



DOCTORAL PROGRAMME IN ARCHITECTURE

University
of Ljubljana Faculty
of Architecture

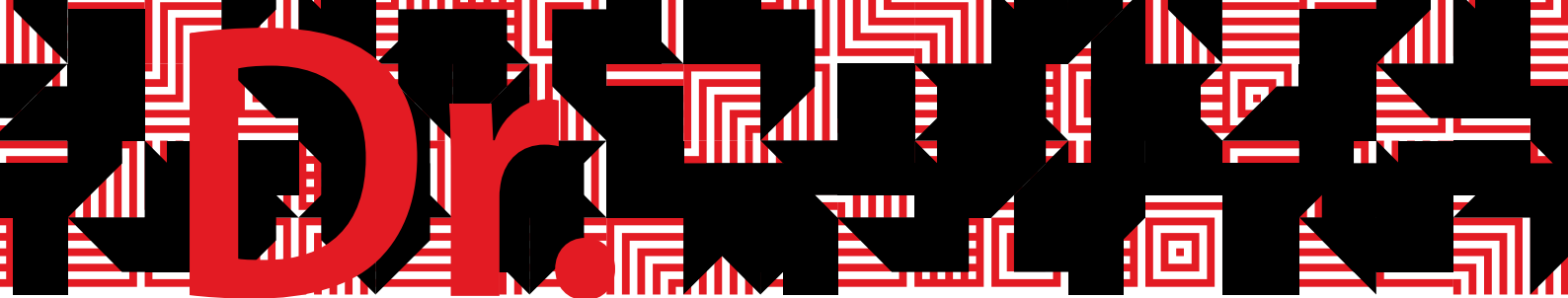


2013-2014



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Dr.

1.

1. DATA ON STUDY PROGRAMME:

The doctoral study programme in Architecture lasts 3 years (6 semesters) and is comprised of a total of 180 ECTS-credits.

The study programme includes 60 ECTS-credits in organized study form, and 120 ECTS-credits of individual research work (basic or applied research). The organized forms are comprised of a general, architectural module and interdisciplinary optional modules, as well as of an annual research presentation (ranging from the presentation of the study plan to the defence of the dissertation).

The scientific title acquired by the doctoral student in the field of architecture is:

Doctor of Science

The abbreviated form of the title placed in front of the name is: Dr.

2.

2. BASIC GOALS OF THE PROGRAMME AND GENERAL COMPETENCES

BASIC GOALS:

The programme trains the independent scientific researcher in the widest problem area of architectural issues, demonstrating responsibility towards the cultural region and excellence at an international level. Responsibility for architecture as both a field of scientific research and a cultural region derives from the significance of architectural design, the quality of buildings harmonizing with the environment, respect for natural and urban landscapes, which is in the public interest. The quality of physical space is protected in the public interest by Slovenian and European legislation.

GENERAL COMPETENCES:

- in-depth understanding of theoretical and methodological concepts deriving from the essence of architecture as science and art, and directly or indirectly related to architecture;
- qualification to independently develop new knowledge in the area of architecture as a generic field and/or in narrowly specified topics that are of significance in architecture and its connectedness with other areas;
- qualification to solve the most demanding problems by testing and improving established and discovering new solutions in achieving quality in architecture;
- qualification to manage the most demanding work systems and scientific research projects in a wide professional or scientific scope of spatial planning and design, emphasizing the quality of architectural space;
- qualification to develop critical reflection – social, group and personal research and/or creation.
Qualification to convey and communicate research results in the following cases:
 - qualification of publishing scientific, professional and popular (for non-expert public) papers and other publications in the field of architecture;
 - qualification for transfer of scientific achievements and knowledge into architectural practice.

3.

3. ENROLMENT CONDITIONS AND SELECTION CRITERIA IN CASE OF ENROLMENT LIMITATION

TO ENROL IN THE DOCTORAL STUDY PROGRAMME IN ARCHITECTURE, CANDIDATES MUST FULFIL THE FOLLOWING CRITERIA:

- completion of the study programme of the second cycle (Bologna master degree);
- completion of uniform study programme comprised of 300 ECTS–credits (Bologna master degree);
- completion of existing study programme for the acquisition of university education;
- completion of existing specialist study programme upon conclusion of professional study programme at an institution of higher education, providing that the candidate has gained at least 30 ECTS in the uniform masters study programme Architecture from the following courses:
 - Architectural theory and critique,
 - Introduction to research in architecture and urbanism,
 - Theory of physical and regional planning,
 - Action planning and strategic assessment,
 - Design concepts,
 - Countryside settlement culture,
 - Art history,
 - Comprehensive preservation of built heritage,
 - Computer supported architecture and
 - Concepts of structures.

3.

IN ACCORDANCE WITH THE ENROLMENT CRITERIA, CANDIDATES CAN ENROL IN THE DOCTORAL STUDY PROGRAMME IN ARCHITECTURE IF:

- they have acquired a master's in science upon completion of the study programme for the acquisition of university education;
- at enrolment, the candidate shall be awarded at least 60 ECTS–credits in accordance with the law;
- they have completed the existing specialist study programme upon completion of the study programme for the acquisition of university education; at enrolment, the candidate shall be awarded at least 60 ECTS–credits in accordance with the law.

Should a resolution on enrolment limitation be adopted (in case the number of applying candidates who fulfil the enrolment criteria is in excess of enrolment places), the candidates shall be selected according to performance in prior studies (20% weighting):

— study programme of the second cycle (Bologna master degree) or

- uniform masters study programme comprised of 300 ECTS–credits (Bologna master degree) or
- existing study programme for the acquisition of university education or
- existing specialist study programme upon conclusion of professional studies at an institution of higher education
- and the additional study obligations from the first paragraph of the enrollment conditions; criteria are:
 - study grade average (15 % weighting) and
 - grade of university diploma or masters thesis (5% weighting);

— according to succes at the selection exam (80% weighting).

The exam is comprised by written and oral parts. The following elements are assessed:

- written and oral presentation of a Draft plan of doctoral studies (also referred to as: outline of the doctoral study plan) prepared in accordance with the Regulations on the procedure for the acquisition of the title of Dr. – doctor of science at the Faculty of Architecture (60% weighting),
- recommendations of distinguished scientists (10% weighting);
- research work prior to programme enrolment (10 % weighting).

STUDY FEE, REGULAR/PART–TIME STUDIES

The study fee is determined according to the applicable price list.

The study is executed in a regular or part–time form; within the modules subjects may be chosen that are performed at distance, or combined. The lectures for part–time study are organized in the afternoon or at weekends (Wednesday, Thursday and Friday afternoons, and Saturday morning), 20% of lectures are replaced in the form of consultations. Candidates for part–time studies shall fulfil all afore–mentioned enrolment conditions.

4.

4. PROVISIONS ON THE RECOGNITION OF KNOWLEDGE AND SKILLS ACQUIRED PRIOR TO PROGRAMME ENROLMENT

Students' knowledge that, both in content and level of excellence, complies with the study programme they enrolled in can be recognised.

Upon the candidate's request, the doctoral studies committee shall examine the possibility of recognition of the knowledge and skills that the candidate acquired prior to programme enrolment and that can be asserted for the doctoral study programme in architecture. This examination shall consider, in particular, the following:

- content conformity with the Draft plan of doctoral studies or the Plan of doctoral studies (specifically with the proposed research topic as described in the document submitted in accordance with the Regulations on the procedure for the acquisition of the title of Dr. – doctor of science at the Faculty of Architecture), and
- compliance of quality level of performance (certificates, documents, reviews of research publications...) as evidence of knowledge and skills which the candidate wishes to assert in the programme.

5.

5. CONDITIONS FOR PROMOTION ACCORDING TO PROGRAMME

CONDITIONS FOR PROMOTION TO THE NEXT ACADEMIC YEAR

To be promoted from the first to the second year, the student shall:

- complete the general module;
- perform a written and oral presentation of his/her doctoral study plan; the presentation is positive if approved by the doctoral studies committee and the Senate of the Faculty of Architecture;
- be awarded a minimum of 45 ECTS–credits in the first year of study.

TO BE PROMOTED FROM THE SECOND TO THE THIRD YEAR, THE STUDENT SHALL:

complete the architectural and interdisciplinary modules;
perform a written and oral presentation of the topic of his/her doctoral dissertation including the publication of a reviewed research article in an important magazine or a scientific chapter in a monograph (the habilitation criteria of FA and UL apply); the presentation is positive if the topic and the publication are approved by the doctoral studies committee and the Senate of the Faculty of Architecture;
have an approved topic for his/her doctoral dissertation at the University of Ljubljana;
have been awarded a minimum of 60 ECTS–credits.

CONDITIONS FOR TEMPORARY SUSPENSION OF STUDENT STATUS

A student may request temporary suspension of student status should he/she, for justified reasons, not be able to fulfil his/her student obligations. As such shall be considered: invalidity, illness (certificate of personal physician confirming an incapability of at least six months over the last year of study), maternity within the last three years of study, family and social circumstances in the last year of study (opinion of the Social Work Centre on his/her unfitness for study), top athlete or top artist status in the last year of study.

The doctoral studies committee of the Faculty of Architecture decides on temporary suspension of student status issues.

6.

6. CONDITIONS FOR COMPLETION OF STUDIES

To conclude his/her studies, the student shall fulfil all obligations in all subjects that he/she has enrolled in (the compulsory publication of a scientific article in a magazine or chapter in a monograph shall be included in the »presentation of the doctoral dissertation topic« within the framework of the subjects of the second year – a requirement for enrolment in the third year of study), complete his/her individual research work, prepare a doctoral dissertation, present the results to the doctoral study committee prior to its defence, and also successfully defend the dissertation. The successful performance of the dissertation shall be examined by the committee for dissertation evaluation and defence in accordance with the Regulations on the procedure for the acquisition of the title of Dr. of science at the Faculty of Architecture of the University of Ljubljana.

7.

7. TRANSITION BETWEEN PROGRAMMES

Transition from a different doctoral programme to the doctoral programme in architecture at the Faculty of Architecture of the University of Ljubljana is possible if the student fulfils the conditions of enrolment in this programme. The same applies to the transition from hitherto existing master's/doctoral or specialist study programmes. At transition the candidate shall submit a certified confirmation on fulfilled study obligations from the study institution where he/she was enrolled, as well as an official extract from the applicable study programmes within the framework of which the afore-mentioned obligations were fulfilled. The request for transition shall be approved by the doctoral study committee and the senate of the Faculty of Architecture – namely through recognition of the examinations, in the preparation process of the doctoral study plan. Upon verification, the content compliance with the programme to which the candidate wishes to transit, and in particular, compliance with the draft doctoral study plan or doctoral study plan shall be examined (more precisely: with the description of the research topic proposed in the document submitted pursuant to the Regulations on the procedure for the acquisition of the title of Dr. of science at the Faculty of Architecture).

8.

8. ASSESSMENT TYPES

In accordance with the law, the assessment types do not need to be specifically defined. However, because the quality of studies at the doctoral level is very important, the quality control system is mentioned here. Within the framework of the subjects of the general architectural and interdisciplinary module, an assessment scale from 1 to 10 is planned (1–5: insufficient; 6–10: sufficient, good, very good and excellent). As a special form of organized studies, emphasis is laid on the annual quality control of the individual research work, which helps the mentor or the group of mentors ensure quality: in the first year, this regards the presentation of the study plan, in the second year the presentation of the topic, and in the third year the presentation of results prior to the defence as well as the defence of the dissertation. Upon control, this obligation is either fulfilled or not – and no assessment scale is foreseen for the individual research work either. The quality of the fulfilled obligation shall be evaluated descriptively, in accordance with the Regulations on the procedure for the acquisition of the title of Dr. – doctor of science) in the field of architecture. The following parties are in charge of the quality of studies: mentors or groups of mentors, the doctoral studies committee of the Faculty of Architecture with a review system, the Senate of the Faculty of Architecture, the professional committee for the assessment of the topic, the dissertation and the defence, appointed by the Senate of the Faculty of Architecture, the doctoral studies committee and the Senate of the University of Ljubljana, at the proposal of the doctoral studies committee.

9.

9. SCHEDULE OF SUBJECTS OF STUDY PROGRAMME

Code	Subject	Semester				Σ hours of study commitment	Σ ECTS
		winter		summer			
		lect.	other	lect.	other		
1st Year							
1.1	General module	15	235	–	–	250	10
1.2	Architectural module	–	–	15	235	250	10
1.3	Presentation of doctoral study plan	–	125	–	–	125	5
1.4	Individual research work 1	–	375	–	500	875	35
	Total	15	735	15	735	1500	60
2nd Year							
2.1	Interdisciplinary module	21	354	14	236	625	25
2.2	Presentation of topic of doctoral dissertation	–	125	–	–	125	5
2.3	Individual research work 2	–	250	–	500	750	30
	Total	21	729	14	736	1500	60
3rd Year							
3.1	Presentation prior to defence of dissertation and of doctoral dissertation	–	–	–	125	125	5
3.2	Individual research work 3	–	750	–	625	1375	55
	Total	–	750	–	750	1500	60
Total studies							
	Organized study forms						60
	Individual study forms						120
	Total	2250		2250		4500	180

9.

- 1.1 General Module** **generic knowledge** **10 ECTS**
Introduction to Scientific Research Lah
University of Ljubljana, Faculty of Architecture 10 ECTS
visiting lecturer 10 ECTS
Scientific Approaches, Methods and
Research Presentation
Scientific Research Subjects/
Modules of Other Programmes teachers of generic subjects/modules 10 ECTS
- 1.2 Architectural Module** **field-specific fundamentals** **10 ECTS**
Architectural Theory and Critique Čeferin
University of Ljubljana, Faculty of Architecture 10 ECTS
Corpus of the Slovene Architecture Fister
University of Ljubljana, Faculty of Architecture 10 ECTS
Strategies of Architectural Design Vodopivec
University of Ljubljana, Faculty of Architecture 10 ECTS
Architectural Research by Design Kobe
University of Ljubljana, Faculty of Architecture 10 ECTS
Contemporary Approaches to Urbanism Koželj
University of Ljubljana, Faculty of Architecture 10 ECTS
Scientific Approaches to Research in Architecture visiting lecturer 10 ECTS
Scientific Research Subjects/
Modules of Other Programmes teachers of architectural subjects/modules 10 ECTS
- 2.1 Interdisciplinary Module** **deepening and/or cross-linking** **25 ECTS**
Thematic modules/emphasis – relations (legend of red dots – titles, disposition and structure of components is (pre)defined in accordance with the research policy of FA):
- Architectural theory and critique, corpus of the Slovene architecture – relation to humanism;
 - Fine-arts and digital theory and methodology – relation to humanism and technology;
 - Theory and methodology of urbanism – relation to social sciences and biotechnology;
 - Theory of planning and technological application in architecture – relation to technology;
 - Thematical modules/emphaseses – related to quality assured, comparable offer from visiting lecturers and other programmes.

9.

- Analysis and Criticism of Contemporary Architecture Čeferin
University of Ljubljana, Faculty of Architecture 5 ECTS
- The Origins of Modernity Koselj / private researcher 5 ECTS
- Interpretation of Memory in Architecture Zorec
University of Ljubljana, Faculty of Architecture 5 ECTS
- Meaning in Architecture Glažar
University of Ljubljana, Faculty of Architecture 5 ECTS
- Architectural Analogies Ažman Momirski
University of Ljubljana, Faculty of Architecture 5 ECTS
- Corpus of the Slovene Architecture – Selected Themes Fister
University of Ljubljana, Faculty of Architecture 5 ECTS
- Identity of Slovene Architecture Deu
University of Ljubljana, Faculty of Architecture 5 ECTS
- Jože Plečnik – the Modern Classicist Krečič / Ljubljana Architecture Museum 5 ECTS
- Protection and Rehabilitation of Architectural Heritage Fister
University of Ljubljana, Faculty of Architecture 5 ECTS
- Integral Renewal Lah
University of Ljubljana, Faculty of Architecture 5 ECTS
- Interpretation of Architectural Heritage Ifko
University of Ljubljana, Faculty of Architecture 5 ECTS
- Architectural Archetypes of the Sacred Debevec
University of Ljubljana, Faculty of Architecture 5 ECTS
- Architecture of Tourist Buildings Leskovec
University of Ljubljana, Faculty of Architecture 5 ECTS
- Theory of Vernacular Architectural Origins Juvanec
University of Ljubljana, Faculty of Architecture 5 ECTS
- Human Environment Anthropology Toš / Sistemprojekt, Zagreb 5 ECTS
- Architectural Psychology Polič / University of Ljubljana, Faculty of Arts 5 ECTS
- Art History Krečič / Ljubljana Architecture Museum 5 ECTS

9.

- Systems of Plastic Arrangements
Bonča
University of Ljubljana, Faculty of Architecture 5 ECTS
- Architectural Versus Fine Art Relations
Marolt
University of Ljubljana, Faculty of Architecture 5 ECTS
- Colours and Space
Kobe
University of Ljubljana, Faculty of Architecture 5 ECTS
- Lighting in Architecture and Urban Environments
Novljan
University of Ljubljana, Faculty of Architecture 5 ECTS
- Abstract Spatial Transformations Tools
Novljan
University of Ljubljana, Faculty of Architecture 5 ECTS
- Interior and Furniture Design
Kobe
University of Ljubljana, Faculty of Architecture 5 ECTS
- Performative Design Strategies
Kirkegaard
University of Aalborg, Faculty of Engineering,
Science and Medicine 5 ECTS
- Digital Methods and Presentations in Architecture
Ettliger
University of Ljubljana, Faculty of Architecture 5 ECTS
- Designing Virtual Environments
Bourdakis / University of Thessaly 5 ECTS
- Digital Design Methods
Achten / Eindhoven University of Technology,
Faculty of Architecture, Construction and Spatial
Planning, and Technical University of Prague,
Faculty of Architecture 5 ECTS
- Programming of Architectural Forms
Duarte / Technical University of Lisbon,
Faculty of Architecture 5 ECTS
- Digital Fabrication
Duarte / Technical University of Lisbon,
Faculty of architecture 5 ECTS
- Interfaces for Architectural Learning and Collaboration
Zupančič
University of Ljubljana, Faculty of Architecture 5 ECTS
- Architectural Publishing
Martens / Vienna University of Technology,
Faculty of Architecture and Regional Planning 5 ECTS

9.

••• History of Urbanism	Koželj University of Ljubljana, Faculty of Architecture	5 ECTS
••• Urban Planning	Čerpes University of Ljubljana, Faculty of Architecture	5 ECTS
••• Architecture and Sustainable Spatial Development	Pogačnik / University of Ljubljana, Faculty of Civil Engineering and Geodesy	5 ECTS
••• Sustainable City Development	Šašek Divjak / Urban Planning Institute of the Republic of Slovenia	5 ECTS
••• Tools for Control of Urban Forms	Dimitrovska Andrews / Urban Planning Institute of the Republic of Slovenia	5 ECTS
••• Regional Planning	Černe University of Ljubljana, Faculty of Arts	5 ECTS
••• Environmental Management for Rural Tourism and Recreation	Gabrijelčič University of Ljubljana, Faculty of Architecture	5 ECTS
••• Local Planning & Public Participation	Voigt / Vienna University of Technology, Faculty of Architecture and Regional Planning	5 ECTS
••• Urban Economics	Cirman University of Ljubljana, Faculty of Economics	5 ECTS
••• Real Estate Economics – Selected Themes	Šubic Kovač University of Ljubljana, Faculty of Civil Engineering and Geodesy	5 ECTS
••• Sociological Concepts of Modern Urbanism	Hočevar University of Ljubljana, Faculty of Social Sciences	5 ECTS
••• Landscape Settlements of Cultural Diversity	Fikfak University of Ljubljana, Faculty of Architecture	5 ECTS
••• Protection of Architectural Landscapes	Deu University of Ljubljana, Faculty of Architecture	5 ECTS
••• Methods of Ambient Design	Gabrijelčič University of Ljubljana, Faculty of Architecture	5 ECTS
••• Sensitive Urban Places	Zupančič University of Ljubljana, Faculty of Architecture	5 ECTS

9.

••• Design of Open Space	Gazvoda University of Ljubljana, Biotechnical Faculty	5 ECTS
••• Housing Environment Humanization	Kresal University of Ljubljana, Faculty of Architecture	5 ECTS
•••• Architectural Design Theory	Toš / Sistemprojekt, Zagreb	5 ECTS
•••• Integrated Practices and Building Modelling	Isaković / University of Ljubljana, Faculty of Civil Engineering and Geodesy	5 ECTS
•••• High-Tech Architecture	Miščević University of Zagreb, Faculty of Architecture	5 ECTS
•••• Contemporary Architectural Technology	Kresal, Zbašnik-Senegačnik University of Ljubljana, Faculty of Architecture	5 ECTS
•••• Mass Customization of Housing	Duarte / Technical University of Lisbon, Faculty of Engineering	5 ECTS
•••• Fire Safety of Built Environment	Kušar University of Ljubljana, Faculty of Architecture	5 ECTS
•••• Environmental Physics for Architects	Roset Catalan Polytechnic University, Superior Technical School of Architecture of Barcelona	5 ECTS
•••• Energy and Environment Assessment of Buildings	Medved / University of Ljubljana, Faculty of Mechanical Engineering	5 ECTS
•••• Microclimate of Urban Areas and Buildings	Medved / University of Ljubljana, Faculty of Mechanical Engineering	5 ECTS
•••• Renewable Sources of Energy in Buildings	Zbašnik-Senegačnik University of Ljubljana, Faculty of Architecture	5 ECTS
•••• Selected Topics in Building and Construction History	Slivnik University of Ljubljana, Faculty of Architecture	5 ECTS
•••• Structures in Architecture	Kilar University of Ljubljana, Faculty of Architecture	5 ECTS
•••• Design of Shell Structures	Brank / University of Ljubljana, Faculty of Civil Engineering and Geodesy	5 ECTS

9.

•••• Basics of Bridge Design	Isaković / University of Ljubljana, Faculty of Civil Engineering and Geodesy	5 ECTS
•••• Earthquake Architecture	Kilar University of Ljubljana, Faculty of Architecture	5 ECTS
••••• Theories and Methods of Scientific Research	visiting lecturers	5 ECTS
••••• Subjects/Modules of Scientific Research from other programmes	teachers of subjects from other programmes	5 ECTS

10.

10. DATA ON POSSIBILITIES REGARDING OPTIONAL SUBJECTS AND MOBILITY

Ratio between compulsory and optional subjects

Compulsory modules / subjects – 14% – 25 ECTS

Optional modules / subjects – 86% – 155 ECTS

Modules / subjects with compulsory content structure

Modules / subjects with optional content and its structure

1.1 General module

1.2 Architectural module

1.3 Presentation of doctoral study plan

2.1 Interdisciplinary module

2.2 Presentation of topics of doctoral dissertation

1.4 Individual research work 1

3.1 Presentation before defence and defence of defence of doctoral dissertation

2.3 Individual research work 2

3.2 Individual research work 3

Selection of subjects in modules:

- according to the theme of dissertation;
 - the candidate could maximally choose one subject from architectural or interdisciplinary module given by the course coordinator which is also the mentor or co-mentor of his individual research work or his doctoral dissertation;
 - in the case the candidate acquired professional qualification in architecture: a minimum of 10 ECTS from the programme offer of other disciplines has to be selected;
 - in the case of other professional qualifications: a minimum of 10 ECTS from the programme offered by lecturers – architects has to be selected;
 - a maximum of 60 ECTS from other comparable programmes, i.e. of other UL faculties or other universities can be approved;
 - the subjects of visiting lecturers are shaped on the yearly basis – the visiting lecturers have to fulfil preset requirements for course coordinators; the syllabus has to be approved by regular validation procedures.
- Mobility: Within the Erasmus programme or on the basis of other bilateral agreements of which the signatory is the Faculty of Architecture, the student can make use of the opportunity to study one or two semesters abroad in (and inclusive of) the second year of studies.

11.

11. THE SHORT INTRODUCTION OF SUBJECTS

1.1 SUBJECTS OF THE GENERAL MODULE

Introduction to Scientific Research – Ljubo Lah (10 ECTS)

The characteristics of scientific research work, in particular in the fields of architecture and urban design; assortment of methodological topics, scientific research methods and techniques; science in relation to philosophy, logics, ethics and psychology of creativity; errors in the scientific research work; definition of a relevant research problem, finding and selection and critical application of scientific information in the field of architecture and urbanism; methods: processing and presentation of results, survey and interview, quantitative methods and sampling, characteristics of critical reading, time management skills; processing and presentation of results, preparation of the so-called primary documents.

1.2 SUBJECTS OF THE ARCHITECTURAL MODULE

Architectural Theory and Critique – Petra Čeferin (10 ECTS)

Architectural concept of Antiquity and Renaissance; from Renaissance to functionalism; functionalism and post-functionalism; Slovene atmosphere: a) sacral versus profane aesthetics; b) socrealism: functionalism: post-modernism; c) minimalistic mask of post-modernism; architectural critique in Slovenia.

Corpus of the Slovene Architecture – Peter Fister (10 ECTS)

New research methods of architectural research in Slovenia with direct connection to the European research projects and integral knowledge of the corpus of Slovene architecture; reestablishment of new forms of interdisciplinary education with connections in Slovene and international environment and direct cooperation in European research projects.

Strategies of Architectural Design – Aleš Vodopivec (10 ECTS)

Modernistic and contemporary strategies of architectural design: form /function; volume/weight; symmetry/regularity; cubism/fourth dimension of space/decoration; free plan layout/space plan; load bearing structure/tectonics; new materials/narrativity of material; building envelope (façade)/ transparency/scenography...

Architectural Research by Design – Jurij Kobe (10 ECTS)

Comprehension of architectural design and architectural practice as a research laboratory; integration of traditional, pragmatic and liberal approaches in the development of architectural methodology; conceptualization of architectural experimental research design based on critical reflections of comparable solutions; possibilities of methodological developments based on architectural experimental design.



11.

Contemporary Approaches to Urbanism – Janez Koželj (10 ECTS)

Introduction: an outlook into globalization processes, neo-liberal conditions, specifics of post-urban space and emerging rights to the city; inefficiency and critical analysis of traditional methods and techniques of urban planning and urban development – the reasons why current urbanism is not able to reflect the needs of post-industrial society; possibilities of computing and informational communication technology; new emerging modes of flexible urbanism: absence of unified theory; operative methods and techniques of processual and pro-active urban planning: light, regulative, operative, consensual, new, loose urbanism and pseudo urbanism; the role of the city governance in response to a changing environment, instruments of equity linkage and innovative modes of urban management.

2.1 SUBJECTS OF THE INTERDISCIPLINARY MODULE

thematic modules/emphasis – relations (legend of red dots – titles, disposition and structure of components is (pre)defined in accordance with the research policy of FA)

- Architectural theory and critique, corpus of the Slovene architecture – relation to humanism
- Fine-arts and digital theory and methodology – relation to humanism and technology
- Theory and methodology of urbanism – relation to social sciences and biotechnology
- Theory of planning and technological application in architecture – relation to technology



• ARCHITECTURAL THEORY AND CRITIQUE, CORPUS OF THE SLOVENE ARCHITECTURE – RELATION TO HUMANISM

• **Analysis and Criticism of Contemporary Architecture – Petra Čeferin (5 ECTS)**

Introductory overview of the contemporary architectural production: populism, rationalism, structuralism, productivism, post-modernism, Neo-Avantgarde, critical regionalism, reflective practices, sustainable architecture. The significance and role of the media in contemporary architecture. The significance of the intertwining of architectural production as building and design, and the »less material« production of architecture in the media. Conditions of the emergence of contemporary architecture. The ways of engagement of architectural production/architecture with the economic, political and cultural contexts in which it works/is made: architecture as an integral part of social reality vs. architecture as a transformation of architectural and social reality; the possibilities, conditions, structure of architectural invention in the contemporary production of architecture and the realms of its operation.

• **The Origins of Modernity – Nataša Koselj (5 ECTS)**

The dialectic of the development, the origins and concepts of the Modernity through comparative analysis of the theory, individual works of art, their authors and the influences of the space and time of their origin; definition of Modernity, period, origins; the use of the term Modern; space, time and the essence of the creative process.

• **Interpretation of Memory in Architecture – Maruša Zorec (5 ECTS)**

Review of the methods of studying architectural history, overview of the approaches and ways of interpretation of memory in architecture; architecture that joins old and new, overview of the historical examples, research of the concepts; development of the new concepts of interpretation of the memory in architecture; development of the new concepts in the relationship of old and new in architecture.

• **Meaning in Architecture – Tadej Glažar (5 ECTS)**

Origins and purpose of meaning in architectural environment; significance of architectural environment; power of meaning, messages; historical development and the role of architectural expression through developing architectural practice (questions on monumentality ...); potentials of architectural expression in modern practice.

• **Architectural Analogies – Lučka Ažman Momirski (5 ECTS)**

Basic terminology; comparisons of architecture and town planning with other disciplines; applicability of methods in studying the subject; interpretations during familiarization with content; simultaneous or alternate studying of two or more contents in order to identify common characteristics or differences.





- **Corpus of the Slovene Architecture – Selected Themes – Peter Fister (5 ECTS)**

Selected themes include chapters from: new research–methods of architecture in Slovenia with direct connection to the European research–projects and integral knowledge of the corpus of Slovene architecture; formation of new forms of interdisciplinary education with the connections within Slovenian and international environment as well as direct cooperation in European research projects.

- **Identity of Slovene Architecture – Živa Deu (5 ECTS)**

Methods and ways of recognizing entities of Slovenian architecture that define and determine the unique Slovenian architecture; analysis and proving of uniqueness; absolute and relative identity of architectural objects; difference in solutions with comparisons and analysis of architectural elements; origins of difference of Slovene architecture to other world architectures.

- **Jože Plečnik – The Modern Classicist – Peter Krečič (5 ECTS)**

History of the in genuine Slovenian art theories (Izidor Cankar – The System of the Style; France Stele – The Art Geography; Nace Šumi – The Regional Constants); the problem of the reduced historicism; the genuine combination of the historical and modern architectural language.

- **Protection and Rehabilitation of Architectural Heritage – Peter Fister (5 ECTS)**

The education about protection and rehabilitation of cultural heritage is connected to the actual changes and experiences of special architectural method and theory with accentuation on Slovene–specific problems and on professionally and scientifically latest achievements and methods of tackling such problems.

- **Integral Renewal – Ljubo Lah (5 ECTS)**

The understanding of fundamental concepts in the field of integral preservation of architectural heritage, familiarization with the interpretations of international data–bases and documents forming the doctrine of integral preservation in the context of sustainable development; theoretical, methodological, legal and value based point of view; selected topics: creativity and renovation, renovation of a town / town section / rural area / settlement, renovation/rehabilitation of buildings, management and cultural heritage, feasibility studies, instruments and mechanisms of spatial planning, planning of adjusted and adapted use of structures in space, preservation of authenticity, conservation interventions, methods and concepts in planning renovation interventions, interdisciplinary and team nature of work.



- **Interpretation of Architectural Heritage – Sonja Ifko (5 ECTS)**

The role of heritage in modern society: identification of cultural identity, space development potential and economic developer; description of characteristic development of heritage protection and the history of presentation methods and techniques; theory and philosophy of protection of natural and cultural heritage: presentation of different categories of architectural heritage, basics of museumological theory and different protection approaches; presentation of heritage and actual trends; inclusion of heritage protection in development programs.

- **Architectural Archetypes of the Sacred – Leon Debevec (5 ECTS)**

Characteristics of the relationship between place and cult; forming layers on the archetypes of the sacred; »wrapping« method; sanctuaries of ancient religions (Egypt, Ancient Greece, Roman Empire); Christian sanctuaries (The Early Christian age, The Middle-age, Baroque, Second Vatican council); parallel spatial developments of other religions.

- **Architecture of Tourist Buildings – Boris Leskovec (5 ECTS)**

Psychology of leisure time and tourism and its influence on architecture. Development of typology around the world and domestically. Designing and functional typology characteristics. Theoretical starting points and real-life examples. Methodical background needed to achieve higher quality of tourist building architecture, while taking into account the global trends on one hand and elements of its identity and typical architecture on the other hand in the sense of understanding of the so-called »critical regionalism«.

- **Theory of Vernacular Architectural Origins – Borut Juvanec (5 ECTS)**

Between techniques, technology, usability, anthropology, ergonomics and aesthetics in architecture: origins of primeval architecture, interrelation of architectural theory and theory of origins, definition of origins; development principles; primeval architecture, scientific research methods for definition of the essence of vernacular architecture and its contemporary conceptual interpretation.





- **Human Environment Anthropology – Igor Toš (5 ECTS)**

Interaction, interdependence and co–evolution of human being and the anthropogenous material and spatial environment. Human being as an »animal symbolism«, a biophysical and symbolical being. Human environment as a biophysical and symbolical milieu. Main concepts in semiotic and information theory. Origins of architecture and origins of city/anthropogenic landscape. Notions of contemporariety. Interdisciplinary structure of architectural anthropology. Methodology of interdisciplinary research, foundations of systems methodology.

- **Architectural Psychology – Marko Polič (5 ECTS)**

Introduction: definition of the domain of architectural psychology; sensual effects; social processes and environment; recognition of the environment; environment problems in settlements; accidents; psychology and planning; specifics of behaviour and experiencing in some special environments; environment for everyone.

- **Art History – Peter Krečič (5 ECTS)**

Art history and history of cultural formations through the prism of architecture and its theory; selected art history topics from different historical periods; theory of art, architectural theories; theories of avant–garde and modernism.



•• FINE-ARTS AND DIGITAL THEORY AND METHODOLOGY – RELATION TO HUMANISM AND TECHNOLOGY

•• **Systems of Plastic Arrangements – Jaka Bonča (5 ECTS)**

Designing composition or a system that is based on the grid or on other forms of repetition. Systems as mathematical isometric projections: mirroring, vortex, repetition etc; the meaning of dimensions, modules, scales, ratios and proportions.

•• **Architectural Versus Fine Art Relations – Peter Marolt (5 ECTS)**

Designing architectural space and spatial forms regarding different levels that art and architecture depend on; communication and communication with spatial entity through spatial dialogue; combination of different media and different kinds of visual arts; the framework for new forms of residence (being, existence); confrontation with the relation between form and the product of the society: knowledge/understanding, order/chaos, revolution/evolution, architecture/sculpture, etc.

•• **Colours and Space – Jurij Kobe (5 ECTS)**

Detailed overview of approaches and methods for colour design; colour design as a reflection of other professions from the perspective of the methods dealt with; professional profile as a starting point of possible methodological contributions; proposal of methodological developments.

•• **Lighting in Architecture and Urban Environments – Tomaž Novljan (5 ECTS)**

Physical properties of the light; the natural light; shade, shadow, refraction, absorption; the lighting with electrical powered sources; essential differences between indoor and outdoor lighting; the comparison between the designed/simulated and measured/achieved photometric quantities; quality and quantity of light; light and the perception of the space; light as the bearer of information; dynamic lighting as a substitution for natural lighting; sustainable lighting design; light pollution; lighting in virtual space; the role of a lighting designer in a building process.

•• **Abstract Spatial Transformations Tools – Tomaž Novljan (5 ECTS)**

Spatial perception; notions: space, abstraction, transformation; their application in the creative process; the chaos theory and self-similarity; basic conception of fractal theory and fractal geometry; application in the design process; ambient design in aggressive environments, habitats without direct connection to aboveground space; adaptation of principles and shaping the perception of natural-like effects into the confined spaces; colour, pattern, light.





- **Interior and Furniture Design – Jurij Kobe (5 ECTS)**
Detailed overview of composition and design methods of mobile and fixed interior equipment, interior composition and design and placing of street equipment in the urban environment; interior/furniture design and understanding of used methods through a reflection of other field of professions; professional profile as a starting point of possible methodological contributions; proposal of methodological developments.
- **Performative Design Strategies – Poul Henning Kirkegaard (5 ECTS)**
A selection of recent projects by designers that use smart materials and systems; research of these works in and preparation for introduction of one own design propositions for a responsive environment; the produced works will draw upon the differing skills of the participants and should range from products and installations, to buildings, cities and landscapes.
- **Digital Methods and Presentations in Architecture – Or Ettliger (5 ECTS)**
Logical and effective use of digital multimedia through the whole planning/building process; methods, software and hardware needed for efficient work; web based technologies, multimedia databases in the field of architecture and tools that enable successful integration of work and communication across world wide web.
- **Designing Virtual Environments – Vassilis Bourdakis (5 ECTS)**
Cyberspace, Virtual Reality, scope of application of synthetic environments, synthetic environments design principles, design tools.
- **Digital Design Methods – Henri Achten (5 ECTS)**
Into the minds of designers – how designers think; the science of the artificial; digital methods of design; developments in digital design methodology.
- **Programming of Architectural Forms – José Pinto Duarte (5 ECTS)**
The theoretical and practical fundamentals for the exploration of the computational aspects or architectural knowledge and form; the basic paradigms for developing generative systems including parametric design, shape grammars, cellular automata, etc and the basic programming constructs such as symbolic expressions, control structures, cyclic functions, data structures, etc; the basics of the scripting language and the required support for development of the exercises/projects.



- **Digital Fabrication – José Pinto Duarte (5 ECTS)**

The basics of advanced geometric modelling, computer aided manufacturing virtual reality and remote collaboration; the use of CAD/CAM tools and processes, namely, subtractive, additive, cutting, and forming processes; solving of complex problems, i.e. in collaboration with the industry; mass customization of housing, the design and production of complex forms etc.

- **Interfaces for Architectural Learning and Collaboration – Tadeja Zupančič (5 ECTS)**

Levels of architectural awareness among different publics; problems of visual communication between professional and general public; blended professional and life-long architectural learning; tools for general and professional architectural learning, for interdisciplinary architectural and urban design collaboration and public participation.

- **Architectural Publishing – Bob Martens (5 ECTS)**

Introduction to (digital) library resources; types of scientific publications; submission, review and dissemination; detailed review of scientific book publications; detailed review of relevant references; impact analysis; ontology.





●●● THEORY AND METHODOLOGY OF URBANISM – RELATION TO SOCIAL SCIENCES AND BIOTECHNOLOGY

●●● History of Urbanism – Janez Koželj (5 ECTS)

Basic notions and the genesis of (spatial) elements. Consistent city: Orient and America; classical antiquity. Post-antiquity (feudal): return of organic structures. Renaissance: ideal city. The rational 'Georgette' city. The modern 'tartan city', 19th and 20th century. Feudal cities in Slovenia. From feudal to the functionalistic city. Contemporary Slovene urban structures.

●●● Urban Planning – Ilka Čerpes (5 ECTS)

Overview of contemporary urban planning theories, sustainable development of the cities, detection and evaluation of the urban development problems, balancing of different development interests, processing of information for the purpose of planning, land use setting and organization, infrastructural network, network of built and un-built space patterns, strategies for generation of built forms.

●●● Architecture and Sustainable Spatial Development – Andrej Pogačnik (5 ECTS)

Architecture as a component of sustainable development of cities, rural areas and landscapes. Research of attractions, environmental carrying capacity and vulnerability of space. Theories of local accessibility analysis, economic justification and social acceptability. Models of plot development, urban and regional scenarios, simulations and games; behavioural, public-opinion, situational and other research. Visual – morphological research of building placement. Architecture and systems: transport, energy-communal systems, agricultural/forest systems, 'green belt' systems. Architecture as a component of land use on municipality, regional and state level. Regionally and state wide important buildings (DLN). Architecture and aspects of sustainable development (ESDP, CEMAT, HABITAT etc). Discussion.

●●● Sustainable City Development – Mojca Šašek Divjak (5 ECTS)

The definition of sustainable city development (by different authors), parameters and indicators of sustainable city development, comparison of different city models and urban patterns, the decentralized concentration model of settlement in different levels (region, city, quarter, community), good practices of sustainable cities, quarters, communities.

●●● Tools for Control of Urban Forms – Kaliopa Dimitrovska Andrews (5 ECTS)

Town planning in modern planning systems. Aesthetic issues in town development. Methods for evaluation and stimulation of quality of urban design and economical sustainability of projects related to town development. Design measures for planning of town and other settlements: classification and their influence on the development of physical structures.



••• **Regional Planning – Andrej Černe (5 ECTS)**

Regional aspects of development; regional problems; development trends and development opportunities; determination of regional development potentials; structure, functions and development of regions; inter- and intra-regional disparities; indicators and criteria as an instrument in regional planning and decision making, the concept of region; spatial division of areas; types of regions.

••• **Environmental Management for Rural Tourism and Recreation – Peter Gabrijelčič (5 ECTS)**

Environmental ethics; psychological and sociological aspects of the environment ; environmental economics: considering the supply and demand, considering the costs and benefits; the role of contractors and management of supporting civil/infrastructure services on the user's quality of life; the quality of ambience related to physical, mental and social health; the theory of active rest.

••• **Local Planning and Public Participation – Andreas Voigt (5 ECTS)**

'Local planning' and 'public participation'. Fundamentals of system theory, simulation theory and communication theory related to planning theory. Planning processes – dealing with public issues various public and private actors; dealing with problems, complexity and various levels of detail. Advantages of various planning approaches. Bottom-up procedures in planning and methods of public participation, 'best practice' examples.

••• **Urban Economics – Andreja Cirman (5 ECTS)**

Introduction to real estate markets. Microeconomic analysis of property markets; Macroeconomic analysis of property markets; economic growth and metropolitan real estate markets; The impact of local governments on real estate markets: local government, property taxes, and real estate markets; public goods, externalities, and development regulation.

••• **Real Estate Economics – Selected Themes – Maruška Šubic Kovač (5 ECTS)**

Definition of real estate economics, real estate life cycle, real estate development. Spatial planning and land use decision: location factors, impact of institutional factors on land use, economic returns to land use, decisions. Real estate development process: land availability, land policy, land acquisition, public and private interests weighting, land development and community infrastructure levy, construction and construction costs. Real estate valuation. Real estate analyses for real estate decision-making.





••• **Sociological Concepts of Modern Urbanism – Marjan Hočevar (5 ECTS)**

Transformation of the cities at intertwining processes of globalization and localization ('glocalization'). The cities as reflective choice for an increasing number of actors. The instrumental significance of spatial practices and the increase role of the reflective practices linked to lifestyles. Intertwining of non-residential spatial practices and spectacle functions in redefinition of postulates of classical urbanism.

••• **Landscape Settlements of Cultural Diversity – Alenka Fikfak (5 ECTS)**

Theoretical and historical basis for understanding forms and spaces. Basic notions (perceptual, experimental and living space); living culture, defining people needs; contemporary global social and economic changes. Designing living units, meaning of individual space as a basis of living units forming (light, communication and function). Elements of buildings in the meaning of sensing/experiencing, imagination of space; examples of contemporary organized building in country side; new forms, experimental models, etc.

••• **Protection of Architectural Landscapes – Živa Deu (5 ECTS)**

International documents about the protection of built environment. Architectural policy for sustainable Europe of diverse regions. The role of significance of the built environment, as an element which contributes to regional diversity. Architectural landscapes and regions of Slovenia. Methods which help to identify quality values and measures of the built environment in an architectural landscape as the prerequisite for quality refurbishment and new designs. Examples of good practice. Discussion on the methods used (architectural, art-historical, ethnological, social).

••• **Methods of Ambiental Design – Peter Gabrijelčič (5 ECTS)**

Mechanisms of spatial perception and sensual formation of human living environment through several perception levels and different perception media. The concept of ambient (material and physical and emotional, intellectual, symbol). Systems of values generated in different historical periods and profession doctrines. Perception of micro-ambients. Perception on the macro-ambiental level. The multi-level experience of traditional town: ambient as realistic geometry, ambient as psychological challenge, ambient as recognizable form and ambient as cultural phenomena. Contemporary theory of perception (the generic city). New aesthetics of space based on individuality and diversity. Interdependence of aesthetics with particular social context and its system of values.



••• **Sensitive Urban Places – Tadeja Zupančič (5 ECTS)**

Detailed review of architectural and urban research/design methods and the design of micro urban and architectural places in the city. Architecture as a reflection of other professions from the perspective of the methods dealt with. Professional profile as a starting point of possible methodological contributions. Proposal of methodological developments.

••• **Design of Open Space – Davorin Gazvoda (5 ECTS)**

Reasons for existence and typology of the objects of garden art. Transition of garden art in more complex design of open space. Built and green open space. Modern landscape design. Generation of landscape forms. Interdependence of architectural and landscape design. Inclusion of sociological, psychological and landscape–ecological issues in design of city open space. New paradigms in design of open space. Critical overview of recent design achievements in the field of open space design.

••• **Housing Environment Humanization – Janez Kresal (5 ECTS)**

Elements of humanization, phenomenology of the elements of humanization, applying method on certain project, method reflections and looking for new models.





●●●● THEORY OF PLANNING AND TECHNOLOGICAL APPLICATION IN ARCHITECTURE – RELATION TO TECHNOLOGY

●●●● Architectural Design Theory – Igor Toš (5 ECTS)

Design as an inter-subject, interdisciplinary, multi-phase and creative process of preparations for the intervention in environment. Factors that influence architecture. Subjects in architectural processes. Design as communication, agreement, coordination and integration of contributions. The role of an architect. Aspects, types and phases of design process. The role of regulations and norms. Design as a problem solving, decision making, as a creative process. Basic concepts in psychology of creativity. Foundations of design methodology and technology, basic general and specific methods and techniques, comparison of methods. Systems methods in design and the problem of specialization. Relation between standpoints and methods, theories and practice. Problem of goal, resource and solution assessment. Value systems and criteria. Ethics and aesthetics in design.

●●●● Integrated Practices and Building Modelling – Tatjana Isaković (5 ECTS)

Approaches to integrated practices: knowledge of project life-cycle. Integrated practices and project knowledge management, the systems thinking approach fundamentals and applications. The project system: environments, elements and relationships, the scope of projects and the role of design teams. Project and teamwork system analyses methodologies, technological, organizational and process analyses for collaborative practices. Team forming, collaborative work and communication. Digital project and optimization of collaborative practices. Integrated practices with building information modelling. Designed-built best practices, documentation, archiving and re-use. Management of design teams, CAD management and small groups.

●●●● High-Tech Architecture – Ljubomir Mišević (5 ECTS)

Contemporary building materials, systems and structures in architectural design and construction of high-tech architecture. Continuous development of architectural discourse and construction technologies through increasing world of discoveries, their application and monitoring, which pose new challenges to creativity. The obligation of architects in pursuing and adopting the high-tech technology in architectural practice. Selected themes: eco-tech, bioclimatic high-tech, extreme architecture, virtual high-tech.

●●●● Contemporary Architectural Technology – Janez Kresal, Martina Zbašnik-Senegačnik (5 ECTS)

Subject is divided into following components: contemporary architectural technologies, building materials selection criteria, ecological building materials: natural, local, recycled, renewable, low energy, hydro- and thermo insulating, smart building materials; nano building materials and techno textiles.



•••• **Mass Customization of Housing – José Pinto Duarte (5 ECTS)**

General production paradigms: handcrafted, mass production, lean production, mass customization. Approaches to mass housing: 19th century and beginning of the 20th century, the period between the Two World Wars, Post–World War II, from the 1960s to today. Prefabrication systems: light and heavy prefabrication; linear, planar and volumetric systems. Design systems: classical, Durand, Le Corbusier, Gropius, Fuller, Wright, Habraken's Theory and other recent approaches. Use of computer aided and building technologies for designing user adapted mass production that give mass produced objects the qualities of individually designed objects.

•••• **Fire Safety of Built Environment – Domen Kušar (5 ECTS)**

While planning architects have to take safety of people, assets, building itself and its surroundings into the account. The planners have to respect legislation as well. The course thus introduces three components of safety problematics: safety against fires – causes of fires and explosions, system of safety measures for prevention of fires, for restraint of spreading of fires, for evacuation and rescuing of people and assets and for intervention of firemen, firefighting devices, etc; safety at work – causes of danger, technology, measures behind expedition and reduction of danger such as: physical (falls, explosions, hits, vibrations, noise, hot blow, light blow, electric blow, etc), chemical (smoke, poisonous and pungent substances, etc.) biological or any other; safety against pollution – causes of pollution of air, waters and lands, measures for expedition of danger of environment pollution of, water treatment plants.

•••• **Environmental Physics for Architects – Jaume Roset (5 ECTS)**

Studies in the field of environmental physics; thermal aspects; acoustics; lighting; 'architectural combinations' of thermal, acoustics and lighting from the environmental physics perspective.

•••• **Energy and Environment Assessment of Buildings – Sašo Medved (5 ECTS)**

Environment related problems caused by construction and utilization of contemporary buildings and settlements due to the materials and energy demand; environmental spheres, natural processes in environmental spheres and their change through anthropogenic sources of pollution; importance of rational use of materials and energy in buildings and principles and technologies for energy supply based on dissipate and district energy systems; analytical and numerical methods for energy and environment assessments of buildings are introduced; methods for technology and economy based feasibility studies of buildings related environment protection technologies.





•••• **Microclimate of Urban Areas and Buildings – Sašo Medved/FS (5 ECTS)**

Modelling of energy and mass flows in the urban environment, sensible and latent heat storage in built environments and nature, microclimatic balance in urban environment, flows ratio and transfer of pollutants in urban environment, mechanisms of heat transfer, discreet and gradual heat transfer through homogenous and inhomogeneous built structures, discreet and gradual water and humidity transfer through homogenous and inhomogeneous built structures, transfer of heat through transparent envelopments of buildings, heat-loss, modelling and evaluation of joints, transfer of sun radiation and sunlight in buildings (modelling), heat storage in built structures, adaptive models of living thermal comfort, thermal response of buildings, planning of interior living environment and energy use based on the thermal response of buildings.

•••• **Renewable Sources of Energy in Buildings – Martina Zbašnik-Senegačnik (5 ECTS)**

Parameters of living comfort, building technologies of passive and low-energy houses, the components of passive and low-energy houses (a thermal insulation, windows and doors, the systems of warming and ventilation, sun protection, etc), the ecological passive houses (houses made from natural materials: straw, clay, earth, etc), big passive houses (offices, schools and kindergartens, mountain huts, factories, etc), the building renovation in passive house technology (thermal insulation, thermal bridges, ventilation, warming, etc), the newest technologies (activation of concrete mass, cooling and warming in the wall, etc).

•••• **Selected Topics in Building and Construction History – Lara Slivnik (5 ECTS)**

The course offers a critical examination of the transformations in architectural and constructional history: Crystal Palace, Palais des Machines, Le Corbusier's pavilion L'Esprit Nouveau, Mies's Barcelona Pavilion, etc and more recent from Hannover EXPO 2000 to Shanghai EXPO 2010.

•••• **Structures in Architecture – Vojko Kilar (5 ECTS)**

The course is oriented toward the preliminary design and analysis of structures. Main teaching topics include: computer models, loading, materials and simulations of structural behaviour with computer programs. Basic knowledge on selected programs for static analysis and basic information on structural modelling are given. Special attention is given to the communication between 3D architectural models and structural mathematical models. The course is also supported with prepared computer simulations of structural behaviour which enable a more direct connection with engineering component of the course.



•••• **Design of Shell Structures – Boštjan Brank (5 ECTS)**

The course covers the following types of shell structures: light reinforced concrete shell, shell made of composite laminates, a system of metal or timber beams that has a curved shape and prestressed textile membrane structures. An emphasis is given on characteristics of shells structures, which are light, slender, curved and aesthetically pleasing constructions over larger spans. The production/building of shells as thin shells out of reinforced concrete is covered. The course also deals with the arrays of linear elements that form the shell and prestressed membranes, as well as problems of shells and problem solving. The basic question thus revolves around: How to find such a shape that is aesthetic on one hand and stable for the design loads on other hand?

•••• **Basics of Bridge Design – Tatjana Isaković (5 ECTS)**

The main topics of the course are conceptual design, analysis and basic procedures for estimation of the dimensions of structural elements. Students will obtain the knowledge about computer based modelling of bridges, including modelling of different materials, loads and different groups of structural elements. He or she will obtain the knowledge about the computer software, which is intended for the analysis and design of bridges. The special attention will be devoted to the proper modelling. Proper procedures for estimation of the bridge strength will be considered, too. The course is supported with computer simulations of structural response. Lectures will be combined with project base and problem oriented work.

•••• **Earthquake Architecture – Vojko Kilar (5 ECTS)**

In the first part the students get basic insight in the earthquake engineering field and actual philosophy of building design in earthquake prone areas. We describe the phenomena of earthquake loading as well as the importance of conceptual building design for actual behaviour of building during an earthquake. The second part is focused to architecture of earthquake resistant structures and analysis of existing or empirical mechanisms to achieve adequate horizontal stiffness of buildings. A special attention is given to the architectural identity of specific cultural region that can be accessed thru earthquake resistant building concept. The symbolic or metaphoric response of architect to earthquakes is also presented. The third part combines the first two parts and looks for a synergy between the earthquake engineering and architecture.



