develop a Joint Master Degree in Architecture.

Commonalities to get Master Degree in Architecture can be resumed as:

- 120 ECTS
- 2 Years, 4 semesters
- prevalence of design studios classes
- theoretical exams
- technical and professional-applied exams

Commonalities to get Architect Licence:

- internship
- state exam

1.1. NATIONAL STANDARS: Latvia

National standard in Latvia is regulated by Cabinet Regulation No. 512 "Regulations Regarding the State Standard for the Second-Level Professional Higher Education", as adopted on 26 August 2014 https://likumi.lv/doc.php?id=268761

In Latvia 1 CP = 1,5 ECTS

Before submitting programme for the licensing and then accreditation, university must ensure that programme compels with the aforementioned standard.

Minimum volume of the study programme credit points (CP) - 40 CP (60 ECTS). In our case - 80 CP (120 ECTS)

Duration of the musters programme must be of 1 to 2 years, if the total duration of bachelor and master studies is not less than five years. In our case 2 years.

Parts of the programme and their volume (compulsory, compulsory electives, electives) including the volume of the graduation paper:

1. Study courses that ensure in-depth acquisition of the latest achievements in the theory and practice of the field (professional field of activity) in the amount of at least 5 CP (7,5 ECTS).
2. Research work, creative work, design work and management study courses in the amount of at least 3 CP (4,5 ECTS).
3. Practice in the amount of at least 26 CP (39 ECTS), if it is intended for the graduates of the academic bachelor study programmes, or in the amount of at least 6 CP (9 ECTS), if it is intended for the graduates of the professional bachelor study programmes.
4. State examination, a part of which is the elaboration and defence of a master's thesis or diploma thesis, in the amount of at least 20 CP (30 ECTS).

The architectural education in Latvia is regulated by the lows:

1. On the Regulated Professions and the Recognition of Professional Qualifications. Part A. Regulated Professions in the Republic of Latvia https://likumi.lv/ta/en/en/id/26021.
2. Minimum requirements of educational programs for obtaining the professional qualification of an architect (only in Latvian) https://likumi.lv/ta/id/63410-izglitibas-programmu-minimalas-prasibas-arhitekta-profesionalas-kvalifikacijas-iegusanai;
3. Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications (Text with EEA relevance) https://eur-lex.europa.eu/eli/dir/2005/36/oj/?locale=en
4. Directive 2013/55/EU of the European Parliament and of the Council of 20 November 2013 amending Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) No 1024/2012 on administrative cooperation through the Internal Market Information System (the IMI Regulation') Text with EEA relevance https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0055

KNOWLEDGE, SKILLS AND COMPETENCES

The content of the Master's programme ensures the acquisition of knowledge, skills and competence required for the performance of professional activity in accordance with the knowledge, skills and competence of the seventh (7) level of the framework specified in the Latvian Education Classification.

Basic principles and procedure of study programmes acquisition evaluation

The degree of achievement of study results is assessed on a 10-point scale or with the assessment "passed / failed". The degree of achievement of study results within the final examination of the study course of the compulsory part of the study program can be assessed with the assessment "passed / failed", if the amount of the study course does not exceed two (2) credit points. With the assessment "passed / failed" it is also possible to assess the degree of achievement of study results within the examinations specified in the study course, which are not the final examinations of the study course.

Description of study practice, if applicable

The student achieves the goal of the internship based on the acquired knowledge, skills, competence and previous work experience. When determining the goals and tasks of the internship, the content of the internship also includes the student's acquaintance with the management structure and operating principles of the relevant internship organization. Representatives of the organizations with which an agreement on the implementation of the internship has been concluded participate in the determination of the goals and tasks of the internship, as well as in the evaluation of the internship.

ASSESSMENT CRITERIA

In the development of the study programme, the competencies required in the professions were initially identified and specified, analysing professional standards, European and world industry competencies, as well as competencies agreed on in the Tripartite Cooperation Sub-Councils for Vocational Education and Employment determining the knowledge, skills and competencies to be acquired at the Master's level. Thus, the content of the study programme ensures the acquisition of knowledge, skills and competencies that are necessary for the performance of professional activity in accordance with the knowledge, skills and competencies of the Latvian Qualifications Framework Level 7.

The acquisition of an architectural education shall ensure that during the studies, having appropriately acquired the necessary theoretical and practical knowledge in the field of architecture, the person has acquired:

1. The ability to develop construction projects that meet the aesthetic and technical requirements of architecture.
2. Knowledge of the history and theory of architecture and the relevant sciences, sciences and humanities.
3. Knowledge of fine arts.
4. Knowledge of urban planning and planning, as well as skills related to the planning process.
5. Understanding of the relationship between people and buildings, buildings and the environment and the ability to adapt landscape spaces and structures to human needs.
6. Understanding of the profession of architect and the importance of the work of an architect in society, as well as the special influence of architecture on the formation of the cultural environment.
7. Understanding of pre-design research and construction project preparation work methods.
8. Understanding of technical problems related to the construction project and calculations related to building structures.
9. Knowledge of building physics and construction technology to ensure the internal comfort of buildings and protection against the effects of climate in the context of sustainable development;
10. The ability to design structures in accordance with the requirements of the customer and the user of the structure, observing the construction costs and regulatory enactments regulating construction;
11. Knowledge of the industries, organizations, regulations and procedures required for the implementation of the ideas contained in the project in the works, as well as the compliance of the construction projects with the general development plans;

In developing the evaluation criteria, the lecturer relies on the Cabinet Regulation No. 240 "Regulations on the State Academic Education Standard", the RTU approved methodological recommendations "Assessment of Study Quality at RTU", RTU Regulation on the Assessment of Study Outcomes and Regulation on Final Examinations at RTU".

MINIMUM REQUIREMENTS RTU	
Content	MINIMUM ECTS
Scientific and professional-applied	7,5
Research work, Creative work, Design and Management Study Courses	4,5
THESIS	30
INTERNSHIP	9 (39*)
TOTAL	**120**

*in case of qualification "Architect" awarding

INTERNSHIP DESCRIPTION

Internship in the amount of 39 ECTS is mandatory only in the case that the professional qualification of Architect is awarded to the student upon completion of studies. In the case of an academic study programme, a Master's degree in Architecture is awarded without qualification. Graduates who want to obtain a professional qualification and an architect's license must work in the industry for at least two (2) years and then pass the exams.

The internship is implemented in accordance with the internship agreement on the provision of the internship place or in accordance with the decision of the higher education institution on the provision of the internship place in the higher education institution itself.

The internship is supervised by an internship coordinator, appointed by the head of the structural unit and responsible for the planning, provision and supervision of the internship. The internship on the part of the company is led by the internship supervisor – an employee appointed by the company who has higher education and work experience in the field corresponding to the student's specialization.

The internship place is provided by the institution or the student chooses it independently, in coordination with the internship coordinator.

The institution, the company and the student enter into a tripartite agreement, which defines the goals and objectives of the internship, planning of the internship, the procedure for evaluating the internship achievements, the duties, rights and responsibilities of the parties. The assignment of a student in practice is formalized by an order of the head of institute, indicating the term of the practice, the name of the company and the coordinator of the student's practice. If the company is not located in Latvia or the student is a foreign citizen, a tripartite agreement is concluded in English.

The order of the head of the structural unit on assigning students to the internship is available on the portal ORTUS in the study course "Internship".

Depending on the chosen specialization, students have access to information about companies.

1.2. NATIONAL STANDARS: Serbia

National Standard in Serbia is regulated by Rulebook on Standards and Procedure for accreditation of Study Programs, "Official Gazette of RS", no. 13/2019 of 28.02.2019.

Standards and Instructions for Accreditation of 1st and 2nd Degree Study Programs; defined by National Entity for Accreditation and Quality Assurance in Higher Education (NEAQA) in Serbia.

In Serbia 1 ESPB= 1 ECTS

KNOWLEDGE SKILLS AND COMPETENCES

Standard 4. Competences of graduate students: By mastering the study programme, the student acquires general and subject-specific abilities that are in the function of quality performance of professional, scientific and artistic activities. The description of the qualification resulting from the study programme must correspond to a certain level of the national qualifications framework,, as explained in the Programme Statement.

MANDATORY CONTENT

The Mandatory content to be awarded a Master Degree in Architecture in Serbia has:

A. **Common subjects (total 30 ECTS - 25%).** Take place from the beginning to the third semester and are structured in three groups of subjects. The first group includes one compulsory academic-general education subject in each of the first three semesters (2 ECTS, total 6 ECTS - 5%). In the second group, there are three elective groups of subjects - Theoretical Discourse, one in each of the first three semesters (2 ECTS, total 6 ECTS - 5%), by type: academic-general education and theoretical-methodological subjects. The third group consists of two groups of electives subjects in each of the first three semesters (2 x 3 ECTS, total 18 ECTS - 15%). In the first semester, students choose one subject in the field of architecture and one in the field of urbanism. In the second semester, one in the field of urbanism and one in the field of architectural technologies/engineering, and in the third semester - one in the field of architecture and one in the field of architectural technologies/engineering. All these subjects are theoretical-methodological or scientific / artistic-vocational subjects, by type. Common subjects, according to Standard 5. include vocational practice and final work. The sum of ECTS of common subjects for all modules of the study programme is 43 ECTS - 36%.

B. **Elective areas** - Modules: A, U, AT, and AE take place in all four semesters, each carries 78 ECTS, mean 68% ECTS of Module. All modules are structured in the same way, each in their field, and include theoretical-methodological, scientific/artistic - vocational and vocational-applicative subjects. Each Module in each semester contains one compulsory theoretical subject (3 ECTS, total 9 ECTS - 7,5%). The highest percentage of the teaching of each Module belongs to teaching in the studio: Studio Design project (15 ECTS per semester, total 45 ECTS – 57,7%) and Studio Seminar - theoretical support to Studio Design project (2 ECTS per semester, total 4 ECTS - 3.33%). Knowledge evaluation is carried out during the semester through the presentations of design work and finally by the public defence of projects and a semestral exhibition of final elaborates. All modules within the study programme also have the obligation of Vocational Practice (3 ECTS - 2.5%, i.e., 90 working hours), which could be realized at the architectural bureau or urban institution or construction site, depending on Module, or appropriate scientific and research or cultural institutions. The acquired knowledge is verified through the preparation and defence of the elaborate of vocational practice.

C. **Master final work (32 ECTS - 26,67%),** consisting of the research-theoretical part - Thematic Research and Master Thesis (10 ECTS in total) and research-design vocational-applicative part - Master Design Project (12 ECTS) and Master Final work (10 ECTS) .

In the structure of the study programme at the master's academic studies, the following groups of courses are represented in relation to the total number of ECTS credits, as follows:

- scientific and professional-applied - about 70%,
- general and theoretical-methodological - about 30%.

In the structure of the study programme, elective courses are represented by at least 30% in relation to the total number of ECTS points in master studies. The list of elective courses should contain at least twice as many cases as the number of electives.

Professional practice and practical work (Internship) includes at least 90 hours, which is realized in appropriate scientific research institutions, in organizations for performing innovation activities, in organizations for providing infrastructural support to innovation activities, in companies and public institutions.

To get the title of Architect it is necessary to pass a State Examination.

MINIMUM REQUIREMENTS UB	
Content	MINIMUM ECTS
Scientific and professional-applied	About 70%
Studio Design project + theoretical	
Common subject	
General and theoretical-methodological	About 30%
Compulsory theoretical subject	
THESIS	27
INTERNSHIP	3
TOTAL	**120**

ASSESSMENT CRITERIA

The student completes the study program of Master Academic Studies – Architecture by passing the exam, thus earning a certain number of ECTS credits, in accordance with the study programme. Each subject in the program carries a certain number of ECTS credits that a student earns when passing the exam successfully. The number of ECTS credits is determined based on the workload of a student in mastering a particular subject and applying the unique methodology of a higher education institution for a specific program of study.

The student earns points in a subject through the work during lessons and by fulfilling the pre-examination obligations and taking the exam. Student's success in mastering a particular subject is continuously monitored during classes and expressed by points. The minimum number of points a student can achieve by completing pre-examination obligations is 30, and the maximum is 70. The maximum number of points a student can earn in a subject is 100.

Pre-examination obligations students are realized in different ways, depending on the type and content of the subject per the study program: tests, colloquiums, evaluation of exercises, presentation, workshops, etc. Attending knowledge tests during the semester is compulsory. The exam form and points acquisition rules are adapted to the subject education field. The exam can include written or oral form, seminar paper, semester elaborate of the project, or exercises essays with an oral defense, etc., appropriately chosen according to the type of subject and content of the course.

The student's assessment is based on the total number of points that a student has earned by fulfilling the pre-examination obligations and taking the exam according to the quality of the acquired knowledge and skills.

Student's overall success in the subject is expressed by grades 5 (failed) to 10 (excellent), following the Rulebook on Student evaluation on Exams (Gazette of the University of Belgrade, No. 136, 168 and 180), according to the following scale:

0 to 50	points – assessment 5	(not passing)
51 to 60	points – assessment 6	(passing)
61 to 70	points – assessment 7	(good)
71 to 80	points – assessment 8	(very good)
81 to 90	points – assessment 9	(excellent)
91 to 100	points – assessment 10	(excellent – outstanding)

Each subject from a study programme has a precise and published method of earning points. The way of earning points during teaching includes the number of points a student receives on the basis of each type of activity during the course or by fulfilling the pre-examination obligations and taking the exam.

INTERNSHIP DESCRIPTION

All modules within the study programme also have the obligation of Internship (3 ECTS - 2.5%, i.e., 90 working hours), which could be realized at the architectural bureau or urban institution or construction site, depending on Module, or appropriate scientific and research or cultural institutions. The acquired knowledge is verified through the preparation and defence of the elaborate of Internship.

1.3. NATIONAL STANDARS: Italy

National standard in Italy is regulated by Decreto Ministeriale 16 marzo 2007 Published in Official Gazette9 July 2007 n. 155 http://attiministeriali.miur.it/anno-2007/marzo/dm-16032007.aspx and Faculty regulation of Unige - D.R. n. 1281 of 28.03.2022 Active since 13.04.2022.

In Italy 1 CFU= 1 ECTS.

KNOWLEDGE SKILLS AND COMPETENCES

In Italy it is mandatory to have a deep knowledge of instruments and forms of representation, deep knowledge in history of architecture, construction, urban planning, architectural restoration knowledge of the theoretical-scientific as well as methodological-operational aspects of mathematics and other basic sciences, deep knowledge of theoretical, scientific, methodological and operational aspects of architecture, building, urban planning and architectural restoration- knowledge in the field of business and business organization and professional ethics and ethics, be fluently, in written and oral form, in Italian and English, as explained in the Programme Statement.

MANDATORY CONTENT

To be awarded with a Master Degree in Architecture each student must acquire 120CFU (120ECTS) that comprehend knowledge in specific disciplines related to the work of Architect.

1) Compulsory study courses – 108 CFU (108 ECTS)in characterising disciplines of architecture, with a minimum of ECTS in each of the following disciplinal area:

   -12 ECTS in ICAR/14 Architectural and urban design

   -4 ECTS in ICAR/18 Architectural history

   -4 ECTS in ICAR/07 Geotechnics

   -4 ECTS in ICAR/08 Structural mechanics or ICAR/09 Structural engineering

   -4 ECTS in ICAR/22 Real estate appraisal

   -4 ECTS in ICAR/20 Urban and regional Planning or ICAR/21 Urban and landscape planning

   -4 ECTS in ICAR/06 Topography and cartography or ICAR/17 Drawing

   -4 ECTS in ICAR/19 Architectural Restoration

   -4 ECTS in FIS/01 Experimental physics or ING-IND/10 Thermal engineering and industrial energy systems or ING-IND/11 Building physics and building energy systems

   -4 ECTS in ICAR/10 Building design or ICAR/11 Building production or ICAR/12 Architectural technology

   -4 ECTS in ING-IND/35 Business and management engineering or IUS/10 Administrative law or SECS-P/06 Applied economics or SPS/10 Urban and environmental sociology

2) Master Thesis – 9 CFU (9 ECTS);
3) Internship is not mandatory, but it can be 3 ECTS.

To be awarded with the licence of Architect it is necessary to have a Master Degree and then pass a State examination. Universities organize state Exams in association with Professional Orders (Ordine degli Architetti, Pianificatori e Paesaggisti) and each local Order has different rules.

In The city of Genoa it is organized by University of Genoa and Ordine degli architeti di Genova (Genovese architect council). State examination is regulated by law n. 1378 del 8/12/1956 "Esami di stato di abilitazione all'esercizio delle professioni"; D.M. 09/09/1957 "Regolamento sugli esami di stato di abilitazione all'esercizio della professione"; D.P.R. n. 328 del 05/06/2001 /"Modifiche ed integrazioni della disciplina dei requisiti per l'ammissione all'esame di Stato e delle relative prove per l'esercizio di talune professioni, nonchè della disciplina dei relativi ordinamenti"; Ordinanza Ministeriale Esami di Stato 2023.

Today, by virtue of the extraordinary nature of the moment caused by the epidemiological emergency, the examination can consist of a single oral test conducted remotely. This test covers all the subjects envisaged by the specific reference regulations and aimes at ascertaining the acquisition of the skills, notions and abilities required by the regulations concerning each individual professional profile. In the case of candidates who have successfully completed the professional traineeship, the State Examination Board may use for the discussion the graphic works reported in the portfolio produced during the traineeship activity, duly validated by the competent Provincial Order Council (see Note MIUR of 09.05.2019).

MINIMUM REQUIREMENTS UNIGE	
Content	MINIMUM ECTS
ICAR/14 Architectural and urban design	12
ICAR/18 Architectural history	4
ICAR/09 Structural engineering	4
ICAR/22 Real estate appraisal	4
ICAR/21 Urban and landscape planning	4
ICAR/17 Drawing	4
ICAR/19 Architectural Restoration	4
ING-IND/11 Building physics and building energy systems	4
ICAR/12 Architectural technology	4
SECS-P/06 Applied economics SPS/10 Urban and environmental sociology	4
THESIS	9
INTERNSHIP	NOT SPECIFIED
TOTAL	**120**

ASSESSMENT CRITERIA

Italian universities normally can activate study classes trough new sorting, through specific deliberations, according to art.9 comma 2 of the decree 22 October 2004 n 270.

Professors or researchers framed in the relevant scientific-disciplinary and tenured professors at the university, or tenured in other universities basing on specific agreements between the universities concerned must teach at least 60% of the courses.

No tenured professor or researcher can be counted in total more than twice for any teaching held in undergraduate or master's degree programmes, both in their own and in other universities.

For each Master's degree programme, the teaching regulations of the university determine an entire number of credits assigned to each training activity, specifying which of them contribute to compliance with the conditions in the annexes to this decree. For this purpose, limited to the training activities provided for in Article 10, paragraph 4, of Ministerial Decree No. 270 of October 22, 2004, the scientific-disciplinary sector or sectors of reference and the related disciplinary field are indicated.

INTERNSHIP DESCRIPTION

The internship is optional, but if enrolled it must be a minimum of 150h.

An internship coordinator, appointed by the head of the structural unit, and responsible for the planning, provision and supervision of the internship, supervises the internship. The internship on the part of the company is led by the internship supervisor – an employee appointed by the company who has higher education and work experience in the field corresponding to the student's specialization.

1.4. CURRICULUM DEVELOPMENT

The consortium proposed four (4) curriculum scenarios. Each one was organised to have a large chart with the classes divided per semesters meeting minimum requirements for each university.

In Italy, there are very strict standards on ECTS for disciplinary area. In addition, there is a maximum of 12 exams, so it can be necessary to join exams together. There are standard classes such as ICAR/14 Architectural and urban design; Architectural history; Structural engineering; Architectural Restoration; Architectural technology; also engineering subjects such as Structural engineering; Building physics and building energy systems; drawing, economics, sociology and landscape. In addition, it is important to notice the proportion between ICAR/14 and other disciplinary areas; here we have 12 ECTS, while in the others only 4. This highlights the importance of architecture and urban design studio. Then the Master thesis, while internship is not mandatory to get the title of Master in Architecture, even if it is very useful for students.

The Serbian standard is more about balance between practical teachings and theoretical-methodological ones. There is a 27 ECTS thesis project and a 3 ECTS internship, which again is optional and can be removed for adjustment in the future.

The Latvian standard is different. The Master in Architecture in RTU has very few minimum ECTS for scientific and professional - there is a mandatory internship of 9 ECTS for those who has gained professional bachelor degree and 39 ECTS for those with an academic bachelor degree. In RTU, there are 30 ECTS for the thesis. However, the thesis class develops during the second, third and fourth semester. Therefore, it is possible to make different exams correspond to the thesis course at RTU. The architectural design studio in the second semester, the course of Architectural Technology and economy in an architecture and urbanism during the second semester and the thesis design project could go together and compose a thesis of 30 ECTS.

So, starting from the beginning: in each semester there are practical laboratories, where students elaborate their projects, thanks also to the theoretical part of the exams. A second part with scientific or professional applied classes. In this section, there are scientific subject such as technology or other classes that deal with a small project or a practical application. Lastly, we have a smaller part in number of ECTS with the theoretical and methodological studies. These classes are more theoretical, with research methods.

All the elaborated scenarios are collected in Annex A2 at the end of the present document; they have different problems and criticalities.

Scenario 02 (Annex A2) respects all three national standard and works correctly from the teaching methodological point of view, even if the learning path needs to be consoled.

The movement of students respects needs from each institution and satisfies national standards.

Scenario 02 becomes the base for implementation on the structure of ECOBUILT Joint Master Curriculum.

5. ECOBUILT MASTERS CURRICULUM

Joint Master Curriculum is implemented according to the adherence to each country's educational standard, educational methodology and consortium need.

The structure of the curriculum of the master ECOBUILT is described in Table 1.

1st semester at University of Genova, focused on fundamentals.

2nd semester is in the University of Belgrade, focused on methods and tools.

3rd semester at Riga Technical University, finalize strategies and in-depth knowledge of technologies.

4th semester Thesis: Integrated Diploma Project, country to be chosen by students.

Each semester has a workload of 30 ECTS and is organized as follows:

1 Design Studio of 15 ECTS with a Theoretical part

2 Scientific and Professional-Applied for 8 ECTS total

1 Theoretical methodological 4 ECTS

1 Elective Course (possibility to implement in online mode) 3ECTS

Table 1

Master's Curriculum

No.	TITLE	1st semester	2nd semester	3rd semester	4th semester Genoa, Belgrade, Riga
		Introduction FUNDAMENTALS	Methods and Tool APPLICATION	Strategies and Tactics	SINTHESYS
COMPULSORY STUDY COURSES					
STUDIO PROJECT + THEORETICAL					
	Architectural studio 1	8			
	Architectural theory 1	2			
	Typological analysis	5			
	Multiscale biofilic design		15		
	Architectural design studio			12	
	Reconstruction and restoration of buildings			3	
SCIENTIFIC + PROFESSIONAL-APPLIED					
	Principles of sustainability	4			
	Principles of landscape architecture	4			

No.	TITLE	1st semester	2nd semester	3rd semester	4th semester Genoa, Belgrade, Riga
		Introduction FUNDAMENTALS	Methods and Tool APPLICATION	Strategies and Tactics	SINTHESYS
	Circular city: ecology and nature based solutions		4		
	Technology and nature in service of architecture: structures and systems		4		
	Integrated urban design			4	
	Material science in eco-friendly built environment			4	
THEORETICAL + METHODOLOGICAL					
	Works, architects, paradigms in eco-friendly built environment	4			
	Regenerative and salutogenic design		4		
	Building climate system in architecture			4	
	TOTAL ECTS COMPULSORY CONTENT	**27**	**27**	**27**	
ELLECTIVE STUDY COURSES					
PROVIDED BY RIGA TECHNICAL UNIVERSITY					
	Principles of Design Planning and Management	3			
	Architectural Morphology and Research Methods	3			
	Methods of Renovation and Transformation of Buildings		3		
PROVIDED BY UNIVERSITY OF BELGRADE					
	Theoretical Framework of Sustainable development	3			
	Theory of Urban Design	3			
	Building Physics			3	
PROVIDED BY UNIVERSITY OF GENOA					
	Buildings Economics		3		
	Resilience of the built environment			3	
	TOTAL ECTS ELECTIVE CONTENT	**3**	**3**	**3**	

No.	TITLE	1st semester	2nd semester	3rd semester	4th semester Genoa, Belgrade, Riga
		Introduction FUNDAMENTALS	Methods and Tool APPLICATION	Strategies and Tactics	SINTHESYS
MASTERS THESES					
RIGA TECHNICAL UNIVERSITY					
	Master Thesis with Integrated Diploma Project				30
UNIVERSITY OF GENOA					
	Master thesis + Thesis defence (26) + Real Estate (2) + Building physics and building energy systems (2)				30
UNIVERSITY OF BELGRADE					
	Master Thesis (9) + Master Design Project (16) + Master Design Project - Course (2) + Vocational Practice (3)				30
TOTAL ECTS SEMESTER		**30**	**30**	**30**	**30**

Modules of Architectural Design, Urban Design, Restoration Design and Landscape Design represent a specific set of Skills, Knowledge and Competences useful in the eco-friendly built environment world of work, according to experts and are developed during the four semesters. In the first semester fundamentals of modules are taught, and developed during the Master Curriculum and synthetized in the Thesis Design Studio.

Some of the classes are cross-disciplinary and help integrate different scales of the project and design strategies.

IMPLEMENTATION'S OPPORTUNITY

The Master Curriculum has different possibilities for implementation:

- During the 4th semester there are three simultaneous design studios, each one has specificity according to national case study. Since students of the Masters programme will study in three (3) countries there is the opportunity of interaction and collaborative workshops and lectures, which also would implement teachers and researchers' mobility.
- Online courses can be implemented as elective courses. Students will travel from one country to the other, which will give the possibility to create specific courses in each university during the three (3) semesters. This can be seen also as the possibility to attend seminar or lectures and exchange knowledge between the three (3) partners' countries.

LEARNING OUTCOMES AND ASSESSMENT CRITERIA

Throughout European Center for the Development of Vocational Training, the term 'learning outcomes' is increasingly embedded in the vocabulary of education and training policies (Prøitz, 2014). Cedefop (2014) provides two interrelated definitions of this concept:

(a) learning outcomes are defined as 'statements of what a learner knows,

understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence' (Cedefop, 2014, p. 74);

(b) learning outcomes are defined as 'sets of knowledge, skills and/or competences an individual has acquired and/or is able to demonstrate after completion of a learning process, either formal, non-formal or informal' (Cedefop, 2014, p. 73).

Learning outcomes represent a perspective and a mode of thinking. The focus is always on the learner and what he/she is expected to know, be able to do and understand.

Defining learning outcomes is not a neutral activity but requires reflection

on the purposes addressed, the interests involved and the implications of available alternatives.

The relevance of learning outcomes statements to individual learners and other users depends on their ability to specify and balance general knowledge subjects with occupation-specific skills and transversal competences.

Also known that Ramsden (1992) states that for students 'the assessment is the curriculum'. By this he means that students will learn what they think they will be assessed on, not necessarily what the learning outcomes in the programme or curriculum state.

The trick, according to Biggs (2003), is to make sure the assessment tasks mirror the learning outcomes.

6. SEMESTERS AND LEARNING UNITS

In this section, the Curriculum's structure is explained trough an in-deep look at semesters and learning units.

Each learning unit is part of a horizontal path over semesters that composes the Modules (Architectural Design, Urban Design, Landscape Design, Restoration Design), that are explained in the following path. Each Module have specific assessment criteria and learning outcomes.

6.1. SEMESTER 1

LEARNING UNITS

Compulsory courses: 27ECTS; 675h			
Unit number	**Title of Unit**	**ECTS**	**Hours**
1.1.	ARCHITECTURAL STUDIO 1	15	375
	Architectural design studio 1		
	Architectural theory		
	Typological analysis		
1.2.	PRINCIPLES OF SUSTAINABILITY	4	100
1.3.	PRINCIPLES OF LANDSCAPE ARCHITECTURE	4	100
1.4	WORKS, ARCHITECTS, PARADIGMS IN ECOFRIENDLY BUILT ENVIRONMENT	4	100
	TOTAL	27	675
Elective courses: 3 ECTS, 75h			
	Explained in the Elective course section		

CONTENT AND ACTIVITIES

Unit 1.1.	***ARCHITECTURAL STUDIO 1*** ***Architectural studio 1+ Architectural theory 1+Typological analysis***

Architectural Studio 1 consists of design studio part and two theoretical parts. In this class, students are introduced to the project and the eco-friendly scope, stimulated to analyse and reflect theoretically on the project in order to develop critical and self-critical capacity and to contribute to the student's personal development and to the general development of the discipline and implement this analysis through drawing, understood here as useful tools to understand the city in its historical evolution and the logic of urban phenomena.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Master the practical and theoretical tools that lead to the definition of an architectural form. - To translate idea into practice. - Analyse and reflect theoretically on the project - Understand the city in its historical evolution and the logic of urban phenomena.	- Design at the scale of the building, with particular attention to eco-friendly solutions and its impact on the context. - Analyse complex contexts - Analyze and study architecture communication and drawings	- Evaluate and control the quality of spaces in relation to the context in which they operate. - Develop critical and self-critical capacity - Develop drawings and effective communications of architecture

Unit 1.2.	***PRINCIPLES OF SUSTAINABILITY***

Principle of sustainability has a laboratory nature, in which students, divided into groups, develop under the guidance of the lecturers a sustainable architectural project of a building object that is chosen each year on the basis of its construction characteristics, its intended use, and the peculiarities of the building envelope that is to be investigated in detail; the project is the subject of activities in the first and second modules of the course.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Know the construction sector in the contemporary national and international context. - Know sustainability topics in terms of historical evolution of the concepts of sustainability, environmental quality, applicability in the construction sector; technological solutions for effective sustainable design.	- Design an eco-friendly building, which is sustainable for its physical context (natural or urban) and socio-cultural context	- Design a detailed architectural project based on the principles of sustainable design.

Unit 1.3.	***PRINCIPLES OF LANDSCAPE ARCHITECTURE***

The course prefigures the elaboration of integrated and strategic projects starting from the interpretation of the construction phenomena of contemporary meta-urban and territorial structures, between cycles of abandonment, reuse and transformation. The nature of these landscapes, places of cohabitation or separation of a mix of populations and activities leads us to question ourselves on the form and nature of the city, on the objectives of the project, economic realities, social phenomena, practices of use and the challenges of change. Moving from the theoretical references of Landscape Urbanism, the course aims to gain an awareness of the relationship between infrastructure, architecture and the design of urban space from a semantic, environmental and performance perspective.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Be familiar with integrated and strategic eco-friendly projects in urban and rural landscape	- Interpret the construction phenomena of contemporary meta-urban and territorial structures, between cycles of abandonment, reuse and transformation.	- Design places of cohabitation or separation of a mix of populations and activities with an eye on human well-being and life sustainability

Unit 1.4.	***WORK, ARCHITECTS, PARADIGMS IN ECO-FRIENDLY BUILT ENVIRONMENT***

The course focuses on the European and international debate, from 1945 to the present day, with an eye on evolution of the concept of sustainable design conducted through a selection of particularly paradigmatic figures, works and projects. The teaching method consists of lectures and students are guided in developing personal research of a theoretical and critical text.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Know history in Europe keeping in mind the evolution of concepts of sustainability and eco-friendly built environment.	- Recognize period of building of most architecture - Think of history as something to learn from students will have the ability to produce a personal research and construct a small critical text	- Write a small critical text, to understand the evolution of sustainable design over centuries - Acquire familiarities with the evolution of technologies and building techniques

6.2. SEMESTER 2

LEARNING UNITS

Compulsory courses: 27ECTS; 675h			
Unit number	**Title of Unit**	**ECTS**	**Hours**
2.1.	ARCHITECTURAL STUDIO 02: MULTISCALE BIOPHILIC DESIGN	15	375
2.2.	CIRCULAR CITY: ECOLOGY AND NATURE-BASED SOLUTIONS	4	100
2.3	TECHNOLOGY AND NATURE IN SERVICE OF ARCHITECTURE: STRUCTURES AND SYSTEMS	4	100
2.4	REGENERATIVE AND SALUTOGENIC DESIGN	4	100
	TOTAL	27	675
Elective courses: 3 ECTS, 75h			
	Explained in the Elective course section		

CONTENT AND ACTIVITIES

Unit 2.1.	***ARCHITECTURAL STUDIO 02: MULTISCALE BIOPHILIC DESIGN***

The main objective of this design studio is to is to empower students with design methods for the multiscale biophilic design. The studio is focused on the programmatic articulation of biophilic elements and principles, and their implementation into architectural and urban practice of heritage preservation and reuse. Through multi-scalar and reflective-critical approach, students are expected to define regenerative and resilient architectural programs and urban natures, and to develop design solutions that responds to uncertainty and the ever-changing relations between built and natural environment.
Teaching takes place through a combination of interactive forms of teaching, case studies, lectures, presentations, individual and group research, on site and site-specific analysis workshops, visual essays, design, etc.
The course will be assessed through group discussion and individual design assignments.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain adequate knowledge of the histories and theories of biophilic design - Obtain knowledge how biophilic design articulates the relationships between nature, human biology and the design of the built environment so that we may experience the human benefits of biophilia in our design applications - Obtain adequate knowledge on principles and patterns of biophilic design and implementing them in the natural and created context at different spatial scales - Obtain knowledge of systems for environmental comfort realized within relevant precepts of biophilic design - Obtain knowledge how to effectively enhance health and well-being for individuals and society using biophilic design patterns	- Recognize a series of tools for understanding design opportunities, as well as strategies and considerations for how to use each pattern - Understand the relationship between people and nature, and between buildings and their environment, and the need to relate buildings and the spaces to natural elements and to human needs and scale - Understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project	- Apply appropriate theoretical concepts of biophilic design to studio design projects, demonstrating a reflective and critical approach - Prepare and present design projects according to principles of biophilic design at diverse scales, complexity, and types in a variety of contexts, using a range of media, and in response to a brief - Create architectural designs that integrates and satisfies: 1) the nature and environmental issues, 2) the aesthetic aspects of a building, 3) the technical requirements of its construction, and 4) the needs of the user - Appraise and prepare design briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context, especially to natural context and elements

Unit 2.2.	***CIRCULAR CITY: ECOLOGY AND NATURE-BASED SOLUTIONS***

The main goal of the course is to get acquainted with and trained for un*derstanding and research of*:

1. *different concepts and principles of Nature-Based Solutions;*
2. *resources, tools, and strategies for integrating nature-based solutions in architectural and urban design;*
3. *concept of urban circularity.*

The general goal is to understand and be able to critically review various spatial and programme aspects, opening up a new field of research into the relationship between nature-based solutions, circularity and architectural and urban design.

Teaching is carrying out through lectures, interactive forms of teaching, presentations, surveys, discussions, workshops, etc.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain knowledge of principles of circular cities - Obtain knowledge of principles of nature-based solutions and their application and possible ways of interpretation and application in architectural and urban practice. - Obtain knowledge of blue-green design and their application - Obtain knowledge of good practices in the planning and design of circular cities through the application of nature-based solutions (at different spatial levels) - Obtain knowledge of range of resources, tools, and strategies for integrating nature-based solutions in architectural and urban design	- Understand how to use nature-based solutions for a circular urban metabolism - understand possibilities and obstacles in the application of good practices - Chose appropriate NBS for solving urban circularity challenges - Understand the role of implementation of nature-based solutions (NBS) for circular cities, in solving societal challenges such as climate change, biodiversity loss and enhance human/ecological well-being to create a greener and more resilient world	- Critically review and explore the possibility of implementation of nature-based solutions in design solutions - Spatially and programmatically redefine various aspects, opening up a new field of research into the relationship between nature-based solutions, circularity and architectural and urban design - Implement circular city principles by creating regenerative green urban spaces, sustainable buildings and prospering communities

Unit 2.3.	***TECHNOLOGY AND NATURE IN SERVICE OF ARCHITECTURE***

The objective of the course is to critically review and explore the adaptability and impact of new technologies on architectural objects based on the dynamic balance between nature and technology. Research should find an adequate architectural model capable of interacting with nature and users through self-regulation of their systems and needs. Through research, students spatially and programmatically redefine various aspects, opening up a new field of research into the relationship between nature and architecture, treating that relationship as a potential place to create and realize the architecture of the future. The impact of technology in addressing the relationship between nature and architecture is methodologically investigated, its assessments and contextual relationship strategies are given. This approach involves a compromised understanding of the links between resource scarcity, energy demand, renewable energy, new materials and technologies.
The teaching methods includes mentoring, lectures, and presentations.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain knowledge of architectural design capable of interacting with nature and users through self-regulation of their systems and needs - Obtain knowledge of the impact of technology in addressing the relationship between nature and architecture - Obtain knowledge of new relationships between nature and architecture, developing regenerative technology and life cycles, and developing systems and strategies for future development by applying performative architecture and network architecture	- Understand the links between resource scarcity, energy demand, renewable energy, new materials and technologies - Understand the opportunities that focus on a synergistic approach to exploring the nature and architecture of the future while developing a holistic strategy - Find adequate architectural models capable of interacting with nature and users through self-regulation of their systems and needs - Exploring the relationship between public and private space and the role of individuals and collectives in creating dynamic and hybrid communities	- Critically review and explore the adaptability and impact of new technologies on architectural objects based on the dynamic balance between nature and technology - Spatially and programmatically redefine various aspects, opening up a new field of research into the relationship between technology, nature and architecture - Implement new technological solutions modelled on nature in architectural design

Unit 2.4.	***REGENERATIVE AND SALUTOGENIC DESIGN***

The main goal of the course is to get acquainted with and trained for:

4. *concepts, principles, and methods of regenerative and salutogenic design;*
5. u*nderstanding and research of the reciprocal and complex environment-behavior relations;*
6. *space from the aspect of its impact on health and overall wellbeing;*
7. *design of regenerative and salutogenic built environments.*

The general goal is to understand the role of the architectural profession in improving health and wellbeing of urban environment as one of the priorities of modern society, as well as the role of the architect in society in the preparation of projects that view space as a regenerative place.

Teaching is carrying out through lectures, interactive forms of teaching, presentations, surveys, discussions, workshops, etc.

Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain knowledge of concepts, principles, and methods of regenerative and salutogenic design - Obtain knowledge of the reciprocal and complex environment-behavior relations - Obtain knowledge of complex relations between people and the overall environment/context (both natural and built); - Obtain knowledge of space from the aspect of its impact on health and overall wellbeing; - Obtain knowledge of how the creative synthesis and perception of complex spatial ecological, cultural, and psychological influences have applicability in regenerative and salutogenic architectural and urban design.	- Consider the reciprocal and complex environment-behavior relations at various spatial scales - Understand human and environmental health as mutually reinforcing concepts in architectural and urban design - Understand different possibilities of enhancing environment-behavior relations in architectural and urban design - understand and improve the practice of the architectural profession in improving human, but also environmental, health and wellbeing in the context of regenerative environments, as one of the priorities of contemporary society - Understand the role of the architectural profession in improving health and wellbeing, as one of the priorities of contemporary society, as well as the role of the architect in society in the preparation of projects that view architecture as a regenerative place	- Create salutogenic and regenerative architectural programs - Develop design solutions that responds to uncertainty and the ever-changing needs, in the spatial, social and temporal dimensions, in order to achieve a positive impact on the overall wellbeing - Implement regenerative and salutogenic design principles in architectural design

6.3. SEMESTER 3

LEARNING UNITS

Compulsory course: 27ECTS; 675h			
Unit number	**Title of Unit**	**ECTS**	**Hours**
3.1.	ARCHITECTURAL STUDIO 3	15	375
	Architectural design studio 3		
	Reconstruction and restoration of building		
3.2	INTEGRATED URBAN DESIGN	4	100
3.3	MATERIAL SCIENCE IN ECOFRIENDLY BUILT ENVIRONMENT	4	100
3.4	BUILDING CLIMATE SYSTEM IN ARCHITECTURE	4	100
	TOTAL	27	675
Elective courses: 3 ECTS, 75h			
	Explained in the Elective course section		

CONTENT AND ACTIVITIES

Unit 3.1.	***ARCHITECTURAL DESIGN STUDIO 3***

Combination of architectural design and restoration design through an eco-friendly perspective.
The aim of the study course is to acquaint students with the identification of physical wear and tear and moral aging of buildings and to develop the ability to evaluate their possible consequences. The tasks of the study course are to provide knowledge about the basic principles of building reconstruction and restoration, to prepare students for team work, to promote the independent adoption of various solutions within the study work. The study course includes a wide range of knowledge, providing an insight into the most typical problems of existing buildings and their possible solutions. The first part of the study course deals with the review of the theoretical basis, application of construction standards for reconstruction and student work in groups, developing and defending the seminar topics previously assigned to the audience. The second stage is practical work with the development of a study paper and the final examination of students in the form of an exam. In the study process, as far as possible, industry professionals are involved, who provide a broader insight into the course of the reconstruction and restoration process and the problems they have encountered in real objects. During the study process, students are shown visual information materials, such as process schedules, pictures from the reconstruction process, details of developed reconstruction projects.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Have a general understanding of what the historical, preserved objects of architectural heritage for future generations are and knows legislation in this area. - Be able to orientate in terms reconstruction, renovation, restoration and other close terms. - Be able to orientate in the basic concepts and theory of reconstruction and restoration	- Develop skills to consolidate knowledge and experience obtained during the formal stages of studies in order to work out the proposal of development of complex urban space on the territory under the protection. - Evaluate moral and physical wear of buildings, technical condition of buildings and constructions. - Determinate possibilities of reconstruction of the signs of moral aging and physical wear and tear of buildings as well as buildings potential threats. - Design intervention of historical building for restoration and re-use or re-qualification.	- Analyse the factors and their impact on the historical buildings and use the knowledge and skills in the reconstruction and restoration processes of architectural monuments. - Evaluate and control the quality of historical building spaces, evaluate the context and propose life-sustainable and eco-friendly intervention. - Navigate non-standard solutions and graphically solve defined problems, use reconstruction technology for different constructive elements. - Demonstrate a full understanding of applying ecological and sustainable related skills - Develop high orders of awareness and self-awareness required to evaluate and employ research data

Unit 3.2.	***INTEGRATED URBAN DESIGN***

The study course's goal is to comprehend urban development processes and to examine the spatial condition from the standpoint of sustainability. Understanding the logic of urban growth in relation to the legal framework and planning policies applicable to the region. To assess the urban environment's living quality. To provide thoughts and solutions for integrated urban design.
The course teaches understanding of sustainable urban design ideas and planning tools, as well as skills for creating an integrated and sustainable urban design solution.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Be able to gather and process the necessary information in accordance with the postulated hypothesis and/or research questions including spatial exploration of the area, conceptual development of the area. - Understand the spatial scale of the interaction of diverse elements in urban environments	- Independently develop environmental assessment and impact factors analysis of the area - Carry out a comparative analysis of development scenarios of the area - Develop the high-quality urban solutions	- Be able to develop high orders of awareness and self-awareness required to evaluate and employ research data such as definition of the spatial research field, impact factors of the research and analysis. - Communicate with appreciation with members/reference person groups involved in the integrated urban design process.

Unit 3.3.	***MATERIAL SCIENCE IN ECO-FRINDLY BUILT ENVIRONMENT***

Introductory concepts, movable and immovable cultural property. Causes of materials decay and damages, agents of deterioration and losses. The principles of conservation/restoration, conservation methodology, treatment. Investigation of objects, photo fixation, description.
Conservation and/or restoration of wood, paper, textiles, leather and metal artefacts, attributed to material groups for basic and adjacent specialization directions. Investigation of materials and items, drawing up of conservation and/or restoration programme. Recommendations for further artefacts storage. Filling of restoration passport.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Be able to name and explain the most important EU, guidelines and regulations for the conservation of Cultural	- Understand European cultural heritage (HER) and the problems of its conservation.	- Understand causes of damage to buildings and their relationship to the structures and properties

Unit 3.3.	***MATERIAL SCIENCE IN ECO-FRINDLY BUILT ENVIRONMENT***	
Heritage (CH), the charters as basic documents for conservation and restoration (C/R). - Be able to name and briefly describe the profession of C/R in Cultural Heritage (CH) and its classification; know how to describe movable and immovable CH; - Know the basic principles of C/R, C/R methodology; forms of C/R, their characteristics, causes of destruction of CH, its triggers - natural, man-made, describe the Venice Rescue Plan. - Be able to name and analyse C/R problems in urban and historic centres areas, name and explain how to solve problems in historic buildings, museums, libraries and archives - Be able to identify the objects of study of a given group of materials required for the project work and know their main materials, know how to gather the necessary information for the conservation and restoration of products of similar materials (C/R) - Be able to carry out a visual examination of objects and know how to draw up a description of the original condition, know methods for obtaining and collecting information.	- Understand the main approaches to the preservation of CH, the causes of its loss and destruction - Demonstrate practical conservation and/or restoration of wood, paper, textiles, leather and metal artefacts, report on the grouping of materials into core and non-core areas of specialization. - Carry out research on materials and objects and draw up a conservation and/or restoration programme. - Formulate recommendations for the future conservation of artefacts. - Prepare and complete a restoration passport and other documents relating to restoration work.	of materials in theory and in analytical work. - Understand the building constructions and parts of buildings of historical development. - Use the design and materials as datable elements - Analytically list the building tectonic elements and corresponding construction material characteristics - Work professionally with the architectural heritage, analyse the architectural heritage related to problematic situations. - Evaluate contemporary restoration products

Unit 3.4.	***BUIDLING CLIMATE SYSTEM IN ARCHITECTURE***

The course's major goal is to supply students with knowledge and understanding of current building climatic control systems and architectural influences on them from the perspective of capacity calculation, visual aspects, and prospective passive interior temperature control solutions. Students should be able to evaluate the relationship between architectural design and internal climate control mechanisms after finishing the study course and conceptually estimate the prospective climate control solutions for specific example buildings.
During the course, students will learn how to make broad selections and calculations for constructing climate systems, which will be based on both practical examples and general norms and standards. The course will begin with a comprehensive overview of temperature control systems and their integration with modern architecture. It will then include thorough information on heating, ventilation, and air-conditioning system options for modern buildings, with a focus on the influence of building architecture on passive microclimate control. At the end of the course, emphasis will be given to how modern architecture might lessen the requirement for active climate systems.

Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Understand and name indoor climate parameters and the regulations governing them. - Be able to recognize, group and analyse the influence of building form, orientation and architectural details on climate systems. - Be able to name active heating systems in buildings. - Know the types of heating sources and their effects on historic buildings - Be able to identify and analyse the main problems of cooling and ventilation on historic buildings. - Describe the integration of building climate control systems into architecture. - Make recommendations on the impact of renovation/alteration of a building or urban structure on passive microclimate control within it.	- Understand the principles of building heat loss, do calculations and design a general layout of heating system for building starting from heat source to choosing the heating elements in accordance to building design needs - Do calculations of heat losses according to given building construction - Evaluate temperatures as well as choose appropriate heating element according to necessary power and design. - Make justified choosing of heat source and it's sizing according to calculated heating needs and explain its placement - Carry out the calculation of required ventilation - Develop ventilation system solutions for specific building taking into account the building shape, orientation and location.	- Carry out calculations of the cooling needs of buildings and recommend possible ventilation solutions; - Be familiar with mechanical ventilation systems. - Historical experience in the restoration of architectural heritage and the transformation of buildings through the adaptation of sustainable engineering solutions, gently integrated into the historic building. - Use the material covered in the course to support the use of different research methods

Unit 3.4.	***BUIDLING CLIMATE SYSTEM IN ARCHITECTURE***	
	- Make assessment of buildings and architectural elements impact on the building climatic systems, and total consumed energy - Independently carry out complex building climate system overall selection and calculation, as well as foresee the architectural impact of such - Calculate the amount of ventilation air required, taking into account the natural ventilation and cooling potentials in Northern and Southern climatic zones	

6.4. SEMESTER 4

The Fourth semester is entirely dedicated to a design studio of synthesis.

In this semester, students will combine all their knowledge into one Master Degree project of 30 ECTS, which comprehends also thesis defence.

Unit 4	***Master Degree Thesis***	
The Master Thesis with Integrated Diploma Project is a graduation project that includes an overall synthesis of knowledge and abilities in research, planning, design, and graphical design at various scales of built up environment, as well as related economic, social, and other concerns.		
Knowledge	**Skills**	**Competencies**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Be able to articulate and define the main issues of the theme and evaluate the related external factors - Be able to adequately plan the progress of work and assess the problems and specifics of the expected amount of it - Be able to develop and present graphically the project - Be able to present and defend publicly the results of the work - Be able to develop a structured theoretical study of the selected - Be able to present and defend publicly the theoretical study of the selected theme	- Think cross-disciplinary and apply a scenario-based approach, understand the connection between technological and environmental perspective simulation and optimization. - design climatic systems for buildings, manage eco-conscious design processes, enhance renewable energy resources and simulate its application, introduce energy efficiency and eco-technological framework in design - Responsibly deal with different environmental and urban issues, think through multiscale approach, focusing on potentials and limitations of existing resources understanding the overall social, ecological, economic, aesthetic context linking large- and small-scale, from landscape to small interventions. - Understand place values and specificity heritage, to address ecologically	- Conduct a personal analysis of the site, which involves forms, composition of the environment, and information of socio-cultural and economic condition and aesthetic of the place. - Understand the impact in urban settlements of environmental, human, social, systemic, temporal, economic and aesthetic values and design spaces that are in line with human and communities' well-being. - Apply basics of scientific research - the methods of data collection and processing used in research, as well as the development of a landscape research matrix based on the principles of sustainable landscape development and the latest landscape planning concepts. - Analyse guidelines, methodologies, recommendations for landscape protection, conservation and restoration. - Propose an original and eco-friendly project with eco-friendly conception and ability to co-operate with its environment. - Design functional and proportionate spaces and with a strong aesthetically satisfying and devoted to human-well being - Develop projects for the restoration or reconstruction of cultural, historical

	responsible rehabilitation and renovation strategies. - Enhance environmentally conscious preservation and increase safety and security of space by creating visually stimulating spaces.	and degraded landscapes and territories, develop the compositional planning and spatial structure of landscapes and public outdoor spaces, functional and compositional solutions, technical solutions, working drawings and specifications.

6.5. ELECTIVE COURSES

Elective learning units are all cross disciplinary.

Each semester students can pick one (1) elective class to in-depth specific field of eco-friendly built environment.

All elective classes are 3 ECTS and require 75h of learning time.

ELECTIVE LEARNING UNITS

Estimated learning time required (hours): 3 ECTS per Semester / 75 h per semester				
Unit number	**Title**	**Semester**	**ECTS**	**Hours**
E.1	PRINCIPLES OF DESIGN PLANNING AND MANAGEMENT	1	3	75
E.2.	ARCHITECTURAL MORPHOLOGY AND RESEARCH METHOD	1	3	75
E.3.	THEORETICAL FRAMEWORK OF SUSTAINABLE DEVELOPMENT	1	3	75
E.4	THEORY OF URBAN DESIGN	1	3	75
E.5	METHODS OF RENOVATION AND TRANSFORMATION OF BUILDING	2	3	75
E.6	BUILDING ECONOMICS	2	3	75
E.7	RESILIENCE OF THE BUILT ENVIRONMENT	3	3	75
E.8	BUILDING PHYSICS	3	3	75

Unit E.1.	***A PRINCIPLES OF DESIGN PLANNING AND MANAGEMENT***
The following subjects are covered in the course: design team work management concepts; professional standards and ethics in architectural design and construction; complicated interfaces of architectural design with other design and construction related specialisations; and client collaboration.	
Knowledge	**Skills**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*
- Understand management context, principles, levels and key tasks, management situations - Recognise management types, types and structure of organizations - Orientate in commercial constraints - Be able assess the implementation of the project results and impact on the industry - Be able to set (identify) development needs of organization and personal	- Use theoretical principles of the management and control to characterize the development of architectural design industry, its results and future potential - Develop a progress assessment of the project design; define the content of design documentation, work scheduling and timing.

Competencies
At the end of this unit, the learner will have acquired the responsibility and autonomy to:
- Use strategic management of architectural design organizations. - Apply professional standards and ethics, legislation. - Understand legal documents of enterprises - Apply project / task development phases – plan project work stages, do pricing and cost calculation of the work, design work management and quality control, Information Systems and technological tools.

Unit E.2.	***ARCHITECTURAL MORPHOLOGY AND RESEARCH METHOD***
The course covers philosophical aspects of architecture, the role of social processes and functions in the development of architectural language, an ecological and contextual approach, regional and national identity, the synthesis of arts in architecture, methods of research work in architecture, and the structure of graphical analysis in design practise.	
Knowledge	**Skills**
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*
- Understand influences in the art of creation of environment in the context of cultural diversity - Explain the reasons of the processes in profession and society and to predict the further stages of their development	- Think logically and structured, select adequately of considerations, discuss and argue in reasonable way - Preform the results of the

Competencies
At the end of this unit, the learner will have acquired the responsibility and autonomy to:
- Define morphology in architecture - dialectics, art and science, tradition and creativity. - Orientate in process of culture, space of culture. - Use creativity in research and art. - Use basic principles of research. - Perform morphological analyses - regional and national Identity, function and Identity.

Unit E.2.	***ARCHITECTURAL MORPHOLOGY AND RESEARCH METHOD***	
- Perceive information and rethink it critically - Evaluate credibility of the sources of information and adequacy of them according to the stated goal - Argue the resources and means necessary to involve in the research in order to arrive to purposeful and adequate result	research work by verbal and visual means - Present the results of the research work in the academic discussion	- Apply understanding of shape and identity - structure, landscape, context and identity. - Apply understanding of connections in architecture and environment, architecture and power, ideology and identity. - Apply understanding of connections in architecture and social processes, social Identity. - Perform according to legal and ethical framework of preservation of historical sites.

Unit E.3.	***THEORETICAL FRAMEWORK OF SUSTAINABLE DEVELOPMENT***	
The course goal is to establish a cognitive framework for understanding, insight, and exploring theory and concepts of sustainability. It aims to develop an understanding of the developmental course of the philosophical and theoretical foundation of the idea of sustainability and sustainable development. It raises awareness and understanding of the critical global positions of operationalizing the concept of sustainability, depending on the social context. It develops the ability to identify the primary theoretical discourses that form the basis of a contemporary approach to operationalizing sustainability concepts. Ability to understand underlying theoretical assumptions that underpin sustainability paradigms in present conditions. Ability to think critically and understand different theoretical approaches to sustainability issues. Teaching includes interactive lectures, analysis of the content of documents in written materials, critical analysis, debates, etc.		
Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain knowledge of the cultural, social and intellectual histories, theories and technologies that influence the design of buildings and urban settings - Obtain knowledge of the influence of history and theory on the spatial, social, and technological aspects of architecture - Obtain adequate knowledge of urban design, planning and the skills involved in the planning process	- Understand, insight, and explore theory and concepts of sustainability - Develop an understanding of the developmental course of the philosophical and theoretical foundation of the idea of sustainability and sustainable development - understanding of the critical global positions of operationalizing the concept of sustainability, depending on the social context - Develops the ability to identify the primary theoretical discourses that form the basis of a contemporary	- Applicate the appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach - Implement adequate planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of

- Obtain knowledge of theories of urban design and the planning of communities - Obtain knowledge of the influence of the design and development of cities, past and present on the contemporary built environment	approach to operationalizing sustainability concepts - Understand underlying theoretical assumptions that underpin sustainability paradigms in present conditions - Think critically and understand different theoretical approaches to sustainability issues	these to design development

Unit E.4.	***THEORY OF URBAN DESIGN***	
The course aims to acquaint students with various theoretical concepts, topics, and dilemmas of urban design. The emphasis is on looking at different approaches for understanding the nature, purpose, role, and content of urban design concerning the economic, social, cultural, and natural environmental conditions of urban development. Classes are realized through interactive lectures, case studies, seminar work.		
Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain knowledge of the cultural, social and intellectual histories, theories and technologies that influence the design of buildings and urban settings - Obtain knowledge of the influence of history and theory on the spatial, social, and technological aspects of architecture - Obtain adequate knowledge of urban design, planning and the skills involved in the planning process - Obtain knowledge of theories of urban design and the planning of communities - Obtain knowledge of the influence of the design and development of cities, past and present on the contemporary built environment	- Understand various theoretical concepts, topics, and dilemmas of urban design - Look at different approaches for understanding the nature, purpose, role, and content of urban design concerning the economic, social, cultural, and natural environmental conditions of urban development - Recognize philosophical foundations, concepts, theories, and models in urban design - Consider the dimensions of urban design (morphological, perceptual, social, visual, functional, environmental, temporal) in different theoretical concepts - Recognize the role of urban design in contemporary urban development - Consider the relationship between urban design theory and practice	- Implement adequate planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development - Apply different approaches to research in urban design - Review different approaches to the design of urban space concerning contemporary urban phenomena and problems

Unit E.5.	***METHODS OF RENOVATION AND TRANSFORMATION OF BUILDING***

The transformation of layout in existing buildings, balance of the principles of restoration and transformation, the preservation and renovation practice of buildings and urban environment in Europe and in the world. Project of transformation of an urban structure.

Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Be able to orientate in the classification of architectural objects. - Understand restoration and transformations in the restoration of architectural heritage - Know the experience of different countries in renovation and transformation of buildings - Know how to change functions of buildings	- Use restoration techniques and transformations in a balanced manner in the restoration of architectural heritage - Carry out a building or urban structure transformation projects - Interpret and use in the creative process the transformations of housing stock and public buildings	- Obtain, compile and systematize factual material necessary for creative architectural design work or scientific research

Unit E.6.	***BUILDING ECONOMICS***

The theoretical tools for estimating the costs and benefits of energy or structural retrofitting interventions will be discussed with particular reference to the trend of costs and benefits within the useful (or economic) life of the building. Than an example of an economic-financial evaluation of an energy retrofitting intervention on a residential building will be developed and the case study on which students will have to develop a similar evaluation will be presented. The course consists of lectures on theoretical tools and classroom exercises in the form of application exercises

Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Recognise the costs and benefits of energy or structural retrofitting of a building; - Estimate, by means of the appropriate methodologies, the costs and benefits over time of an energy or structural retrofitting intervention on a building; assess the effects of inflation on costs and benefits over time;	- Evaluate the economic-financial feasibility of retrofitting interventions also for the purpose of selecting the best alternative option;	- Financially evaluate an architectural project and to draw up an economic-financial feasibility report on an energy or structural retrofitting of a building

Unit E.6.	***BUILDING ECONOMICS***	
Recognise and evaluate the risk and uncertainty factors of interventions and the effects on the economic-financial feasibility of the intervention		

Unit E.7	***RESILIENCE OF THE BUILT ENVIRONMENT***	
Theoretical course contents are methodological and applicative and converge in the practice of architectural design. The lectures will be accompanied by the production of a series of individual research papers on the specifics of the elements, with attention to their graphic restitution, according to the indications provided by the course. The research papers will be discussed periodically and collectively during the lectures. Organised into final presentations, the papers will be discussed during the examination.		
Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- The objective of the course is to train students in architectural composition, understood as the activity of formal, functional and constructive synthesis of architectural design. Students will have the ability to develop design methods capable of reacting to the accelerated world of space production, taking into account the functional and expressive implications of the aspects that contribute to the definition of the project.	- At the end of the course, students will learn the application skills and language proper to the discipline that will allow them to defend the reasons for the architectural project. The cognitive tools provided in the frontal lessons will be followed up in the elaboration of design ex-tempore aimed at transmitting confidence and awareness in the design approach and critical autonomy on the aspects underlying the process of space production.	- Students will gain critical autonomy on the production of spaces. Students will learn to effect socio cultural and economic environment through architecture and urban design.

Unit E.8.	***BUILDING PHYSICS***

Introduction to the characteristic problems in the domain of building physics that treat the issue of energy in buildings in different ways and are directly related to the aspects of a pleasurable experience, i.e., thermal and air comfort. Mastering the basic elements and principles of calculating the energy performance of buildings. Upon course completion, the student should have a better understanding of the importance of an adequate (design) attitude toward the issue of energy in buildings for its overall behavior, as well as the basic knowledge necessary to calculate and verify the relevant characteristics of the building, i.e., its envelope, as initial elements in the process of calculating the total energy performance of buildings.
Teaching is conducted through lectures, presentation and analysis of examples with discussion and active participation of students, interactive work, consultations.

Knowledge	***Skills***	***Competencies***
At the end of this unit the learner will:	*At the end of this unit the learner will be able to:*	*At the end of this unit, the learner will have acquired the responsibility and autonomy to:*
- Obtain knowledge of characteristic problems in the domain of building physics that treat the issue - of energy in buildings in different ways and are directly related to the aspects of a pleasurable experience, i.e., thermal and air comfort - Obtain knowledge on thermal comfort; thermal energy in buildings – the flow of thermal energy through the structure – types of structures and characteristics of materials; indoor air quality; heat accumulation; solar energy and buildings – the problems of solar gains and thermal stability of buildings in the summer; heat loss and the building shape factor; total energy needs of the building – the concept - obtain adequate knowledge of the histories and theories of architecture and the related technologies - obtain knowledge of technologies that influence the design of buildings - Obtain knowledge of the impact of buildings on the environment, and the precepts of sustainable design - Obtain knowledge on different concepts and approaches: energy conservation, energy efficiency, built-in energy; evolution of attitudes towards thermal protection of buildings	- understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale - understanding of the structural design, constructional and engineering problems associated with energy in buildings - Understand the importance of an adequate (design) attitude toward the issue of energy in buildings for its overall behaviour - Understand the concept of concept of the energy performance of buildings and relevant European and local legislation	- Identify relevant principles associated with designing optimum visual, thermal and acoustic environments - Master the basic elements and principles of calculating the energy performance of buildings - calculate and verify the relevant characteristics of the building, i.e., its envelope, as initial elements in the process of calculating the total energy performance of buildings - check the basic parameters of energy efficiency of a building for the purpose of energy certification (energy passport), using (relevant) free software, on an adequate example from their own projects (from previous classes)

7. MODULES

The ECOBUILT Master's Curriculum is divided in four (4) modules. Each module refers to a specific scale of the discipline, from the scale of the building to the scale of the landscape, as described in Table 2.

Table 2

CURRICULUM DIVIDED IN LEARNING MODULES

Estimated learning time required (ECTS):	**MODULE 1**	**Architectural Design**	27ECTS
	MODULE 2	**Urban design**	27 ECTS
	MODULE 3	**Landscape design**	12 ECTS
	MODULE 4	**Renovation design**	15 ECTS

Modules have an horizontal development, in each semester there are classes that build knowledge in a precise module, as described in Table 3.

In this chapter, there is the explanation of learning unit of each learning module, study programs, learning outcomes and assessment criteria of each learning unit.

Table 3

MODULES OVER SEMESTERS

No.	TITLE	1st semester	2nd semester	3rd semester	4th semester Genoa, Belgrade, Riga
		Introduction FUNDAMENTALS	Methods and Tool APPLICATION	Strategies and Tactics	SINTHESYS
COMPULSORY STUDY COURSES					
STUDIO PROJECT + THEORETICAL					
	Architectural studio 1	8			
	Architectural theory 1	2			
	Typological analysis	5			
	Multiscale biofilic design		15		
	Architectural design studio			12	
	Reconstruction and restoration of buildings			3	
SCIENTIFIC + PROFESSIONAL-APPLIED					

No.	TITLE	1st semester	2nd semester	3rd semester	4th semester Genoa, Belgrade, Riga
		Introduction FUNDAMENTALS	Methods and Tool APPLICATION	Strategies and Tactics	SINTHESYS
	Principles of sustainability	4			
	Principles of landscape architecture	4			
	Circular city: ecology and nature based solutions		4		
	Technology and nature in service of architecture: structures and systems		4		
	Integrated urban design			4	
	Material science in eco-friendly built environment			4	
THEORETICAL + METHODOLOGICAL					
	Works, architects, paradigms in eco-friendly built environment	4			
	Regenerative and salutogenic design		4		
	Building climate system in architecture			4	
	TOTAL ECTS COMPULSORY CONTENT	**27**	**27**	**27**	
ELLECTIVE STUDY COURSES					
PROVIDED BY RIGA TECHNICAL UNIVERSITY					
	Principles of Design Planning and Management	3			
	Architectural Morphology and Research Methods	3			
	Methods of Renovation and Transformation of Buildings		3		
PROVIDED BY UNIVERSITY OF BELGRADE					
	Theoretical Framework of Sustainable development	3			

No.	TITLE	1st semester	2nd semester	3rd semester	4th semester Genoa, Belgrade, Riga
		Introduction FUNDAMENTALS	Methods and Tool APPLICATION	Strategies and Tactics	SINTHESYS
	Theory of Urban Design	3			
	Building Physics			3	
PROVIDED BY UNIVERSITY OF GENOA					
	Buildings Economics		3		
	Resilience of the built environment			3	
	TOTAL ECTS ELECTIVE CONTENT	**3**	**3**	**3**	
MASTERS THESES					
RIGA TECHNICAL UNIVERSITY					
	Master Thesis with Integrated Diploma Project				30
UNIVERSITY OF GENOA					
	Master thesis + Thesis defence (26) + Real Estate (2) + Building physics and building energy systems (2)				30
UNIVERSITY OF BELGRADE					
	Master Thesis (9) + Master Design Project (16) + Master Design Project - Course (2) + Vocational Practice (3)				30
	TOTAL ECTS SEMESTER	**30**	**30**	**30**	**30**

7.1. ARCHITECTURAL DESIGN MODULE

MODULE 1
Architectural Design

The module addresses issues such as ecology and sustainability in architecture, as well as its interaction with the built and natural environment. The concept of sustainable and eco-oriented architectural design can only be achieved though holistic strategies in which various aspects of the project co-operates to the perfect functioning of it at multiple scales, the complexity of the project is crucial and many subjects works together. Theoretical and historical-critical knowledge of architecture are essential for interaction human-nature and, consequentially, for any eco-friendly built environment.

In this Module students will attend classes of:

1. *Architectural Design Studio 1* at the first semester (*Architectural Studio 1 + Architectural theory 1 + typological analysis*) 15 ECTS
2. *Principles of sustainability* [1] at the first semester, 4ECTS.
3. *Technology and nature in service of Architecture: Structures and systems* in the 2nd semester, 4ECTS
4. *Regenerative and salutogenic design* [2] , 2nd semester, 4ECTS
5. *Building climate system in architecture* in the 3rd semester 4ECTS.
6. *Architectural Design Studio 3* [3] (*Architectural Studio 3 + Reconstruction and restoration of buildings*) in the 3rd semester, 15 ECTS

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1. *which implements the knowledge in "environmentally responsive design" one of the most important themes according to experts,*
2. *is cross-disciplinary class between Architecture and Landscape design, which implements the knowledge in "design for human health and well-being" one of the most important themes according to expert's*
3. *which is cross-disciplinary class between Architectural design and Restoration design*

Learning Outcomes:	**Assessment criteria:**
The learner will:	*The learner can:*
- Know Architectural composition and architectural theory - Know history of architecture and urban theory - Understand the historical development of building structures and parts of buildings and use constructions and materials as a dating element. - Communicate architecture through drawings and project presentations - Use programmes of graphics to create architectural drawings and communicative images - Understand the main principles in sustainability and eco-friendly built environment, promoting use of renewable energy, life cycle of building construction, innovative structural and materials techniques - Evaluate the impact of a new construction on the surroundings and find solutions to various practical construction problems. - Orientate in non-standard solutions and graphically solve defined problems.	- Control spatial composition in design - Create functional and aesthetically pleasing spaces, buildings and environments. - Describe and verbally present architectures, navigating freely in the general theory and history of architecture and urban design - Analyse physical contexts, and identify socio-cultural diversities and identify coherent solutions - Analyse energy efficiency in exiting building structures, controlling new materials and innovative building technologies - Identify the tectonic elements of a building, the appropriate structural and finishing materials and their characteristics, in respect of the

- Apply structure and systems technologies to eco-friendly built environment - Know physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate, in the framework of sustainable development	surroundings and according the user's needs. - Work professionally in the complex system of sustainable architecture.

MODULE'S LEARNING UNITS

Unit number	Unit Title	Semester	ECTS	Hours
Unit 1.1.	ARCHITECTURAL STUDIO 1	1	15	375
	Architectural design studio 1			
	Architectural theory			
	Typological analysis			
Unit 1.2.	PRINCIPLES OF SUSTAINABILITY	1	4	100
Unit 2.3.	TECHNOLOGY AND NATURE IN SERVICE OF ARCHITECTURE	2	4	100
Unit 3.4	BUIDLING CLIMATE SYSTEM IN ARCHITECTURE	3	4	100
		TOTAL	27	675

7.2. URBAN DESIGN MODULE

MODULE 2
Urban design
This module addresses issues such are the importance and role of the environment, both natural and built, its relationship with the user, as well as design methodologies to address and improve these relations and to achieve built environments that are more life-sustaining and more resilient, and less costly to build and maintain. Students will study how to address life-sustaining and resilient environment, how to create scenarios for more balanced lifestyle, how to protect environment and resources, how to enhance living conditions, both from theoretical and practical point of view. "Long-term planning of spaces" is one of the main objectives in all courses in this module. In this Module students will attend classes of: 1. *Work, architects, paradigms in eco-friendly built environment 1 in 1st Semester 4 ECTS* 2. *Multiscale Biophilic Design 2nd Semester 15 ECTS* 3. *Circular City: ecology and nature-based solutions 2 , 2nd Semester, 4ECTS* 4. *Integrated Urban Design 3, 3rd Semester, 4ECTS* 5. *Material Science in Eco-friendly Built Environment, 3rd Semester, 4 ECTS* 1. *implements "Impact of the design in the social scenario" one of the most important according to experts.* 2. *which implements knowledge in "Net Zero Carbon and circular economy" one of the most important themes according to expert's.* 3. *is a cross discipline between urban design and landscape design*

Learning Outcomes:	***Assessment criteria:***
The learner will:	*The learner can:*
- Prepare and present urban design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief; - Knows the histories and theories of urban design and the related disciplines had influenced the design of eco-friendly built environment - Understand the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale - Understand the Health, Safety and Wellbeing issues and requirements within the built environment - Understand design for ecological infrastructure and corridors - Understand the impact of buildings on the environment	- Create urban designs that satisfy both aesthetic and technical requirements for eco-friendly design solutions in urban environment - Verbally and graphically present projects at different urban scale - Define environmental strategies and the regulatory requirements that apply to the design and construction of eco-friendly design solutions; - Develop a conceptual and critical approach to urban and architectural design that integrates and satisfies complex environmental, human, social, systemic, temporal, economic and aesthetic requirements and issues

MODULE'S LEARNING UNITS

Unit No	Title	Semester	ECTS	Hours
Unit 1.4.	WORK ARCHITECTS PARADIGMS IN ECOFRIENDLY BUILT ENVIRONMENT	1	4	100
Unit 2.1.	ARCHITECTURAL STUDIO 2: MULTISCALE BIOPHILIC DESIGN	2	15	375
Unit 2.2	CIRCULAR CITY: ECOLOGY AND NATURE-BASED SOLUTIONS	2	4	100
Unit 3.3	MATERIAL SCIENCE IN ECO-FRINDLY BUILT ENVIRONMENT	3	4	100
		TOTAL	27	675

7.3. LANDSCAPE DESIGN MODULE

MODULE 3	
Landscape design	

Intelligent spatial planning is crucial to modern urban and rural development. The study of regional and local landscapes, public and private outdoor space, spatial development planning, landscape preservation, restoration, and management all require knowledge of landscape design. Students will study different methodology of analysis, development, conservation, restoration and management of landscapes, public and private outdoor amenities and green spaces. Within the module, students will learn large-scale planning, gain knowledge of spatial planning processes and the regulatory framework; understand landscape revitalization methods and the principles of degraded area restoration, planning aspects. The module will include the development of a thematic plan and a concept for the greenery of a settlement.
The concepts "Inclusive and Healthy neighbourhoods" is part of a course taught during the third semester while "biodiversity in cities" and "reconnecting humans and nature", most important according to expert's, are mainly applied during the design studio at the first and second semester.
In this Module students will attend classes of:

1. *Principles of Landscape design*, in the first Semester 4 ECTS
2. *Regenerative and salutogenic design* [1], 2nd Semester 4ECTS
3. *Integrated Urban Design* [2], 3rd Semester 4ECTS

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1. *is cross-disciplinary class between Architecture and Landscape design, which implement the knowledge in "design for human health and well-being" one of the most important themes according to expert's*
2. *is a cross discipline between urban design and landscpe design*

Learning Outcomes:	Assessment criteria:
The learner will:	The learner can:
- Work with different information sources and regulatory framework. - Analyse the interaction of landscape, architecture and art, develop projects in landscape architecture. - Understand the importance of cultural and historical landscape and natural heritage in the development of the national economy and to orientate in landscape typology and ecology. - Apply the acquired academic knowledge in solving ecological, aesthetic and social problems in ensuring the sustainability of the landscape. - Develop guidelines, methodologies, and recommendations for landscape management, protection, conservation and restoration. - Solve the problems of branch science and practice in consulting and design institutions and companies, state and local government institutions. - Organize the work process in cooperation with specialists in related fields, plan and manage work,	- Evaluate and study the interaction of spatial structures and landscape elements. - Assess the impact of foreseeable changes on the landscape. - Develop guidelines, methodologies, recommendations for landscape protection, conservation and restoration; - Develop projects for the restoration or reconstruction of cultural, historical and degraded landscapes and territories - Develop the compositional planning and spatial structure of landscapes and public outdoor spaces, functional and compositional solutions, technical solutions, working drawings and specifications. - Advise designers, participants in the construction process and residents on the issues of landscaping, landscaping and creation of greenery.

work in a team in accordance with the project time schedule. - Carry out pre-project research of the territory, summarizing information on natural and anthropogenic factors, as well as on the nature of construction. - Develop the functional zoning of the landscape territory, the compositional plan in accordance with the pre-project research of the territory, functional requirements and task. - Develop a landscaping and greenery project for public and private outdoor space, including road and area planning, landscaping plan, vertical and horizontal connection plans, landscaping element plans, works and materials volumes and specifications, as well as project documentation at all stages of the project. - Enhance degraded landscapes, and re-establishing and design of new ones intensification of ecological processes to mitigate degradation. - Be able to environmental interventions to reduce resource consumption and apply adapting reuse, while promoting upcycling/recycling. - Increase quality of in-door spaces and design solutions for depleted buildings and abandoned spaces. - Take into account preservation of existing ecosystems while planning cities and architecture	- Develop private and public outdoor spaces - parks, squares, residential quarters, private territories, etc. improvement and greenery projects. - Develop technical solutions for improvement elements, projects for the restoration or reconstruction of cultural-historical and degraded landscapes and territories, methodologies and recommendations for landscape protection and management. - Work independently or in team

MANDATORY LEARNING UNITS

Unit no	Title	Semester	ECTS	Hours
Unit 1.3.	PRINCIPLES OF LANDSCAPE ARCHITECTURE	1	4	100
Unit 2.4	REGENERATIVE AND SALUTOGENIC DESIGN	2	4	100
Unit 3.2	INTEGRATED URBAN DESIGN	3	4	100
		TOTAL	12	300

7.4. RENOVATION DESIGN MODULE

MODULE 4
Renovation design

The module of Renovation design aims to address a responsible heritage protection and preservation. This module focuses on understanding of place values and specificity heritage, to address ecologically responsible rehabilitation and renovation strategies. It teaches also to enhance environmentally conscious preservation and to increase safety and security of space by creating visually stimulating spaces.

The module will address issues related to buildings renovation design including such as European cultural heritage and its classification, as well as the requirements and methods for including cultural material on UNESCO World Heritage Lists and Registers. Issues concerning cultural heritage preservation will be addressed, with emphasis on the causes of destruction and damage, examples of the assessment, preservation of movable and immovable cultural heritage, and its forms, and the role of responsible authorities in preserving cultural heritage and educating the public. Module will focus also on the implementation of circular economy principles in buildings. Circular economy strategies seek to reduce the total resources extracted from the environment and reduce the wastes.

In this Module students will attend classes of:

- *Architectural Design Studio 3* [1] (Architectural Studio 3 + Reconstruction and restoration of building), in the 3rd semester 15 ECTS

1. *is cross-disciplinary class between Architectural design and Restoration design*

Learning Outcomes:	**Assessment criteria:**
The learner will:	*The learner can:*
- Knowl world cultural heritage and the problems of its preservation. - Work professionally with the European architectural heritage and analyse problematic situations related to the preservation of the architectural heritage. - Navigate freely in the general theory and history of the restoration of architectural monuments. - Understand the main principles in the preservation of cultural heritage, the causes of its disappearance and destruction, types of chemical and physical destruction.	- Cassify real cultural heritage objects, the principles and problems of cultural heritage preservation. - Analyse the current state of cultural heritage, to determine the causes of degradation and destruction. - Perform a life cycle assessment (LCA). - Apply circular construction and recycling / upcycling. - Understand the structure of historical buildings and their finishing aesthetics, used building materials, construction and finishing methods; - Use the acquired knowledge in a reconstruction project. - A physical and moral degradation of structures, and the potential consequences. - Apply principles of building reconstruction and restoration with the focus to circular buildings restoration - Make balanced use of restoration techniques and transformations in the restoration of architectural heritage.

- Orient in the concepts and theory of reconstruction and restoration. - Understand the historical development of building structures and parts of buildings. - Use constructions and materials as a dating element taking into account circular economy principles, solving practical issues. - Identify the tectonic elements of a historic building, the appropriate structural and finishing materials and their characteristics. - Use the acquired theoretical knowledge in independent research.	- Interpret and use the experience of transformation of housing stock and public buildings in the creative process. - Obtain, compile and systematize factual material, which is necessary in the creative work of architectural design or scientific research, to improve analytical research skills. - Work professionally with the European architectural heritage prevention; - Identify and analyse problematic prevention situations - Navigate freely in the general theory and history of the restoration of architectural monuments

MODULE'S LEARNING UNITS

Unit No	Title	Semester	ECTS	Hours
Unit 3.1.	ARCHITECTURAL STUDIO 3	3	15	375
	Architectural design studio 3			
	Reconstruction and restoration of building			
		TOTAL	15	375

ANNEXES

A.1 Draft Scenario 01

In Scenario 01 (Figure 1), UNIGE is in the first Semester, RTU is in the Second Semester and UB is in the third semester. The fourth semester can be attended in one of partner universities and it is dedicated to Master Thesis.

ECTS number for each class needs to be fixed in the definitive curriculum, because each semester needs to be 30 ECTS for accreditation.

In the smaller chart (Figure 1), there are all the standards resumed and it is highlighted how each standard is satisfied. In this scenario, there are not standard problems.

SCENARIO 1

	ARCHITECTURAL DESIGN		RESTORATION DESIGN			URBAN DESIGN							
	LANDSCAPE DESIGN												
	1- UNIGE (fall)		2-RTU (spring)			3-UB (fall)			4-thesis (spring)			5 (fall)	
Studio + theoretical	ARCHITECTURE STUDIO 1 ARCHITECTURAL THEORY 1	Architecture	Architectural Design Studio		4,5 Architecture	THEORETICAL DISCOURSE 3 THEORETICAL FRAMEWORK OF SUSTAINABLE DEVELOPMENT		2	UB	MASTER THESIS A	27	RTU Internship	39
	TYPOLOGICAL ANALYSIS	Drawing				+STUDIO_SUSTAINABLE TERRITORIAL DEVELOPMENT +		12		Or			
			Reconstruction and Restoration of Buildings		6 Restoration				UNIGE	Master thesis+ thesis defense	27		
			One of the three following exams:			SUSTAINABLE CITY - INSTRUMENTS OF TERRITORIAL MANAGEMENT		3 Real estate appraisal		Or			
			Methods of Renovation and Transformation of Buildings	Theory of Cultural Heritage Conservation/Restoration	Conservation of Historical Buildings 3 Restoration	STUDIO - DESIGN PROJECT_PARTICIPATIVE URBAN DESIGN		15	RTU	Internship. (Title of Architect in Latvia Only)			
			Practical Conservation/Restoration of Organic Materials		15 Restoration								
Scientific + Professional-Applied	PRINCIPLES OF SUSTAINABILITY	4 Technology	Building Climate Systems in Architecture		3	ARCHITECTURAL BUILDINGS TECHNOLOGY		3 Structural engineering					
	PRINCIPLES OF URBAN DESIGN	4 Urban	Architectural Acoustics		3	+ELECTIVE SUBJECT 3 - ARCHITECTURAL TECHNOLOGIES, one of the three following exams:							
			Pigments and Paints for Restauration	Conservation and Restoration of Inorganic Materials	6 Restoration	OPTIMIZATION OF STRUCTURAL SYSTEMS.	LEED AND WELL SYSTEMS AND DESIGN PROCESS	BUILDINGS RENOVATION IN THE CONTEXT OF SUSTAINABLE ARCHITECTURE 3 Structural engineering					
						ECONOMY IN ARCHITECTURE AND URBANISM		2 Economics					
						URBAN MANAGEMENT	CONTINUITY IN URBAN DEVELOPMENT	3 Economics					
Theoretical + Methodological			Architectural Morphology and Researh Methods	One of the two following exams: Integrated Urban Design	3 Urban and landscape planning	CONTEMPORARY URBAN PHENOMENA	ECOPOLIS: ECOLOGICAL RESILIENCE OF THE CITY - CONCEPTS One of the two following exams	3 Urban and environmental sociology					
			Sustainable Urban Development	Principles of Design Planning and Management	3 Real estate appraisal	CE1U08URBAN RECREATION	CE1A05ARCHITECTURE OF TERRITORY	3 ICAR/15 lanscape architecture					
			Architecture of Regional Landscape		3 Lanscape architecture	ARCHITECTURAL PHILOSOPHY		2 History					
	WORKS, ARCHITECTS, PARADIGMS	4 History	Contemporary Architecture		3 History								
	TOT:	22 ECTS			TOT: 29 ECTS	TOT:		31 ECTS			27		

Figure 1. Scenario 01

A.2 Draft Scenario 02

In Scenario 02 (Figure 2) studies were planned at UNIGE in the first semester, UB in the second and RTU in the third semester.

ECTS number for each class needed to be fixed in the definitive curriculum, because each semester needed to be 30 ECTS for accreditation.

In the smaller chart (Figure 2), there are all the standards resumed and it is highlighted how each standard is satisfied. In this scenario, there are no standard problems.

SCENARIO 2

	ARCHITECTURAL DESIGN			URBAN DESIGN			RESTORATION DESIGN					
	LANDSCAPE DESIGN											
	1- UNIGE (fall)			2-UB (spring)			3-RTU (fall)			4-thesis (spring)		5 (fall)
Studio + theoretical	ARCHITECTURE STUDIO +ARCHITECTURAL THEORY 1 +	8+2	Architecture	STUDIO DESIGN PROJECT_PARTICIPATIVE URBAN DESIGN STUDIO SEMINAR_PARTICIPATIVE URBAN DESIGN	DESIGN PROJECT + STUDIO - SEMINAR	17 Architecture	Architecture of Latvia OR User Centered Design	3	SPS/10 Urban and environmental sociology	UB	MASTER THESIS A +	23 RTU Internship 30
	TYPOLOGICAL ANALYSIS	5	Drawing	A SUSTAINABLE CITY 2 - SPACE UNITS		3 Applied economics	Interior Architecture	3			Real Estate+	2
							Theory and Practice of Restoration and Reconstruction+ One of the two following exams: reduce amount to 6 ECTS and add Design for sustainability 6 ECTS	12			Building physics and building energy systems	2
							Reconstruction and Restoration of Buildings / Practical Restoration (basics)	3	Arhitectural Restoration		Or	
Scientific + Professional-Applied	PRINCIPLES OF SUSTAINABILITY +	4	Technology	THEORETICAL DISCOURSE 2 In one of the following exam:		2 Structural engineering	Electrical Systems in Architecture	3	Building physics and building energy	UNIGE	Master thesis+ thesis defense+	23
	PRINCIPLES OF LANDSCAPE ARCHITECTURE	4	Landscape Architecture	THEORY OF URBAN DESIGN +EVOLUTION OF CONSTRUCTION PRINCIPLES AND CONSTRUCTION TECHNIQUES	DYNAMICS OF STRUCTURES AND FOUNDATIONS		Pigments and Paints for Restauration / Conservation and Restoration of Inorganic Materials	6	Arhitectural Restoration		Real Estate+	2
				+ELECTIVE SUBJECT 2 - ARCHITECTURAL TECHNOLOGIES, one of the three following exams:			Corrosion and Restoration of Natural and Artifical Stone Materials	10	Building physics and building energy		Building physics and building	2
				GREEN CONSTRUCTION – LESSONS FROM THE PAST / EVALUATION OF ENVIRONMENTAL CHARACTERISTICS OF BUILDINGS / SMART RECYCLING - recycled material houses		3 Structural engineering				RTU	Internship (Architect in Latvia Only)	
Theoretical + Methodological	WORKS, ARCHITECTS, PARADIGMS	4	History	INDIVIDUAL METHODOLOGIES		3 Architecture	Conservation of Historical Buildings+	3	Arhitectural Restoration			
				ARCHITECTURE AND SOCIETY		2 Urban and environmental sociology	Reconstruction and Restoration of Buildings	3	Arhitectural Restoration			
				ARCHITECTS AND CIVIC INITIATIVES FOR SUSTAINABLE DEVELOPMENT		3 Real estate appraisal	Basics of Labour Protection	2	Urban and environmental sociology			
	TOT:	27	ECTS		TOT:	30 ECTS	TOT:	30	ECTS			27

Figure 2. Scenario 02

A.3 Draft Scenario 03

In Scenario 03 (Figure 3) UB has the first semester, RTU has the second semester and UNIGE has the third semester. The fourth semester can be attended at one of the universities of choice and it is dedicated to Master Thesis.

ECTS number for each class needs to be fixed in the definitive curriculum, because each semester needs to be 30 ECTS for accreditation. In the smaller chart (Figure 3), there are all the standards resumed and it is highlighted how each standard is satisfied. In this scenario, there are no standard problems, but there are some teaching problems in the curriculum. Most of UNIGE courses are too easy for the second year of the Master Degree, while UB classes seem more possible for an advanced student. Problems are highlighted in red (Figure 3).

SCENARIO 3

	URBAN DESIGN				RESTORATION DESIGN				ARCHITECTURAL DESIGN								
	LANDSCAPE DESIGN																
	1-UB (fall)				2-RTU (spring)				3- UNIGE (fall)				4-thesis (spring)			5 (fall)	
Studio + theoretical	STUDIO - DESIGN PROJECT_PARTICIPATIVE URBAN DESIGN			15	Architectural Design Studio			4,5 Architecture	ARCHITECTURE STUDIO 1+ARCHITECTURAL THEORY 1 +		8+2 Architecture		UB	MASTER THESIS A	27	RTU Internship	39
	THEORETICAL DISCOURSE 1 +			2					TYPOLOGICAL ANALYSIS		5 Drawing			Or			
	STUDIO_SUSTAINABLE TERRITORIAL DEVELOPMENT +			12	Reconstruction and Restoration of Buildings + One of the three following exams:			6 Restoration	ARCHITECTURE STUDIO 4		10 Drawing		UNIGE	Master thesis+ thesis defense	27		
	SUSTAINABLE CITY - INSTRUMENTS OF TERRITORIAL MANAGEMENT			3 Real estate appraisal	Methods of Renovation and Transformation of Buildings	Theory of Cultural Heritage Conservation/Restoration	Conservation of Historical Buildings	3 Restoration									
					Practical Conservation/Restoration of Organic Materials			15 Restoration									
Scientific + Professional-Applied	ARCHITECTURAL BUILDINGS TECHNOLOGY			3 Structural engineering	Building Climate Systems in Architecture			3 ING-IND/11	PRINCIPLES OF SUSTAINABILITY		4 technology						
	+ELECTIVE SUBJECT 3 - ARCHITECTURAL TECHNOLOGIES), one of the three following exams:				Architectural Acoustics			3	PRINCIPLES OF LANDSCAPE ARCHITECTURE		4 lanscape architecture						
	OPTIMIZATION OF STRUCTURAL SYSTEMS.	EED AND WELL SYSTEMS AND DESIGN PROCESS	BUILDINGS RENOVATION IN THE CONTEXT OF	3 Structural engineering	Pigments and Paints for Restauration	Conservation and Restoration of Inorganic Materials		6 Restoration									
	ECONOMY IN ARCHITECTURE AND URBANISM			2 economics													
	URBAN MANAGEMENT	CONTINUITY IN URBAN DEVELOPMENT		3 economics													
Theoretical + Methodological	ARCHITECTURAL PHILOSOPHY			2 Aesthetics	Contemporary Architecture			3 History	WORKS, ARCHITECTS, PARADIGMS		4 History						
	CONTEMPORARY URBAN PHENOMENA	One of the two following exams:ECOPOLIS: ECOLOGICAL RESILIENCE OF THE CITY - CONCEPTS+ One of the two following exams:		3 Urban and environmental sociology	Principles of Design Planning and Management	One of the two following exams: Integrated Urban Design +One of the two following exams:		Urban and landscape 3 planning									
	URBAN RECREATION	ARCHITECTURE OF TERRITORY		3 Landscape Architecture	Sustainable Urban Development	Architectural Morphology and Research Methods +		3 Real estate appraisal									
					Architecture of Regional Landscape			3 Landscape Architecture									
	TOT:			31 ECTS			TOT:	28,5 ECTS	TOT:		27 ECTS				27		

Figure 3. Scenario 03

A.4 Draft Scenario 04

In Scenario 04 (Figure 4) UB has the first semester, UNIGE has the second semester and RTU has the third semester. The fourth semester can be attended at the chosen university and it is dedicated to Master Thesis.

ECTS number for each class needs to be fixed in the definitive curriculum, because each semester needs to be 30 ECTS for accreditation.

In the smaller chart (Figure 4), there are all the standards resumed and it is highlighted how each standard is satisfied. In this scenario, there are some problems with the Italian Standard; also, there are some teaching problems in the curriculum. Most of UNIGE courses are too easy for the second year of the Master Degree, while UB classes seem more possible for an advanced student. Problems are highlighted in red (Figure 4)

SCENARIO 4

	URBAN DESIGN				ARCHITECTURAL DESIGN		RESTORATION DESIGN								
	LANDSCAPE DESIGN														
	1- UB (fall)				2- UNIGE (spring)		3-RTU (fall)				4-thesis (spring)			5 (fall)	
Studio + theoretical	STUDIO - DESIGN PROJECT_PARTICIPATIVE URBAN DESIGN			15 Architecture	ARCHITECTURE STUDIO 2	10 Architecture	Architecture of Latvia		3 Urban and environmental sociology		UB	MASTER THESIS A	27	RTU Internship	39
	THEORETICAL DISCOURSE 1 +			2 Technology			Interior Architecture +		3 ICAR/14			Or			
	STUDIO_SUSTAINABLE TERRITORIAL DEVELOPMENT+			12 Architecture			Theory and Practice of Restoration and Reconstruction+ One of the two following exams:		12 ICAR/14		UNIGE	Master thesis+ thesis defense	27		
	A SUSTAINABLE CITY - INSTRUMENTS OF TERRITORIAL MANAGEMENT			3 Real estate appraisal			Reconstruction and Restoration of Buildings	Practical Restoration	3 Arhitectural Restoration			Or			
Scientific + Professional-Applied	ARCHITECTURAL BUILDINGS TECHNOLOGY			3 Structural engineering	PRINCIPLES OF CONSERVATION +	4 Technology	Electrical Systems in Architecture		3 Building physics and building energy systems		RTU	Internship. (Title of Architect in Latvia Only)			
	+ELECTIVE SUBJECT 3 - ARCHITECTURAL TECHNOLOGIES, one of the three following exams:				PRINCIPLES OF LANDSCAPE ARCHITECTURE	4 Landscape Architecture	Pigments and Paints for Restauration	Conservation and Restoration of Inorganic Materials	6 Arhitectural Restoration						
	OPTIMIZATION OF STRUCTURAL SYSTEMS.	LEED AND WELL SYSTEMS AND DESIGN PROCESS	BUILDINGS RENOVATION IN THE CONTEXT OF SUSTAINABLE ARCHITECTURE	3 Structural engineering			Corrosion and Restoration of Natural and Artifical Stone Materials		10 Building physics and building energy systems						
	ECONOMY IN ARCHITECTURE AND URBANISM			2 Economics											
	URBAN MANAGEMENT	CONTINUITY IN URBAN DEVELOPMENT		3 Economics											
Theoretical + Methodological	ARCHITECTURAL PHILOSOPHY			2 Aesthetics	STRUCTURAL MORPHOLOGY	5 Structural engineering	Conservation of Historical Buildings+		3 Arhitectural Restoration						
	CONTEMPORARY URBAN PHENOMENA	One of the two following exams: ECOPOLIS: ECOLOGICAL RESILIENCE OF THE CITY - CONCEPTS+ One of the two following exams:		3 Urban and environmental sociology			Reconstruction and Restoration of Buildings		3 Arhitectural Restoration						
	URBAN RECREATION	ARCHITECTURE OF TERRITORY		3 Landscape Architecture			Basics of Labour Protection		1,5 Urban and environmental sociology						
	TOT:			31 ECTS		TOT 23 ECTS	TOT:		30 ECTS				27		

Figure 4. Scenario 04