JOSIP JURAJ STROSSMAYER
UNIVERSITY IN OSIJEK

FACULTY OF CIVIL ENGINEERING

University Undergraduate Study Programme in Architecture and Urban Planning

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1 INTRODUCTORY PART

1.1 University of Josip Juraj Strossmayer in Osijek, Faculty of Civil Engineering in Osijek

1.1.1 Brief History of the Faculty

University education of civil engineers in the region of East Croatia reaches back into the year 1967, when the department of the Technical College Zagreb was established in Osijek. This department has been active in the region up to 1976 when, as a part of the Educational Centre for Civil Engineers, the Civil Engineering College Osijek was established. The Civil Engineering College was separated from the Civil Engineering School in 1982 and in 1983 it was merged with the Department for Materials and Constructions Osijek into the Faculty of Civil Engineering Sciences of the Osijek University. Since than the Faculty has been active within the Civil Engineering Institute Zagreb and after its transformation during the Homeland War in 1991, the four independent units in Zagreb, Split, Rijeka and Osijek were formed. With the separation of the Business centre Osijek of the Civil Engineering Institute of Croatia, the independent Faculty of Civil Engineering Osijek was founded February 7, 1992.

1.1.2 Dosadašnja iskustva u provođenju visokoškolskih obrazovnih programa

Dvadeset devet godina tradicije u obrazovanju građevinara u Slavoniji čini Građevinski fakultet u Osijeku jednim od značajnih sastavnica Sveučilišta Josipa Jurja Strossmayera, priznatog u Slavoniji, Hrvatskoj i Europi. To je vidljivo u povećanom interesu studenata za studij na Građevinskom fakultetu u Osijeku te u tendenciji skraćenja vremena studiranja. Prema trenutnom stanju na Fakultetu, kakvoći nastavnih programa na dodiplomskom i poslijediplomskim studijama, uspjehu znanstveno-nastavnih djelatnika, nastavnika, suradnika i ostalog osoblja na svim područjima njihovog djelovanja, te uspješnim gospodarenjem ostvarenim prihodima, Fakultet dokazuje svoju ozbiljnost i visoku poziciju u visokoškolskom obrazovanju i znanosti u Republici Hrvatskoj. U dvadeset devet godina postojanja Fakulteta diplomu je steklo preko 1100 građevinskih inženjera, gotovo 300 diplomiranih inženjera građevinarstva te četiri doktora tehničkih znanosti iz područja građevinarstva.

1.1.2 Past Experiences in the Implementation of University Educational Programmes

Faculty of Civil Engineering Osijek, with its 29 years of experience in educating civil engineers in Slavonia, is today one of the prominent faculties of Josip Juraj Strossmayer University, and of Slavonia, Croatia and Europe. This fact has become evident in the increased interest of students for the studies at the Faculty of Civil Engineering in Osijek and in the tendency of shortening the time of the studying. According to the present situation at the Faculty, the quality of curricula of the undergraduate and postgraduate studies, the success of the scientific and teaching workers, co-workers and other faculty members in all fields of their work, and the successful managing with the revenues, the Faculty has proved its seriousness and high position in university education and science in Croatia.
During the last 29 years of the Faculty, over 1100 students have become civil engineers, almost 300 of them have become Bachelors of Science in civil engineering, and 4 candidates have acquired their doctoral degrees in technical sciences (Ph.D.). In 2003 the Faculty established the dislocated study of civil engineering for the Vukovar-Srijem county in Vinkovci. During 2003 and 2004 the Faculty of Civil

Engineering in Osijek has initiated and realised the CARDS project of the life-long education of civil engineers which at once embraced more than one thousand civil engineers in the region of East Slavonia. The life-long education of civil engineers in the region is supported by regular organisation of scientific and professional lectures and presentations, and by publishing of textbooks, mimeographed course materials, monographs for students and civil engineers.
The concept of the new study programmes of the Civil Engineering Faculty of Josip Juraj Strossmayer in Osijek follows the tradition of high-quality university education of civil engineers in our region and coordinates them with the modern European (the Bologna Declaration) and world trends.

1.2. Comparative analysis of the study programme with similar accredited programmes in the Republic of Croatia and European Union member states

There are two key premises of relevance for prospective students that guided the design of the proposed university undergraduate study programme in architecture and urban planning. The first premise is the comparability of the proposed study programme with two similar study programmes in Croatia, viz. those delivered by the Faculty of Architecture of Zagreb University and by the Faculty of Civil Engineering, Architecture and Geodesy of the University of Split. The main reason is that this would guarantee future holders of the university degree of bachelor of architecture from J. J. Strossmayer University in Osijek an opportunity to compete, on an equal basis, i.e. subject to no additional requirements, for admission into the masters programmes offered by the universities in Zagreb and Split.
The second premise that informed the design of the proposed study programme is its comparability with undergraduate study programmes in architecture delivered abroad. Initially, we set out to analyse comparable study programmes in the close European vicinity, viz. in Austria, Germany, and Serbia. However, we focused on areas whose higher education systems have already implemented the principles of the Bologna Declaration (which is not yet the case in Germany) and with which we have a common heritage of educational structure. We chose, as the most compatible, undergraduate study programmes in architecture at two Austrian universities, viz. in Vienna (Technische Universität Wien) and Graz (Technische Universität Graz). In addition to the aforementioned, our programme shows similarities with those offered by ETH Zürich, IUAV Venezia, RWTH Aachen and TU Delft, which have been incorporated into the programme delivered by the Faculty of Architecture of Zagreb University.

Table 1 shows the course-based and ECTS-based comparison between five relevant national and foreign study programmes and the proposed study programme of Osijek University.

Table 1 Comparison of ECTS credit allocations per course category between the national and foreign study programmes analysed (Zagreb, Split, Maribor, Graz, Vienna) and the herein proposed study programme

	Course category	Zagreb	Split	Vienna	Graz	Maribor	Osijek
1	General Courses	30.0	24.0	35	18.5	19	32.0
2	Architectural Design	66.5	62.0	45.5	64.0	56	47.0
3	Construction Management	48.5	50.0	45.5	59.0	47	49.0
4	History and Theory of	21.0	24.0	14.0	20.5	18	23.0

	Architecture						
5	**Urban Planning**	**17.0**	**20.0**	**16.0**	**9.0**	**15**	**18.0**
TOTAL		**183.0**	**180.0**	**156.0**	**171.0**	**140.0**	**169.0**
				remaining credits are accumulated via elective courses leading toward specific study profiles		remaining credits are accumulated via elective courses (25)	remaining credits are accumulated via elective courses (8)

Table 2 Course-based and ECTS-based comparison of existing national study programmes and the study programme proposed herein

General Courses						
	ZAGREB	**ECTS**	**SPLIT**	**ECTS**	**OSIJEK**	**ECTS**
1.	Basics of Descriptive Geometry	3.5	Drawing 1	3.0	Mathematics	5.0
2.	Drawing I	3.0	Basics of Projection I	5.0	Geometry in Architecture	5.0
3.	Introduction to Computer-aided Design	1.5	Mathematics I	2.0	Spatial Representation in Architecture	3.0
4.	Mathematics	3.5	Computer-aided Architectural Design I	2.0	Drawing 1	3.0
5.	English for Architecture I	1.5	Basics of Projection 2	5.0	Drawing 2	3.0
6.	Physical and Health Education I	0.0	Drawing 2	3.0	Modelling 1	3.0
7.	Descriptive Geometry and Perspective	3.5	Computer-aided Architectural Design 2	2.0	Modelling 2	3.0
8.	Drawing II	3.0	Mathematics 2	2.0	Computer-aided Architectural Design 1	2.0
9.	Computer-aided Architectural Design I	1.5			Computer-aided Architectural Design 2	1.0
10.	English for Architecture II	1.5			English for Architects	3.0
11.	Physical and Health Education II	0.0			German for Architects	3.0
12.	Modelling I	2.5			Physical and Health Education 1	1.0
13.	Computer-aided Architectural Design II	2.5			Physical and Health Education 2	1.0
14.	Physical and Health Education III	0.0			Physical and Health Education 3	1.0
15.	Modelling II	2.5			Physical and Health Education 4	1.0
16.	Physical and Health Education IV	0.0				

Architectural Design						
	ZAGREB	**ECTS**	**SPLIT**	**ECTS**	**OSIJEK**	**ECTS**
1.	Architectural Design I	5.0	Basics of Architectural Design I	6.0	Basics of Architectural Design	5.0
2.	Architectural Design II	5.0	Architectural Design Workshop I	10.0	Architectural Design	6.0
3.	Introduction to Design of Residential Buildings	2.0	Modelling	2.0	Residential Buildings 1	6.0
4.	DESIGN STUDIO I	13.0	Architectural Presentation	2.0	Residential Buildings 2	6.0
5.	Residential Buildings I	2.0	Architectural Design Workshop III	10.0	Buildings for Educational Purposes	6.0
6.	DESIGN STUDIO II	6.5	Basics of Architectural Design 2	6.0	Commercial Buildings	3.0
7.	Residential Buildings II	1.0	Architectural Design Workshop 2	10.0	Interior Design	3.0
8.	DESIGN STUDIO III	13.0	Architectural Design Workshop 4 – bachelor's thesis	16.0	Design Studio in Urban Planning and Architecture – bachelor's thesis	12.0
9.	Buildings for Educational Purposes	2.0				
10.	DESIGN STUDIO IV	15.0				
11.	Office and Commercial Buildings	2.0				

Urban Planning						
	ZAGREB	**ECTS**	**SPLIT**	**ECTS**	**OSIJEK**	**ECTS**
1.	Urban Planning I	1.0	Urban Planning I	6.0	Urban Planning 1	3.0
2.	Urban Planning II	1.0	Basics of Urban Planning	2.0	Urban Planning 2	3.0
3.	Environmental Sociology	1.0	History of Urban Form	2.0	Urban Planning 3	6.0
4.	Urban Planning III	2.0	Urban Planning 2	8.0	Basics of Spatial Planning	2.0
5.	Introduction to Urban Planning and Building Legislation	2.0	Sociology of Urban Space	2.0	Rural Planning	1.0
6.	Town Planning	4.0			Systems of Public Infrastructure	3.0
7.	Landscape Planning	1.0				
8.	Contemporary Landscape Architecture	1.0				

Construction Management						
	ZAGREB	**ECTS**	**SPLIT**	**ECTS**	**OSIJEK**	**ECTS**
1.	Architectural Structures and Materials III	2.0	Basics of Load-Bearing Structures I	6.0	Architectural Structures 1	5.0
2.	Building Installations I	2.0	Elements of Buildings I	4.0	Architectural Structures 2	5.0
3.	Load-Bearing Structures III	3.0	Elements of Buildings III	4.0	Architectural Structures 3	5.0
4.	Engineering Studio	12.0	Load-Bearing Structures I	6.0	Materials in Architecture	3.0
5.	Building Installations II	1.0	Building Services	4.0	Engineering Mechanics	5.0
6.	Building Physics	2.0	Building Physics	2.0	Statics	5.0
7.	Planning and Project Management	5.0	Planning and Project Management	2.0	Reinforced Concrete and Masonry Structures	5.0
8.	Building Technology	2.0	Urban Traffic Areas and Facilities	2.0	Metal and Timber Structures	5.0
9.			Elements of Buildings 2	4.0	Building Installations	3.0
10.			Basics of Load-Bearing Structures 2	6.0	Building Physics	2.0
11.			Elements of Buildings 4	4.0	Basis of Structural Design and Actions on Structures	2.0
12.			Load-Bearing Structures 2	6.0	Construction Management	5.0
13.					Architectural Management	2.0

History and Theory of Architecture						
	ZAGREB	**ECTS**	**SPLIT**	**ECTS**	**OSIJEK**	**ECTS**
1.	History of Architecture I	2.0	Typology and Form in Architecture III	2.0	Art History 1	2.0
2.	Architecture in Croatian Regions - Zagreb	0.5	History of Architecture and Art I	4.0	Art History 2	2.0
3.	History of Architecture II	2.0	History of Architecture and Art III	2.0	History of Architecture 1	2.0
4.	Architecture in Croatian Regions - Northwest Croatia	0.5	Contemporary Architecture I	2.0	History of Architecture 2	2.0
5.	History of Architecture III	2.0	Typology and Form in Architecture 2	2.0	World Architecture of the 20th Century	2.0
6.	History of Architecture IV	2.0	History of Architecture and Art 2	4.0	Croatian Architecture of the 20th Century	2.0
7.	Architecture in Croatian Regions - Slavonia	1.0	Typology and Form in Architecture 4	2.0	Preservation of the Built Heritage	2.0
8.	Modern and Contemporary Architecture of the 20th century	2.0	History of Architecture and Art 4	2.0	Introduction to the Theory of Architecture	2.0
9.	Preservation of the Architectural Heritage	1.0	Contemporary Architecture 2	2.0	Field Work 1	1.0
10.	Twentieth Century Croatian Architecture	2.0			Field Work 2	1.0
11.	Introduction to the Theory of Architecture	1.0			Field Work 3	2.0
12.	Architecture in Croatian Regions - Istria	1.0				
13.	Materials in Interior Design	2.0				
14.	Sustainable Architecture	2.0				

2 GENERAL PART

2.1 Title of Studies

UNIVERSITY UNDERGRADUATE STUDY PROGRAMME IN ARCHITECTURE AND URBAN PLANNING

2.2 Coordinator of Studies

The University of Josip Juraj Strossmayer in Osijek, Faculty of Civil Engineering in Osijek

The university undergraduate study programme in architecture and urban planning in Osijek would be delivered in addition to the existing undergraduate, graduate and postgraduate study programmes at the Faculty of Civil Engineering in Osijek. The Faculty of Civil Engineering would deliver the study programmes in civil engineering and architecture in the same facility. The two study programmes would also have a common infrastructure for research, teaching and professional activities, as well as common equipment, office for student affairs, library etc.

2.3. Type of study programme
University study programme

2.4. Level
University undergraduate study programme

2.5. Academic area
2. Technical sciences

2.6. Academic field
2.01 Architecture and urban planning

2.7. Academic branch
Branches:
2.01.01 architectural design
2.01.02. urban planning and physical planning
2.01.03 architectural structures, building physics, building materials and technology
2.01.04 history and theory of architecture and conservation of built heritage
2.01.05 landscape architecture

2.8. Admission criteria

A person can be admitted into the university undergraduate study programme in architecture and urban planning providing they have completed at least four years of secondary education and they had had at least two years of mathematics during their secondary education. Eligibility of candidates for admission into the university undergraduate study programme in architecture and urban planning is assessed by means of an entrance exam.
A candidate's eligibility for admission will depend on the number of credits achieved in the following three categories:
- overall performance in the secondary school - credits based on the average of grades earned during the four years of secondary education
- Matura exam results - credits achieved on A-level exams in the core courses, i.e. Croatian, mathematics, foreign language and fine arts as the elective course
- results on additional tests - credits earned on tests of specific knowledge, competencies and skills.

The entrance exam includes additional tests designed to assess candidates' specific competencies, knowledge and skills. These tests concern graphic and fine art skills, visual memory, observational skills, spatial perception, representation of space using projection, etc.

Candidates' general eligibility for the study programme in architecture and urban planning is also assessed with a test targeting their knowledge of art and general (culturally-valued) knowledge, in accordance with a protocol for the administration of additional tests of knowledge, skills and competencies.
The maximum number of credits a candidate can achieve on the entrance exam is 100, whereby the ratio between secondary school success, Matura exam results, and additional test results is: 10:25:65.

Credits structure and distribution:
- overall performance in secondary school (max. 10 credits)
- results on the Matura exam (max. 25 credits):
    Mathematics (max. 10 credits)
    Croatian (max. 5 credits)
    Foreign language (max. 5 credits)
    Fine arts (max. 5 credits)
- additional tests of the knowledge, competencies and skills required for the pursuit of the study programme in architecture and urban planning:
    test of fine arts and graphic skills (max. 20 credits)
    test of spatial perception skills (max. 30 credits)
    Test of general knowledge (max. 15 credits)

Candidates who have earned a minimum of 20 credits on additional tests are eligible for admission into the undergraduate study programme in architecture and urban planning. All applicants are ranked on the basis of their overall score (results on additional tests, Matura exam results, and secondary school performance) and they are selected for admission based on their placement on the ranking list. If two candidates score equally, preference will be given to that candidate who has scored higher on the tests of graphic and fine arts skills, then on the test of spatial perception skills, and finally on the test of general knowledge. Candidates do not receive extra credits for any additional achievements.

2.9. Duration of study
The undergraduate study programme in architecture and urban planning takes three academic years, i.e. 6 semesters, during which students must accumulate a minimum of 180 ECTS points.

2.10. Degree/qualification obtained upon completion of study program
On completion of the study programme, the following academic title is awarded: BACHELOR OF ARCHITECTURE AND URBAN PLANNING

3. PROGRAMME DESCRIPTION

3.1. List of core and elective courses (Table 1)

Table 1 List of core and elective courses and/or modules, indicating the number of contact (teaching) hours and ECTS credits

LIST OF MODULES/COURSES							
Year of study: 1st (first)							
Semester: I First semester							
MODULE	**COURSE**	**LECTURER**	**L**	**E**	**S**	**ECTS**	**STATUS[1]**
PTM1	**Art History 1**	**Dr Margareta Turkalj Podmanicki, assistant professor**	**30**	**0**	**0**	**2,0**	**C**
	Fieldwork 1	**Željka Jurković, M.Sc. (Arch.), lecturer**	**0**	**0**	**30**	**1,0**	**C**
GPM1	**Geometry in Architecture**	**Ivanka Stipančić-Klaić, M.Sc. senior lecturer**	**30**	**30**	**0**	**5,0**	**C**
	Drawing 1	**Dr Ines Matijević Cakić, assistant professor (Art)**	**15**	**30**	**0**	**3,0**	**C**
PUM1	**Basics of Architectural Design**	**Dr Sanja Lončar-Vicković, associate professor**	**30**	**0**	**0**	**5,0**	**C**
		Bruno Rechner, M.Sc. (Arch.), teaching assistant	**0**	**30**	**0**		**C**
TM1	**Mathematics**	**Dr Ninoslav Truhar, full professor**	**30**	**30**	**0**	**5,0**	**C**
	Architectural Structures 1	**Dr Željko Koški, associate professor**	**30**	**0**	**0**	**5,0**	**C**
		Božica Česi, M.Sc. (Arch.), teaching assistant	**0**	**30**	**0**		**C**
	Physical and Health Education 1	**Željka Vukić, senior lecturer**	**0**	**30**	**0**	**1,0**	**C**
	English for Architects	**Lidija Kraljević, senior lecturer**	**15**	**30**	**0**	**3,0**	**E**
	German for Architects	**Anamarija Štefić, senior lecturer**	**15**	**30**	**0**	**3,0**	**E**

PTM1 **Povijesno – teorijski modul 1**
GPM1 **Grafičko – prezentacijski modul 1**
PUM1 **Projektantsko – urbanistički modul 1**
TM1 **Tehnički modul 1**

1**IMPORTANT:** If the course is compulsory (core courses), write "C", if elective, write "E"

LIST OF MODULES/COURSES							
Year of study: 1st (first)							
Semester: II Second semester							
MODULE	COURSE	LECTURER	L	E	S	ECTS	STATUS
PTM2	Art History 2	Dr Margareta Turkalj Podmanicki, assistant professor	30	0	0	2,0	C
GPM2	Spatial Representation in Architecture	Ivanka Stipančić-Klaić M.Sc. senior lecturer	30	15	0	3,0	C
	Drawing 2	Dr Ines Matijević Cakić, assistant professor (Art)	15	30	0	3,0	C
	Computer-aided Architectural Design 1	Dr Irena Ištoka Otković, assistant professor	15	0	0	2,0	C
		Tihomir Štefić, teaching assistant	0	15	0		C
PUM2	Architectural Design	Dr Sanja Lončar-Vicković, associate professor	30	0	0	6,0	C
		Bruno Rechner, M.Sc. (Arch.), teaching assistant	0	45	0		C
TM2	Architectural Structures 2	Dr Željko Koški, associate professor	30	0	0	5,0	C
		Božica Česi, M.Sc. (Arch.), teaching assistant	0	30	0		C
	Statics	Dr Tanja Kalman Šipoš, assistant professor	30	30	0	5,0	C
	Materials in Architecture	Dr Ivanka Netinger Grubeša, associate professor	30	0	0	3,0	C
		Krunoslav Ćosić, M.Sc. (Civil Engineering), teaching assistant	0	15	0		C
	Physical and Health Education 2	Željka Vukić, senior lecturer	0	30	0	1,0	C

PTM2 Povijesno – teorijski modul 2
GPM2 Grafičko – prezentacijski modul 2
PUM2 Projektantsko – urbanistički modul 2
TM2 Tehnički modul 2

LIST OF MODULES/COURSES							
Year of study: 2nd (second)							
Semester: III Third semester							
MODULE	**COURSE**	**LECTURER**	**L**	**E**	**S**	**ECTS**	**STATUS**
PTM3	History of Architecture 1	Dr Margareta Turkalj Podmanicki, assistant professor	30	0	0	2,0	C
GPM3	Modelling 1	Dr Božica Dea Matasić, associate professor (Art)	15	30	0	3,0	C
	Computer-aided Architectural Design 2	Dr Irena Ištoka Otković, assistant professor	0	0	0	1,0	C
		Tihomir Štefić, M.Sc. (Civil Engineering), teaching assistant	0	15	0		C
PUM3	Residential Buildings 1	Dr Luca Maria Francesco Fabris, assistant professor	30	0	0	6,0	C
		Damir Jukić, B.Sc. (Arch.), teaching assistant	0	45	0		C
	Urban Planning 1	Dr Dina Stober, assistant professor	15	0	0	3,0	C
		Ivan Cingel, M.Sc. (Arch.), teaching assistant	0	30	0		C
TM3	Architectural Structures 3	Dr Nana Palinić, assistant professor	30	0	0	5,0	C
		Božica Česi, M.Sc. (Arch.), teaching assistant	0	30	0		C
	Basis of Structural Design and Actions on Structures	Dr Damir Markulak, full professor	15	0	0	2,0	C
		Tihomir Štefić, M.Sc. (Civil Engineering), teaching assistant	0	15	0		C
	Engineering Mechanics	Dr Aleksandar Jurić, associate professor	30	0	0	5,0	C
		Dr Goran Gazić, postdoctoral fellow	0	30	0		C
	Physical and Health Education 3	Željka Vukić, senior lecturer	0	30	0	1,0	C
	Building Technology	Dr Hrvoje Krstić, assistant professor	30	0	0	2,0	E
	Engineering Structures	Dr Damir Varevac, associate professor	15	15	0	2,0	E

PTM3 Povijesno – teorijski modul 3
GPM3 Grafičko – prezentacijski modul 3
PUM3 Projektantsko – urbanistički modul 3
TM3 Tehnički modul 3

LIST OF MODULES/COURSES							
Year of study: 2nd (second)							
Semester: IV Fourth semester							
MODULE	**COURSE**	**LECTURER**	**L**	**E**	**S**	**ECTS**	**STATUS**
PTM4	History of Architecture 2	Dr Margareta Turkalj Podmanicki, assistant professor	30	0	0	2,0	C
	Fieldwork 2	Željka Jurković, M.Sc. (Arch.), lecturer	0	0	30	1,0	C
GPM4	Modelling 2	Dr Božica Dea Matasić, associate professor (Art)	15	30	0	3,0	C
PUM4	Residential Buildings 2	Dr Luca Maria Francesco Fabris, assistant professor	30	0	0	6,0	C
		Damir Jukić, B.Sc. (Arch.), teaching assistant	0	45	0		C
	Urban Planning 2	Dr Dina Stober, assistant professor	15	0	0	3,0	C
		Ivan Cingel, M.Sc. (Arch.), teaching assistant	0	30	0		C
TM4	Building Physics	Dr Željko Koški, associate professor	30	0	0	2,0	C
	Reinforced Concrete and Masonry Structures	Dr Marijana Hadzima-Nyarko, assistant professor	30	0	0	5,0	C
		Mario Jeleč, M.Sc. (Civil Engineering), teaching assistant	0	30	0		C
	Construction Management	Dr Zlata Dolaček-Alduk, assistant professor	30	0	0	5,0	C
		Mario Galić, M.Sc. (Civil Engineering), teaching assistant	0	30	0		C
	Physical and Health Education 4	Željka Vukić, senior lecturer	0	30	0	1,0	C
	Urban Sociology	Dr Antun Šundalić, full professor	30	0	0	2,0	E
	Building Maintenance	Dr Hrvoje Krstić, assistant professor	30	0	0	2,0	E

PTM4 Povijesno – teorijski modul 4
GPM4 Grafičko – prezentacijski modul 4
PUM4 Projektantsko – urbanistički modul 4
TM4 Tehnički modul 4

LIST OF MODULES/COURSES							
Year of study: 3rd (third)							
Semester: V Fifth semester							
MODULE	**COURSE**	**LECTURER**	**L**	**E**	**S**	**ECTS**	**STATUS**
PTM5	World Architecture of the 20th Century	Dr Sanja Lončar-Vicković, associate professor	30	0	0	2,0	C
PUM5	Buildings for Educational Purposes	Dr Jaroslav Vego, full professor	30	0	0	6,0	C
		Lucija Lončar, M.Sc. (Arch.), teaching assistant	0	45	0		C
	Commercial Buildings	Dr Jaroslav Vego, full professor	30	0	15	3,0	C
	Urban Planning 3	Dr Borislav Puljić, assistant professor	30	0	0	6,0	C
		Slaven Letica, M.Sc. (Arch.), teaching assistant	0	45	0		C
	Basics of Spatial Planning	Dr Borislav Puljić, assistant professor	30	0	0	2,0	C
	Rural Planning	Dr Dina Stober, assistant professor	15	0	0	1,0	C
TM5	Metal and Timber Structures	Dr Ivan Radić, assistant professor	30	30	0	5,0	C
	Building Installations	Dr Marija Šperac, assistant professor	30	0	0	3,0	C
		Željko Šreng, M.Sc. (Civil Engineering), teaching assistant	0	15	0		C
	Energy Efficient and Sustainable Architecture	Dr Hrvoje Krstić, assistant professor	30	0	0	2,0	E
	Visualisation in Architecture	Željka Jurković, M.Sc. (Arch.), lecturer	15	15	0	2,0	E

PTM5 Povijesno – teorijski modul 5
PUM5 Projektantsko – urbanistički modul 5
TM5 Tehnički modul 5

LIST OF MODULES/COURSES							
Year of study: 3rd (third)							
Semester: VI Sixth semester							
MODULE	**COURSE**	**LECTURER**	**L**	**E**	**S**	**ECTS**	**STATUS**
PTM6	Preservation of the Built Heritage	Dr Nana Palinić, assistant professor	30	0	0	2,0	C
	Introduction to the Theory of Architecture	Dr Luca Maria Francesco Fabris, assistant professor	30	0	0	2,0	C
	Croatian Architecture of the 20th Century	Dr Sanja Lončar-Vicković, associate professor	30	0	0	2,0	C
	Fieldwork 3	Željka Jurković, M.Sc. (Arch.), lecturer	0	0	30	2,0	C
PUM6	Design Studio in Urban Planning and Architecture - bachelor's thesis	Dr Željko Koški, associate professor Dr Sanja Lončar-Vicković, associate professor Dr Dina Stober, assistant professor	0	60	0	12,0	C
		Danijela Lovoković, M.Sc. (Arch.), teaching assistant	0	90	0		C
		Slaven Letica, M.Sc. (Arch.), teaching assistant	0	90	0		C
	Interior Design	Dr Luca Maria Francesco Fabris, assistant professor	30	0	0	3,0	C
		Damir Jukić, B.Sc. (Arch.), teaching assistant	0	15	0		C
TM6	Architectural Management	Dr Ksenija Čulo, full professor	30	0	0	2,0	C
	Systems of Public Infrastructure	Dr Ivana Barišić, assistant professor	30	15	0	3,0	C
	Introduction to Integrated Design	Dr Dina Stober, assistant professor	15	15	0	2,0	E
	Environmental Protection	Dr Lidija Tadić, associate professor	30	0	0	2,0	E

PTM6 Povijesno – teorijski modul 6
PUM6 Projektantsko – urbanistički modul 6
TM6 Tehnički modul 6

3.2.1. Description of courses

The descriptions of courses in total are given in point 4 of the Annex.

3.2.2. Study programme organisation and admission criteria

In terms of its content, the proposed study programme consists of core (compulsory) and elective courses. Core courses present necessary knowledge that introduce students to the scientific and professional field of architecture and urban planning. They make up 93.5% of the entire programme and are organised in the form of lectures, exercises and seminars (2,355 contact hours of core courses of a

total of 2,520 contact (teaching) hours), or 93.8% of all ECTS credits awarded during the course of the study programme.
In the first semester, students can earn 27 ECTS credits from core courses. In addition, they are required to choose one of the two foreign languages offered (English or German), each with 3 ECTS.
In the second semester, all courses are compulsory. In the third, fourth, fifth and sixth semester, in addition to core courses, student must choose one elective course per semester, each of which equalling 2 ECTS. As stated in agreements concluded between individual university constituents, students can choose elective courses offered by other University constituents.
Students are required to attend classes and complete all assignments, (take revision tests, take part in field trips, develop programmes, etc.) In the sixth semester, students are required to produce their bachelor's thesis within the core course Design Studio in Urban Planning and Architecture.
Requirements for obtaining teachers' signatures in the student book (index) are regular class attendance (a minimum of 70% of classes), completion of other student obligations (examinations, programmes, etc.) in a timely and organised manner.
Prerequisites for enrolment in individual courses are defined in the detailed course description (Annex 7.2.2).

Students maintain the full-time status throughout the duration of the required study programme, or up to maximum of one-third of the length of the prescribed duration of the studies, that is, to the end of the academic year in which that period will expire.

3.2.3. Beginning and end of academic year

The beginning and end of each academic year is defined by the Decision of the Senate on the teaching calendar, which is an integral part of the curriculum.

3.2.4. Conditions for enrolment in the higher academic year

Students may enrol in the higher academic year provided that they have:

- obtained teachers'signatures for having attended all courses delivered in the previous year of study;
- obtained an official verification of the fulfilment of their obligations in all previous semester; and
- passed examinations and earned a total of **50 ECTS** credits in the previous academic year.

Should students not fulfil conditions for enrolment in the higher year of study, they are eligible for **repeating** their studies of the respective academic year, provided that they have obtained at least **24 ECTS credits** in the year they are repeating. Students can repeat the same year of study only once, or otherwise they will lose the full-time status. The Ordinance on Study Programmes and Studying at Josip Juraj Strossmayer University in Osijek lays down other matters related to studying (exam questions, grade appeals procedure, exam re-administration procedure, mechanisms ensuring the public nature of examinations etc).

3.2.5 General and special conditions of studying

Students of the university undergraduate study programme in architecture and urban planning are required to comply with general and special conditions laid by the Statute of the Josip Juraj Strossmayer

University in Osijek and the Ordinance on Study Programmes and Studying at Josip Juraj Strossmayer University in Osijek, which pertain to the following:

- obtaining student status (full-time student, guest student, special student status: categorised athletes and top artists and highly successful students),
- transfer of students from other related university study programmes,
- resuming studies after discontinuation,
- mobility within the University,
- student rights and obligations (e.g. the right to inaction of obligations),
- student workload (the European Credit Transfer System (ECTS)),
- advancement through studies (enrolment in the higher year of study, cancellation of the enrolled course, repeating of the academic year, verification of the semester and teachers' signatures, examinations and other forms of testing knowledge, grade appeals, recognition of the examination passed at another institution of higher learning), and
- termination of student status.

3.2.6. Student status

Candidates who enrol in the university undergraduate study programme in architecture and urban planning may only be enrolled in the full-time status.

3.3. List of elective courses offered by other study programmes

A number of elective courses is offered at the university undergraduate study programme in architecture and urban planning. The selection of such courses (Table 6 below) lists only those courses whose learning outcomes reflect the necessary knowledge required from a bachelor of architecture and urban planning.

Table 6 List of courses, lecturers and corresponding ECTS credits of potential elective courses offered at the university undergraduate study programme in civil engineering

FACULTY OF CIVIL ENGINEERING	COURSE NAME	LECTURER	ECTS
	Technical Drawing/CAD	Dr Irena Ištoka Otković, assistant professor	4.0
	Materials Science	Dr Ivanka Netinger Grubeša, associate professor	2.0
	Computer Programming in Architecture	Dr Davorin Penava, assistant professor	2.0
	Construction Regulations	Dr Hrvoje Krstić, assistant professor	2.0
	Water and Transport Infrastructure Technology	Dr Petar Brana, full professor	5.0
	Building Construction Technology	Dr Petar Brana, full professor	5.0

Elective courses offered by other constituents of J. J. Strossmayer University are given in Table 3 in Chapter 3.13.1 of this Proposal.

3.4. List of courses that may be taught in a foreign language (Annex)

The list of courses that may be taught in a foreign language is included in Annex 7.2.3 below. There are 10 courses in total that may be taught in a foreign language, of which 10 in English and 2 in German.

Annex 7.2.3 List of courses that may be taught in English

	COURSE	LECTURER	ECTS
1	Mathematics	Dr Ninoslav Truhar, full professor	5.0
2	Croatian Architecture of the 20th Century*	Dr Sanja Lončar-Vicković, associate professor	2.0
3	World Architecture of the 20th Century*	Dr Sanja Lončar-Vicković, associate professor	2.0
4	Rural Planning	Dr Dina Stober, assistant professor	1.0
5	Introduction to Integrated Design	Dr Dina Stober, assistant professor	2.0
6	Basis of Structural Design and Actions on Structures	Dr Damir Markulak, full professor	2.0
7	Energy Efficient and Sustainable Architecture	Dr Hrvoje Krstić, assistant professor	2.0
8	Building Maintenance	Dr Hrvoje Krstić, assistant professor	2.0
9	Construction Management	Dr Zlata Dolaček-Alduk, assistant professor	5.0
10	Environmental Protection	Dr Lidija Tadić, associate professor	2.0

*courses that may also be taught in German

3.5. Degree completion process

The university undergraduate study programme in architecture and urban planning is completed by passing all examinations and producing the bachelor's thesis. With the bachelor's thesis the students must prove that they can apply the knowledge acquired during the study and demonstrate that they can successfully fulfil the tasks of their profession in compliance with the title acquired by the diploma.

A final examination is not part of the bachelor's thesis procedure. The thesis is evaluated by the appointed Committee for evaluation of the bachelor's thesis. The questions related to producing and defending a master's thesis, final examinations, rights and obligations of students, mentors and examination committee, as well as other specific questions regarding the work of the Committee for the bachelor's and master's theses are laid down by the Ordinance on bachelor's and master's theses of the Faculty.

3.6. Conditions under which students may be readmitted

In accordance with the general act of the Faculty, individuals who have lost their full-time student status shall be given the right to complete their studies in the period of five years (if the status was lost during any study year), or in the period of ten years (if the status was lost while the student was already a candidate for a degree).

Full-time students who have lost their status as a result of discontinuation of the studies may resume their studies in the full-time student status, provided that the study programme has not been significantly modified in the meantime.

In compliance with general acts of the Faculty, students who have discontinued their studies may continue them on condition that they bear the costs of studies themselves, and that the study programme has not significantly changed when compared to the one that they originally enrolled in. Students who have lost their full-time status at another institution of higher learning may continue their studies at this Faculty, if their previous study programme is a comparable study programme in architecture. They may also be required to pass certain additional exams.

4 Annex

Course description and course content

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ninoslav Truhar, full professor*	
Course title	**Mathematics**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	5
	Contact hours per week (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The goal of the course is to introduce students to basic algebraic and vector operations, elementary functions, analytic geometry and differential calculus.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

Define and correctly explain basic concepts of set theory, vector algebra, single variable calculus and single variable differential calculus.
State and correctly explain basic concepts of elementary functions, especially trigonometric functions.
Solve vector addition, vector decomposition and multiplication of vectors with real numbers.
Apply the rules of vector calculus in order to correctly plot lines and planes in plane and space. Compute limit values and the derivatives of single-variable functions.

1.4. Course content

1. Natural numbers and integers. Rational and real numbers. Intervals.
2. Elementary functions. Concept of limit of a function. Function continuity.
3. Trigonometric functions. Application of trigonometry in geometry.
4. Vectors (directed line segments). Collinearity and coplanarity of vectors.
5. Vector sum. Vector decomposition.
6. Multiplication of vectors with real numbers. Basis and coordinate system.
7. Scalar sum of vectors.
8. Rectangular coordinate system.
9. Cross product. Moment of force systems. Equilibrium equations.
10. Dot product. Multiple products.
11. Analytic geometry (plane in space)
12. Analytic geometry (line in space)
13. Derivatives of elementary functions and application of derivatives.
14. Higher order derivatives. Application of differential calculus.
15.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:

	☐ fieldwork	
1.6. Comments		
1.7. *Student requirements*		

1.8. Student performance evaluation[2].

Class attendance	0.5	Class participation	0.5	Seminar paper		Experimental work	
Written exam	2	Oral exam	2	Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

a) Student assessment is based on written exams and revision tests.

A passing grade in the revision tests replaces the written part of the exam. The grade from the revision tests affects the final grade.

Additionally, should the students successfully pass both revision tests; they can choose not to take the written part of the exam.

The written part of the exam consists of mathematical problems, totalling 100 points. Students are considered to have achieved a passing grade if they achieve 45 points in the written exam.

b) Students are graded and evaluated based on their performance in revision tests and written exams.

1.10. *Required readings (as on submission of the study programme proposal)*

1. Dragan Jukić, Rudolf Scitovski. MATEMATIKA I, Faculty of Food Technology Osijek and Faculty of Electrical Engineering in Osijek, Osijek, 1998, http://www.mathos.unios.hr/integralni/Jukic_Scitovski.pdf
2. Ivan Slapničar. Matematika 1, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture in Split, Split, 2002
3. Ivan Slapničar, Josipa Barić, Marina Ninčević. Matematika 1. Zbirka zadataka, http://lavica.fesb.hr/mat1/pdf/vjezbe.pdf

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. B. P. Demidovič, Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1986
2. J. Stewart: Calculus, Brooks/Cole, New York, 2011

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students is based on written exams, revision tests and tasks given to them during lectures and practical classes.

[2] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used to indicate additional types of activity

COURSE DESCRIPTION

General information		
Lecturer	*Ivanka Stipančić-Klaić, M.Sc. (Math.), senior lecturer*	
Course title	**Geometry in Architecture**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	5
	Contact hours per week (L+E+S)	30+30+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
- develop students' spatial perception skills - acquire the methods of drawing geometric shapes - interpret the location and size of the objects in space from drawings		
1.2. *Enrolment requirements and prerequisites*		
none		
1.3. Expected learning outcomes		
- provide definitions of geometric shapes and describe their possible locations according to planes of projection **- determine spatial and metric relations of geometric shapes and discuss them** **- define and apply methods of projection** **- present a regular geometric shape in orthogonal and oblique projections**		
1.4. Course content		
Basic geometric constructions. Transformations of the plane. Construction of second-degree curves. Orthogonal projection on two planes. Spatial and metric relations. Side view and isometric view. Plane rotation and application of affinities. Projection of geometric shapes. Plane cross-sections. Methods of oblique projections.		
1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		
1.7. *Student requirements*		

Regular attendance, revision tests, exam (revision tests during the semester or an exam consisting of an oral and a written part at the end of semester).

1.8. *Student performance evaluation*[3]

Class attendance	2	Class participation		Seminar paper		Experimental work	
Assessment	2	Oral exam	1	Essay		Research	
Project		Continuous or final assessment	(3)	Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

A) *ASSESSMENT OF STUDENT PERFORMANCE DURING THE COURSE*
- **attendance, class participation, practice work, revision tests**

b) ***Assessment of student performance in the final examination***
- **written / oral / group / public**

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Babić, I., Gorjanc, S., Sliepčević, A., Szirovicza, V.: Konstruktivna geometrija-zadaci, HDKGIKG, Zagreb, 2005**
2. **Horvatić-Baldasar, K., Babić, I.: Nacrtna geometrija, SAND d.o.o, Zagreb, 2007**

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. **Niče, V.: Deskriptivna geometrija, Školska knjiga, Zagreb, 1992**
2. **Jurkin, E., Szirovicza, V.: Deskriptivna geometrija, CD-ROM, HDKGIKG, Zagreb, 2005**
3. **Pal, I.: Geometrija u anaglifskim slikama, Tehnička knjiga, Zagreb, 1966**
4. **Kurnik, Z., Palman, D., Pavković, B.: Zadaci iz Nacrtne geometrije, Tehnička knjiga, Zagreb, 1966**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Horvatić-Baldasar, K., Babić, I.: Nacrtna geometrija, SAND d.o.o., Zagreb, 2007	**10**	
Babić, I., Gorjanc, S., Sliepčević, A., Szirovicza, V.: Konstruktivna geometrija-zadaci, HDKGIKG, Zagreb, 2005	**13**	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring, revision tests, exam.

[3] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ines Matijević Cakić, Assistant professor (Art)*	
Course title	**Drawing 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	3
	Contact hours per week (L+E+S)	15+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of this course is to visually depict spatial composition, using observational drawing, in a given field of view, with basic visual elements (lines and points), in charcoal.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

1. Apply the basic methods of composition and depiction of spatial composition in charcoal by means of linear drawing.
2. Differentiate between and apply types of composition, principles of composition, depiction of perspective and use of charcoal drawing media.
3. Develop one's perception and unique artistic voice through observational drawing.

1.4. Course content

Drawing 1 course is based on introducing and applying various types of composition and principles of composition by using basic drawing elements and observational drawing. Content: COMPOSITION; types of composition, principles of composition, DRAWING ELEMENTS; line, types of lines, line curvature, line thickness and shades, contour drawing, linear structure, linear drawing, drawing texture, structure lines, texture lines, DRAWING MEDIA; charcoal.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☒ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Students are required to attend classes regularly and to express given drawing problems and principles of composition by actively participating in class. At the end of semester, students are required to file the drawings they have drawn throughout the semester into an organised folder. Students are required to attend at least one exhibition per semester, as per arrangement, and write an essay in which they will interpret the contents of the

exhibition.

1.8. *Student performance evaluation*[4]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam	0.5	Essay	0.5	Research	
Project		Continuous or final assessment		Oral presentation		Practical work	0.5
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Assessment during the course is periodic, after teaching units have been acquired. Student assessment is based on interviews, during which students are directed to critically review both their own and their colleagues' artwork. The final grade at the end of semester is a compound of students' progress and successful completion of exercises.

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Bačić M., Mirenić Bačić J. (1998). Uvod u likovno mišljenje. Zagreb: Školska knjiga**
2. **Peić M. (1971). Pristup likovnom djelu, Zagreb: Školska knjiga**
3. **Jakubin, M. (1999). Likovni jezik i likovne tehnike. Zagreb: Educa**
4. **Tanay, E. R., i Kučina, V. (1995). Tehnike likovnog izražavanja. Zagreb: Naklada Zakej**

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. *By Editors of Phaidon (2013). Vitamin D2: New Perspectives in Drawing. NYC: Phaidon* by Editors of Phaidon (2013) *Vitamin D (2002): New Perspectives in Drawing. NYC: Phaidon*
2. **Grgurić, N. and Jakubin, M. (1996). Vizualno likovni odgoj i obrazovanje. Zagreb: Educa**
3. **Damjanov, J. (1991). Vizualni jezik i likovna umjetnost. Zagreb: Školska knjiga**
4. **Ivančević, R. (1997). Likovni govor. Zagreb: Profil**
5. **Ivančević, R. (1996). Perspektive. Zagreb: Školska knjiga**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring, evaluation of student class activity, analyses of essays and exercises.

[4] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Course description

General information		
Lecturer	Dr Sanja Lončar Vicković, associate professor	
Course title	Basics of Architectural Design	
Study programme	University undergraduate study programme in architecture and urban planning	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	5
	Contact hours per week (L+E+S)	30+30+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
The aim of the course is to introduce students to the basics of design thinking, terms and relations of shapes, construction and function in space.		
1.2. *Enrolment requirements and prerequisites*		
None		
1.3. Expected learning outcomes		
1. Examine the significance of architecture as a field in social, artistic and technical contexts. 2. Understand the structure of architectural syntax. 3. Define the basic themes and methods of architectural design. 4. Recognise the basics of design process by solving simple tasks. 5. Develop free architectural expression by solving simple design tasks.		
1.4. Course content		
Architecture as a technical and artistic field. Basic themes and methods of architectural design. Exploration of space; linearity, flatness, spatiality, size and relations in architecture; linkage of spaces; architectural composition. Movement; communication. Function. Man as a measure of things. Analysis of a location – position, illumination, measure, scale, natural and anthropogenic parameters of building site location. Concept. Construction and materials. Initial architectural tasks: Theoretical: monospace, multi-space, modular grids, outdoors and indoors, bright and dark space, calm and dynamic space. Practical: – introduction to scales, means of space representation, ground plans, cross-sections, perspective, axonometric projection, model; analysis of a chosen location in an urban area; organisation and forming of an enclosed space single-floor simple structure; organisation of single-floor enclosed space with a more complex structure.		
1.5. *Type of instruction*	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____

1.6. ***Comments***	

1.7. ***Student requirements***

Attendance of at least 70%, active participation in class, production and presentation of a project.

1.8. ***Student performance evaluation***[5]

Class attendance	**2**	**Class participation**		**Seminar paper**		**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project	**2**	**Continuous assessment**	**1**	**Oral presentation**		**Practical work**	
Portfolio							

1.9. ***Assessment of student performance during the course and in the final examination***

A) Assessment during the course: attendance, participation in class
B) Assessment and evaluation during the production and presentation of various project tasks: continuous evaluation of projects during production by periodical corrections and presentations of solutions, final presentation.

1.10. ***Required readings (as on submission of the study programme proposal)***

1. Neufert, E.; Neufert, P. Elementi arhitektonskog projektiranja, Golden marketing, Zagreb 2002
2. Zevi, B. Znati gledati arhitekturu, Naklada Lukom, Zagreb 2000

1.11. ***Recommended readings (as on submission of the study programme proposal)***

1. Hertzberger, H. Lessons for Students in Architecture, 010 Publishers, Rotterdam 2001
2. Hertzberger, H. Space and the architect: Lessons in Architecture 2, 010 Publishers, Rotterdam 2000
3. Rasmussen, S.E. Experiencing Architecture, MIT Press, Cambridge, 1997
4. various architecture journals from Croatia and abroad

1.12. ***Number of available copies of required readings in relation to the current course enrolment quota***

Title	*Number of copies*	*Number of students*

1.13. ***Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills***

Attendance monitoring. Evaluation of student projects presented in front of their peers. Topics are presented both graphically and textually, by using research and independent study skills.
Self-assessment and a survey of student assessment of teaching.

[5]**IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Course description

General information		
Lecturer	**Dr Margareta Turkalj Podmanicki, lecturer**	
Course title	**Art History 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Core**	
Year	**1st**	
ECTS value and form of instruction	**ECTS**	**2**
	Contact hours per week (L+E+S)	**30+0+0**

1. **COURSE DESCRIPTION**		
1.1. Course objectives		
Introduction to the most important art phenomena, artworks, artists and basic characteristics of art movements, along with cultural and historical conditions in which they developed.		
1.2. ***Enrolment requirements and prerequisites***		
None		
1.3. Expected learning outcomes		
1. Recognise and interpret artworks and their artists from the period of prehistory until the 15th century. 2. Explain the cultural and historical contexts in which artworks were created, from the period of prehistory until the 15th century 3. Analyse artworks by using the basic terminology and methods of art history.		
1.4. Course content		
An overview of the most significant monuments, development and characteristics of art phenomena in prehistory, Egyptian art, Ancient Near Eastern art; Aegean, Greek and Roman art, early Christian and Byzantine art, art of the early Middle Ages, Romanesque and Gothic art. Along with the examples from around the world and Europe, particular attention will be given to examples from Croatia and its neighbouring countries.		
1.5. Type of instruction	**☒ lectures ☐ seminars and workshops ☐ practical classes ☒ distance learning ☐ fieldwork**	**☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____**
1.6. Comments		
1.7. ***Student requirements***		
Attendance of at least 70%, completion of individual assignments, 2 revision tests or a final written exam		

***1.8. Student performance evaluation*[6]**

Class attendance	**1**	**Class participation**	**0.1**	**Seminar paper**		**Experimental work**	
Written exam	**0.7**	**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio		**Individual assignments**	**0.2**				

1.9. *Assessment of student performance during the course and in the final examination*

Regular attendance and class participation, individual assignments, distance-based learning (Loomen), 2 revision tests or a final written exam

1.10. *Required readings (as on submission of the study programme proposal)*

- Penelope J. E. Davies, Walter B. Denny, Frima Fox Hofrichter, Joseph Jacobs, Ann M. Roberts, and David L. Simon. Jansonova povijest umjetnosti: zapadna tradicija, 7th ed., Varaždin, 2008
- H. W. Janson. Povijest umjetnosti, 2005
- Milan Pelc. Povijest umjetnosti u Hrvatskoj, Zagreb, 2012
- course materials available on Loomen

1.11. *Recommended readings (as on submission of the study programme proposal)*

- Hrvatska umjetnost. Povijest i spomenici, Zagreb, 2010
- Slavonija, Baranja, Srijem – vrela europske civilizacije, vol. 1, Zagreb, 2009

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Survey of student assessment of teaching

[6] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	**Dr Željko Koški, associate professor**	
Course title	**Architectural Structures 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	5
	Contact hours per week (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of this course is to introduce students to basic elements of buildings and ways of presenting these elements in various design types.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

1. Identify the basic elements of a building in various types of designs.
2. Define and analyse the structures of basic elements of a building.
3. Describe the role of bearing and non-bearing building elements.
4. Draw parts of preliminary design, main design and detailed design for simple structures.
5. Use parts of various designs in own design project.

1.4. Course content

Introduction to the scientific discipline which deals with elements of structural engineering constructed on properties of building materials, structural analysis and building physics.
Factors that affect the longevity of buildings and types of structural systems. Types of design documentation, location permit, building permit and use permit. Brick and clay block walls, types of bricks and clay blocks. Types of brick bonds – English, Polish and Dutch. Wall ties, quoins, brick fins. Brick columns, rounded corner and spherical brick walls. Concrete masonry unit block walls. Brick chimney and prefabricated chimneys, vents. Brick arches – straight, segmental and semi-circular. Mortar and plaster. Lime, cement-lime, gypsum and fire clay mortars. Stone walls – types based on shape and size. Stonewall arches – straight, segmental and semi-circular. Stone columns and stone cladding. Concrete and reinforced concrete walls – breakdown based on type of wall and characteristics. Partition walls. Lightweight concrete, gypsum rock, glass rock.
Facades: types of materials and coverings. Thermal isolation. Glass facades.
Ceilings – construction, soffit, bottom view. Reinforced concrete ceilings – types. Monolithic, semi-prefab and prefab reinforced concrete ceilings. Reinforced concrete ceilings with glass fibre reinforcement.
Flat roofs – impassable and usable. Details.
Wooden ceilings – types. Wooden ceilings with steel beam support. Steel ceilings – types. Dropped ceilings.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular class attendance (max. nonattendance of 30 %, or 4 sessions).
Timely submission of all projects (3 projects).

1.8. *Student performance evaluation*[7]

Class attendance	1	Class participation	0.5	Seminar paper	-	Experimental work	-
Written exam	1	Oral exam	1	Essay	-	Research	-
Project	1	Continuous assessment	0.5	Oral presentation	-	Practical work	-
Portfolio	-		-		-		-

1.9. *Assessment of student performance during the course and in the final examination*

	Class participation	Design no.1	Design no. 2.	Design no. 3	Revision test 1 or written exam, part 1	Revision test 2 or written exam, part 2	Oral exam	TOTAL
Score range	0-10	0-10	0-10	0-10	0-15	0-15	0-30	0-100
Passing minimum score	1	6	6	6	8	8	16	51

Points/grade
0-50 insufficient (1); **51-63** sufficient (2); **64-75** good (3); **76-87** very good (4); **88-100** excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Course materials
2. N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Đuro Peulić: Konstruktivni elementi zgrada, Croatia knjiga 2002, Zagreb
2. Zvonimir Vrkljan: Oprema građevnih nacrta, Civil Engineering Institute – Faculty of Civil Engineering Sciences, Zagreb 1986
3. Ivo Kordiš: Izvedbeni nacrti, Civil Engineering Institute – Faculty of Civil Engineering Sciences, Zagreb, 1986
4. A. Štulhofer, Z. Veršić: Crtanje arhitektonskih nacrta: pribor i osnove, UPI-2M, d.o.o., Zagreb, 1998
5. E. Neufert: Elementi arhitektonskog projektiranja, Goldeng Marketing, Zagreb, 2002
6. Various types of structural engineering design documentation

[7] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*		
Title	*Number of copies*	*Number of students*
N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008	10	30
Notes (course materials)	On website http://www.gfos.unios.hr/	30
1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*		
- regular lecture and practical class attendance **- production of designs during practical classes** **- production of designs at home** **- grading of designs** **- students can opt to take two revision tests, which exempts them from taking the final exam**		

COURSE DESCRIPTION

General information		
Lecturer	**Željka Jurković, M.Sc. (Arch), lecturer**	
Course title	**Fieldwork 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Core**	
Year	**1st**	
ECTS value and form of instruction	**ECTS**	**1**
	Contact hours (L+E+S)	**1 day (6+0+6)**

1. **COURSE DESCRIPTION**
1.1. Course objectives
The aim of the course is to introduce students to the main characteristics of the traditional architecture in Slavonia and Baranja region and with modernist architectural and urban developments in Slavonia and Baranja region.
1.2. ***Enrolment requirements and prerequisites***
none
1.3. Expected learning outcomes
On successful completion of the course, students will be able to: **1. Identify the distinctive characteristics of architecture in local and historical contexts.** **2. Recognise the main characteristics of traditional architecture of Slavonia and Baranja region.** **3. Analyse the elements of modernist and contemporary architecture.** **4. Develop their own critical perspective on challenges and issues of physical planning, urbanism, and architecture in Slavonia and Baranja region.**
1.4. Course content
Development of immediate understanding of urbanist and architectural accomplishments. **In-field lecture (”in situ“) during expert guided tours.** **A tour of urban, rural and architectural heritage of Slavonia and Baranja region in situ.** **Identify in spatial and temporal context the most significant urbant and architectural accomplishments in the region of Slavonia and Baranja.** **Familiarising students with important characteristic of spaces, urban and rural ambiences and individual buildings.** **Interpretation of traditional architectural forms of building, traditionally used materials. Analysis of functional and spatial organisation of a traditional Slavonian house.** **Introduction to features of modernist architecture and contemporary architectural works in the cities.** **Analysis of a building, its placement on a location and its relations to the surrounding buildings. Analysis of traffic access, shape (look) of the building, its construction and particular shape and functional elements.** **Personal impression of a building, ambience and urban / rural structure. Memorising the location and ambience.**

1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. ***Student requirements***

Regular fieldwork attendance.
Submission of a seminar paper with a topic from fieldwork classes.

1.8. ***Student performance evaluation***[8]

Class attendance	**0.5**	**Class participation**		**Seminar paper**	**0.5**	**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio		**Programme**					

1.9. ***Assessment of student performance during the course and in the final examination***

- regular attendance, participation in class, field work activities, production of a project :

	Field work activities	Seminar paper	TOTAL
Score range	**0-5**	**0-5**	**0-10**
Passing minimum score	**3***	**3***	**6**

***required for the instructor's signature: 3+3=6 points**

b) Grading and assessment of student performance at the final exam

- according to the table above: **Points / grade:**

0-5 insufficient (1)
6 sufficient (2)
7 good (3)
8 very good (4)
9-10 excellent (5)

1.10. ***Required readings (as on submission of the study programme proposal)***

1. Lončar-Vicković S., Stober D., Tradicijska kuća Slavonije i Baranje – priručnik za obnovu, Ministry of Tourism of the Republic of Croatia, Faculty of Civil Engineering in Osijek, Zagreb, 2011
2. Group of authors, Osječka arhitektura 1918.-1945., HAZU (CASA) The Institute for Scientific and Artistic Work in Osijek, Osijek, 2006
3. Jurković Ž, Koški Ž., Lovoković D., Urbanistički i arhitektonski natječaji u Osijeku 1994.-2014., Faculty of Civil Engineering in Osijek, Osijek, 2015
4. Uchytil A., Barišić Marenić Z., Kahrović E., Leksikon arhitekata, Atlas hrvatske arhitekture XX. stoljeća, Faculty of Architecture, Zagreb, 2009

1.11. ***Recommended readings (as on submission of the study programme proposal)***

1. Group of authors, Srednjevjekovni i turski Osijek, HAZU (CASA) The Institute for Scientific and Artistic Work in Osijek, Osijek, 1994
2. Group of authors, Od turskog do suvremenog Osijeka, HAZU (CASA) The Institute for Scientific and

[8] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Artistic Work in Osijek, Osijek, 1996
3. Group of authors, Secesija slobodnog i kraljevskog grada Osijeka, HAZU (CASA) The Institute for Scientific and Artistic Work in Osijek Zagreb – Osijek, 2001
4. Koški, Ž, doctoral dissertation. Model slavonske obiteljske prigradske kuće utemeljen na analizi tradicijskog iskustva, Faculty of Architecture, Zagreb, 1997
5. Šmit K, master's thesis. Urbanistička obilježja širenja Osijeka od 18. do kraja 20. stoljeća, Faculty of Architecture, Zagreb, 2002

6. Karač Z., doctoral dissertation. Analiza urbanističko-arhitektonskog razvoja grada Vukovara – s težištem na urbanom razvoju tijekom srednjovjekovnoga i turskog razdoblja do 1700. godine, Faculty of Architecture, Zagreb, 2010.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Lončar-Vicković S., Stober D., Tradicijska kuća Slavonije i Baranje – priručnik za obnovu, Ministry of Tourism of the Republic of Croatia, Faculty of Civil Engineering Osijek, Zagreb, 2011	6	30
Group of authors, Osječka arhitektura 1918.-1945., HAZU (CASA), Institute for Scientific and Artistic Work in Osijek, Osijek, 2006	6	30
Jurković Ž., Koški Ž., Lovoković D., Urbanistički i arhitektonski natječaji u Osijeku 1994.-2014., Faculty of Civil Engineering in Osijek, Osijek, 2015	6	30
Uchytil A., Barišić Marenić Z., Kahrović E., Leksikon arhitekata, Atlas hrvatske arhitekture XX. stoljeća, Faculty of Architecture, Zagreb, 2009	6	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- fieldwork attendance
- seminar paper

COURSE DESCRIPTION

General information		
Lecturer	*Željka Vukić, senior lecturer*	
Course title	**Physical and Health Education 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	0+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Fulfilment of the biological need for exercise, creation of healthy lifestyle habits. Acquisition of basic skills, knowledge and habits, achievement of a certain level of motor skills, improvement of motor and functional skills.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

Students will be able to understand and analyse anthropometric characteristics and psychomotor dimensions.

1.4. Course content

Kinesiology, physical education, kinesiological recreation, the concept of sport and techniques of sports training, Kinesiotherapy, subject and structure of kinesiology, kinanthropometry, health status and disease prevention, functions of respiratory and cardiovascular systems.
Assessment of functional skills and benchmarks, assessment of motor skills and benchmarks, assessment of morphological characteristics and benchmarks, ability to work and methods of assessment, assessment of body posture.

1.5. Type of instruction	☐ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ other _____
1.6. Comments		

1.7. *Student requirements*

Regular attendance, participation in sports competitions. Medically exempt students write a seminar paper instead.

1.8. *Student performance evaluation*[9]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

1.10. *Required readings (as on submission of the study programme proposal)*

1. Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Mraković, M.: Uvod u sistematsku kineziologiju, Zagreb, 1997
2. Mišigoj-Duraković, M. et al.: Morfološka antropometrija u športu, Zagreb, 1995
3. Milanović, D.: Dijagnostika u sportu, Rovinj, 1996
4. Andrijašević, M.: Sportska rekreacija u mjestu rada i stanovanja, Zagreb, 1996
5. Pečina M. i Heimer, S.: Športska medicina, Zagreb, 1993

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999	available at instructor's web page	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' initial physical state. Assessment of immediate and cumulative results of the transformational process.

[9] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	**Lidija Kraljević, senior lecturer**	
Course title	**English for Architects**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Elective**	
Year	**1st**	
ECTS value and form of instruction	**ECTS**	**3**
	Contact hours (L+E+S)	**15+15+15**

1. **COURSE DESCRIPTION**		
1.1. Course objectives		
Additional acquisition and expansion of general vocabulary with a focus on specialist vocabulary; development of translation skills, both from and to English, development of reading skills for specialist architecture-based texts; revision and improvement of basic grammatical structures.		
1.2. *Enrolment requirements and prerequisites*		
Elementary knowledge of grammar and basic vocabulary.		
1.3. Expected learning outcomes		
On successful completion of this course, students will be able to: **1. Adopt and understand the basic architecture-based terminology.** **2. Define and explain the meaning of words from architecture-based texts.** **3. Recognise and distinguish the basic types of English grammatical structures in written texts.** **4. To translate simpler/less demanding technical texts.** **5. Paraphrase sentences or parts of text.** **6.**		
1.4. Course content		
1. Building in general **2. Ancient geniuses** **3. Arches and vaults** **4. Dome** **5. Building Materials** **6. Concrete** **7. Steel** **8. Skyscrapers I** **9. Skyscrapers II** **10. Tunnels**		
1.5. Type of instruction	**☒ lectures** **☒ seminars and workshops** **☒ practical classes** **☐ distance learning**	**☐ individual assignments** **☐ multimedia and e-learning** **☐ lab work** **☐ tutorials** **☐ other:**

	☐ **fieldwork**	
1.6. Comments		
1.7. ***Student requirements***		
Regular class attendance. ***Regular completion of grammar and vocabulary exercises.*** ***Written translations of academic texts.***		
1.8. ***Student performance evaluation***[10]		

Class attendance	**1.5**	**Class participation**		**Seminar paper**		**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous or final assessment**	**1.5**	**Oral presentation**		**Practical work**	
Portfolio		**Homework assignments**		**Practicum**			

1.9. ***Assessment of student performance during the course and in the final examination***

Revision tests:
10% regular attendance, translations submitted, assignments completed
35% 1st revision test
35% 2nd revision test
20% oral exam (mandatory only for students who wish to achieve a grade of very good and excellent)

Seminars:
10% regular attendance, translations, grammar and vocabulary assignments completed
90% seminar paper (grading and assessment during research, writing and oral presentation of the seminar paper – only for students who wish to achieve a grade of very good and excellent)

Exams:
10% regular attendance, translations submitted, assignments completed
70% written exam
20% oral exam (mandatory only for students who wish to achieve a grade of very good and excellent*)*

1.10. ***Required readings (as on submission of the study programme proposal)***

L. Kraljević: Architecture in English (internal course materials)

1.11. ***Recommended readings (as on submission of the study programme proposal)***

L. Kraljević: Structures in Time & Space I, Faculty of Civil Engineering, J.J. Strossmayer University of Osijek, 2002

1.12. ***Number of available copies of required readings in relation to the current course enrolment quota***

Title	*Number of copies*	*Number of students*
L. Kraljević: Architecture in English	**30**	**30**

1.13. ***Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills***

[10] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Attendance and class participation monitoring **Written assignments and exercises (translations, summaries, grammar and vocabulary exercises** **Oral expression (reading, oral communication)**

COURSE DESCRIPTION

General information		
Lecturer	**Anamarija Štefić, senior lecturer**	
Course title	**German for Architects**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Elective**	
Year	**1st**	
ECTS value and form of instruction	**ECTS**	**3**
	Contact hours (L+E+S)	**15+15+15**

1. COURSE DESCRIPTION

1.1. Course objectives

- **learn technical German skills applied to architecture**
- **introduce field-specific grammar structures and technical terminology**
- **enrich field-specific vocabulary**
- **read and comprehend authentic reading materials**
- **develop basic interpersonal communication skills**

1.2. Enrolment requirements and prerequisites

- **Basic vocabulary and elementary grammar**

1.3. Expected learning outcomes

By the end of the course, students should be able to do the following:

1. **read and understand shorter technical texts**
2. **analyse technical texts (give answers to questions, fill in the blanks…)**
3. **define and classify technical terms**
4. **use technical terminology in order to enhance written and verbal skills**
5. **use grammatical structures in context**
6. **formulate written abstracts**
7. **paraphrase or rewrite parts of text**
8. **translate simple technical texts from German into Croatian**

1.4. Course content

- **Wichtige Themen in der Architektur**
- **Architekturdarstellung**
- **Die Entwicklung der Grundlagen: Antike und frühes Christentum**
  Die Pyramiden von Gizeh
  Das Kolosseum in Rom / Das Pantheon in Rom / Der Parthenon in Athen / Der Diokletianspalast von Spalato
  Hagia Sophia in Konstantinopol
- **Romanik**
  Der schiefe Turm in Pisa

- **Gotik**
  Alhambra
  Der Dogenpalast in Venedig, Italien
- **Renaissance**
  Die Villa Rotonda in Italien
- **Barock und Rokoko**
  Schloss Versailles
- **Klassizismus – Architektur der Vernunft**
  Monticello, USA
- **Historismus und Ingenieurarchitektur**
  Schloss Neuschwanstein
  Das Flatiron Building in New York
- **Neuer Mensch und neues Bauen: 1900 bis heute**
  Le Corbusier: Unité d Habitations / Die Notre-Dame-du-Haut-Kirche in Ronschamp
  Frank Lloyd Wright: Fallingwater / Guggenheim Museum
  Oscar Niemeyer: Kathedrale von Brasília
  Adrian Smith: Jin Mao Tower
  …

1.5. Type of instruction	**☒ lectures** **☒ seminars and workshops** **☒ practical classes** **☐ distance learning** **☐ fieldwork**	**☐ individual assignments** **☐ multimedia and e-learning** **☐ lab work** **☐ tutorials** **☐ other** **_____**
1.6. Comments		

1.7. Student requirements

- **Class attendance (attendance of at least 70%)**
- **Revision tests or an examination during the exam terms.**

1.8. ***Student performance evaluation***[11]

Class attendance	**1.5**	**Class participation**		**Seminar paper**		**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**	**1.5**	**Oral presentation**		**Practical work**	
Portfolio							

1.9. Assessment of student performance during the course and in the final examination

Students can write quizzes or final exam, given to students at the end of a course of study. During the semester, students write two (2) quizzes and the average grade of both quizzes is a final grade. The second quizz can be replaced by seminar paper. If students fail or they are not satisfied with the final

[11] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

grade, they can / have to take the final exam during the exam terms. Oral exam is obligatory only for students who wish to achieve a grade of Excellent and those who want to improve average quizz grades. Each quiz is worth 45 points. 10 additional points can be achieved by solving some extra tasks.
The final grade is a sum of all the points achieved during the semester, based on the following scale:
poor (2)…… 44 – 57
satisfactory (3)……58 – 71
good (4)……..… 72 – 85
excellent (5)……..…86 - 100

1.10. Required readings (as on submission of the study programme proposal)

Various texts from the Internet and books

1.11. Recommended readings (as on submission of the study programme proposal)

- **Tecilazić, F. (1966): *Deutsch für Studenten der Architektur,* University of Zagreb, Faculty of Architecture, Zagreb**
- **Gympel, J. (2013): *Geschichte der Architektur von der Antike bis heute*, h.f.ullman, Potsdam**
- **Field, D. M. (2006): *Meisterwerke der Architektur,* Edition XXL, Fränkisch-Crumbach**
- **Wilkinson, P. (2013): *Wetberühmte Bauwerke im Detail,* Dorling Kindersley Verlag GmbH, München**
- **Journals available at the faculty library:**
  ***Detail,* Institut für Internationale Architektur – Dokumentation, usw.**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Texts from the Internet brought to class	**Sufficient number for each student**	

1.13. Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills

- **Class attendance and activity**
- **assessment is based on quizzes or final exam**
- **self-evaluation**

COURSE DESCRIPTION

General information		
Lecturer	*Ivanka Stipančić-Klaić, M.Sc. (Math.), senior lecturer*	
Course title	**Spatial Representation in Architecture**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

- develop spatial perception skills
- representation of route design
- representation of roof structures and models of roof structures
- determine the object's shadow
- learn to draw perspective drawings

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

- **determine the spatial and metric relations of geometric objects and discuss them**
- **represent regular geometric solids in orthogonal and oblique projections**

1.4. Course content

Multi-view orthogonal projection: topographic planes, plateau, route design. Cross-sections of rotating surfaces. Light and shadows. Perspective: methods of construction of perspective drawings, choice of drawings, choice of parameters, shadows cast by parallel light rays, measurements in horizontal planes.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular attendance, revision tests, exam (continuous assessment during the semester or an exam consisting of an oral and a written part at the end of semester).

1.8. *Student performance evaluation*[12]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Assessment	1	Oral exam	0.5	Essay		Research	
Project		Continuous or final assessment	(1.5)	Oral presentation		Practical work	
Portfolio							

1.9. Assessment of student performance during the course and in the final examination

A) *ASSESSMENT OF STUDENT PERFORMANCE DURING THE COURSE*
- **Attendance, class activity, practical work, revision tests**

b) Assessment of student performance in the final examination
- **written / oral / group / public**

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Kurilj, P., Sudeta, N., Šimić, M.: Perspektiva, Golden marketing-Tehn. Knjiga, Zagreb, 2005**
2. **Babić, I., Gorjanc, S.,Sliepčević, A., Szirovicza, V.: Konstruktivna geometrija-zadaci, IGH, Zagreb, 2000**
3. **Horvatić-Baldasar, K., Babić, I.: Nacrtna geometrija, SAND d.o.o., Zagreb, 2007**
4. **www.gfos.hr, course materials**

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. **Niče, V.: Deskriptivna geometrija, Školska knjiga, Zagreb, 1992**
2. **Jurkin, E., Szirovicza, V.: Deskriptivna geometrija, cd-rom, HDGG and Faculty of Civil Engineering, Zagreb, 2005**
3. **Palman, D.: Nacrtna geometrija, Element, Zagreb, 2002**
4. **Brauner, H., Kickinger, W.: Geometrija u graditeljstvu; Školska knjiga, Zagreb, 1980**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Horvatić-Baldasar, K., Babić, I.: Nacrtna geometrija, SAND d.o.o., Zagreb, 2007	**10**	
Babić, I., Gorjanc, S.,Sliepčević, A., Szirovicza, V.: Konstruktivna geometrija-zadaci, HDGIKG, Zagreb, 2000	**13**	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring, revision tests, exam.

[12] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ines Matijević Cakić, assistant professor (Art)*	
Course title	**Drawing 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	15+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of this course is to visually depict spatial composition, using observational drawing, in a given field of view, with basic visual elements (lines, points and planes).

1.2. *Enrolment requirements and prerequisites*

Regular attendance at lectures and practical classes.

1.3. Expected learning outcomes

1. Apply the basic methods of composition and depiction of spatial composition in drawing media by applying various types of drawings.
2. Differentiate between and apply types of composition, depiction of perspective and use of traditional drawing media.
3. Develop one's perception and unique artistic voice through observational drawing.

1.4. Course content

Drawing 2 course is based on introducing and applying various types of composition and principles of composition by using basic drawing elements and observational drawing. Content: COMPOSITION; types of composition, principles of composition, DRAWING ELEMENTS; line, types of lines, line curvature, line thickness and shades, contour drawing, linear drawing, drawing texture, structure lines, texture lines, surfaces, tone drawing, DRAWING MEDIA; pencil, Indian ink, charcoal, colouring pencils, fibre pens.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☒ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Students are required to attend classes regularly and to express given drawing problems and principles of composition by actively participating in class. At the end of semester, students are required to file the drawings they have drawn throughout the semester into an organised folder. Students are required to attend at least one exhibition per semester, as per arrangement, and write an essay in which they will interpret the contents of the exhibition.

1.8. *Student performance evaluation*[13]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam	0.5	Essay	0.5	Research	
Project		Continuous or final assessment		Oral presentation		Practical work	0.5
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Assessment during the course is periodical, after teaching units have been acquired. Student assessment is based on interviews, during which students are directed to critically review both their own and their colleagues' artwork. The final grade at the end of semester is a compound of students' progress and successful completion of exercises.

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Bačić M., Mirenić Bačić J. (1998). Uvod u likovno mišljenje. Zagreb: Školska knjiga**
2. **Peić M. (1971). Pristup likovnom djelu, Zagreb: Školska knjiga**
3. **Jakubin, M. (1999). Likovni jezik i likovne tehnike. Zagreb: Educa**
4. **Tanay, E. R., and Kučina, V. (1995). Tehnike likovnog izražavanja. Zagreb: Naklada Zakej**

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. *Editors of Phaidon (2013). Vitamin D2: New Perspectives in Drawing. NYC: Phaidon by Editors of Phaidon (2013) Vitamin D (2002): New Perspectives in Drawing. NYC: Phaidon*
2. **Grgurić, N. and Jakubin, M. (1996). Vizualno likovni odgoj i obrazovanje. Zagreb: Educa**
3. **Damjanov, J. (1991). Vizualni jezik i likovna umjetnost. Zagreb: Školska knjiga**
4. **Ivančević, R. (1997). Likovni govor. Zagreb: Profil**
5. **Ivančević, R. (1996). Perspektive. Zagreb: Školska knjiga**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring, evaluation of student class activity, analyses of essays and exercises.

[13] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Irena Ištoka Otković, assistant professor*	
Course title	**Computer-aided Architectural Design 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	15+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to the elements of technical drawing. Introduction to the elements of physical planning. Introduction to levels of project documentation. Introduction to technical drawing equipment. Introduction to basic elements of AutoCAD for 2D drawing.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

1. Analyse the elements of technical drawings.
2. Apply the acquired knowledge in technical drawing.
3. Group similar elements in the order of technical drawing.
4. Use the basic features of AutoCAD software package.

1.4. Course content

The aim of technical drawing. Tools. Paper sizes. Draft composition. Scales. Physical planning documents. Design documentation. Water and traffic infrastructure designs, structural engineering designs. Site plans. Conceptual designs. Main designs. Construction designs. Detailed designs. Ground plans, cross-sections and fronts. Spatial representation. Drawing accessories. Thickness and types of lines. Hatching. Multi-view plans. Footer and component sections. Quality of technical drawing. Graphical designations. Basic terms and principles of CAD. Basic elements of AutoCAD – 2D. Drawing of basic graphical elements. Object editing. Object duplication.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular class attendance. Completion of individual assignments.

1.8. *Student performance evaluation*[14]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment	1	Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

Written part of the exam consists of the theoretical part. Practical part of the exam is computer-based.

1.10. *Required readings (as on submission of the study programme proposal)*

Nikola Klem, Željko Koški, Irena Ištoka Otković: Tehničko crtanje i CAD, Faculty of Civil Engineering, Osijek, 2008

1.11. *Recommended readings (as on submission of the study programme proposal)*

Margareta Trconić: Tehničko crtanje s primjerima tehničkih crteža, Vinkovci, 2007
Zvonimir Vrkljan: Oprema građevinskih nacrta, Zagreb, 1986

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Nikola Klem, Željko Koški, Irena Ištoka Otković: Tehničko crtanje i CAD, Faculty of Civil Engineering, Osijek, 2008	10	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

During and at the end of the semester, students (both in person and in an anonymous survey) state their opinions on the contents of the course and the quality of available accompanying literature, the quality of teaching and learning hours required to acquire the course content with regard to the number of ECTS credits.

[14] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Course description

General information		
Lecturer	Dr Sanja Lončar Vicković, associate professor	
Course title	Architectural Design	
Study programme	University undergraduate study programme in architecture and urban planning	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	6
	Contact hours (L+E+S)	30+45+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
Introduce students to more complex aspects of design thinking and prepare them to solve particular design tasks to follow in further years of study.		
1.2. *Enrolment requirements and prerequisites*		
None		
1.3. Expected learning outcomes		
1. Improve the knowledge of themes and methods of architectural design. 2. Expand students' knowledge of architectural syntax. 3. Understand the structure of architectural composition. 4. Apply the basic design knowledge to solve various design tasks. 5. Develop free architectural expression by solving simple design tasks.		
1.4. Course content		
Themes and methods of architectural design. Exploration of space; linearity, flatness, spatiality, size and relations in architecture; linkage of spaces; architectural composition. Movement; communication. Function. Man as a measure of things. Analysis of a location – position, illumination, measure, scale, natural and anthropogenic parameters of building site location. Concept. Construction and materials. Design tasks: Analysis of selected locations in space; organisation and formation of multifunctional, multi-level content; linkage of indoor and outdoor spaces on selected locations.		
1.5. *Type of instruction*	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. *Comments*		
1.7. *Student requirements*		
Class attendance of min. 70%, active class participation, production and presentation of a design.		

1.8. ***Student performance evaluation***[15]

Class attendance	**2.5**	**Class participation**		**Seminar paper**		**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project	**2.5**	**Continuous assessment**	**1**	**Oral presentation**		**Practical work**	
Portfolio							

1.9. ***Assessment of student performance during the course and in the final examination***

A) Assessment during the course: attendance, participation in class
B) Assessment and evaluation during the production and presentation of various project tasks: continuous evaluation of project during production by periodical corrections and presentations of solutions, final presentation.

1.10. ***Required readings (as on submission of the study programme proposal)***

1. Neufert, E.; Neufert, P. Elementi arhitektonskog projektiranja, Golden marketing, Zagreb 2002
2. Zevi, B. Znati gledati arhitekturu, Naklada Lukom, Zagreb 2000

1.11. ***Recommended readings (as on submission of the study programme proposal)***

1. Hertzberger, H. Lessons for Students in Architecture, 010 Publishers, Rotterdam, 2001
2. Hertzberger, H. Space and the architect: Lessons in Architecture 2, 010 Publishers, Rotterdam, 2000
3. Lawson, B. The Language of Space, Architectural Press, Oxford, 2001
4. Rasmussen, S.E. Experiencing Architecture, MIT Press, Cambridge, 1997
5. various architecture journals from Croatia and abroad

1.12. ***Number of available copies of required readings in relation to the current course enrolment quota***

Title	*Number of copies*	*Number of students*

1.13. ***Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills***

Attendance monitoring. Evaluation of student projects that are presented in front of their peers. Topics are presented both graphically and textually, by using research and independent study skills.
Self-assessment and a survey of student assessment of teaching.

[15] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Course description

General information		
Lecturer	**Dr Margareta Turkalj Podmanicki, lecturer**	
Course title	**Art History 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Core**	
Year	**1st**	
ECTS value and form of instruction	**ECTS**	**2**
	Contact hours (L+E+S)	**30+0+0**

1. **COURSE DESCRIPTION**		
1.1. Course objectives		
Introduction to the most important art phenomena, artworks, artists and basic characteristics of art movements, along with cultural and historical conditions in which they developed.		
1.2. ***Enrolment requirements and prerequisites***		
Art History 1.		
1.3. Expected learning outcomes		
1. Recognise and interpret artworks and their artists from the period of the beginning of the 15th until the end of the 20th century. 2. Explain the cultural and historical contexts in which artworks were created, from the period of the beginning of the 15th until the end of the 20th century. 3. Analyse artworks by using the basic terminology and methods of art history.		
1.4. Course content		
An overview of most significant artworks of Renaissance, Mannerism, Baroque, Rococo, Neo-classicism, Romanticism, Realism, Impressionism, Post-impressionism, Symbolism, Art Nouveau, and 20th century styles. Along with the examples from around the world and Europe, particular attention will be given to examples from Croatia and its neighbouring countries.		
1.5. Type of instruction	**☒ lectures ☐ seminars and workshops ☐ practical classes ☒ distance learning ☐ fieldwork**	**☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____**
1.6. Comments		
1.7. Student requirements		
Attendance of at least 70%, completion of individual assignments, 2 revision tests or a final written exam		

1.8. ***Student performance evaluation***[16]

Class attendance	**1**	**Class participation**	**0.1**	**Seminar paper**		**Experimental work**	
Written exam	**0.7**	**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio		**Individual assignments**	**0.2**				

1.9. ***Assessment of student performance during the course and in the final examination***

Regular attendance and class participation, individual assignments, distance-based learning (Loomen), 2 revision tests or a final written exam.

1.10. ***Required readings (as on submission of the study programme proposal)***

- Penelope J. E. Davies; Walter B. Denny; Frima Fox Hofrichter; Joseph Jacobs; Ann M. Roberts; David L. Simon, Jansonova povijest umjetnosti: zapadna tradicija, 7th edition, Varaždin, 2008
- H. W. JANSON, POVIJEST UMJETNOSTI, 2005
- Milan Pelc, Povijest umjetnosti u Hrvatskoj, Zagreb, 2012
- class materials available on Loomen

1.11. ***Recommended readings (as on submission of the study programme proposal)***

- **Hrvatska umjetnost. Povijest i spomenici, Zagreb, 2010**
- **Slavonija, Baranja, Srijem – vrela europske civilizacije, vol. 1, Zagreb, 2009**

1.12. ***Number of available copies of required readings in relation to the current course enrolment quota***

Title	*Number of copies*	*Number of students*

1.13. ***Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills***

Survey of student assessment of teaching

[16] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	**Dr Željko Koški, associate professor**	
Course title	**Architectural Structures 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Core**	
Year	**1st**	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of this course is to introduce students to basic elements of buildings and ways of presenting these elements in various design types.

1.2. *Enrolment requirements and prerequisites*

Architectural Structures 1.

1.3. Expected learning outcomes

1. Identify the basic elements of a building in various types of designs.
2. Analyse the structures of basic massive elements of a building.
3. Examine the functioning of doors and windows in a building.
4. Draw parts of a detailed design.
5. Use parts of various designs in own design project.

1.4. Course content

Foundation materials and types of foundations. Excavation. Shallow and deep foundations. Retaining walls and formwork.
Waterproofing. Drainage. Groundwater control.
Single- and double-sided concrete walls formwork. Reinforced concrete formwork. Formwork of reinforced concrete retaining wall. Reinforced concrete lintels and formwork, reinforced concrete pillars and formwork of rectangular, circular and variable cross-section pillars. Formwork of monolithic reinforced concrete ceilings.
Staircases – reinforced concrete, wooden, steel. Shapes, details and types of graphical representations in ground plans and cross sections.
Doors and windows. Types according to manner of opening and material composition. Details.
Floors. Types according to material composition, heat loss and manner of construction. Screed floors. Office floors.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular class attendance (max. nonattendance of 30 %, or 4 sessions).
All designs submitted according to the deadline (3 design projects).

1.8. *Student performance evaluation*[17]

Class attendance	1	Class participation	0.5	Seminar paper	-	Experimental work	-
Written exam	1	Oral exam	1	Essay	-	Research	-
Project	1	Continuous assessment	0.5	Oral presentation	-	Practical work	-
Portfolio	-		-		-		-

1.9. *Assessment of student performance during the course and in the final examination*

	Class participation	Design no.1	Design no. 2.	Design no. 3	Revision test 1 or written exam, part 1	Revision test 2 or written exam, part 2	Oral exam	TOTAL
Score range	0-10	0-10	0-10	0-10	0-15	0-15	0-30	0-100
Passing minimum score	1	6	6	6	8	8	16	51

Points/grade
0-50 insufficient (1); **51-63** sufficient (2); **64-75** good (3); **76-87** very good (4); **88-100** excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Course materials
2. N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Đuro Peulić: Konstruktivni elementi zgrada, Croatia knjiga 2002, Zagreb
2. Zvonimir Vrkljan: Oprema građevnih nacrta, Civil Engineering Institute – Faculty of Civil Engineering Sciences, Zagreb 1986
3. Ivo Kordiš: Izvedbeni nacrti, Civil Engineering Institute – Faculty of Civil Engineering Sciences, Zagreb 1986
4. A. Štulhofer, Z. Veršić: Crtanje arhitektonskih nacrta: pribor i osnove, UPI-2M, d.o.o., Zagreb, 1998
5. E. Neufert: Elementi arhitektonskog projektiranja, Goldeng Marketing, Zagreb, 2002
6. Various types of structural design documentation.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer	10	30

[17] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008		
Internal course materials	On website: http://www.gfos.unios.hr/	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- regular lecture and practical class attendance
- production of designs during practical classes
- production of designs at home
- grading of designs
- students have the option to take two revision tests which excuses them from taking the final exam

COURSE DESCRIPTION

General information		
Lecturer	*Dr Tanja Kalman Šipoš, assistant professor*	
Course title	**Statics**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of this course is to understand the acting of forces on the structure, reactive forces and equilibria of external and internal structural forces. Introduction to the basics of structural analysis, from simple rod construction to more complex frame structures. Understanding of the types of force transfer, surface and line loads on the structural elements. Application of numerical modelling of simple structures on a computer.

1.2. *Enrolment requirements and prerequisites*

Basic mathematics knowledge.

1.3. Expected learning outcomes

On successful completion of this course, students will be able to:

1. **analyse the geometrical invariance and static (in)determinacy of a system (identify the load-bearing system);**
2. **make a structural analysis of reaction and internal forces on statically determinate structural systems in a plane;**
3. **identify the basic properties of statically determinate systems;**
4. **identify and sketch internal force diagrams for planar statically determinate systems;**
5. produce a numerical model of simple planar structural systems

1.4. Course content

Basic laws and tasks of statics. Geometrical invariance of structural systems. Static determinacy and indeterminacy of structural systems. Basic units of statics: force, moment, force couple. Equilibria of planar systems. External (types of loads) and internal forces. Determining of internal force diagrams. Differential equations of loads and internal forces. Methods of structural analysis of planar statically determinate systems: basic static systems, Gerber girders, full laminated girders, three-hinged frames, tension frames, and complex beam girders. Transfer of forces, surface and line loads on the construction elements. Numeric modelling of planar structural systems on a computer.

1.5. *Type of instruction*	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. *Comments*		

1.7. *Student requirements*

Regular attendance, revision tests, project, exam.

1.8. *Student performance evaluation*[18]

Class attendance	2	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project	0.5	Continuous or final assessment	2.5	Oral presentation		Practical work	
Portfolio		Programme					

1.9. *Assessment of student performance during the course and in the final examination*

a) Assessment during the course: two revision tests. Students can complete the course by successfully passing the revision tests.

b) Assessment after the end of classes:
- written and oral exam

Grading scale:
60 – 69 points = sufficient (2)
70 – 79 points = good (3)
80 – 89 points = very good (4)
90 – 100 points = excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Mehanika I – Statika, A. Jurić, Faculty of Civil Engineering in Osijek, 2006 – university textbook.

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Statics - F.P. Beer, E.R. Johnston, Jr., McGraw-Hill Publishing Company, New York, 1988
2. Mehanika I, Ž. Nikolić, Faculty of Civil Engineering, Architecture and Geodesy in Split, Split 2009
3. Tehnička mehanika I – statika, A. Kiričenko, IGH, Zagreb, 1990

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Mehanika I – Statika, A. Jurić, Faculty of Civil	13	

[18] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Engineering in Osijek, 2006 – university textbook.		
1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*		
Attendance monitoring, revision tests, project, exam.		

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ivanka Netinger Grubeša, associate professor*	
Course title	**Materials in Architecture**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduce students to the basic knowledge of materials used in architecture / construction. Familiarise students with the methods of examining / determining the properties of materials, as well as the interpretation of properties and applications of materials in construction according to their properties. Describe the methods of protection of materials in construction.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

On successful completion of this course, students will be able to:

1. determine the properties of various building materials
2. compare the properties of different building materials
3. apply the results of building material analysis
4. choose the type of building material with respect to its purpose in construction
5. identify the methods of protection of building materials according to the mechanisms of degradation

1.4. Course content

Introduction: materials in architecture; general information, applications, properties. Physical, mechanical, and chemical properties of materials. Standards. Concrete. Metals. Stone. Wood. Ceramic building material. Glass. Polymers. Binders. Paints and varnishes. Glues. Heat, water and soundproofing. Durability of materials. Sustainable materials.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☒ lab work ☐ tutorials ☐ other ☐ program _____
1.6. Comments	---	

1.7. *Student requirements*

- Attendance at lectures (75%)
- Lab work attendance (100%)
- Lab work papers completed and submitted

- Attendance at auditory exercises (75%)

1.8. *Student performance evaluation*[19]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	0.5
Written exam	(0.5)	Oral exam	(0.5)	Essay		Research	
Project		Continuous assessment	1	Oral presentation		Practical work	
Portfolio		Programme					

1.9. *Assessment of student performance during the course and in the final examination*

Student assessment in the revision tests:

• 2 revision tests = 100 points (exercises: 50 points + theoretical part: 50 points)
• maximum 25 points per revision test can be obtained from the theoretical part
• maximum 25 points per revision test can be obtained from the exercises part
• students are exempt from taking the final exam if they obtain a minimum of 15 points from the practical part of each of the revision tests
• students are exempt from taking the final exam if they obtain a minimum of 15 points from the theoretical part of each of the revision tests

Exam taking procedure:

• revision tests (both revision tests passed, both theory and exercises)
• written and oral exam

Grading scale: (1 revision test + 2 revision test) or a written exam
60 – 69 points = sufficient (2)
70 – 79 points = good (3)
80 – 89 points = very good (4)
90 – 100 points = excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Beslać, J.; Materijali u arhitekturi i građevinarstvu, Školska knjiga, Zagreb, 1989
2. Ukrainczyk, V.; Poznavanje gradiva, Alkor, Zagreb, 2001
3. Netinger, I.; Vračević, M.; Bačkalić, Z.; Opeka – od sirovine do gotovog proizvoda, Faculty of Civil Engineering in Osijek, 2014
4. Netinger, I.; Miličević, I.; Zbirka zadataka iz Gradiva – course materials, Faculty of Civil Engineering in Osijek, 2014
5. Mikoč, M.; Gradiva, Faculty of Civil Engineering in Osijek, 2008

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Ashby, Michael F.; Joneas David R, H.; Engineering Materials 1, Butterworth-Heinemann, Oxford-Boston-Johannesburg-Melbourne-New Delhi-Singapore, 1996
2. Lyons, A.; Materials for Architects and Builders, Oxford: Butterworth-Heinemann, 2002
3. Ballard Bell, V.; Materials for Architectural Design, London: Laurence King Publishing, 2006

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Beslać, J.; Materijali u arhitekturi i građevinarstvu, Školska knjiga, Zagreb, 1989	7	
Ukrainczyk, V.; Poznavanje gradiva, Alkor, Zagreb, 2001	5	
Netinger, I.; Vračević, M.; Bačkalić, Z.; Opeka – od sirovine do gotovog proizvoda, Faculty of Civil Engineering in Osijek, Osijek, 2014	10	
Netinger, I.; Miličević, I.; Zbirka zadataka iz Gradiva – internal course materials, Faculty of Civil Engineering in Osijek, Osijek, 2014	10	
Mikoč, M.; Gradiva, Faculty of Civil Engineering in Osijek, 2008	14	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Achievement of learning outcomes is verified by:

- lab work papers submitted and accepted
- final exam or revision tests passed
- oral exam passed

COURSE DESCRIPTION

General information		
Lecturer	*Željka Vukić, senior lecturer*	
Course title	**Physical and Health Education 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	1st	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	0+30+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
Fulfilment of the biological need for exercise, creation of healthy lifestyle habits. Acquisition of basic skills, knowledge and habits, achievement of a certain level of motor skills, improvement of motor and functional skills.		
1.2. *Enrolment requirements and prerequisites*		
1.3. Expected learning outcomes		
Train students to independently plan and program transformational processes.		
1.4. Course content		
Anthropological status, planning and programming of transformational processes, energy capacity, locomotor system, role of muscles and physiology of posture. Assessment of cumulative effects of recreation programmes, basic methods of aerobic training, basic methods of anaerobic training, deformities of the spine, ribcage and feet, medical gymnastics, models and tools for the development of glycolytic – lactate mechanism, interval and continuous training method, models of training programmes.		
1.5. Type of instruction	☐ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ other _____
1.6. Comments		
1.7. *Student requirements*		
Regular attendance, participation in sports competitions. Medically exempt students write a seminar paper instead.		
1.8. *Student performance evaluation*[20]		

[20] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

1.10. *Required readings (as on submission of the study programme proposal)*

1. Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Milanović, D.: Fitness, Zagreb, 1996
2. Andrijašević, M.: Sportska rekreacija u mjestu rada i stanovanja, Zagreb, 1996
3. Milanović, D.: Priručnik za sportske trenere, Zagreb, 1997
4. Metikoš, D. et al: Suvremena aerobika, Zagreb, 1997
5. Groser, M., H. Ehlenz, E. Zimmermann: Richting Muskeltraining, BVL Verlagsgesellschaft, Munchen, 1987

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999	Available at instructor's personal web page	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' initial physical states. Assessment of immediate and cumulative results of the transformational process.

COURSE DESCRIPTION

General information		
Lecturer	**Dr Božica Dea Matasić, associate professor (Art)**	
Course title	**Modelling 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	15+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Through visual arts, with emphasis on 3D modelling, the basic rules of compositionality are explored. Abstract thinking and development of knowledge of coherent structures is employed to reach the individual solutions for the assigned research topics. By placing emphasis on intermediality of the basic visual art rules, students are encouraged to identify and analyse various types of art media, such as sculpture, painting, photography, film etc. and synthesise the qualities, i.e. principles applicable to architectural design and compositions. The aim of the course is for students to abstractly and individually enhance their scope of artistic knowledge as a preparation for their future work of creative architectural output.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

1.4. Course content

This course, in its theoretical and practical parts, introduces students to the basics of three-dimensional design through the use of visual arts elements and procedures (points, lines, surfaces, colours, tones, shapes, cloning, composition, ratios, rhythm etc.) that are in accordance with the architectural practice and thought.

1.5. Type of instruction	lectures practical classes fieldwork	individual assignments multimedia and e-learning tutorials
1.6. Comments		

1.7. *Student requirements*

Regular attendance, timely submission of practical work and homework assignments. Taking of lecture

notes and recording of students' own thoughts, drafts and ideas. Analytic following of the cultural events.

1.8. *Student performance evaluation*[21]

Class attendance	0.5	Class participation	0.5	Seminar paper		Experimental work	0.5
Written exam		Oral exam		Essay		Research	0.5
Project		Continuous or final assessment		Oral presentation		Practical work	0.5
Portfolio		Homework assignments		Practicum	0.5		

1.9. *Assessment of student performance during the course and in the final examination*

The final grade is based on class activity and the quality of the submitted programmes.

1.10. *Required readings (as on submission of the study programme proposal)*

1. Rudolf Arnheim: Umetnost i vizuelno opažanje, Univerzitet umetnosti u Beogradu, Beograd, 1981
2. E.H. Gombrich: Umetnost i iluzija, Nolit, Beograd, 1984
3. Gillo Dorfles: Kič, Golden marketing, Zagreb, 1997
4. C.G. Jung: Čovjek i njegovi simboli, Mladost, Zagreb, 1974
5. Rosalind Krauss: The originality of avant-garde an other modernist myths, The MIT Press, Cambridge, Massachusetts

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. N. Miščević, M. Zinaić: Plastični znak, Izdavački centar Rijeka, Rijeka, 1982
2. H.W. Janson: Povijest umjetnosti (hrvatsko prošireno izdanje), Stanek, Varaždin, 2003
3. J. Itten: Umetnost boje, priručnik, Umetnička akademija u Beogradu, Beograd, 1973
4. Josep Lluis Mateo, Florian Sauter: Natural metaphor, ETH Zurich, 2007 (a collection of essays)
5. Paul Overy: De Stijl, Thames&Hudson World of Art, London, 1991, 2000
6. **Collins. J., Sculpture Today, Phaidon, 2007**
7. **Vitamin 3-D; New Perspectives in Sculpture and Installation, Phaidon, 2009**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

[21] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Irena Ištoka Otković, assistant professor*	
Course title	**Computer-aided Architectural Design 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	0+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to AutoCAD software package for 2D drawing.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

1. Use AutoCAD software package.
2. Draw a complex technical drawing with all the required elements with AutoCAD.
3. Develop teamwork skills for solving of group tasks.

1.4. Course content

AutoCAD software – 2D. Complex objects – polyline and block. Collection of data from drawings. Text. Hatching. Dimensioning. Complex plans. Plot.

1.5. Type of instruction	☐ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Practical class attendance. Completion of individual assignments.

1.8. *Student performance evaluation*[22]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	

[22] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Project		Continuous assessment	0.5	Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

Exam is taken on computers. There is no oral exam.

1.10. *Required readings (as on submission of the study programme proposal)*

Nikola Klem, Željko Koški, Irena Ištoka Otković: Tehničko crtanje i CAD, Faculty of Civil Engineering, Osijek, 2008

1.11. *Recommended readings (as on submission of the study programme proposal)*

Margareta Trconić: Tehničko crtanje s primjerima tehničkih crteža, Vinkovci, 2007
Zvonimir Vrkljan: Oprema građevinskih nacrta, Zagreb, 1986

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Nikola Klem, Željko Koški, Irena Ištoka Otković: Tehničko crtanje i CAD, Faculty of Civil Engineering, Osijek, 2008	10	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

During and at the end of the semester, students (both in person and in an anonymous survey) state their opinions on the contents of the course and the quality of available accompanying literature, the quality of teaching and learning hours required to acquire the course content with regard to the number of ECTS credits.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Luca Maria Francesco Fabris, assistant professor*	
Course title	**Residential Buildings 1**	
Study programme	*University undergraduate study programme in architecture and urban planning*	
Course status	Core	
Year	**2nd**	
ECTS value and form of instruction	ECTS	6
	Contact hours (L+E+S)	30+45+0

1. COURSE DESCRIPTION

1.1. Course objectives

Understanding of human needs in everyday living spaces, especially in residential architecture – from usable space, housing unit organisation elements, layout of living quarters (dimensioning), requirements of a healthy lifestyle, ventilation, sunlight, orientation etc.
Analysis and understanding of main elements of detached family house design. Relationship with its surroundings, access to detached houses. Application of knowledge in practical classes and individually – designing of certain parts of a housing unit (bedrooms, living room, outhouse, communication etc.)
The relationship between man and living spaces. Architectural problems of living spaces – elements, organisation, layout, standards of space, the relationship of a living space with its close surroundings. Introduction to architectural design of residential buildings.
The aim of the course is to introduce students to all the important factors pertaining to the design of detached family houses and other types of detached dwellings; explain the various methods of architectural design and improve their knowledge of distinctive and anthological architectural examples from these parts. An important aim of the course is to design a family home and the application of acquired knowledge in solving an integrated urban-architectural task which is set in the Urban Planning 1.

1.2. *Enrolment requirements and prerequisites*

-

1.3. Expected learning outcomes

To understand human needs in residential architecture through the analysis of examples and their application in architectural design. Prepare for the design of more complex buildings (during the study programme).
The results: a design of individual functional parts of a residential unit, and a design of a detached family house. A critical analysis of the proposed project of the family house for an integrated urban - architectural task.

1.4. Course content

The course is an introduction to the design of the most widespread, basic type of a building: residential architecture, by way of an analysis of basic human needs and their fulfilment in space.
After the analysis of individual parts that make up a housing unit (bedrooms, living room, outhouse, communication framework), students apply the acquired knowledge by designing these parts of a housing unit.
Afterwards, a family house is designed and analysed as a unit, as well as its relationship with the surroundings, layout etc., by applying the knowledge acquired during lectures and the design of "small" projects. Students also evaluate the architectural elements of residential architecture.

1.5. Type of instruction	☒ **lectures** ☐ seminars and workshops ☒ **practical classes** ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Design of housing unit parts, design of a residential house

1.8. *Student performance evaluation*[23]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam	1.5	Essay		Research	
Project	4	Continuous or final assessment	0.5	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Regular attendance, regular corrections, consultations
Final exam: assessment of theoretical knowledge and practical use of main postulates of residential building design

1.10. *Required readings (as on submission of the study programme proposal)*

Biondić, Lj.: Uvod u projektiranje stambenih zgrada,
Zagreb, 2011., Golden marketing - Tehnička knjiga
Strižić, Z.: Arhitektonsko projektiranje 1 i 2,
Zagreb, 1956, Školska knjiga
Neufert: Elementi arhitektonskog projektiranja
Golden Marketing, Zagreb, 2002

1.11. *Recommended readings (as on submission of the study programme proposal)*

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Analysis of students' designs, final presentation with guest lecturers-critics

[23] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Course description

General information		
Lecturer	Dr Margareta Turkalj Podmanicki, lecturer	
Course title	History of Architecture 1	
Study programme	University undergraduate study programme in architecture and urban planning	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
To introduce students to the basic architectural terms, forms and elements through an overview of the history of Croatian and world architecture in the period from prehistory to the end of the Middle Ages.		
1.2. *Enrolment requirements and prerequisites*		
None		
1.3. Expected learning outcomes		
1. Enumerate and describe the basic terms, forms and elements of architectural structures. 2. Identify the core phases in the historical development of architecture from prehistory to the end of the Middle Ages. 3. Describe the basic characteristics of every historical phase of architectural development from prehistory to the end of the Middle Ages. 4. Identify and interpret the most significant buildings and architects of every historical phase in Croatia and the world. 5. Independently produce, illustrate and present a selected semestral assignment.		
1.4. Course content		
Basic architectural terms. Basic architectural shapes and themes. The oldest preserved architectural artefacts. Architecture of prehistory. Egypt; ideological assumptions, periods, urbanism, building types, most significant examples of complexes and buildings, particularities of construction. Greece: development of civilisation, urbanism, Greek temple and orders, the relationship between public and residential architecture, builders and their works. Rome: historical overview, urbanism, typology, new materials and constructions, builders, most significant buildings, Roman architecture in Croatia. Early Christian architecture; period, sites, types of structures, most significant buildings in Europe and in Croatia. Pre-Romanesque and Romanesque period; distribution, typology, most significant examples from Europe and Croatia. Gothic architecture; temporal and geographic definition, typology, Gothic cathedrals, most significant examples in Europe and in Croatia.		
1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other

	☒ **fieldwork**	_____
1.6. Comments		

1.7. ***Student requirements***

Class attendance of min. 70%, active class participation, production and presentation of a seminar paper.

1.8. ***Student performance evaluation***[24]

Class attendance	**1**	**Class participation**		**Seminar paper**	**1**	**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio							

1.9. ***Assessment of student performance during the course and in the final examination***

A) Assessment during the course: class attendance, in-class activity
B) Assessment during the presentation of a seminar paper: research skills, effective team cooperation, application of acquired knowledge

1.10. ***Required readings (as on submission of the study programme proposal)***

1. **Müller, W.; Vogel, G. Atlas arhitekture I, Golden marketing, Zagreb, 1999**
2. **Müller, W.; Vogel, G. Atlas arhitekture II, Golden marketing, Zagreb, 2000**

1.11. ***Recommended readings (as on submission of the study programme proposal)***

1. **Mažuran, I. Srednjovjekovni i turski Osijek, Školska knjiga, Osijek, 1994**
2. **Janson, H.W.; Janson, A.F. Povijest umjetnosti, Stanek, Varaždin, 2003**
3. **Vitruvije, Deset knjiga o arhitekturi, Golden marketing, Zagreb, 1999**
4. **Watkin, D. History of Western Architecture, Lawrence King Publishing, London, 2011**

1.12. ***Number of available copies of required readings in relation to the current course enrolment quota***

Title	*Number of copies*	*Number of students*

1.13. ***Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills***

Attendance monitoring. Evaluation of seminars, which the students present in front of their peers and in which the chosen topic is presented both textually and graphically, using their research skills and independent and team work abilities.
Self-assessment and a survey of student assessment of teaching.

[24] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	**Dr Nana Palinić, assistant professor**	
Course title	**Architectural Structures 3**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of this course is to introduce students to basic elements of buildings and ways of presenting these elements in various design types.

1.2. *Enrolment requirements and prerequisites*

Architectural Structures 1 and 2

1.3. Expected learning outcomes

1. Draw a detailed design and details of a traditional timber roof truss.
2. Perform basic structural analyses regarding building physics.
3. Evaluate the functioning and role of load bearing and non-load bearing building elements.
4. Define and analyse the structure of all building elements.
5. Draw a detailed design of a complex building

1.4. Course content

Roofs – traditional and engineering construction types. Types of roofs by shape. Rafter and secondary rafter roofs. Hollow core roofs, kingbolt and king truss. Mono-pitched roofs. Pitched roofs – order of solving, span. Roofing: tiles, sheet metal, Salonit (asbestos-cement) boards, shingles, bituminous membranes.
Details of massive, wooden and steel staircases, ceiling structures, flat roofs, foundations, doors, windows, glass facades.
Introduction to the scientific field of engineering physics. Subject and goals of engineering physics. Basic terms and units of thermal science. Types of heat transfer: conduction, convection and radiation. Thermal conductivity of building materials. Systematisation of thermal insulation materials. Thermal insulation of building elements. Calculation of overall heat transfer coefficient (U). Water vapour condensation on the inner sides of outer building elements. Thermal bridges. Diffusion of water vapour through the building elements. Glaser method of calculation of water vapour diffusion. Soundproofing of building elements. Propagation of sound in air and in structures (structure-borne sound).

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular lecture and practical class attendance. (Absence from max. 30% or 4 sessions).
Timely submission of all designs (3 programmes)

1.8. *Student performance evaluation*[25]

Class attendance	1	Class participation	0.5	Seminar paper	-	Experimental work	-
Written exam	1	Oral exam	1	Essay	-	Research	-
Project	1	Continuous assessment	0.5	Oral presentation	-	Practical work	-
Portfolio	-		-		-		-

1.9. *Assessment of student performance during the course and in the final examination*

	Class participation	Design no. 1	Design no. 2	Design no. 3	Revision test 1 or written exam part 1	Revision test 2 or written exam part 2	Oral	Total
Score range	0-10	0-10	0-10	0-10	0-15	0-15	0-30	0-100
Passing minimum score	1	6	6	6	8	8	16	51

Points/grade
0-50 insufficient (1); **51-63** sufficient (2); **64-75** good (3); **76-87** very good (4); **88-100** excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Course materials
2. N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008.

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Đuro Peulić : Konstruktivni elementi zgrada, Croatia knjiga 2002, Zagreb
2. Zvonimir Vrkljan : Oprema građevnih nacrta, Civil Engineering Institute – Faculty of Civil Engineering Sciences, Zagreb 1986
3. Ivo Kordiš: Izvedbeni nacrti, Civil Engineering Institute – Faculty of Civil Engineering Sciences, Zagreb, 1986
4. A. Štulhofer, Z. Veršić: Crtanje arhitektonskih nacrta: pribor i osnove, UPI-2M, d.o.o., Zagreb, 1998
5. E. Neufert: Elementi arhitektonskog projektiranja, Goldeng Marketing, Zagreb, 2002
6. Various types of structural engineering design documentation.

[25] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*		
Title	*Number of copies*	*Number of students*
N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008	10	30
Internal course materials	On website http://www.gfos.unios.hr/	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- Regular lecture and practical class attendance
- production of designs during practical classes
- production of designs at home
- grading of designs
- students have the option to take two revision tests, which exempts them from taking the written part of the final exam

COURSE DESCRIPTION

General information		
Lecturer	*Dr Damir Markulak, full professor*	
Course title	**Basis of Structural Design and Actions on Structures**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	15+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

- Introduce students to theoretical knowledge concerning the concepts for building structures, and the methods of their structural analysis
- Illustrate the basic terms of theory of structural reliability and European standards for structural analysis of building structures (Eurocode)
- Train students for independent analysis, modelling and combining of work for simple building structures (pillars, beams and panels) in structural engineering

1.2. *Enrolment requirements and prerequisites*

- None

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

- Interpret the conceptual framework of building structure reliability on which contemporary European standards for structural analysis of building structures (Eurocode)
- Recognise and interpret the characteristics of typical effects of weight of the structure, constant loads, snow, wind, temperature and fire on simple building structures
- Explore the possible effects, individual or combined, on typical building elements (pillars, beams and panels) and define structural analysis in this manner

1.4. Course content

General introduction to building structures and methods of structural analysis. Method of allowable stress. Method of limit states. Experimental methods of structural analysis. Structural reliability and criteria. Basics of structural analysis using partial factor method, as per Eurocode. Effects on structures. Basic types of effects. Representative values of effects. Rules for combining of effects in structural engineering.

1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular class attendance (min. 70% of total contact hours) and semestral assignment produced and successfully submitted.

1.8. *Student performance evaluation*[26]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam	0.75	Oral exam	0.25	Essay		Research	
Project		Continuous or final assessment	(0.75)	Oral presentation		Practical work	
Portfolio		Homework assignments	0.5	Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Students can complete the exam by taking a revision test or in a standard way, by taking an exam consisting of a written and an oral part. There is one revision test that takes place at the end of the semester, and it consists of a practical and theoretical part, totalling 100 points. In order to pass, students have to achieve a minimum of 30 points in each part of the revision test, after which they only have to take the oral part of the final exam. During the first session, students can select the topic of a seminar paper that they will prepare and present in front of their peers later during the semester. A successfully prepared and presented seminar paper is assigned the corresponding number of points achieved in the theoretical part of the revision test (should the students not pass the test, a weighted arithmetic mean obtained from the seminar is added to the passing grade obtained from the exam and the final grade is calculated in this manner). The written part of the exam also consists of a theoretical and a practical part, totalling 100 points. A minimum of 30 points from each part of the exam is required to obtain the passing grade, after which students take the oral part of the exam.

Grading scale:
60-70 points = sufficient (2)
71-80 points = good (3)
81-90 points = very good (4)
91-100 points = excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Markulak, D.: Proračun čeličnih konstrukcija prema EN 1993-1-1, Faculty of Civil Engineering in Osijek, 2008
2. Androić, B., Dujmović, D.; Džeba, I.: Čelične konstrukcije 1, IA Projektiranje, 2009

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Androić, B., Dujmović, D.; Džeba, I.: Inženjerstvo pouzdanosti, IA Projektiranje

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
1. Markulak, D.: Proračun čeličnih konstrukcija prema EN 1993-1-1, Faculty of Civil Engineering in Osijek, 2008	20	
2. Androić, B., Dujmović, D.; Džeba, I.: Čelične konstrukcije 1, IA Projektiranje, 2009		

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Students' work is assessed by monitoring their attendance and practical work activities, class activity and efforts in writing the semester paper. The grading of students' achievements is based on the criteria used for the revision tests and the final exam.

[26] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Aleksandar Jurić, associate professor*	
Course title	**Engineering Mechanics**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Master the concepts of stress and strain, laws, units and methods for solving the exercises in strength of materials. Determine the stress caused by various types of loads and demonstrate the accompanying deformations and the distribution of strain. Calculate the reactions and internal forces by using the force method and the displacement method.

1.2. *Enrolment requirements and prerequisites*

Knowledge of the basics of differential and integral calculus and the basic structural systems, calculation and presentation of inner forces.

1.3. Expected learning outcomes

Students will be able to:

1. Calculate stress and strain in rod elements loaded with longitudinal force, shear stress, strain, torsion and flexion.
2. Design of simple rod construction elements.
3. Calculate the moments of inertia and moments of resistance of a complex cross-section.
4. Calculate and explain the bucking force for individual cases of buckling.
5. Recognise and calculate simple statically indeterminate line structural systems by using the force method and the displacement method.
6.

1.4. Course content

A practical introduction to basic mechanical characteristics of a deformable body, (ad.a). The concept of strain and deformation, (ad.a.). Basic characteristics of materials and Hooke's law of compression and shearing, (ad.a.). Allowable strain and safety coefficient, (ad.b.) Single axis rod element load (longitudinal force, Mohr circle, influence of own body weight and temperature) (ad.aib). Shearing, joints, joint materials (ad.aib). Geometric characteristics of rod element cross-sections (ad.c.) Torsion of rod elements, (ad. aib). Bending of straight rod (column) elements (pure bending, longitudinal force bending, diagonal force bending, strain and deformations, diagonal bending (ad.a.). Rod element stability, (ad.d.). Statically indeterminate structures – force method and displacement method (determining of reactions and internal forces), (ad.e.).

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:

1.6. Comments	

1.7. *Student requirements*

Regular attendance, programme, exam.

1.8. *Student performance evaluation*[27]

Class attendance	2	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous or final assessment	2.5	Oral presentation		Practical work	
Portfolio		Programme	0.5				

1.9. *Assessment of student performance during the course and in the final examination*

As a part of practical classes, students take two revision tests. Students can complete the course and get the final grade according to the number of points they achieved in their revision tests (%), or partially, i.e. meet the requirement to take the oral exam. A maximum number of points per revision test is 50, for a total of 100. The grading scale for the revision tests is as follows: 40-49,9% - minimum required for the oral exam, 50-59,9% - sufficient (2), 60-69,9% - good (3), 70-79,9% - very good (4), 80-100% - excellent (5). Students can take either a written or an oral exam. A minimum of 40% on the written exam is required to pass, and the scale for the other grades is the same as for the revision tests. On condition that the oral exam is successfully passed, the final grade is an average of a written and an oral exam.

1.10. *Required readings (as on submission of the study programme proposal)*

1. Tehnička Mehanika II - Đ. Matošević, Faculty of Civil Engineering in Osijek, 2007 - university textbook

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Otpornost materijala I , V. Šimić, ŠK Zagreb, 1992
2. Nauka o čvrstoći - I. Alfirević, ŠK Zagreb, 1995
3. Nauka o čvrstoći - J. Brnić, ŠK Zagreb, 1991
4. Građevna statika II – M. Anđelić, Faculty of Civil Engineering, Zagreb

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Tehnička Mehanika II	10	-

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring, programme, exam.

[27] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Dina Stober, assistant professor*	
Course title	**Urban Planning 1**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	15+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to the field of urban design and urban planning. Training for the analysis and providing of critical opinions on urban states of residential areas. Development of spatial perception. Building of knowledge and competences for the organisation and design of a residential neighbourhood and the application of various individual construction typologies.
Design, production of a proposal and a choice of solutions for urban intervention and application of knowledge in an integrated urban-architectural task.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

1. Identify and describe urban planning documents.
2. List and interpret the Urban Quality Indicators in urban planning.
3. Identify the possible key issues and the advantages of residential areas with the help of examples.
4. Explain the principles of organisation of residential areas.
5. Apply the principles of organisation of residential areas.
6. Critically analyze the proposed urban environment and land use for the integrated project-architectural task.

1.4. Course content

Method of urban planning of residential districts. Typology of residential buildings. Development of residential areas since the 19th century. Infrastructure of residential areas, traffic, pedestrians, public facilities, open spaces. Green infrastructure and the role of vegetation in cities. Quantified indicators in urban planning. Implementation of detailed urban plans.
Production of a detailed development plan through teamwork. Organisation of a residential neighbourhood and various typologies of residential construction. Defining land use and urban rules for the application within an integrated urban-architectural task in the course Residential building 1.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Attendance of min. 70%, active class participation. Fieldwork attendance.

1.8. *Student performance evaluation*[28]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam	1	Oral exam		Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	1
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

A) Assessment during the course:
Class attendance, class activity, active participation in fieldwork
B) Grading and assessment of student performance:
Written assessment of individual assignments

1.10. *Required readings (as on submission of the study programme proposal)*

Pegan S.: Uvod u detaljno urbanističko planiranje, Acta Arhitectonica, Faculty of Architecture, University of Zagreb, Zagreb, 2007
Prinz, D.: Urbanizam I - Urbanističko planiranje, GMTK, Zagreb, 2006
Prinz, D.: Urbanizam II - Urbanističko oblikovanje, GMTK, Zagreb, 2008

1.11. *Recommended readings (as on submission of the study programme proposal)*

Mumford L.: Grad u historiji, Naprijed – Zagreb
Milić B. Razvoj grada kroz stoljeća I, II, III; Školska knjiga, Zagreb

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Pegan S.: Uvod u detaljno urbanističko planiranje, Acta Arhitectonica, Faculty of Architecture, University of Zagreb, Zagreb, 2007		30
Prinz, D.: Urbanizam I - Urbanističko planiranje, GMTK, Zagreb, 2006		30
Prinz, D.: Urbanizam II - Urbanističko oblikovanje, GMTK, Zagreb, 2008		30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' abilities to provide answers to questions and participate in discussions.
Grading as per the revision test and final exam scale. Self-evaluation and a survey of student assessment of teaching.

[28] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Željka Vukić, senior lecturer*	
Course title	**Physical and Health Education 3**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	0+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Fulfilment of the biological need for exercise, create healthy lifestyle habits. Acquisition of basic skills, knowledge and habits, achievement of a certain level of motor skills, improvement of motor and functional skills.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

Train students to independently control the immediate effects of transformational processes.

1.4. Course content

Models and means of the development of motor skills, models and means of the development of functional skills, models of health - curative programmes, models of exercise according to the group of illnesses.
Models and means of aerobic training, model of the development of motor skills, models of health-prevention exercise programmes, estimation of immediate effects of transformational process, control of rehabilitation treatment. Models and means of exercise for the development of creatine phosphate shuttle, models and means of exercise for the development of glycolytic-lactate pathway, basic methods of anabolic training.

1.5. Type of instruction	☐ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ other _____
1.6. Comments		

1.7. *Student requirements*

Regular attendance, participation in sports competitions. Medically exempt students write a seminar paper instead.

1.8. *Student performance evaluation*[29]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

1.10. *Required readings (as on submission of the study programme proposal)*

1. Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Mraković, M.: Uvod u sistematsku kineziologiju, Zagreb, 1997
2. Mišigoj-Duraković, M. et al.: Morfološka antropometrija u športu, Zagreb, 1995
3. Milanović, D.: Dijagnostika u sportu, Rovinj, 1996
4. Milanović, D.: Fitness, Zagreb, 1996
5. Andrijašević, M.: Sportska rekreacija u mjestu rada i stanovanja, Zagreb, 1996
6. Pečina M. i Heimer, S.: Športska medicina, Zagreb, 1993
7. Milanović, D.: Priručnik za sportske trenere, Zagreb, 1997
8. Metikoš, D. i drugi: Suvremena aerobika, Zagreb, 1997
9. Groser, M., H. Ehlenz, E. Zimmermann: Richting Muskeltraining, BVL Verlagsgesellschaft, Munchen, 1987

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999	available at instructor's personal web page	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' initial physical states. Assessment of immediate and cumulative results of the transformational process.

[29] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Hrvoje Krstić, assistant professor*	
Course title	**Building Technology**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

To introduce students to the classic and contemporary building technologies.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

1. Define and differentiate between types of earthwork technologies.
2. Define and differentiate between types of concrete work in modern construction.
2. Define and differentiate between types of masonry work in modern construction.
3. Analyse the process of production, delivery and assembly of prefabricated elements.
4. Calculate the needs for machines and equipment for various variants of technologies, depending on the scope and purpose of works, for simpler examples.
5. Select the optimal combination of machines and equipment for a simple example case.

1.4. Course content

Introduction to building technology. Classic methods of building. Geotechnical works. Construction and protection of foundation pits. Reinforced concrete structures. Accelerated curing methods (factory and building site steam curing). Concreting of very large cross-sections. Basic terms and usage of sprayed concrete. Masonry structure construction technologies. Prefab structure construction technologies. Assembly technologies. Transport of elements. Safety measures on building sites. Technologies of construction of modern steel structures. Technologies of construction of modern timber structures. Glass structures. Alternative building technologies.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments	*No comments.*	

1.7. *Student requirements*

Regular attendance and the timely submission of the individual assignment.

1.8. *Student performance evaluation*[30]

Class attendance	**1.00**	Class participation	**0.20**	Seminar paper		Experimental work	
Written exam	***0.40****	Oral exam	***0.20****	Essay		Research	
Project		Continuous or final assessment	**0.60**	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum		Individual assignments	**0.20**

** If the student has not completed the course via revision tests (continuous assessment of student performance)*

1.9. *Assessment of student performance during the course and in the final examination*

a) Assessment and grading of student performance during the course:
- class attendance, individual assignments, revision tests, as per the following table:

ACTIVITY	ACTIVITY OF STUDENT	POINTS	SCALE	% of grade
Class attendance	91% and more	10	0-10	5%
	70% - 90%	5		
	less than 70%	0		
Student in-class activity	regular activity, discussion	10	0-10	5%
	periodical activities, questions	5		
	Not active in class	0		
Individual assignment	timely submission, accurate	20	0-20	10%
	timely submission, with small mistakes	15		
	timely submission, with major mistakes	10		
	assignment not submitted	0		
Revision tests	Revision test 1	0-80	0-160	80%
	Revision test 2	0-80		
		TOTAL	0-200	0-100%

b) Assessment and grading of student performance in the final exam:
- written and oral exam, as per the following scale:

%	Points total	Grade
0-30	0-60	no signature
31-59	61-118	insufficient (1)
60-69	119-138	sufficient (2)
70-79	139-158	good (3)
80-89	159-178	very good (4)
90-100	179-200	excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

Arizanović, D.: *Tehnologija građevinskih radova*, Univerzitet u Beogradu, Beograd, 1997
Gorazd Bučar: *Tesarski i armirački radovi na gradilištu*, Faculty of Civil Engineering, Osijek, 1997
Lončarić, R.: *Organizacija izvedbe građevinskih projekata*, Zagreb, 1995
Zdravko Linarić: *Učinak građevinskih strojeva*, course materials
Rex, S: *Industrijski način građenja, II dio*, Faculty of Civil Engineering, Zagreb, 1983

1.11. *Recommended readings (as on submission of the study programme proposal)*

Daniels (2003) *Advanced building systems*, Birkhauser, Basel
Addington, Schodek (2004) *Smart materials and technologies in architecture*, Architectural Press
David M. Gann (2000) *Building innovation*, Thomas Telford Publishing, London
Bennett (1997) *Exploring concrete architecture*, Birkhauser, Basel
Le Cuyer (1999) *Steel and beyond*, Birkhauser, Basel
Weber, Steiger, Hugues (2004) *Timber construction*, Birkhauser, Basel

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Tehnologija građevinskih radova	0	15

[30] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Tesarski i armirački radovi na gradilištu	5	15
Organizacija izvedbe građevinskih projekata	8	15
Učinak građevinskih strojeva	unlimited	15
Industrijski način građenja, II dio	2	15

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Mechanisms used to monitor course quality, ensuring the achievement of set learning outcomes:

1. Validation of learning outcomes, which is carried out by regularly collecting students' feedback on the acquisition and coverage of all learning outcomes (analysis of student assessment of teaching, class attendance and participation, as well as the analysis of individual / group seminar papers)
2. Verification of the study programme according to learning outcomes, which is based on the analysis of the links between learning outcomes, teaching methods and assessment methods at the level of study programmes. It also includes an assessment of how the various learning outcomes affect the students' workload.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Damir Varevac, associate professor*	
Course title	Engineering Structures	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	15+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

- introduce students to various types of structures and their main parts
- introduce students to peculiarities of structures with regard to type of materials they are built from
- introduce students to types of construction (prefab, semi-prefab, in-situ)
- enable students to select a proper static system
- enable students to select an appropriate cross-section.

1.2. *Enrolment requirements and prerequisites*

Statics.

1.3. Expected learning outcomes

On successful completion of this course, students will be able to:
- identify and list types of structural engineering constructions and their parts
- select appropriate building materials and construction types
- explain the suitability of an individual static system and analyse its effectiveness
- select an appropriate cross-section
- identify span limits with regard to material composition and loads
- select an appropriate method of foundation construction

1.4. Course content

Introduction to purpose and use of structures
Classification of structures with regard to their static system and material composition
Types of building materials; basic properties and uses
Parts of structures; main requirements of structures; additional requirements of structures
Types of construction; dependence of construction type on its purpose and method of structural analysis
Cross-sections of load-bearing elements; dependence of cross-section shape, load, and span
Planar analysis of spatial structures; spatial effects; eccentricities
Basics of structural analysis of building structures; uncertainties and partial coefficients
Foundations of structures, types of foundations

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials

	learning ☒ fieldwork	☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular attendance at lectures and practical classes
Production of semestral paper

1.8. *Student performance evaluation*[31]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam	0.5	Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

There are two revision tests during the course related to the content covered by the lectures prior to the test. Revision tests are graded on a scale from insufficient (1) to excellent (5). Students who achieve a grade of very good (4) or excellent (5) and submit a semestral paper in a timely manner are exempt from taking the final written and oral exam. Students who pass the revision tests and submit a semestral paper on time, which has to be accepted by the lecturer, are exempt from the written part of the final exam. Exemption from taking the exam is only valid for the current academic year. Students who fail one of the revision tests or fail to take a revision test altogether, have to take both a written and an oral exam, on condition that they submitted their semestral paper on time and that it was accepted by the lecturer. Should the students not submit their paper on time, or the lecturer does not accept the paper, they will not be given the instructor's signature and will have to take the course again.
The final grade consists of grades obtained from revision tests, semestral paper and the written and oral exams.

1.10. *Required readings (as on submission of the study programme proposal)*

I. Tomičić. Betonske konstrukcije. Školska knjiga Zagreb 1988 (selected chapters)
Markulak, D.: Proračun čeličnih konstrukcija prema EN 1993-1-1, Faculty of Civil Engineering in Osijek, 2008 (selected chapters)
Bjelanović, A., Rajčić, V.: Drvene konstrukcije prema europskim normama, Hrvatska sveučilišna naklada, Zagreb, 2005. (2nd edition 2007) (selected chapters)

1.11. *Recommended readings (as on submission of the study programme proposal)*

Androić, B., Dujmović, D., Džeba, I.: Metalne konstrukcije 1, IGH, Zagreb, 1994
Žagar, Z: Drvene konstrukcije I-IV, Udžbenici Sveučilišta u Zagrebu, Zagreb, 1999

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Bjelanović, A., Rajčić, V.: Drvene konstrukcije prema europskim normama, Hrvatska sveučilišna naklada, Zagreb, 2005. (2nd ed. 2007) (selected chapters)	19	
Markulak, D.: Proračun čeličnih konstrukcija prema EN 1993-1-1, Faculty of Civil Engineering in Osijek, 2008 (selected chapters)	20	
I. Tomičić. Betonske konstrukcije, Školska knjiga Zagreb 1988 (selected chapters)	22	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

[31] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

	Analysis of the quality of production and presentation of individual seminar papers, analysis of the results of the student assessment of the quality of teaching, attendance and a degree of students' in-class activity

COURSE DESCRIPTION

General information		
Lecturer	**Dr Božica Dea Matasić, associate professor (Art)**	
Course title	**Modelling 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	15+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Rules and elements of visual arts are shown, applied and explored through three-dimensional shapes. The relations of volume and light, details and the whole are additionally deepened through practice on tone and colour and their effect in relation to spatiality and total architectural experience is explored. Students master the principles of clear and comprehensive presentation of architectural designs through the phases of production of the final design. The aim of the course is for students to abstractly and individually enhance their scope of artistic knowledge as a preparation for their future work of creative architectural output.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

1.4. Course content

Through recognition, assessment and practical use of artistic elements and procedures, the course artistically cultivates and enhances the engineering part of the architectural mind. Sensibility for the relations of visual elements is developed and groundwork for their proper use during the design process is laid.

1.5. Type of instruction	lectures practical classes fieldwork	individual assignments multimedia and e-learning tutorials
1.6. Comments		

1.7. *Student requirements*

Regular attendance, regular submission of practical work and homework assignments. Taking of lecture

notes and recording of students' own thoughts, drafts and ideas. Analytic following of the cultural events. Production of a final design.

1.8. *Student performance evaluation*[32]

Class attendance	0.5	Class participation	0.5	Seminar paper		Experimental work	0.5
Written exam		Oral exam		Essay		Research	0.5
Project		Continuous or final assessment		Oral presentation		Practical work	0.5
Portfolio		Homework assignments		Practicum	0.5		

1.9. *Assessment of student performance during the course and in the final examination*

Final grade is based on class activity and a final design.

1.10. *Required readings (as on submission of the study programme proposal)*

1. Rudolf Arnheim: Umetnost i vizuelno opažanje, Univerzitet umetnosti u Beogradu, Beograd, 1981
2. Juhani Pallasmaa: The thinking hand, Wiley&Sons Ltd, 2009
3. Christian Norberg-Schulz: Intencije u arhitekturi, Jesenski i Turk, Zagreb, 2009 (Croatian edition)
4. Nikola Tanhofer: O boji: na filmu i srodnim medijima, Novi Liber, Zagreb 2000
5. Rosalind Krauss: Passages in modern sculpture, The MIT Press, Cambridge, Massachusetts, 1977

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. H.W. Janson: Povijest umjetnosti (hrvatsko prošireno izdanje), Stanek, Varaždin, 2003
2. J. Itten: Umetnost boje, priručnik, Umetnička akademija u Beogradu, Beograd, 1973
3. Steven Holl: Intertwining, Princeton arch. press., 1996
4. B. Tchumi: Arhitektura i disjunkcija, AGM, Zagreb, 2001
5. Naoto Fukasawa, Jasper Morrison: Supernormal-sensations of the ordinary, Lars Mueller, Baden, 2008
7. Tania Kovatch: The Drawing book, Black dog, London 2007
8. Šuvaković: Pojmovnik suvremene umjetnosti, 2005, Horetzky, Zagreb
9. Milllet, C. Suvremena umjetnost, Zagreb, 2004
10. Smith, L.E., Umjetnost danas, Zagreb, 1978

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

[32] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Luca Maria Francesco Fabris, assistant professor*	
Course title	**Residential Buildings 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	**2nd**	
ECTS value and form of instruction	ECTS	6
	Contact hours (L+E+S)	30+45+0

1. COURSE DESCRIPTION

1.1. Course objectives

Understand human needs in contemporary living
Analyse the residential area solutions in multi-residential buildings
Differentiate between types of multi-residential buildings: from terraced houses to larger structures
Compare the advantages and disadvantages of typological solutions (housing units facing the stairway / gallery)
Apply the acquired knowledge to own multi-residential building design
Individually design own multi-residential building.
An important objective of the course is the design of the building and application of acquired knowledge in solving an integrated urban-architectural task which is set in the Urban Planning 2.

1.2. *Enrolment requirements and prerequisites*

The course Residential Buildings 1; designs from Residential Buildings 1 course submitted and given a passing grade (housing unit design and family house design)

1.3. Expected learning outcomes

Explain the rules of designing multi-residential buildings (ergonomics, safety, insolation)
Give examples of good and bad multi-residential building design and support them
Apply the acquired knowledge and experience from own design project to other designs.
A critical analysis of the proposed project of the building of an integrated urban - architectural task.

1.4. Course content

Analysis of various types of multi-residential buildings (criteria: several flats per staircase, gallery (internal / external) as an introduction to design of modern multi-residential buildings during practical classes. Ergonomic and sanitary requirements, orientation with respect to insolation; specific site requirements (winds, position within an urban landscape etc.), safety requirements etc. Design of multi-residential buildings.
Knowledge and experience obtained during Residential buildings 1 course are applied in this course, as well as other courses (construction, technical, design-related and urban planning) as part of the resolution of the integrated urban – architectural task and the terms of reference related to the course of Urban Planning 2.

1.5. Type of instruction	☒ **lectures** ☐ seminars and workshops ☒ **practical classes** ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Design of a multi-residential building

1.8. *Student performance evaluation*[33]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam	1.5	Essay		Research	
Project	3	Continuous or final assessment	0.5	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Regular class attendance, regular corrections, consultations
Design – assessment of the solution
Final exam: a test of theoretical knowledge and practical use of the main principles of multi-residential building design

1.10. *Required readings (as on submission of the study programme proposal)*

Knežević, G. Višestambene zgrade, Zagreb, Tehnička knjiga, 1986
Knežević, G., Kordiš, I., Stambene i javne zgrade, Zagreb, Tehnička knjiga, 1972
Strižić, Z.: Arhitektonsko projektiranje 1 i 2, Zagreb, 1956, Školska knjiga
Neufert: Elementi arhitektonskog projektiranja, Zagreb, Golden Marketing, 2002

1.11. *Recommended readings (as on submission of the study programme proposal)*

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Assessment of student designs; final presentations with guest lecturers - critics
Continuous assessment of students' knowledge and improvement during the semester, analysis of designs from lesson to lesson, corrections of projects and consultations.
Survey of student assessment of teaching.

[33] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Zlata Dolaček-Alduk, assistant professor*	
Course title	**Construction Management**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Acquisition of knowledge of construction project planning and management. Acquisition of knowledge needed for cost calculation of a building project and application of methods and tools for dynamic planning. Acquisition of knowledge of record keeping on the building site, methods of quality control, methods for control of the amount of work, production and control of monthly situation reports. Acquisition of knowledge on work interdependence.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

1. **Familiarise students with the characteristics of building construction.**
2. **Identify the structure, principles and methodology of construction management.**
3. **Acquire knowledge of network planning and create a network structure for building projects of moderate complexity**
4. **Explain the basic terms of construction management, management of project participants and building regulations.**
5. **Solve tasks regarding construction management and technology for preparation of building sites, taking statutory regulations into account (e.g. determining the expenses for the completion of a given project)**
6. **Analyse the building process, taking into account the location and weather conditions and costs.**

1.4. Course content

Development of organisation. Principles of organisation. Basic properties of construction. Types of construction. The concept of a building construction project. Classification of projects. Phases of projects. Management of building projects. Feasibility of building projects. Management of the building process. Leader of the building project. In situ decision-making – expenses, deadlines and quality. Designing of building construction project (structure and contents of building construction project). Organisation of building site layout (temporary building site structures, storages, workshops and plants, internal transport, construction site roads, electric energy, water supply and drainage, building site fences, spatial arrangement of building site). Planning of construction schedule (the process of planning, types of plans, Gantt charts, cyclograms) Grid planning (deterministic and stochastic). Cost calculation and building costs (cost breakdown: costs of labour, materials, machines and equipment, structure of indirect building site costs and company management, calculation of indirect cost rate, calculation of building work costs). Organisation of project participants (project participants, relations of participants, organisational structures, documentation of construction process, required on-site documentation). Building site safety.

1.5. Type of instruction		
	☒ lectures	☒ individual assignments
	☐ seminars and workshops	☐ multimedia and e-learning
	☒ practical classes	☐ lab work
	☐ distance learning	☐ tutorials

	☒ fieldwork	☐ other _____
1.6. Comments	*Fieldwork takes place according to the Fieldwork Plan for the current academic year.*	

1.7. *Student requirements*

Regular lecture and practical class attendance, seminar paper.

1.8. *Student performance evaluation*[34]

Class attendance	**2.0**	Class participation		Seminar paper		Experimental work	
Written exam	(*1.0*)*	Oral exam	**0.5**	Essay		Research	
Project		Continuous assessment	**1.0**	Oral presentation		Practical work	
Portfolio		Individual assignments	**0.5**	Programme	**1.0**		

** If the student is not excused from taking the written part of the exam (continuous assessment)*

1.9. *Assessment of student performance during the course and in the final examination*

Requirements for taking the final exam: regular attendance at lectures and practical classes, timely submission of a programme; students can be exempt from taking the written part of the exam by taking revision tests (2 revision tests; a score of at least 2/3 on the first revision test is required to be able to take the second revision test)
Grading (students can obtain a maximum of 180 points):

- 2 revision tests – 2 x 30 points = 60 points
- building site layout plan – 20 points
- programme – 80 points
- 2 homework assignments (individual assignment) – 20 points

Grading scale:

- od 130 - 140 points – sufficient (2)
- od 141 - 150 points – good (3)
- od 151 - 160 points – very good (4)
- od 161 - 180 points – excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

[1] Radujković M. et al.: Planiranje i kontrola projekata, University of Zagreb, Faculty of Civil Engineering, Zagreb, 2012
[2] Marušić, J.: Organizacija građenja, FS, Zagreb, 1994
[3] Trbojević, B.: Organizacija građenja, GK, Beograd, 1994
[4] Lončarić, R.: Organizacija izvedbe građevinskih projekata, Zagreb, 1995

1.11. *Recommended readings (as on submission of the study programme proposal)*

[1] Klepac, J.: Organizacija građenja i uređenje gradilišta, Faculty of Civil Engineering Sciences, Zagreb, 1982

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Planiranje i kontrola projekata (Radujković, M.)	10	30
Organizacija građenja (Marušić, J.)	-	30
Organizacija građenja (Trbojević, B.)	4	30
Organizacija izvedbe građevinskih projekata (Lončarić R.)	8	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

[34] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Mechanisms used to monitor course quality, ensuring the achievement of learning outcomes:

1. Validation of learning outcomes, which is carried out by collecting students' feedback on the acquisition and coverage of all learning outcomes (analysis of student assessment of teaching, class attendance and participation, as well as the analysis of individual / group seminar papers)
2. Verification of the study programme in accordance with learning outcomes, which is based on the analysis of the links between learning outcomes, teaching methods and assessment methods at the level of study programmes. It also includes an assessment of how the various learning outcomes affect the students' workload.

Course description

General information		
Lecturer	Dr Margareta Turkalj Podmanicki, lecturer	
Course title	History of Architecture 2	
Study programme	University undergraduate study programme in architecture and urban planning	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
To introduce students to the basic architectural forms, styles, builders and buildings through an overview of the history of Croatian and world architecture in the period from Renaissance until the 21st century.		
1.2. *Enrolment requirements and prerequisites*		
None		
1.3. Expected learning outcomes		
1. Identify the main phases in the historical development of architecture from the Renaissance until the 21st century. 2. Describe the basic characteristics of every historical phase of architectural development from the Renaissance until the 21st century. 3. Identify and interpret the most significant buildings and architects of every historical phase in Croatia and worldwide. 4. Present the phases of development, selected buildings and architects of Osijek. 5. Autonomously produce, illustrate and present a selected semestral assignment.		
1.4. Course content		
Renaissance; period, distribution, ideological assumptions, building types, most significant architects and buildings in Europe and in Croatia. Baroque, Mannerism, Rococo; period, building types, distribution and examples of Baroque architecture in Europe, distribution and examples of Baroque buildings in Croatia, Tvrđa in Osijek. Classicism; temporal and geographic definitions, most significant architects and buildings in Europe and in America, classicism in Osijek and in Croatia. Secession; period, forms, materials, examples and architects in the world and in Croatia, Secession architecture in Osijek. Modernist architecture; ideological assumptions, founders, development, Modernist architects, significant buildings, Modernist architecture in Croatia and in Osijek. Contemporary architecture: building types, materials, constructions, most significant architects and buildings in the world and in Croatia. Introduction to architectural history of Osijek; urban development and an overview of the most significant buildings and architects.		
1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes	☐ individual assignments ☐ multimedia and e-learning ☐ lab work

	☐ distance learning ☒ fieldwork	☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Attendance of at least 70%, active class participation, production and presentation of a seminar paper.

1.8. *Student performance evaluation*[35]

Class attendance	**1**	**Class participation**		**Seminar paper**	**1**	**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

A) Assessment during the course: class attendance, class activity
B) Assessment and grading during the presentation of a seminar paper: research skills, effective team cooperation, application of acquired knowledge

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Müller, W.; Vogel, G. Atlas arhitekture II, Golden marketing, Zagreb 2000**

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. **Gössel, P.; Leuthäuser, G. Arhitektura 20. stoljeća, V.B.Z. d.o.o, Zagreb 2007**
2. **Watkin, D. History of Western Architecture, Lawrence King Publishing, London 2011**
3. **Janson, H.W.; Janson, A.F. Povijest umjetnosti, Stanek, Varaždin 2003**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring. Evaluation of seminars, which the students present in front of their peers and in which the chosen topic is presented both textually and graphically, using their research skills and independent and team work abilities.
Self-assessment and a survey of student assessment of teaching.

[35] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Željko Koški, associate professor*	
Course title	**Building Physics**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to the basic fields of building physics, heat energy saving and energy efficiency of buildings, along with the relevant legislation in force.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

1. Analyse buildings from the perspective of energy use for heating and cooling
2. Define the basic terms in the field of building physics.
3. Apply the basic steps of calculation of heat loss and water vapour diffusion in buildings
4. Use the current legislation of the field of building physics

1.4. Course content

Field and goals of the scientific discipline of building physics. Basic terms and units of thermal science. Mechanisms of heat transfer. Heat transfer coefficient of building materials. Systematisation of thermal insulation materials. Thermal insulation of buildings. Calculation of overall heat transfer coefficient (U) for the entire building. Heat accumulation. Temperature curve.
Technical regulation on rational energy use and heat insulation in buildings. Properties of energy efficient buildings.
Definitions: low-energy houses, Three-litre houses, passive houses, nearly zero-energy buildings, zero-energy houses, energy self-sufficient house, energy-plus-house.
Properties of humid air. Water vapour condensation. Thermal bridges. Diffusion of water vapour through the building elements. Effects of solar radiation on building elements. Solar protection. Techniques for use of solar radiation in buildings. Thermal stability of external building elements during summer periods.
Acoustics. Physical (objective) properties of sound. Noise. Physiological (subjective) properties of sound. Sound waves in enclosed spaces. Sound transfer from room to room. Propagation of structure-borne sound from room to room. Building repair and reconstruction for improvement of their physical properties.

1.5. Type of instruction		
	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☒ tutorials ☐ other

	learning ☐ fieldwork	_____
1.6. Comments		
1.7. *Student requirements*		

1.8. *Student performance evaluation*[36]

Class attendance	1	Class participation		Seminar paper	No	Experimental work	
Written exam		Oral exam		Essay	No	Research	
Project		Continuous assessment	1	Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

	Attendance	Class activity	Written exam	TOTAL
Score range	**0-5**	**0-15**	**0-80**	**0-100**
Minimum passing score	**1**	**0**	**41**	**42**

Points/grade
0-41 insufficient (1); 42-55 sufficient (2); 56-68 good (3); 69-80 very good (4); 81-100 excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Ž. Koški: Građevinska fizika (internal course materials on the website) 2014

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Technical regulations on thermal energy savings and thermal protection in buildings
2. V. Šimetin: Građevinska fizika, Civil Engineering Institute - Faculty of Civil Engineering Sciences of the University in Zagreb, Zagreb 1983
3. Sections of project documentation on physical properties of buildings

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
*Ž. Koški: Građevinska fizika (*internal course materials on the website*) 2014*	Available on the course webpage	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' abilities to provide answers to questions and participate in discussions.
Survey of student assessment of teaching.

[36] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Marijana Hadzima-Nyarko, assistant professor*	
Course title	**Reinforced Concrete and Masonry Structures**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

- acquisition of theoretical and practical knowledge of the design of reinforced concrete elements and structures,
- acquisition of theoretical and practical knowledge of the design of masonry structure elements

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

1. Explain a given physical-mechanical property of reinforced concrete structure materials
2. Produce a plan position of simple-structure layout
3. Conduct a load analysis of the structure and the structural analysis of reinforced concrete structure elements
4. Design a cross-section under the influence of bending moment and shear force
5. Describe walls in masonry buildings according to their various divisions
6. State the mechanical and deformation properties of unreinforced masonry (URM)
7. Identify the causes of collapse of masonry structures under earthquake load and describe the process of designing earthquake-resistant buildings
8. Evaluate shear and compressive load-bearing capacity of unreinforced masonry

1.4. Course content

Reinforced concrete structures

A short historical overview. Advantages and disadvantages of reinforced concrete structures. The concept of reinforced concrete. Types of concrete. Strength of concrete. Deformation properties under short-term, cyclic and long-term load (creep). Volume changes of concrete (shrinkage and temperature changes). Types of rebars (geometric, physical and mechanical properties). Concrete-steel bond (adhesion). Ultimate limit state (partial factors of safety). Phases of design and structural analysis. Phases of structural analysis preceding dimensioning. Analysis of structures and loads. Idealises structures – "static system". Production of plan position of simple structure layouts. Single- and double- reinforced rectangular cross-section. T-section under bending. Dimensioning with regard to shear force.

Masonry structures

A historical overview of masonry constructions; Building materials of masonry structures – masonry elements (bricks). Mortar, types of mortar; Types of walls by their role in construction, with regard to the type of masonry and construction. Mechanical properties of Unreinforced masonry (URM); deformation properties of unreinforced masonry; Technical regulations for masonry structures; masonry structures in seismically active areas, overview of EN 1996 standard.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops	☐ individual assignments ☐ multimedia and e-

	☒ practical classes ☐ distance learning ☐ fieldwork	learning ☐ lab work ☐ tutorials ☒ other: programme
1.6. Comments		

1.7. *Student requirements*

- regular attendance: practical classes are mandatory and any absence needs to be justified, while the maximum allowable absence from lectures is 30%
- positively evaluated programme which is developed during practical classes

1.8. *Student performance evaluation*[37]

Class attendance	2	Class participation		Seminar paper		Experimental work	
Written exam	(1)	Oral exam	(2)	Essay		Research	
Project		Continuous or final assessment	3	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

There are **THREE (3) revision tests** during the semester.
Revision tests take place at the end of the corresponding teaching unit; the precise dates are determined in the implementation plan. Revision tests are administered in written form.
Students with 14 or more points have passed the revision test.
The total amount of points students can achieve by taking the revision tests and producing the programme is 100.
The programme is produced during practical classes.
At the end of semester, students' activity and success in developing their individual programmes will be graded on a point scale from 0 to 10. 5 points or more (50%) is the passing treshold.

Revision test 1. (reinforced concrete structures): Theory questions. The maximum number of points in this test is 30. Students with 14 or more points have passed the revision test.
Revision test 2. (reinforced concrete structures): 2 theory questions and 1 problem task. The theoretical part (dimensioning procedures) is worth 15 points, as well as the problem task (15 points). The maximum number of points in the second revision test is 30. Students with 7 or more points in each of the parts have passed the revision test.
Revision test 3 (masonry structures): theory questions and 1 problem task The theoretical part is worth 15 points, as well as the problem task (15 points). The maximum number of points in the third revision test are 30. Students with 7 or more points in each of the parts have passed the revision test.

Questions for each of the revision tests can be found on the course web page.

Criteria for exemption from the final exam:
- 14 or more points on each of the revision tests
- 5 or more points for the programme
Grading scale:

- **sufficient (2)..... 61 - 70**
- **good (3)..... 71 - 80**
- **very good (4)..... 81 - 90**
- **excellent (5)..... 91 - 100**

1.10. *Required readings (as on submission of the study programme proposal)*

[37] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

I. Tomičić. Betonske konstrukcije. Školska knjiga, Zagreb, 1988

I. Tomičić. Priručnik za proračun armiranobetonskih konstrukcija. DHGK, Zagreb, 1993

Zorislav Sorić (2004) – Zidane konstrukcije 1, textbook, second edition, University of Zagreb, Zagreb

1.11. *Recommended readings (as on submission of the study programme proposal)*

J. Radić i suradnici, Betonske konstrukcije- Priručnik, Andris 2006
J. Radić i suradnici, Betonske konstrukcije- Primjeri, Andris 2006
Jure Radić i suradnici (2007) – Zidane konstrukcije – priručnik, University of Zagreb, textbook, Zagreb
Stjepan Takač (2000) – Zidane konstrukcije, Faculty of Civil Engineering in Osijek, Osijek

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
I. Tomičić. Betonske konstrukcije, ŠK Zagreb 1988	*22*	
I. Tomičić. Priručnik za proračun armiranobetonskih konstrukcija. DHGK, Zagreb 1993.	*10*	
Zorislav Sorić – Zidane konstrukcije 1, University of Zagreb, textbooks, 1999 and 2004	*20+5*	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

By using the revision test grading scale and/or exam results.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Dina Stober, assistant professor*	
Course title	**Urban Planning 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	15+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to look at the issue of physical organisation of cities and the methodology and methods of develping detailed urban plans. Students are trained to develop concepts for parts of an urban settlement. Experience-based learning on the organisation of uran spatial areas and and application of knowledge in an integrated urban-architectural task.

1.2. *Enrolment requirements and prerequisites*

Urban Planning 1.

1.3. Expected learning outcomes

1. Knowledge and interpretation of urban plans on a citywide level.
2. Analyse changes in urban areas on examples of smaller parts of urban areas.
3. Illustrate and compare the examples of public urban spaces.
4. Explain the principles of organisation of parts of a city.
5. Apply the principles of organisation of parts of a city.
6. Critically analyze land use and urban policy for integrated urban-architectural task.

1.4. Course content

Urban planning on a citywide level. Methods for analysis of urban areas of cities. Documents pertaining to physical planning as instruments of physical development of urban area as a whole. Criteria for assessment of optimal purpose and use of spaces. Elements of urban area planning: communication systems, urban surroundings and cityscapes. Land-use plan as an instrument for control and carrying out of planned measures and management of urban spaces. The plan of land use, land use and urban rules for the application as part of an integrated urban development and the terms of reference on the subject Residential building 2.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Attendance of at least 70% of classes, active class participation. Fieldwork attendance.

1.8. *Student performance evaluation*[38]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam		Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	1
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

A) Assessment during the course:
Class attendance, class activity, active fieldwork attendance
B) Assessment of student performance:
Grading of students' individual works

1.10. *Required readings (as on submission of the study programme proposal)*

Vresk, M. Grad i urbanizacija, Školska knjiga, Zagreb, 2002
Lehnerer, A. Grand Urban Rules, 010 Publishers, Rotterdam, 2009
Pegan S.: Uvod u detaljno urbanističko planiranje, Acta Architectonica, Faculty of Architecture, University of Zagreb, Zagreb, 2007

1.11. *Recommended readings (as on submission of the study programme proposal)*

Prinz, D.: Urbanizam I - Urbanističko planiranje, GMTK, Zagreb, 2006
Prinz, D.: Urbanizam II - Urbanističko oblikovanje, GMTK, Zagreb, 2008

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Vresk, M. Grad i urbanizacija, Školska knjiga, Zagreb, 2002		30
Lehnerer, A. Grand Urban Rules, 010 Publishers, Rotterdam, 2009		30
Pegan S.: Uvod u detaljno urbanističko planiranje, Acta Arhitectonica, Faculty of Architecture, University of Zagreb, Zagreb, 2007		30

1.13. Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills

Evaluation of students' abilities to provide answers to questions and participate in discussions.
Grading as per revision test and written exam criteria.
Self-evaluation and a survey of student assessment of teaching.

[38] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	**Željka Jurković, M.Sc. (Arch), lecturer**	
Course title	**Fieldwork 2**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	2 days (12+0+12)

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to urban and architectural characteristics of the spatial unit of the city of Zagreb.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

1. Identify the particularities of an architectural work in its local historical and physical context.
2. Identify the basic characteristics of urban development of the city of Zagreb.
3. Analyse the elements of Modernist and contemporary architecture.
4. Develop their own critical perspective on challenges and issues of urbanism and architecture in the city of Zagreb.

1.4. Course content

Development of immediate understanding of urban and architectural accomplishments.
In-field lecture („in situ") during expert guided tours.
A tour of urban heritage of Zagreb in situ.
Identification in the spatial and temporal context of the most significant urban and architectural accomplishments in the spatial unit of Zagreb.
Familiarising students with important characteristic of spaces, ambiences and urban areas in the city of Zagreb.
Familiarising students with the developmental urban features of Zagreb.
Familiarising students with the architectural interpolation during Modernism and contemporary interpolations.
Urban and architectural analysis of new settlements in the City of Zagreb.
Familiarising students with the industrial heritage of the city of Zagreb and revitalised locations / individual buildings.
Analysis of individual buildings, their position in a certain location and their relationship with their surroundings. Analysis of traffic access to buildings, recognition of a building's structure, analysis of the building's shape and individual particular shape or functional elements.
Analysis of individual buildings, their placement in a location and their relations to the surrounding buildings. Analysis of traffic access, shape (appearance) of the building, its construction and particular shape and functional elements.

Personal impression of a building, ambience and urban / rural structure. Memorising the location and urban ambience

1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular fieldwork attendance.
Seminar paper on a fieldwork-related topic submitted.

1.8. *Student performance evaluation*[39]

Class attendance	0.5	Class participation		Seminar paper	0.5	Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio		Programme					

1.9. *Assessment of student performance during the course and in the final examination*

- class attendance, class activity, work during practical classes, production of a seminar paper:

	Fieldwork activity	**Seminar paper**	**TOTAL**
Score range	**0-5**	**0-5**	**0-10**
Passing minimum score	**3***	**3***	**6**

***required for the instructor's signature: 3+3=6 points**

b) Assessment and grading on the final exam:
- according to the table above and the following grading scale:

Points / grade:
0-5 insufficient (1)
6 sufficient (2)
7 good (3)
8 very good (4)
9-10 excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Kampuš, I., Karaman I., Tisućljetni Zagreb, Školska knjiga, Zagreb, 1994
2. Knežević, S., Zagrebačka zelena potkova, Školska knjiga, Zagreb, 1996
3. Premerl T., Hrvatska moderna arhitektura između dva rata, Matica Hrvatska, Zagreb, 1990
4. Laslo, A., Arhitektonski vodič, Zagreb 1898.-2010., Profil, Zagreb, 2011
5. Jukić, T., Mlinar I., Smokvina, M., Zagreb – Stanovanje u gradu i stambena naselja, Faculty of Architecture, Zagreb, 2011
6. Uchytil A., Barišić Marenić Z., Kahrović E., Leksikon arhitekata, Atlas hrvatske arhitekture XX. stoljeća,

[39] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Faculty of Architecture, Zagreb, 2009
1.11. *Recommended readings (as on submission of the study programme proposal)*
1. Group of authors, Arhitektura / Interpolacija, 184-185, Zagreb, 1983 **2. Group of authors, Arhitektura / Zagrebretro, 200-203, Zagreb, 1987** **3. Group of authors, Werk, bauen + wohnen / Zagreb Agram, 09, Zürich, 2001** **4. Radović-Mahečić D., Moderna arhitektura u Hrvatskoj 30-ih, Institut za povijest umjetnosti i Školska knjiga, Zagreb, 2007** **5. Group of authors, Arhitektura u Hrvatskoj 1945-1985., no. 196-199, Zagreb, 1986**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Kampuš, I., Karaman I., Tisućljetni Zagreb, Školska knjiga, Zagreb, 1994	6	30
Knežević, S., Zagrebačka zelena potkova, Školska knjiga, Zagreb, 1996	6	30
Laslo, A., Arhitektonski vodič, Zagreb 1898.-2010., Profil, Zagreb, 2011	6	30
Premerl, T., Hrvatska moderna arhitektura između dva rata, Matica Hrvatska, Zagreb, 1990	6	30
Jukić, T., Mlinar I., Smokvina, M., Zagreb – Stanovanje u gradu i stambena naselja, Faculty of Architecture, Zagreb, 2011	6	30
Uchytil A., Barišić Marenić Z., Kahrović E., Leksikon arhitekata, Atlas hrvatske arhitekture XX. stoljeća, Faculty of Architecture, Zagreb, 2009	6	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- fieldwork attendance
- production of a seminar paper

COURSE DESCRIPTION

General information		
Lecturer	*Željka Vukić, senior lecturer*	
Course title	**Physical and Health Education 4**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	2nd	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	0+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

Fulfilment of the biological need for exercise, creation of healthy lifestyle habits. Acquisition of basic skills, knowledge and habits, achievement of a certain level of motor skills, improvement of motor and functional skills.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

Train students to perform self-control of cumulative effects of the transformational process with the aim of increasing one's working abilities.

1.4. Course content

Models of physical exercise for students with impaired health, in accordance to the type and degree of impairment. Models of exercise programmes, assessment of cumulative effects of exercise programmes.
Kinesiological stimuli – explosive strength, repetitive strength, speed, motor skills, flexibility and relaxation. Exercises for proper posture and removal of irregularities. Assessment of immediate effects of transformational process, control of rehabilitation treatment. Assessment of cumulative effects of transformational process.

1.5. Type of instruction	☐ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ other _____
1.6. Comments		

1.7. *Student requirements*

Regular attendance, participation in sports competitions. Medically exempt students write a seminar paper instead.

1.8. *Student performance evaluation*[40]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

1.10. *Required readings (as on submission of the study programme proposal)*

1. Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Mraković, M.: Uvod u sistematsku kineziologiju, Zagreb, 1997
2. Mišigoj-Duraković, M. et al.: Morfološka antropometrija u športu, Zagreb, 1995
3. Milanović, D.: Dijagnostika u sportu, Rovinj, 1996
4. Milanović, D.: Fitness, Zagreb, 1996
5. Andrijašević, M.: Sportska rekreacija u mjestu rada i stanovanja, Zagreb, 1996
6. Pečina M. i Heimer, S.: Športska medicina, Zagreb, 1993
7. Milanović, D.: Priručnik za sportske trenere, Zagreb, 1997
8. .Metikoš, D. et al.: Suvremena aerobika, Zagreb, 1997
9. Groser, M., H. Ehlenz, E. Zimmermann: Richting Muskeltraining, BVL Verlagsgesellschaft, Munchen, 1987

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Vukić, Ž. Željka Vukić, S. Jančić: Priručnik za samostalno ciljano vježbanje studenata, Osijek, 1999	available at instructor's personal web page	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' initial physical state. Assessment of immediate and cumulative results of the transformational process.

[40] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Hrvoje Krstić, assistant professor*	
Course title	**Building Maintenance**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	3rd, 5th semester	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduce students to the basics of building maintenance, creation of maintenance plans and optimisation of expenses related to building maintenance.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

1. Use the legislation pertaining to building maintenance.
2. Group the expenses of building maintenance.
2. Calculate the expenses of building maintenance.
3. Single out the causes of damage to elements of buildings.
4. Analyse the lifespan of individual parts of a building.
5. Propose a building maintenance plan.

1.4. Course content

Introduction and basic terms. Legislation in the field of building maintenance. Types of expenses in building maintenance. Damage and causes of damage. Lifespan of elements of buildings. Reference lifespan. Factor analysis.
Building maintenance and maintenance planning. Types of maintenance expenses. Calculation of maintenance expenses. Net present value method. Production of a maintenance plan for new and extant buildings. Importance of design and construction on future building maintenance. Assessment of optimal building maintenance strategy.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ other: Oral presentation
1.6. Comments	*No comments.*	

1.7. *Student requirements*

Regular attendance. Oral presentation.

1.8. *Student performance evaluation*[41]

Class attendance	**1.0**	Class participation	**0.20**	Seminar paper		Experimental work	
Written exam	***0.40****	Oral exam	***0.10****	Essay		Research	
Project		Continuous or final assessment	**0.50**	Oral presentation	**0.30**	Practical work	
Portfolio		Homework assignments		Practicum			

** If the student is not excused from taking the written part of the exam (continuous assessment)*

1.9. *Assessment of student performance during the course and in the final examination*

a) Assessment of student performance during the course
- class attendance, class activity, production of a seminar paper, revision tests, as per the following table:

ACTIVITY	ACTIVITY OF STUDENT	POINTS	SCALE	% of grade
Class attendance	91% and more	10	0-10	5%
	70% - 90%	5		
	less than 70%	0		
Student in-class activity	regular activity, discussion	10	0-10	5%
	periodical activities, questions	5		
	Not active in class	0		
Seminar paper	submitted on time, accurate	20	0-20	10%
	submitted on time, with small mistakes	15		
	submitted on time, with major mistakes	10		
	paper not submitted	0		
Revision tests	Revision test 1	0-80	0-160	80%
	Revision test 2	0-80		
		TOTAL	0-200	0-100%

b) Assessment and grading of student performance in the final exam
- written and oral exam, as per the following scale:

%	Points total	Grade
0-30	0-60	no signature
31-59	61-118	insufficient (1)
60-69	119-138	sufficient (2)
70-79	139-158	good (3)
80-89	159-178	very good (4)
90-100	179-200	excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

[1] Zakon o gradnji (NN 153/13)
(Building Act (OG 153/13))

[2] Pravilnik o održavanju građevina (NN 122/14)
(Ordinance on the maintenance of buildings (OG 122/14))

[3] Uredba o održavanju zgrada (NN 91/96)
(Regulation on building maintenance OG 91/96))

[4] HRN ISO 15686-1:2002, Zgrade i druge građevine -- Planiranje vijeka uporabe -- 1. dio: Opća načela (ISO 15686-1:2000)
(HRN ISO 15686-1:2002, Buildings and constructed assets -- Service life planning -- Part 1: General principles and framework (ISO 15686-1:2000))

[5] HRN ISO 15686-2:2002, Zgrade i druge građevine -- Planiranje vijeka uporabe -- 2. dio: Postupci predviđanja vijeka uporabe (ISO 15686-2:2001)
(HRN ISO 15686-2:2002, Buildings and constructed assets -- Service life planning -- Part 2: Service life prediction procedures (ISO 15686-2:2012))

[6] HRN ISO 15686-5:2009, Građevine -- Planiranje uporabnog vijeka -- 5. dio: Trošak životnog ciklusa (ISO 15686-5:2008)

[41] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

(HRN ISO 15686-5:2009, Buildings and constructed assets -- Service-life planning -- Part 5: Life-cycle costing (ISO 15686-5:2008))

[7] HRN ISO 15686-8:2009, Građevine -- Planiranje uporabnog vijeka -- 8. dio: Referentni uporabni vijek i njegova procjena (ISO 15686-8:2008)
(HRN ISO 15686-8:2009, Buildings and constructed assets -- Service-life planning -- Part 8: Reference service life and service-life estimation (ISO 15686-8:2008))

1.11. *Recommended readings (as on submission of the study programme proposal)*

[1] Wood, B.: *Building Maintenance*, Blackwell Publishing 2009
[2] Atkin, B.; Brooks, A.: *Total Facilities Management*, Wiley-Blackwell, 2009
[3] Dhillon, B.S.: *Life Cycle Costing for Engineers*, Boca Raton, USA 2010

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Zakon o gradnji (NN 153/13.) Pravilnik o održavanju građevina (NN 122/14) Uredba o održavanju zgrada (NN 91/96)	Unlimited	15
HRN ISO 15686-1:2002 HRN ISO 15686-2:2002 HRN ISO 15686-5:2009	1	15

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Mechanisms used to monitor course quality, ensuring the achievement of learning outcomes:

1. Validation of learning outcomes, which is carried out by regularly collecting students' feedback on the acquisition and coverage of all learning outcomes (analysis of student assessment of teaching, class attendance and participation, as well as the analysis of individual / group seminar papers)
2. Verification of the study programme based on learning outcomes, which is based on the analysis of the links between the learning outcomes, teaching methods and assessment methods at the level of study programmes. It also includes an assessment of how the set learning outcomes affect students' workload.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Antun Šundalić, tenured professor*	
Course title	**Urban Sociology**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	2nd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

To introduce students to the main characteristics of the modern urban society. Introduce them to the trend of hyper-urbanisation, which transforms the "traditional" urban society into new urban forms. Students are also introduced to the urbanisation process of rural areas of the Slavonia and Baranja region. Additionally, the aim of the course is to examine the lifestyle of inhabitants of a modern megacity. Especially relevant topics within the analysis of modern cities are the marked social inequality and urban fragmentation, which are characteristic of large cities.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

1. Identify the characteristics of the modern urban society
2. Describe the ongoing urbanisation processes of the Croatian society.
3. Differentiate between the characteristics of rural and urban societies
4. Analyse the changes that urbanisation brings about to the concepts of social capital and social inequality
5. Compare the influences of social changes on the development of cities throughout history

1.4. Course content

An introduction to the creation of cities and their historical development. The circumstances in which urban sociology emerged and developed. An overview of the main theories of urban sociology.
Cities and modernisation. Cities and globalisation. Cities in post-industrial societies. Multicultural characteristics of modern cities. The processes of metropolisation. Megacities.
Social inequality and fragmentation of the urban society.
Development of cities in regard to their socio-physical environment (urban planning, changes in the social structure, everyday life in the cities, enrichment of urban amenities…)
Urbanisation and "metropolisation" of Croatian society.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other

1.6. Comments	-	
1.7. *Student requirements*		
Regular class attendance. **Taking of two revision tests during the semester or taking the final exam (written and oral exam).**		

1.8. *Student performance evaluation*[42]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam	1	Oral exam	0.5	Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

Students take two revision tests during the semester and take an oral exam. After the end of the course, students take the final exam (written and oral).

1.10. *Required readings (as on submission of the study programme proposal)*

1. Čaldarović, O. (2012). Čikaška škola urbane sociologije: utemeljenje profesionalne sociologije. Zagreb: Jesenski & Turk.
2. Čaldarović, O. (2011). Urbano društvo na početku 21. stoljeća. Zagreb: Jesenski & Turk.

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Mumford, L. (1986). Grad u historiji. Zagreb: Naprijed (ch. I-III; XVI-XVIII).
2. Rogić, I. (1990). Stanovati i biti. Zagreb: Sociološko društvo Hrvatske.
3. Low, S. M., ed. (2006). Promišljanje grada. Zagreb: Jesenski & Turk.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Survey of student assessment of teaching and assessment methods after the end of the course.

[42] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	**Dr Jaroslav Vego, full professor**	
Course title	**Buildings for Educational Purposes**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	6
	Contact hours (L+E+S)	30+45+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is the acquisition of knowledge and skills in planning, architectural programming and designing of buildings for educational purposes:
nurseries, kindergartens and primary schools.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

1. Understand the theory of planning and architectural programming of buildings for educational purposes.
2. Understand and differentiate between types of buildings for educational purposes.
3. Define, analyse and differentiate between functional and spatial units of buildings for educational purposes.
4. Acquire the competencies and skills required for the design of buildings for educational purposes.

1.4. Course content

Analysis of pedagogical systems and standards of pre-school education and elementary education in Croatia and the world.
Overview of pedagogical and physical standards for size, organisation and design of buildings for educational purposes and hygiene and technical requirements.
Spatial-functional properties of buildings for educational purposes.
Analysis of elements; urbanist, and architectural parameters of programming and design of nurseries, kindergartens and primary schools.
Analysis and design of spatial-functional units of nursery and kindergartens and of the basic element of a primary school building – the classroom.
Analysis and design of external spatial-functional amenities of nurseries, kindergartens and primary schools.
Overview and analysis of main physical types / concepts of schools concerning spatial organisation and communication systems.
Assessment of spatial-functional conditions of arrangement of spatial units for class and subject teaching in elementary schools.
An overview of spaces for physical education classes; single unit gyms, gyms with one or two divider curtains with the accompanying areas and outdoor playing fields.
Social (shared) school spaces and their integration with the social life of the local community.
Analysis of types, requirements and criteria for the selection of furniture and equipment for nurseries,

kindergartens and primary schools.
An overview and analysis of the relevant and modern buildings for educational purposes in Croatia and the world.
Ecological and energy efficiency requirements for buildings for educational purposes.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular attendance.
Programme submitted.

1.8. *Student performance evaluation*[43]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam	1.5	Oral exam	1.5	Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio		Programme	2.5				

1.9. *Assessment of student performance during the course and in the final examination*

- class attendance, class activity, activity during practical classes, production of a programme:

	Activity during lecture classes	Activity during practical classes	Programme	Written exam	Oral exam	TOTAL
Score range	**0-10**	**0-10**	**0-30**	**0-25**	**0-25**	**0-100**
Passing minimum score	**2***	**3***	**17***	**14**	**14**	**50**

***required for the instructor's signature: 2+3+17=22 points**

b) Assessment and grading of student performance in the final exam:
- written and oral exam, as per the following scale:

points / grade:
23-49 insufficient (1)
50-64 sufficient (2)
65-77 good (3)
78-90 very good (4)
91-100 excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Državni pedagoški standard osnovnoškolskog sustava odgoja i obrazovanja („Narodne novine" broj 63/08 i 90/10)**
2. **Državni pedagoški standard predškolskog odgoja i naobrazbe („Narodne novine" broj 63/08 i 90/10)**
3. Auf-Franić, H. i ostali; Dječje jaslice i vrtići: programiranje, planiranje i projektiranje, Acta Architectonica, Zagreb, 2003

[43] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

4. Auf-Franić, H. i ostali; Osnovne škole: Upute za programiranje, planiranje i projektiranje dječijih jaslica i vrtića, Acta Architectonica, Zagreb, 2003
5. Bajbutović, Z.; Arhitektura školske zgrade, Svjetlost, Sarajevo, 1981

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Neufert, E.; Elementi arhitektonskog projektiranja, Tehnička knjiga, Zagreb, 2002
2. Knežević, G.; Kordiš, I.; Stambene i javne zgrade, Tehnička knjiga, Zagreb, 1987
3. School buildings, The state of affairs, The Swiss Contribution in an International Context, Birkhäuser, 2004
4. Dudek, M.; Architecture of schools: the new learning environments, Architectural Press, Boston, 2000
5. Matijević, M., Alternativne škole, Tipex, Zagreb, 2001

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Državni pedagoški standard osnovnoškolskog sustava odgoja i obrazovanja („Narodne novine“ broj 63/08 i 90/10)	-	30
Državni pedagoški standard predškolskog odgoja i naobrazbe („Narodne novine“ broj 63/08 i 90/10)	-	30
Auf-Franić, H. i ostali; Osnovne škole: Upute za programiranje, planiranje i projektiranje dječijih jaslica i vrtića, Acta Architectonica, Zagreb, 2003	-	30
Auf-Franić, H. i ostali; Dječje jaslice i vrtići: programiranje, planiranje i projektiranje, Acta Architectonica, Zagreb, 2003	-	30
Bajbutović, Z; Arhitektura školske zgrade, Svjetlost, Sarajevo, 1981	-	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- regular attendance of lectures and practical classes
- production of a programme during practical classes
- production of a programme at home
- grading of the programme

COURSE DESCRIPTION

General information		
Lecturer	**Dr Jaroslav Vego, full professor**	
Course title	**Commercial Buildings**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+0+15

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is the acquisition of skills and knowledge for the architectural programming and design of commercial buildings.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

1. Identify and differentiate between various types of commercial buildings.
2. Identify the structural, functional and shape features of commercial, industrial and agricultural buildings.
3. Define, analyse and differentiate between functional and spatial units of commercial, industrial and agricultural buildings.
4. Acquire the competencies and skills required for the design of commercial buildings.

1.4. Course content

A historical overview of the development of commercial buildings (the Industrial Revolution, invention of wide span structures – iron and steel skeleton frames, architecture of world fair buildings, futurism in the 20th century, Modernist architecture, large systems of commercial building complexes, megastructures, metabolism, symbolism and identity of commercial architecture – branding, integrated systems, workplace ecology).
An analysis of the basic elements and conditions for the programming and design of commercial buildings.
An introduction to spatial-functional characteristics of commercial buildings with special emphasis on office and retail buildings, as well as on multipurpose buildings.
An overview of the main spatial-functional characteristics of agricultural and industry building.
Functional, shape, structural, anthropometric and social factors of workspace design.
Flexibility of application and universality of structural systems of commercial buildings.
Social, economic, scientific and technological factors that affect the organisation and design of workspaces in retail and administrative buildings.
Physical requirements of workspace design – wiring, management, maintenance.
Visual and aesthetical component of workspace design.
Cubicle and "open-space" workspaces.
Analysis of elements of a single workplace and workspace in the working process.

Retail spaces: department stores, shopping centres and retail supply centres, specialist stores, supermarkets, marketplaces, shopping galleries.
Development of retail and its influence on retail space structure.
The relationship between the flow of goods and the buyer communication process.
New challenges: non-territorial offices, satellite offices, mobile workspace, telecommuting.
An overview and analysis of the relevant commercial buildings in Croatia and in the world.
Ecological and energy efficiency requirements of buildings for commercial purposes.
Industrial and agricultural buildings: structural systems, functional organisation linked to the technological processes, environmental requirements.

1.5. *Type of instruction*	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. *Comments*		

1.7. *Student requirements*

Regular class attendance.
Submission of a seminar paper.

1.8. *Student performance evaluation*[44]

Class attendance	0.5	Class participation		Seminar paper	0.5	Experimental work	
Written exam	1.0	Oral exam	1.0	Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio		Programme					

1.9. *Assessment of student performance during the course and in the final examination*

- regular attendance, class activity, activity during practical classes, writing seminar paper:

	Lecture activity	Seminar paper	Written exam	Oral exam	TOTAL
Score range	**0-20**	**0-20**	**0-30**	**0-30**	**0-100**
Passing minimum score	**10***	**10***	**15***	**15***	**50***

***required for the instructor's signature: 10+10+15+15= points**

b) Assessment and grading of students in the final examination:
- written and oral according to the table above and the following scale:

Points / grade:
0-49 insufficient (1)
50-64 sufficient (2)
65-78 good (3)
79-90 very good (4)
91-100 excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

[44] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1. Neufert, E.; Elementi arhitektonskog projektiranja, Tehnička knjiga, Zagreb, 2002
2. Knežević, G.; Kordiš, I.; Stambene i javne zgrade, Tehnička knjiga, Zagreb, 1987
3. Frampton, K.; Moderna arhitektura - kritička povijest, Globus, Zagreb, 1992

1.11. Recommended readings (as on submission of the study programme proposal)

1. Becker, F., Steele, F.; Workplace by design, Jossey-Bass Publishers, San Francisco, 1994
2. Becker, F.; The total workplace-facilities management and the elastic organization, Van Nostrand Reinhold, New York, 1990
3. Architecture for the retail trade - Department stores, Shopping Centers, Arcades, History and Current Tendencies, with a Work Report of RKW Architects, with contributions by Wolfgang Hocquel et al., Birkhaeuser, Basel, 1996
4. Coleman, P., Shopping Environments, Evolution, Planning and Design, Elsevier - Architectural Press, 2006
5. Van Uffelen, C., Offices, Braun publishing AG, 2010, ISBN 13

6 Frampton, K.; Moderna arhitektura - kritička povijest, Globus, Zagreb, 1992

7. Radović-Mahečić D., Moderna arhitektura u Hrvatskoj 30-ih, Institut za povijest umjetnosti i Školska knjiga, Zagreb, 2007
8. A group of authors, Arhitektura u Hrvatskoj 1945-1985, pp. 196-199, Zagreb, 1986

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Neufert, E.; Elementi arhitektonskog projektiranja, Tehnička knjiga, Zagreb, 2002	-	30
Knežević, G.; Kordiš, I.; Stambene i javne zgrade, Tehnička knjiga, Zagreb, 1987	-	30
Frampton, K.; Moderna arhitektura - kritička povijest, Globus, Zagreb, 1992	-	30
	-	30
	-	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- regular attendance of lectures and practical classes
- the evaluation of the seminar paper

Course description

General information		
Lecturer	Dr Sanja Lončar Vicković, associate professor	
Course title	World Architecture of the 20th Century	
Study programme	University undergraduate study programme in architecture and urban planning	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
To introduce students to the most significant stylistic and thematic units of world architecture from 1900 to date, with an emphasis on relevant designers and buildings.		
1.2. *Enrolment requirements and prerequisites*		
None		
1.3. Expected learning outcomes		
1. Identify and describe the main chronological, stylistic and thematic periods of world architecture from 1900 to date. 2. Analyse and interpret the body of work of the most significant architects of the period. 3. Define the formal, spatial, theoretical and historical characteristics of the selected period buildings and appraise their role in the development of world architecture. 4. Examine and exemplify the correlation of architectural works with the social circumstances in which they were created. 5. Independently produce, illustrate and present a selected semestral assignment.		
1.4. Course content		
Secessionist architecture; period, distribution, types, most significant architects and buildings. Industrial architecture from 1900 until 1918; significance, distribution, types, most significant architects and buildings. European inter-war architecture; distribution, types, most significant architects and buildings with an emphasis on the creation, principles of design, influence and creators of Bauhaus World inter-war architecture; distribution, types, most significant architects and buildings European architecture from 1950's until 1970's: distribution, types, most significant architects and buildings. World architecture from 1950's until 1970's; USA; Japan, South America: distribution, types, most significant architects and buildings. European architecture from 1970's until 1990's; distribution, types, most significant architects and buildings. World architecture from 1970's until 1990's; USA; Japan, South America: distribution, types, most significant architects and buildings. European and world architecture from 1990's; distribution, types, most significant architects and buildings		
1.5. *Type of instruction*	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials

	learning ☒ fieldwork	☐ other _____
1.6. *Comments*		

1.7. *Student requirements*

Attendance of at least 70% of classes, active class participation, production and presentation of a seminar paper

1.8. *Student performance evaluation*[45]

Class attendance	**1**	**Class participation**		**Seminar paper**	**1**	**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

A) Assessment during the course: class participation, class attendance
B) Assessment and evaluation during the presentation of a seminar paper: research skills, application of acquired knowledge

1.10. *Required readings (as on submission of the study programme proposal)*

1. **Frampton, K. Moderna arhitektura. Kritička povijest. Globus, 1992**
2. **Zevi, B. Povijest moderne arhitekture I i II, Golden marketing - Tehnička knjiga, Zagreb, 2010**

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. **Conrads, U. Programi i manifesti arhitekture XX. stoljeća. UHA, 1997**
2. **Gideon, S. Space, Time and Architecture - The Growth of a New Tradition, Harvard Uni. Press, 2009**
3. **Gössel, P.; Leuthäuser: G. Arhitektura XX. stoljeća. Taschen, 2007**
4. **Ullmann, H. F. The World of Contemporary Architecture, 2008**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring. Evaluation of student seminars, which the students present in front of their peers. Topics are presented both graphically and textually, which involves the implementation of research skills and independent and team work.
Self-assessment and a survey of student assessment of teaching.

[45] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Borislav Puljić, assistant professor*	
Course title	**Urban Planning 3**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+45+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to the theoretical background and operative instruments of urban planning. During the course, students develop competences for research and interpretation of urban areas in the context of modern developments, work in an interdisciplinary team and apply the acquired knowledge to an example of planning of an urban area unit.

1.2. *Enrolment requirements and prerequisites*

Urban Planning 1 and Urban Planning 2.

1.3. Expected learning outcomes

1. Identify, interpret and exemplify the development of the post-industrial city.
2. List and interpret the physical structures of settlements.
3. List and interpret individual urban systems and their interconnections.
4. Know theoretical underpinnings of and interpret the “image of the city” research on examples

1.4. Course content

Urban planning through conservation and development methods. Zoning as a method of urban planning, mixed-use development as an answer to single-use zones. Methods of defining purposes and dimensioning of purposes in space. Urban systems: traffic, utilities, green, public spaces. What comprises the image of the city, an overview of cities analysed with the methodology by K. Lynch.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Attendance of at least 70% of classes, active class participation. Fieldwork attendance.

1.8. *Student performance evaluation*[46]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	1
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

Assessment during the course:
Class attendance, class activity, active fieldwork participation

1.10. *Required readings (as on submission of the study programme proposal)*

1. Prinz, Dieter. URBANIZAM, svezak 2 - urbanističko planiranje, Golden marketing, Tehnička knjiga i AF, Zagreb, 2006, ISBN 953-212-216-8
2. Marinović-Uzelac, Ante. Teorija namjene površina u urbanizmu, Tehnička knjiga, Zagreb, 1989, ISBN 86-7059-036-0
3. Vresk, Milan. 2002, Grad i urbanizacija, Školska knjiga, Zagreb, ISBN 953-0-30865-5

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Lehnerer, Alex. Grand Urban Rules, 010 Publishers, Roterdam, 2009, ISBN 978-90-6450-660-6
2. Nan, Elien. Postmoderni urbanizam, Orion art, Bakar, Bor, 2002, ISBN 96-83305-05-8

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
1. Prinz, Dieter. URBANIZAM, svezak 2 - urbanističko planiranje, Golden marketing, Tehnička knjiga and Faculty of Architecture, Zagreb, 2006		30
2. Marinović-Uzelac, Ante. Teorija namjene površina u urbanizmu, Tehnička knjiga, Zagreb, 1989		30
3. Vresk, Milan Grad i urbanizacija, Školska knjiga, Zagreb, 2002		30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' abilities to provide answers to questions and participate in discussions.
Self-evaluation and a survey of student assessment of teaching.

[46] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ivan Radić, assistant professor*	
Course title	**Metal and Timber Structures**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	5
	Contact hours (L+E+S)	30+30+0

1. COURSE DESCRIPTION

1.1. Course objectives

- introduction to the advantages and disadvantages of steel and wood as building materials
- acquisition of theoretical knowledge of production and types of steel and wood, their mechanical characteristics and labelling according to the latest legislation
- acquisition of theoretical and practical knowledge of calculation of steel and wooden cross-sections, elements and joints
- acquisition of practical knowledge of bracing of steel and wooden structures

1.2. *Enrolment requirements and prerequisites*

None
Recommendation – Basis of Structural Design and Actions on Structures and Statics courses completed

1.3. Expected learning outcomes

- explain the mechanical characteristics of steel and wood materials
- differentiate between stability problems of steel and wooden cross-sections and elements
- apply the classification method of steel cross-sections
- classify types of lumber
- make a strutural analysis of steel and wooden rod elements exposed to shear stress, longitudinal force, strain and torsion
- shape and structurally analyse simpler details of joints in steel and wooden structures
- solve the problem of bracing of steel and wooden structures
- produce workshop drawings

1.4. Course content

On steel structures in general: historical development, current state, recent trends. Characteristics of steel as a building material. Production, characteristics and labelling of structural steel. Protection of steel from fire and corrosion. Steel cross-section reduction and classification. Calculation of limit state design of steel cross-sections in accordance with HRN EN 1993 standard. Stability problems of steel structural elements. Structural design and structural analysis of joints in steel structures. Basic elements of factory structural design – basic terms. Production and fixture of steel structures. Production of workshop drawings.
On wooden structures in general: historical development, current state, recent trends. Characteristics of wood as a building material – solid timber, glulam timber, particleboard. Technologies of wood element production. Types of wooden structures, modern wooden structures. Classification of lumber. Calculation of limit state design of wooden cross-sections and elements in accordance with the HRN EN 1995 standard. Structural design and structural analysis of joints in wooden structures. Longevity, weather and fireproofing of wooden structural elements.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops	☐ individual assignments

	☒ practical classes ☐ distance learning ☐ fieldwork	☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ program ☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular attendance of lectures and practical classes (min. 70% of total amount of contact hours) and a successfully completed, defended and submitted semestral paper

1.8. *Student performance evaluation*[47]

Class attendance	2	Class participation		Seminar paper		Experimental work	
Written exam	1.5	Oral exam	1	Essay		Research	
Project		Continuous or final assessment	(1.5)	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum		Programme	0.5

1.9. *Assessment of student performance during the course and in the final examination*

Options for assessment:

- **revision tests: Students write three revision tests. The tests are evenly sized in regard to the course content, and consist of a theoretical part and a practical part; the grade from the semestral paper (a requirement) is added to the grade; the total amount of points is 100; the requirement for taking the consecutive revision tests is to pass the previous tests.**
- **writtern examination: the written part of the exam consists of two parts a theoretical part with a total of six questions and a problem part with one task. The time limit for the problem part is 120 minutes. The practical part is an open book exam (only printed literature is allowed). After the practical part, students write the theoretical part, with a time limit of 70 minutes. This part is a closed book test. There is a total of 100 points. In order to pass, students must achieve at least 30 points in each part of the exam.**

Grading scale:

- **60-70 points: sufficient (2)**
- **71-80 points: good (3)**
- **81-90 points: very good (4)**
- **91-100 points: excellent (5)**

1.10. *Required readings (as on submission of the study programme proposal)*

- **Markulak, D.: Proračun čeličnih konstrukcija prema EN 1993-1-1, Josip Juraj Strossmayer University of Osijek, Faculty of Civil Engineering in Osijek, 2008**
- **Androić, B., Dujmović, D., Džeba, I.: Čelične konstrukcije 1, IA Projektiranje, Zagreb, 2009**
- **Takač, S.: Novi koncept sigurnosti drvenih konstrukcija, Josip Juraj Strossmayer University of Osijek, textbook, Osijek, 1997.**
- **Bjelanović, A., Rajčić, V.: Drvene konstrukcije prema europskim normama, Hrvatska sveučilišna naklada, Zagreb, 2005**
- **Androić, B., Dujmović, D., Džeba, I.: Metalne konstrukcije II, IA Projektiranje, Zagreb, 1995**

[47] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1.11. *Recommended readings (as on submission of the study programme proposal)*

- **Androić, B., Dujmović, D., Džeba, I.: Metalne konstrukcije III, IA Projektiranje, Zagreb, 1997**
- **HRN EN 1993-1-1:2008 Eurokod 3 - Projektiranje čeličnih konstrukcija - Dio 1-1: Opća pravila i pravila za zgrade**
  (HRN EN 1993-1-1:2008 Eurocode 3: Design of steel structures -- Part 1-1: General rules and rules for buildings (EN 1993-1-1:2005+AC:2006))

- **Žagar, Z: Drvene konstrukcije I-IV, Udžbenici Sveučilišta u Zagrebu, Zagreb, 1999**
- **HRN EN 1995-1-1:2008 Eurokod 5 - Projektiranje drvenih konstrukcija - Dio 1-1: Općenito –Opća pravila i pravila za zgrade**
  (HRN EN 1995-1-1:2008 Eurocode 5: Design of timber structures -- Part 1-1: General -- Common rules and rules for buildings (EN 1995-1-1:2004+AC:2006+A1:2008))

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Proračun čeličnih konstrukcija prema EN 1993-1-1	20	
Čelične konstrukcije 1	5	
Novi koncept sigurnosti drvenih konstrukcija	9	
Drvene konstrukcije prema europskim normama	19	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Monitoring and analysis of attendance at lectures and practical classes, grading of seminar papers, analysis of active class participation and the pass rate in the revision tests and the final examination

COURSE DESCRIPTION

General information		
Lecturer	*Dr Borislav Puljić, assistant professor*	
Course title	**Basics of Spatial Planning**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
The aim of the course is to introduce students to the terminology of physical planning. Students are continually presented with a multi-disciplinary approach to physical planning. Through an inspection and analysis of elements in space and the current legislation, students learn the principles of design and production of physical designs. The awareness of the participation of the general public in the process of physical planning is raised.		
1.2. *Enrolment requirements and prerequisites*		
none		
1.3. Expected learning outcomes		
1. Identify and describe the strategic physical planning documentation. 2. List and interpret the principles of physical planning with regard to the levels of planning and the Croatian legislative framework. 3. Understand and differentiate between the roles that the various disciplines and entities have in the process of developent and adoption of physical plans. 4. Have working knowledge of methods of communication with the interested parties from the general public in the process of production and adoption of physical plans.		
1.4. Course content		
Definition of the term 'physical planning', levels and types of planning. Participants of physical plan development. Types of physical plans. Regional planning. Process of development, components and procedure for the adoption of physical plans. Strategic and implementation plan – overview and introduction to Croatian physical planning documents. Cities and regions: role of cities in space, influential urban zones. Legislative framework of physical planning and landscaping. Involvement of general public in production and adoption of physical plans – methods and examples of best practice.		
1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		
1.7. *Student requirements*		

Class attendance of min. 70% of classes, active class participation. Fieldwork attendance.

1.8. *Student performance evaluation*[48]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam		Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	
Portfolio		Homework assignments	0.5	Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Assessment during the course:
Class attendance, class activity, active fieldwork activity

1.10. *Required readings (as on submission of the study programme proposal)*

Marinović-Uzelac, A. (2001). Prostorno planiranje, Dom i svijet, Zagreb
Šimunović, I. (1996). Grad u regiji ili regionalni grad, Logos, Split

1.11. *Recommended readings (as on submission of the study programme proposal)*

Prostorno planiranje u Primorsko-goranskoj županiji, Zavod za prostorno uređenje primorsko-goranske županije, Rijeka, 2011

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Marinović-Uzelac, A. 2001, Prostorno planiranje, Dom i svijet, Zagreb		30
Šimunović, I. 1996, Grad u regiji ili regionalni grad, Logos, Split		30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' abilities to provide answers to questions and participate in discussions.
Self-assessment and a survey of student assessment of teaching.

[48] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Marija Šperac, assistant professor*	
Course title	**Building Installations**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to water supply and sewage installations, functional aspects of fireproofing installation, placement in the building, dimensioning, required space and their integration into modern building solutions and technologies. Introduction to the basics of gas fittings, air conditioning, domestic hot water system, heating, cooling and ventilation installations, as well as electrical wiring of buildings.

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

- **independently design entire water supply and sewage installations of multi-residential and simpler commercial buildings**
- **perform hydraulic dimensioning of entire water supply and sewage installations of multi-residential and commercial buildings**
- **supervise water supply and sewage installation work**
- understand the basics of electrical wiring and mechanical installations of domestic hot water systems, heating, ventilation and air conditioning

1.4. Course content

Water supply: cold water pipes, basic diagrams of the home water supply system, main parts of home water supply system, symbols used in design plans, elements of diagrams of distribution networks. Water-based fire protection systems: types, representation, diagram, elements. Hot water use, types of preparation, devices, representation of installations and devices in diagrams. Technical regulations for water supply installations, design and dimensioning of hot and cold water pipes: according to flow amount, flow velocity, uniform friction loss method, segmented loss method. Representation in dimensional drawings and diagrams.
Sewage pipes: wastewater, sanitary objects and devices, pipes and tools. Main parts of home sewage system: Horizontal and vertical drainpipes, storm sewer, connection to public sewer. Construction of home sewer. Dimensioning and design of sewer pipes, representation in dimensional drawings and diagrams.
Gas fittings: types of gas for use in buildings, main parts of home fittings, installation of pipes, design of home gas fittings.
Central heating: thermal bridges, planar temperature, calculation of heat loss for residential buildings. Central heating fittings inside buildings, description of elements, diagrams, location inside structures. Types and systems of central heating. Solar energy.
Ventilation: basics of ventilation, primary, secondary, basic diagrams, devices.

Air conditioning: basics of air conditioning, standalone and central devices, device fitting. Air humidifiers. Electrical wiring: types of electrical wiring in buildings, basic diagrams, materials, installation. Lightning conductors. Representation in dimensional drawings and diagrams.

1.5. *Type of instruction*	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☒ other - programme

1.6. *Comments*	

1.7. *Student requirements*

Regular class attendance (70%)

1.8. *Student performance evaluation*[49]

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam	0.5	Essay		Research	
Project		Continuous assessment-midterm test	(1)	Oral presentation		Practical work	
Portfolio						Programme	0.5

1.9. *Assessment of student performance during the course and in the final examination*

Revision tests (two revision tests) or a written and oral exam; programme

1.10. *Required readings (as on submission of the study programme proposal)*

M. Radonić: Vodovod i kanalizacija u zgradama, Croatiaknjiga Zagreb, 2003

B. Tušar: Kućna kanalizacija, Faculty of Civil Engineering, Zagreb, 2001

1.11. *Recommended readings (as on submission of the study programme proposal)*

Blagojević, Biljana: Vodovod i kanalizacija, Tehnička knjiga Beograd, 2002
Boris Labudović: Osnove tehnike instalacija vode i plina, Zagreb, 2000
Boris Labudović: Priručnik za grijanje, Zagreb, 2005
Boris Labudović: Priručnik za ventilaciju i klimatizaciju, Zagreb, 2003
Čargonja: Instalacije vodovoda i kanalizacije, Zagreb 1990
M. Šivak: Centralno grijanje, ventilacija, klimatizacija, Nakladnička djelatnost M. Šivak, Zagreb, 1998
V. Rodeš: Električne instalacije (1. i 2. dio), Elektrostrojarska škola Varaždin, 2007

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
M. Radonić: Vodovod i kanalizacija u zgradama, Croatiaknjiga Zagreb, 2003	3	
B. Tušar: Kućna kanalizacija, Faculty of Civil Engineering, Zagreb, 2001	10	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

[49] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Programme, results of revision tests, class attendance and level of students' active class participation

COURSE DESCRIPTION

General information		
Lecturer	*Dr Dina Stober, assistant professor*	
Course title	**Rural Planning**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	1
	Contact hours (L+E+S)	15+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

To introduce students to the spatial, functional and social characteristics of rural settlements. Students will be introduced to various physical patterns of rural settlements and causes and effects of contemporary changes using examples from the region.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

1. List and interpret the values of cultural landscape.
2. Identify and describe the various typologies of rural settlements.
3. Explain the principles of organisation of a rural settlement.
4. Identify the causes and effects in the modern changes of rural settlements.

1.4. Course content

Explanation of the term 'rural planning' in the context of physical planning. Valuation of a cultural landscape. Open landscape and rural settlements, functions in rural areas. Valuation of a cultural landscape. Urbanisation of rural areas, rural patterns – settlements, villages, heaths, farms – examples from the region. Economic sectors with an interest in rural areas: agriculture, forestry, water works, transportation, tourism. Modern trends of rural area development, socio-economical, spatial, functional and visual changes. Contemporary rural home.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Attendance of min. 70% of classes, active class participation. Fieldwork attendance.

1.8. *Student performance evaluation*[50]

Class attendance	0.5	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam	0.5	Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Grading during the course:
Class attendance, class activity, active fieldwork participation.

1.10. *Required readings (as on submission of the study programme proposal)*

Marinović-Uzelac, A. 2001. Prostorno planiranje, Dom i svijet, Zagreb
Prostor iza – kako modernizacija mijenja hrvatsko selo, 2002, eds. Štambuk, M.; Rogić, I.; Mišetić, A., Institut društvenih znanosti Ivo Pilar, Zagreb

1.11. *Recommended readings (as on submission of the study programme proposal)*

Gabrijelčić, P.; Fikfak A. 2002, Rurizem in ruralna arhitektura, Ljubljana
Ruralni razvoj u Hrvatskoj, Izvještaj EU-Hrvatska, Zajednički savjetodavni odbor, http://www.odraz.hr/

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Marinović-Uzelac, A. 2001, Prostorno planiranje, Dom i svijet, Zagreb		30
Prostor iza – kako modernizacija mijenja hrvatsko selo, 2002, eds. Štambuk, M.; Rogić, I.; Mišetić, A., Institut društvenih znanosti Ivo Pilar, Zagreb		30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Evaluation of students' abilities to provide answers to questions and participate in discussions.
Self-assessment and a survey of student assessment of teaching.

[50] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Hrvoje Krstić, assistant professor*	
Course title	**Energy Efficient and Sustainable Architecture**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to basic laws of energy efficiency in construction and their applications. Acquire the methodology of calculation of heat transfer coefficient. An introduction to the characteristics of energy efficient buildings. A detailed introduction to the elements and the operation of passive houses. Students will know how to calculate the required amount of energy for heating and cooling of residential buildings. Students will learn to evaluate various detailed designs of buildings based on their economic viability and how to properly use thermographic cameras in order to determine the existence of thermal bridges of buildings. Students will learn how to properly use the BlowerDoor machine in order to measure the airtightness of buildings.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

1. Apply the technical regulations from the field of energy efficiency.
2. Calculate the heat transfer coefficient.
3. Apply the architectural detailed plans of energy efficient buildings.
4. Estimate the required amount of energy required for heating and cooling purposes of residential buildings.
5. Apply the technological measures and the necessary actions on buildings for the improvement of energy efficiency.
6. Evaluate the various building designs based on their economic viability.
7. Use the thermographic camera in order to determine the existence of thermal bridges of buildings.
8. Use the BlowerDoor machine in order to measure the airtightness of buildings.

1.4. Course content

Basic concepts of energy efficiency in buildings. Legislative framework for the realisation of energy efficient and sustainable architectural designs. Energy and energy sources. Energy transfer, heat loss, heat transfer coefficient, thermal bridges. Building envelope. Basic principles and possibilities of application of renewable energy sources (solar energy, biomass, wind energy). Basic principles of design and construction of passive houses and nearly zero-energy buildings (orientation, solar energy storage, building shape, building technology, windows and doors, design of details, airtightness, windproofing, ventilation, heating). Examples of realised designs of energy efficient and sustainable architecture.

Basic legislation in the field of energy efficiency of buildings, legislative framework for the implementation of energy efficiency in building construction. Energy certificates of buildings. An overview of standards. Water consumption in construction, energy required for heating, cooling and hot water preparation, water use, collection of data on water and energy use. Methodology of calculation of energy use in building construction. Methodology of calculation of heat loss and heat gain.

Thermography. Analysis of thermograms and the applications of thermography in building construction.

Measurement of building airtightness. Application of computer software for calculation of energy efficiency class of buildings. Interpretation of results.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☒ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular lecture and practical class attendance. Production of programme tasks.

1.8. *Student performance evaluation*[51]

Class attendance	**0.80**	Class participation	**0.20**	Seminar paper		Experimental work	**0.20**
Written exam	***0.40****	Oral exam	***0.20****	Essay		Research	
Project		Continuous or final assessment	**0.60**	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum		Fieldwork	**0.20**

** If the student is not excused from taking the written part of the exam (continuous assessment)*

1.9. *Assessment of student performance during the course and in the final examination*

a) Assessment of student performance during the course:
- class attendance, class activity, fieldwork, revision test, as per the following table:

ACTIVITY	ACTIVITY OF THE STUDENT	POINTS	SCALE	% of grade
Class attendance	91% or above	10	0-10	5%
	70% - 90%	5		
	less than 70%	0		
Class activity	Regular participation in class discussions	10	0-10	5%
	Occasional participation in class discussion	5		
	Does not actively participate	0		
Fieldwork	Active fieldwork participation	0-20		10%
Revision tests	Revision test 1	0-80	0-160	80%
	Revision test 2	0-80		
		TOTAL	0-200	0-100%

b) Assessment of student performance in the final examination
- written and oral, as per the following scale:

%	Points	Grade
0-30	0-60	No signature
31-59	61-118	Insufficient (1)
60-69	119-138	Sufficient (2)
70-79	139-158	Good (3)
80-89	159-178	Very good (4)
90-100	179-200	Excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

[1] UNDP, *Priručnik za energetsko certificiranje zgrada 2 DIO*, Zagreb, 2012.
[2] UNDP, *Priručnik za energetsko certificiranje zgrada 1. DIO*, Zagreb, 2010.
[3] Fülöp, L.; Koški, Ž.; Ištoka Otković, I.; Krstić, H.; Magyar, Z.; Španić, M.*: Istraživanje zrakonepropusnosti prostorija u zgradama sa stajališta potrošnje energije i toplinskog komfora*, Znanstvena publikacija Projekta HUHR/1001/2.1.3/0009, Osijek, 2013.

[51] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

[4] UNDP, *Tipske mjere za povećanje energetske efikasnosti u kućanstvima*, Zagreb, 2012.
[5] Zbašnik Senegačnik, M.: *Pasivna kuća*, SUN ARH, 2009.
[6] Pravilnik o energetskim pregledima građevina i energetskom certificiranju zgrada (NN 48/14, 150/14)
(Ordinance on Energy Audit and Energy Certification of Buildings (OG 48/14, 150/14))

1.11. *Recommended readings (as on submission of the study programme proposal)*

[1] Koški, Ž. Pasivni solarni energetski sustavi u ruralnim kućama regije, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[2] Lončar-Vicković, S. Energetske značajke povijesnih zgrada, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[3] Pavković, B.: Primjena sustava s dizalicama topline za nove i obnovljene zgrade, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[4] Stojkov, M. et al: Energetski efikasna rasvjeta, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[5] László, F.: Aktivni solarni i fotonaponski sustavi, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[6] Magyar, Z.: Kvaliteta ambijenta u interijeru i EPBD (Direktiva o energetskim svojstvima zgrada), Building Energetics, HUHR/1001/2.2.1/0009, 2012
[7] Barótfi, I., Halász, G. Energetika uredskih zgrada u kontekstu građevinskih i strojarskih sustava, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[8] Szabó, M.: Niskoenergetske zgrade i troškovno optimalne razine u energetici zgrada, Building Energetics, HUHR/1001/2.2.1/0009, 2012
[9] Zakon o učinkovitom korištenju energije u neposrednoj potrošnji (NN 101/13, NN 14/14)
(Act on efficient energy use in final consumption (OG 101/13 OG 14/14))
[10] Pravilnik o uvjetima i mjerilima za osobe koje provode energetske preglede građevina i energetsko certificiranje zgrada, (NN 81/12, NN 64/13)
(Ordinance on conditions and criteria for persons who perform energy audit and energy certification of buildings (OG 81/12. OG 64/13))
[11] Pravilnik o kontroli energetskih certifikata zgrada i izvješća o energetskim pregledima građevina (NN 81/12, NN 79/13)
(Ordinance on the control of energy certificates of buildings and of building energy audit reports (OG 81/12, OG 79/13))
[12] Tehnički propis o racionalnoj uporabi energije i toplinskoj zaštiti u zgradama (NN 97/14, NN 130/14)
(Technical regulations on thermal energy savings and thermal protection in buildings (OG 97/14, OG 130/14))
[13] Zakon o gradnji (NN 153/13)
(Building Act (OG 153/13))

1.12. Number of available copies of required readings in relation to the current course enrolment quota

Title	Number of copies	Number of students
Priručnik za energetsko certificiranje zgrada 1. dio	5	15
Priručnik za energetsko certificiranje zgrada 2. dio	7	**15**
Istraživanje zrakonepropusnosti prostorija u zgradama sa stajališta potrošnje energije i toplinskog komfora	10	**15**
Tipske mjere za povećanje energetske efikasnosti u kućanstvima	unlimited	**15**
Pasivna kuća	8	**15**
Pravilnik o energetskim pregledima građevina i energetskom certificiranju zgrada (NN 81/12, 29/13, 78/13)	unlimited	**15**

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Mechanisms used to monitor course quality, ensuring the achievement of learning outcomes:

1. Validation of learning outcomes, which is carried out by regularly collecting students' feedback on the acquisition aand coverage of all learning outcomes (analysis of student assessment of teaching, class attendance and participation, as well as the analysis of individual / group seminar papers)
2. Verification of the study programme, which is based on the analysis of the links between learning outcomes, teaching methods and assessment methods at the level of study programmes. It also includes an assessment of how the various learning outcomes affect the students' workload.

COURSE DESCRIPTION

General information		
Lecturer	**Željka Jurković, M.Sc. (Arch), lecturer**	
Course title	**Visualisation in Architecture**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	2nd (4th semester)	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	15+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to the basic types of spatial representation in architecture.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

On successful completion of the course, students will be able to :
1. Recognise the types of visual representations of architectural structures.
2. Analyse the elements of visual representations.
3. Draw architectural visual representations.

1.4. Course content

Architectural perspectives in various techniques. Studies of architectural structures. Orientation of bodies in space. Models.
Visual communications in architecture. Visual identity. Sketches, studies and analyses of urbanist and architectural procedures.
Applications of computers in architectural presentations.
Visual values and their meaning in architecture.
Details.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular class and fieldwork attendance (max. tolerated absence is 30 % or 4 sessions).
Timely submission of all programmes (3 programmes).

1.8. *Student performance evaluation*[52]

Class attendance	1	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio		Programme	1				

1.9. *Assessment of student performance during the course and in the final examination*

- Class attendance, class activity, practical classes activity, production of a programme:

	Class activity	Practical classes activity	Programme	Written exam	TOTAL
Score range	**0-10**	**0-10**	**0-40**	**0-40**	**0-100**
Passing minimum score	**2***	**2***	**23***	**23**	**50**

***requirements for the lecturer's signature: 2+2+23=27 points**

b) Assessment of student performance in the final examination:

- written and oral according to the grading scale:

Points / grade:
27-49 insufficient (1)
50-63 sufficient (2)
64-76 good (3)
77-89 very good (4)
90-100 excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Kurilj P., Sudeta N., Šimić M., Perspektiva, Golden-marketing-Tehnička knjiga, Zagreb, 2005
2. Čahtarević R., Perspektiva u klasičnom i digitalnom formatu, Faculty of Architecture, Sarajevo, 2009
3. Turković, H. Razumijevanje perspektive- teorija likovnog razabiranja, Durieux, Zagreb, 2002

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Štulhofer A., Veršić Z.: Crtanje arhitektonskih nacrta: pribor i osnove, UPI-2M, d.o.o., Zagreb, 1998
2. Klem N., Koški Ž., Ištoka Otković, I.: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008
3. Software user guides

[52] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*		
Title	*Number of copies*	*Number of students*
N. Klem, Ž. Koški, I. Ištoka Otković: Tehničko crtanje i CAD, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2008	10	30 max.
Ž. Koški, N. Bošnjak, I. Brkanić: Elementi visokogradnje I, Josip Juraj Strossmayer University of Osijek - Faculty of Civil Engineering in Osijek, Osijek, 2012 (internal course materials)	On website http://www.gfos.unios.hr/	30 max.
1.13.*Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*		
- regular lecture and practical class attendance **- production of a programme during practical classes** **- production of a programme at home** **- grading of a programme** **- students have the option to take two revision tests, which excuses them from taking the final written exam**		

COURSE DESCRIPTION

General information		
Lecturer	*Dr Željko Koški, associate professor* *Dr Sanja Lončar-Vicković, associate professor* *Dr Dina Stober, assistant professor*	
Course title	**Design Studio in Urban Planning and Architecture - bachelor's thesis**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	12.0
	Contact hours (L+E+S)	0+150+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is that students within the complex urban and architectural task provide the design project of the commercial building in the urban environment while use the knowledge from the fields of architectural design and construction building. In the first part of the course student has a task to create an Urban Detailed Plan and to site more office buildings. In the second part of the course student will provide architectural design project for the office building according to zone parameters of the Detailed Plan (the inputs and conditions for construction). During the study course cooperation between fields of urban design, architectural design, theory and construction is conducted and integrated study work - final result should present the use of technical knowledge and proper managing in interdisciplinary, regulatory and advanced creative environment and communication.

1.2. *Enrolment requirements and prerequisites*

Courses from the urban planning, design and construction course groups.

1.3. Expected learning outcomes

1. Provide a proper methodological framework for a given urban - architectural task.
2. Provide critical presentation of Urban Detailed Plan and urban planning rules
3. In accordance with modern architectural concepts provide a project design of commercial building by producing a creative idea according to the urban context in Urban Detailed plan and architectural content.
4. Apply the modern structural and technical solutions in accordance with the more complex design problems.

1.4. Course content

The course features a set of assignments such as creation of Urban Detailed Plan for commercial zone as well as the architectural design for commercial buildings (commercial and office or business-commercial building). Studio course jointly perform urban planning, architectural and structural category to present the use of skills from the fields of urban planning, engineering and construction knowledge. The cooperation among lecturers that teach urban planning, architectural design, theoretical and structural areas will provide integrative studio work that should demonstrate knowledge in urban analysis, urban planning, architectural and technical solution for the project task. The task that involves urban planning skills should result with the creation of (level of Urban Detailed Plan) urbane zone for commercial uses. The design task is to develop an office building according to the urban rules in Urban Detailed Plan and the given architectural program for an office building that presents contemporary architectural criteria. Studio course allows integration of urban, architectural and technical knowledge through the development of complex (urban, architectural, structural, technical) task.

1.5. Type of instruction	☐ lectures ☐ seminars and workshops ☒ practical	☒ individual assignments ☐ multimedia and e-learning

	classes ☐ distance learning ☒ fieldwork	☐ lab work ☒ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Attendance of at least 70% of classes, active class participation. Fieldwork attendance.

1.8. Student performance evaluation[53]

Class attendance	5	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	2
Project		Continuous assessment		Oral presentation		Practical work	5
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

Assessment during the course
Class attendance, class activity, active fieldwork activity

1.10. *Required readings (as on submission of the study programme proposal)*

1. Frampton, K., Moderna arhitektura - kritička povijest, Globus, Zagreb, 1992.
2. Hauptman D., Cities in Transition, 010 Publishers, Roterdam, ISBN 90-6450-415-6, 2001.
3. Nan, E., Postmoderni urbanizam, Orion art, Bakar, Bor, ISBN 96-83305-05-8, 2002.
4. Vresk, M., Grad i urbanizacija, Školska knjiga, Zagreb, ISBN 953-0-30865-5, 2002.

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Becker, F., Steele, F.; Workplace by design, Jossey-Bass Publishers, San Francisco, 1994.
2. Becker, F.; The total workplace-facilities management and the elastic organization, Van Nostrand Reinhold, New York, 1990.
3. Architecture for the retail trade - Department stores, Shopping Centers, Arcades, History and Current Tendencies, with a Work Report of RKW Architects, with a contributions by Wolfgang Hocquel et al., Birkhaeuser, Basel, 1996.
4. Coleman, P., Shopping Environments, Evolution, Planning and Design, Elsevier - Architectural Press, 2006.
5. Van Uffelen, C., Offices, Braun publishing AG, 2010, ISBN 13

Readings specified in courses related to the content of the course Design Studio in Urban Planning and Architecture - bachelor's thesis.

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Frampton, K., Moderna arhitektura - kritička povijest, Globus, Zagreb, 1992.		30
Hauptman D., Cities in Transition, 010 Publishers, Roterdam, ISBN 90-6450-415-6, 2001.		30
Nan, Elien (2002) Postmoderni urbanizam, Orion art, Bakar, Bor, ISBN 96-83305-05-8		30
Vresk, M., Grad i urbanizacija, Školska knjiga, Zagreb, ISBN 953-0-30865-5, 2002.		30

1.13. Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills

[53] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Regular class attendance. Continuous monitoring of the progress of the student during the semester. Presentation of the Bachelor's thesis in front of peers and teachers. The ability of independent and team work. Self-assessment and a survey of student assessment of teaching.

Course description

General information		
Lecturer	**Dr Nana Palinić, associate professor**	
Course title	**Preservation of the Built Heritage**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Core**	
Year	**3rd**	
ECTS value and form of instruction	**ECTS**	**2**
	Contact hours (L+E+S)	**30+0+0**

1. **COURSE DESCRIPTION**
1.1. Course objectives
The aim of the course is to introduce students to the history, structure, principles, forms and characteristics of protection and conservation of build heritage on global, national and local levels.
1.2. *Enrolment requirements and prerequisites*
None
1.3. Expected learning outcomes
1. Define the concept and the significance of built heritage. **2. List and describe the methods of documentation of built heritage.** **3. Differentiate between and describe the types and levels of conservation of built heritage.** **4. List and interpret selected examples of restoration of built heritage in the world, Croatia and the local community.** **5. Independently produce, illustrate and present a selected semestral assignment.**
1.4. Course content
Origin of and definition of concept of 'built heritage'. Role of heritage in cultural and national identities. Legislative frameworks of built heritage conservation in Croatia. Categories of conservation. Overview of protected sites in Croatia. **Protection of built heritage in Europe and the world; selected examples of protected sites.** **Documentation of heritage; development, methods, examples. Standardisation of documentation. Documentation as part of an information system.** **Typology of revitalisation. Facsimiles; guidelines, argumentation, examples. Restoration, modification, reconstruction; grading, guidelines, argumentation, examples. Interpolation; guidelines, approach, examples.** **Cultural and architectural landscape. Rural heritage; development and transformation, conservation of rural heritage, examples from Croatia and the Osijek area. Urban heritage; historical development of cities, typology, fortresses and walled towns, examples.** **Management and maintenance of built heritage, examples from the world and Croatia. Osijek and Tvrđa;**

foundation, development, current state, UNESCO list, state of documentation, state of conservation, management, examples.		
1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. ***Student requirements***

Attendance of at least 70% of classes, active class participation, production and presentation of a seminar paper.

1.8. ***Student performance evaluation***[54]

Class attendance	**1**	**Class participation**		**Seminar paper**	**1**	**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio							

1.9. ***Assessment of student performance during the course and in the final examination***

A) Assessment during the course: class attendance, class activity
B) Assessment and evaluation during the presentation of a seminar paper: research skills, effective team cooperation, application of acquired knowledge

1.10. ***Required readings (as on submission of the study programme proposal)***

1. **Feilden, Bernard M. Uvod u konzerviranje kulturnog nasljeđa, Društvo konzervatora Hrvatske, Zagreb 1981**
2. **Marasović, T. Zaštita graditeljskog nasljeđa – Povijesni pregled s izborom tekstova i dokumenata, Društvo konzervatora Hrvatske – Zagreb; Zagreb – Split 1983**

1.11. ***Recommended readings (as on submission of the study programme proposal)***

1. **Antolović, J. Zaštita i očuvanje kulturnih dobara, Hadrian, Zagreb 2009.**
2. **Feilden, Bernard M. *Conservation of Historic Buildings,* Butterworth-Heinemann, Oxford 1994**
3. **Jokilehto, J. A History of Architectural Conservation, Butterworth-Heinemann; Oxford 1999**
4. **Marasović, T. Aktivni pristup graditeljskom nasljeđu, Društvo konzervatora Hrvatske – Zagreb, Split 1985**
5. **Maroević, I. Sadašnjost baštine, DPUSRH, Zagreb 1986**
6. **Maroević, I. Baštinom u svijet, Rat i baština u prostoru Hrvatske, Konzervatorsko novo iverje, Matica hrvatska, Ogranak Petrinja, Petrinja 2004**

1.12. ***Number of available copies of required readings in relation to the current course enrolment quota***

Title	*Number of copies*	*Number of students*

1.13. ***Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills***

[54] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

	Attendance monitoring. Evaluation of student seminars, which the students present in front of their peers. Topics are presented both graphically and textually, which involves the use of research skills and independent and team work. **Self-assessment and a survey of student assessment of teaching.**

COURSE DESCRIPTION

General information		
Lecturer	*Dr Luca Maria Francesco Fabris, assistant professor*	
Course title	**Introduction to the Theory of Architecture**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
Define the main pushes and pulls that shaped architecture throughout history Analyse the principles of architecture – both absolute, which have been present throughout history, as well as those which influenced and affected their respective periods List the most significant theories – designers and works which significantly influenced the development of architecture.		
1.2. *Enrolment requirements and prerequisites*		
-		
1.3. Expected learning outcomes		
Identify the important factors of architecture Explain the relations between the factors of architecture and their effects on architectural work. Analyse the basic premises of the most significant theorists of architecture Connect architectural thought with the development of architecture in practice		
1.4. Course content		
Analyse the interaction between important factors of architecture, the definition of which was put forward by Vitruvius: *Firmitas, Utilitas, Venustas* (in modern terms: strength (structure), utility (function), beauty (form), and other factors and principles relevant to the process of production of an architectural work. An analysis of and introduction to the key principles of several important architectural theories (historical and contemporary) through exposure to the excerpts from primary sources.		
1.5. Type of instruction	☒ **lectures** ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☒ **individual assignments** ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		
1.7. *Student requirements*		
Following of the assigned literature during the semester and active participation in discussions		

1.8. *Student performance evaluation*[55]

Class attendance	0.5	Class participation	0.5	Seminar paper		Experimental work	
Written exam		Oral exam	1	Essay		Research	
Project		Continuous or final assessment		Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Regular attendance, completion of reading assignments, active participation in class discussions

1.10. *Required readings (as on submission of the study programme proposal)*

Boris Magaš, Arhitektura - pristup arhitektonskom djelu, Zagreb, Školska knjiga, 2012 (selected chapters)
Bruno Zevi, Povijest moderne arhitekture I i II, Zagreb, Golden marketing - Faculty of Architecture of University in Zagreb, Zagreb, 2006 and 2010 (selected chapters)

1.11. *Recommended readings (as on submission of the study programme proposal)*

Vitruvije, Deset knjiga o arhitekturi, Zagreb, Golden marketing – Tehnička knjiga, 1999 (selected chapters)
Alberti, Leon Battista. De re aedificatoria. (On the art of building in ten books). Cambridge, Mass.: MIT Press, 1988 (or any other edition) - (selected chapters)
Le Corbusier, K pravoj arhitekturi, Beograd. Građevinska knjiga,
Adolf Loos, Ornament i zločin, Meandar, Zagreb, 2003

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Continuous assessment of students' knowledge and progress during the semester (checking the completion of reading assignments during the semester, assessment of comprehension of newly presented materials (questions and explanations), discussions with active student involvement)
A survey of student assessment of teaching.

[55] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

Course description

General information		
Lecturer	**Dr Sanja Lončar Vicković, associate professor**	
Course title	**Croatian Architecture of the 20th Century**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	**Core**	
Year	**3rd**	
ECTS value and form of instruction	**ECTS**	**2**
	Contact hours (L+E+S)	**30+0+0**

1. **COURSE DESCRIPTION**		
1.1. Course objectives		
Introduce students to the most significant stylistic and thematic units of Croatian architecture from 1900 to date with an emphasis on relevant architects and buildings.		
1.2. ***Enrolment requirements and prerequisites***		
None		
1.3. Expected learning outcomes		
1. Identify and describe the most significant stylistic and thematic units of Croatian architecture from 1900 to date. **2. Analyse and interpret the work of the most significant Croatian architects of the period.** **3. Define the formal, spatial, theoretical, historical characteristics of most significant period buildings and assess their role in the development of Croatian architecture.** **4. Give critical opinions on and connect the examples of recent architectural work in Croatia with the global developments in construction.** **5. Critically connect and, by using examples, demonstrate the correlation of Croatian architecture with the social context in which it emerged.** **6. Independently produce, illustrate and present a given semestral assignment.**		
1.4. Course content		
Architecture of Croatian secessionism; period, distribution, typology, most significant architects and buildings with a special focus on secessionist architecture in Osijek. **Industrial architecture in Croatia from 1900 until 1918: importance of industrial architecture, distribution, typology, most significant architects and buildings with a special focus on examples from Osijek.** **Croatian inter-war architecture; distribution, typology, most significant architects and buildings.** **Croatian architecture from 1950 until 1970; distribution, typology, most significant architects and buildings.** **Croatian architecture from 1970 until 1990; distribution, typology, most significant architects and buildings.** **Croatian architecture after 1990; distribution, typology, most significant architects and buildings.**		
1.5. ***Type of instruction***	**☒ lectures** **☒ seminars and workshops** **☐ practical classes** **☐ distance learning** **☒ fieldwork**	**☐ individual assignments** **☐ multimedia and e-learning** **☐ lab work** **☐ tutorials** **☐ other** _____
1.6. ***Comments***		

1.7. *Student requirements*

Attendance of at least 70% of classes, active class participation, production and presentation of a seminar paper

1.8. *Student performance evaluation*[56]

Class attendance	**1**	**Class participation**		**Seminar paper**	**1**	**Experimental work**	
Written exam		**Oral exam**		**Essay**		**Research**	
Project		**Continuous assessment**		**Oral presentation**		**Practical work**	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

A) Assessment of student performance during the course: class attendance, class activity
B) Assessment and evaluation during the presentation of a seminar paper: research skills, implementation of acquired knowledge

1.10. *Required readings (as on submission of the study programme proposal)*

1. Mimica, V.; Mrduljaš, M.; Rusan, A Suvremena hrvatska arhitektura – testiranje stvarnosti, Arhitekst, 2007
2. Odak, T. Hrvatska arhitektura dvadesetog stoljeća - neostvareni projekti, Studio forma urbis, UPI-2M Plus, 2006
3. Osječka arhitektura 1918.-1945., HAZU (CASA), The Institute for Scientific and Artistic Work in Osijek, 2006
4. Secesija slobodnog i kraljevskog grada Osijeka, The Institute for Scientific and Artistic Work in Osijek, 2001
5. Uchytil, A.; Barišić Marenić, Z.; Kahrović, E. Leksikon arhitekata Atlasa hrvatske arhitekture XX. stoljeća, Faculty of Architecture of University in Zagreb, 2009

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. **Premerl, T. Hrvatska moderna arhitektura između dva rata, Nakladni zavod Matice hrvatske, 1989**
2. **Radović-Mahečić, D. Moderna arhitektura u Hrvatskoj 30-ih. IPU & Školska knjiga, 2007**
3. **various issues of journals Arhitektura, Čovjek i prostor, Oris**

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring. Evaluation of student seminars, which the students present in front of their peers. Topics are presented both graphically and textually, which involves using research skills and independent and team work skills.
Self-assessment and a survey of student assessment of teaching.

[56] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ivana Barišić, assistant professor*	
Course title	**Systems of Public Infrastructure**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+15+0

1. COURSE DESCRIPTION		
1.1. Course objectives		
To introduce students to the planning, conceptualizing and designing of urban traffic subsystems, which involves choosing elements of cross-sections, particularities of urban road drainage systems, public infrastructure and methods of ensuring building accessibility for the disabled and persons with reduced mobility.		
1.2. *Enrolment requirements and prerequisites*		
-		
1.3. Expected learning outcomes		
Student will be able to : 1. explain the basic principles of traffic flow in cities through various city traffic subsystems **2. define and describe the elements of cross-sections of urban roads in defined conditions** **3. define the corridors of utility infrastructure in urban road cross-sections** **4. produce a preliminary design of urban roads with regard to location requirements and traffic conditions** **5. design a simple parking lot, taking into account the sizes of parking spots and width of traffic lanes**		
1.4. Course content		
Introduction, urban traffic and roads. Urban traffic subsystems. Road and street design elements. Secondary and special roads. Roads for bicycles and pedestrians. Parking lots and garages. Ensuring building accessibility for the disabled and for persons with reduced mobility. Urban rail systems. Urban road drainage systems. Corridors and layout of public infrastructure in urban roads. Street light systems. Equipment of urban roads.		
1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☒ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		
1.7. *Student requirements*		

Regular class attendance and production of a semestral project

1.8. *Student performance evaluation*

Class attendance	1.5	Class participation		Seminar paper		Experimental work	
Written exam	0.5	Oral exam	0.5	Essay		Research	
Project		Continuous assessment	(1)	Oral presentation		Practical work	
Portfolio		Production of programme	0.5				

1.9. *Assessment of student performance during the course and in the final examination*

Exam consists of a written and an oral part. Questions in the written part are based on the required readings and course content. A maximum number of points in the revision test is 100.
WRITTEN EXAM GRADING SCALE:

Points	**grade**
54 or less	**insufficient**
55-64	**sufficient**
65-74	**good**
75-84	**very good**
85 or more	**excellent**

Students take two revision tests during the semester. The course is completed if the students achieve at least 60 points in each of the revision tests. A maximum number of points in the revision test is 100. The grade from the revision test is based on the same scale used for the written exam.

1.10. *Required readings (as on submission of the study programme proposal)*

1. Legac I. et al.: Gradske prometnice, Faculty of Transport and Traffic Sciences, Zagreb, 2011.

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Pravilnik o osiguranju pristupačnosti građevina osobama s invaliditetom i smanjene pokretljivosti, Narodne novine no.151/05.
(Ordinance on ensuring accessibility of buildings for disabled persons and persons with reduced mobility, Official Gazette 151/05)
2. Nyvig, A. et al.: Urban Traffic Areas-Part 10, The Visual Environment, Danish Vejdirektoratet-Vejregeludvalget, 1993
3. Neufert, E.: Elementi arhitektonskog projektiranja, 36. prošireno i prerađeno izdanje, Golden marketing, Zagreb, 2002

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
1. Legac I. i suradnici: Gradske prometnice, Faculty of Transport and Traffic Sciences, Zagreb, 2011	10	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Course quality monitoring is based on the following criteria:
- **analysis of successful completion of the exams (pass rate in the revision tests and in the final exam)**
- **analysis of lecture and practical class attendance**
- **analysis of student survey of assessment of teaching**
- **analysis of successful completion of fieldwork**

COURSE DESCRIPTION

General information		
Lecturer	*Dr Luca Maria Francesco Fabris, assistant professor*	
Course title	**Interior Design**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	3
	Contact hours (L+E+S)	30+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

Recognise the interior as a basic defining feature of architecture
Assess the merit of particular interior designs
Produce an interior design

1.2. *Enrolment requirements and prerequisites*

1.3. Expected learning outcomes

Apply the acquired knowledge of interior design to own interior design project
Create a design project of the interior
Design elements of the interior

1.4. Course content

By taking interior as one of the basic defining features of architecture, the experience of interior is analysed on examples from the 20th and 21st century. Elements that achieve such an experience are analysed, as well as their interrelations.
This knowledge is applied to students' own interior design project (during practical classes).

1.5. Type of instruction	☒ **lectures** ☐ seminars and workshops ☒ **practical classes** ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:
1.6. Comments		

1.7. *Student requirements*

Regular attendance and class activity; interior design project

1.8. *Student performance evaluation*[57]

Class attendance		Class participation		Seminar paper		Experimental work	
Written exam		Oral exam	1	Essay		Research	
Project	2	Continuous or final assessment		Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

Regular attendance, interior design project, final presentation of the design

1.10. *Required readings (as on submission of the study programme proposal)*

Johannes Itten: Umjetnost boje, Beograd, 1973
Arnold Friedmann: Interior Design, Elsevier, New York, 1973
Anne Massey: Interior Design of the 20th Century, Thames&Hudson, London, 1990
Adolf Loos: Ornament i zločin, Meandar, Zagreb, 2003

1.11. *Recommended readings (as on submission of the study programme proposal)*

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Analysis of students' designs, final presentation with guest lecturers-critics
Continuous assessment of students' knowledge and improvement during the semester, analysis of designs from lesson to lesson, corrections of projects and consultations.
Survey of student assessment of teaching.

[57] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Ksenija Čulo, full professor*	
Course title	**Architectural Management**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

To introduce students to the basic terms of management in the process of design, construction and maintenance of architectural structures. Students acquire knowledge of project management and business management.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

Recognise the goals, structure and functions of strategic, tactical and operative management.
Calculate the total cost and the market selling price.
Apply the acquired methods of project management
Compare the differences and similarities of marketing strategies in management.
Recognise the importance of ethical business practices and business communication.
Employ teamwork for the achievement of synergy for better business success.
Employ the applicable legislative framework in project management and construction.

1.4. Course content

- Introduction to management.
- Theories of management.
- Planning, organisation and management of human resources, leadership, and control
- Project management.
- Marketing in architecture.
- Business communication.
- Human resources management.
- Cost/Benefit analysis.
- Introduction to building regulations.
- Management of design processes.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other:

1.6. Comments	None

1.7. *Student requirements*

Student requirements for the lecturer's signature for the course:

- **attendance and active class participation: justified absence from a maximum of 25% of classes is allowed**

1.8. *Student performance evaluation*[58]

Class attendance	0.8	Class participation	0.2	Seminar paper		Experimental work	
Written exam		Oral exam	0.2	Essay		Research	
Project		Continuous or final assessment	0.8	Oral presentation		Practical work	
Portfolio		Homework assignments		Practicum			

1.9. *Assessment of student performance during the course and in the final examination*

1. Revision Tests

There are two (2) review tests during the semester. Review tests take place at the end of the corresponding lessons unit; the precise dates are determined at the beginning of the semester. Review tests are administered in written form.

In order to take a second review test, students must successfully pass the first review test. Each review test consists of two parts. The first part is a theoretical part consisting of multiple-choice questions, confirming questions or addition-allowed type questions. Multiple-choice questions can have more than one correct answer. All questions are worth 1 (one) point; in certain cases, some answers may be evaluated half a point. The second part of the review test is a case study. The number of points depends on the number of subtasks.

First and second review tests are evaluated independently and two distinct grades are given. In order for the review tests to be successfully passed, both review tests need to be passed with a passing grade, i.e. 50% or more both in the theoretical and practical parts of the test. Students are graded according to the following scale:

- **sufficient (2)..... 50% - 64%**
- **good (3)..... 65% - 79%**
- **very good (4)..... 80% - 89%**
- **excellent (5)..... 90% - 100%**

2. Preconditions for not taking the exam and for grade entry:

Precodnitions for not taking the exam are:

- **student requirements stipulated above completed**
- **both review tests passed**

If the students satisfy both preconditions, they can be excused from taking the exam and can get the final grade. In such a case, the final grade is an arithmetic mean of all four grades from the review tests. If the students are not satisfied with the proposed grade, but they have satisfied the preconditions for nottaking the exam, they can take the exam as if they had not passed the review tests.

3. Exam

All the students who did not meet the precondition for not taking the exam and who have been granted the signature must take the exam. The exam consists of a written part, which has the same structure and is graded in the same manner as the review test, and an oral part.

[58] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1.10. *Required readings (as on submission of the study programme proposal)*

Sikavica, P., Bahtijarević-Šiber, F., Pološki Vokić, N (2008). Temelji menadžmenta, Školska knjiga, Zagreb

1.11. *Recommended readings (as on submission of the study programme proposal)*

Architectural Management: International Research and Practice; Stephen Emmitt, Matthijs Prins, Ad den Otter.

John Wiley & Sons, 13th April 2009

A Guide to the Project Management Body of Knowledge: PMBOK(R) Guide Paperback – January 1, 2013 (translation available on the Internet).

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Sikavica, P., Bahtijarević-Šiber, F., Pološki Vokić, N. (2008). Temelji menadžmenta, Školska knjiga, Zagreb	0	
Architectural Management: International Research and Practice; Stephen Emmitt, Matthijs Prins, Ad den Otter. John Wiley & Sons, 13 April 2009	0	
A Guide to the Project Management Body of Knowledge: PMBOK(R) Guide Paperback, 2013	Available on the Internet	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Course quality is monitored through students' individual and group work, analysis of the results of survey of students assessment of teaching, class attendance and extent of active student class participation

COURSE DESCRIPTION

General information		
Lecturer	**Željka Jurković, M.Sc. (Arch), lecturer**	
Course title	**Fieldwork 3**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Core	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	3 days 18+0+18

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to urban and architectural features of construction in the coastal part of Croatia, particularly in the physical units of Istria and Dalmatia.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

On successful completion of the course, students will be able to:

1. Identify the basic characteristics of urban development of coastal parts of Croatia
2. Identify the basic urban and architectural features of coastal urban areas.
3. Analyse the elements of contemporary interpolations in an inherited urban fabric.
4. Develop own critical viewpoint on challenges and issues of physical planning, urbanism and architecture in Istria and Dalmatia.

1.4. Course content

Development of immediate understanding of urbanist and architectural accomplishments.
In-field lecture ("in situ") during expert guided tours.
A tour of Croatian urbanist and architectural heritage of the Adriatic coast in situ.
Identify in spatial and temporal context the most significant urbanist and architectural accomplishments in the area of the Adriatic Coast.
Familiarising students with important characteristics of spaces, ambiences and spatial units in the coastal part of Croatia.
Familiarising students with the developmental urbanist features of cities in the coastal part of Croatia.
Familiarising students with the historical and modern architecture in spatial and temporal contexts (climate, terrain, cultural-historical circumstances, illegal buildings)
A tour of tourist architecture, i.e. particular hotels, hotel complexes and tourist villages.
Analysis of spatial resources of cities and building areas outside of settlements in the coastal part of Croatia.
Analysis of individual buildings, their position in a certain location and their relationship with their surroundings. Analysis of traffic access to buildings, recognition of a building's structure, analysis of the building's shape and individual particular shape or functional elements.
Critical overview of illegal construction in the coastal part of Croatia, from individual buildings to settlements or parts of settlements.
Personal impression of a building, ambience and urban structure. Memorising the location and ambience.

1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☒ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Regular fieldwork attendance.
Seminar paper on a fieldwork-related topic submitted.

1.8. *Student performance evaluation*[59]

Class attendance	1	Class participation		Seminar paper	1	Experimental work	
Written exam		Oral exam		Essay		Research	
Project		Continuous assessment		Oral presentation		Practical work	
Portfolio		Programme					

1.9. *Assessment of student performance during the course and in the final examination*

- class attendance, class activity, work during practical classes, production of a programme:

	Field work activity	Seminar paper	TOTAL
Score range	**0-5**	**0-5**	**0-10**
Passing minimum score	**3***	**3***	**6**

***required for the instructor's signature: 3+3=6 points**

b) Assessment and grading of students in the final examination:
- according to the following scale:

Grading scale:
0-5 insufficient (1)
6 sufficient (2)
7 good (3)
8 very good (4)
9-10 excellent (5)

1.10. *Required readings (as on submission of the study programme proposal)*

1. Suić M., Antički grad na istočnom Jadranu, Golden marketing - Tehnička knjiga, Institut za arheologiju, Zagreb, 2003
2. Marasović T., Graditeljstvo starohrvatskog doba u Dalmaciji, Književni krug, Split, 1994.
3. Premerl T., Hrvatska moderna arhitektura između dva rata, Matica Hrvatska, Zagreb, 1990
4. Uchytil, A., Žarnić, T., Karač, Z., Barišić, Z., Elementarni arhitektonski vodič – Dalmacija, Faculty of Architecture, Zagreb, 1998
5. Uchytil A., Barišić Marenić Z., Kahrović E., Leksikon arhitekata, Atlas hrvatske arhitekture XX. stoljeća, Faculty of Architecture, Zagreb, 2009.
6. Split, arhitektura 20. stoljeća, vodič, University in Split, Faculty of Civil Engineering, Architecture and Geodesy, Split, 2011

[59] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Uchytil, A., Barišić Marenić, Z., Žarnić T., Kovačević M., Kuzmanić A., Vulin A., Kozulić N., Dnevnik terenske nastave – Dalmacija (student book), Faculty of Architecture, Zagreb, 2000
2. Uchytil, A., Hrvatski prostor i arhitektura – Dalmacija - separati terenske nastave Dalmacija, 1998.-2010., Faculty of Architecture, Zagreb, 2010
3. Milić B., Razvoj grada kroz stoljeća 1 - prapovijest – antika, Školska knjiga, Zagreb, 1990
4. Milić B., Razvoj grada kroz stoljeća 2 – srednji vijek , Školska knjiga, Zagreb, 1990.
5. Milić B., Razvoj grada kroz stoljeća 3 - novo doba, Školska knjiga, Zagreb, 1990
6. Grujić N., Prostori dubrovačke ladanjske arhitekture, Zagreb, 1982
7. Radović-Mahečić D., Moderna arhitektura u Hrvatskoj 30-ih, Institut za povijest umjetnosti i Školska knjiga, Zagreb, 2007

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Suić M., Antički grad na istočnom Jadranu, Golden marketing - Tehnička knjiga, Institut za arheologiju, Zagreb, 2003	6	30
Marasović T., Graditeljstvo starohrvatskog doba u Dalmaciji, Književni krug, Split, 1994	6	30
Premerl T., Hrvatska moderna arhitektura između dva rata, Matica Hrvatska, Zagreb, 1990	6	30
Uchytil, A., Žarnić, T., Karač, Z., Barišić, Z., Elementarni arhitektonski vodič – Dalmacija, Faculty of Architecture, Zagreb, 1998	6	30
Uchytil A., Barišić Marenić Z., Kahrović E., Leksikon arhitekata, Atlas hrvatske arhitekture XX. stoljeća, Faculty of Architecture, Zagreb, 2009	6	30
Split, arhitektura 20. stoljeća, vodič, University of Split, Faculty of Civil Engineering, Architecture and Geodesy, Split, 2011	6	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

- field work attendance
- seminar paper

COURSE DESCRIPTION

General information		
Lecturer	*Dr Dina Stober, assistant professor*	
Course title	**Introduction to Integrated Design**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	15+15+0

1. COURSE DESCRIPTION

1.1. Course objectives

The aim of the course is to introduce students to the characteristic of integrated design process, compared to the problems that occur in disciplinary approach in practice. Through a complex analysis of architectural-building units students are shown that there is comprehensive way of thinking and organising of design documentation from the conceptual phase to the building information modelling phase (BIM). The aim of the course it to develop students' knowledge, understanding, organising and monitoring skills for integrated architectural-building designs through simulations of real-world situations. Students interpret an assigned architectural–building unit and integrate and present the acquired knowledge during the production of a model.

1.2. *Enrolment requirements and prerequisites*

none

1.3. Expected learning outcomes

1. Define and interpret the phases and roles of participants in production of a project according to the concepts of integrated design
2. Use the computer software indispensable for building information modelling (AutoCAD 3D, Revit, MS Project)
3. Apply and develop acquired knowledge in production of technical documentation from a model.
4. Produce variants of project solutions using computer-based modelling, compare them and explain.

1.4. Course content

Introduction to definitions and terminology of integrated design. Methods and types of spatial design. Analysis of the present situation, conceptual solutions, architectural design. Drawbacks of traditional methods of production of design documentation and project management. Participants in a project and interdisciplinary project teams. Link between architecture and modern systems of installations, smart homes. Basics of modelling and simulation. Computer-based building project modelling. Building Information Modelling - BIM. Applications and effects of BIM on building in practice. Practical classes: Integrated design studio for a selected example case of a single residential house.

1.5. Type of instruction	☒ lectures ☐ seminars and workshops ☒ practical classes ☐ distance learning ☐ fieldwork	☒ individual assignments ☒ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Attendance of min. 70%, active class participation, seminar paper

1.8. *Student performance evaluation*[60]

Class attendance	**1**	Class participation		Seminar paper		Experimental work	
Written exam		Oral exam		Essay		Research	
Project	**1**	Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

A) Assessment of student performance during the course:
Attendance, in-class activity, active participation in assignments
B) Assessment and grading of students in the final examination:
Project presentation

1.10. *Required readings (as on submission of the study programme proposal)*

[1] Radujković, M. et al. (2012). Planiranje i kontrola projekata, University of Zagreb, Zagreb
[2] Deplazes, A. (2008). Arhitektonske konstrukcije: Od sirovine do građevine, Građevinska knjiga, Beograd
[3] Eastman, C.; Teicholz, P.; Sacks, R.; Liston, K. (2011). BIM handbook: A guide to building information modeling for owners, managers, designers, engineers and contractors, John Wiley & Sons, New Jersey

1.11. *Recommended readings (as on submission of the study programme proposal)*

[1] Autodesk 2010: AutoCAD 2010 3D, Kompjuter biblioteka, Beograd
[2] Vandezande, J.; Krygiel, E.; Read, P. (2013): Mastering Autodesk Revit Architecture 2014: Autodesk Official Press, John Wiley & Sons, New Jersey
[3] Dodds, J.; Johnson, S. (2011): Mastering Autodesk Navisworks 2013, Sybex
[4] Kovačić i. et al., Leitfaden für Integrale Planung, Forschungsbereich Interdisziplinäre Bauplanung und Industriebau, TU Wien, publik.tuwien.ac.at/files/PubDat_219310.pdf (translated)

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Radujković, M. et al. (2012): Planiranje i kontrola projekata, University of Zagreb, Zagreb	10	30
Deplazes, A. (2008): Arhitektonske konstrukcije: Od sirovine do građevine, Građevinska knjiga, Beograd	1	30
Eastman, C.; Teicholz, P., Sacks, R., Liston, K. (2011): BIM handbook: A guide to building information modeling for owners, managers, designers, engineers and contractors, John Wiley & Sons, New Jersey	1	30

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Attendance monitoring. Analysis of survey of student assessment of teaching. Analysis of attendance at and participation in lectures, as well as analysis of individual / group seminar papers. Student survey.

[60] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.

COURSE DESCRIPTION

General information		
Lecturer	*Dr Lidija Tadić, associate professor*	
Course title	**Environmental Protection**	
Study programme	**University undergraduate study programme in architecture and urban planning**	
Course status	Elective	
Year	3rd	
ECTS value and form of instruction	ECTS	2
	Contact hours (L+E+S)	30+0+0

1. COURSE DESCRIPTION

1.1. Course objectives

Introduction to environment-related terms and concepts, to the importance of the environment and to the impact of buildings on the environment. Raising awareness of the importance of the environment instead of the acquisition of formal knowledge.

1.2. *Enrolment requirements and prerequisites*

None

1.3. Expected learning outcomes

On successful completion of the course, students are expected to:

1. **define the basic terms and concepts**
2. **develop awareness of the importance of the environment and the human place, actions and activities in the environment**

1.4. Course content

1. Environment and its components (2)
2. Air, water, soil, biota (6)
3. Application of the concept of sustainable development. (2)
4. Legal basis (2)
5. Influence of construction on natural resources (3)
6. Environmental impact assessments. (2)
7. Especially vulnerable buildings. (2)
8. Sustainable construction – possible solutions for environmental protection.. (2)
9. Costs and benefits of environmental protection. (2)
10. State of the environment in Croatia and Europe. (2)

1.5. Type of instruction	☒ lectures ☒ seminars and workshops ☐ practical classes ☐ distance learning ☐ fieldwork	☐ individual assignments ☐ multimedia and e-learning ☐ lab work ☐ tutorials ☐ other _____
1.6. Comments		

1.7. *Student requirements*

Class attendance (min. 70%) and a presentation of a seminar paper submitted according to the deadline.

1.8. *Student performance evaluation*[61]

Class attendance	1	Class participation	0.2	Seminar paper	0.8	Experimental work	
Written exam		Oral exam		Essay		Research	
Project (programme)		Continuous assessment		Oral presentation		Practical work	
Portfolio							

1.9. *Assessment of student performance during the course and in the final examination*

Seminar paper

1.10. *Required readings (as on submission of the study programme proposal)*

1. The State of the Environment Report of the Republic of Croatia (www.mzopu.hr)
2. Ekološki leksikon, MZOPU 2001
3. Tadić, L (2003) Strategija zaštite okoliša i uloga građevinarstva, Građevinski inženjeri na putu u Europu, pages 362-380, Osijek

1.11. *Recommended readings (as on submission of the study programme proposal)*

1. Martinović, J. Tloznanstvo u zaštiti okoliša, Zagreb, 1997
2. Bonacci, O. Ekohidrologija, Split, 2003

1.12. *Number of available copies of required readings in relation to the current course enrolment quota*

Title	*Number of copies*	*Number of students*
Građevinski inženjeri na putu u Europu	4	
The State of the Environment Report of the Republic of Croatia	**(www.mzopu.hr)**	

1.13. *Mechanisms used to monitor course quality, ensuring the achievement of exit competencies, knowledge and skills*

Monitoring of students' class attendance, student in-class activities and presenting of a self-written seminar paper

[61] **IMPORTANT:** For every method of student performance evaluation, indicate its corresponding share in the total ECTS credits allocated to the course. Empty cells may be used for indicating additional types of activity.