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SEMESTER 1

Mechanics 1.
Lecturers: Dr. Ghaemi Mohsen
Subject supervisor: Dr. Iványi Péter
Allotment of hours per week: 4 L, 0 P
ECTS Credits: 5
Requirement: semester mark
Brief Syllabus: This course aims at teaching the basics of mechanics and covers the following topics: equilibrium states and conditions of equilibrium; resultant and balance of plane force systems; defining load-bearing structures, their types and loads. This theme is also expanded through the calculation of support reactions, simple hinged structures, loads on structures, calculation of loads, types of structural systems, definition and calculation of internal forces and internal force diagrams, definition of support and internal forces of joint structures, three-joint girders, Gerber girders and compound joint structures. The definition and types of truss is also covered and the forces influencing them.
This subject intends to provide students with knowledge in the basics of mechanics, resultant and balance of plane force systems. An additional objectiveis to prepare students with a basic knowledge for planning construction structures.
Course materials:

- Wight, J. K, MacGregor J. Reinforced concrete mechanics & design, Pearson, 2012.

Mathematics b/1.
Lecturers: Dr. Perjésiné Dr. Hámori Ildikó
Subject supervisor: Dr. Klincsik Mihály
Allotment of hours per week: 4 L, 0 P
ECTS Credits: 5
Requirement: semester mark
Brief Syllabus: This lecture and practical based course aims to give architecture students a solid mathematics basis through covering the following topics: sets of numbers (natural, whole, rational and real numbers); vectors and operations with vectors, scalar and vector products and their applications; sets and operations with sets; projections; definition of functions; presentation of functions; polinoms; rational-fractional functions; algebraic functions; sequences of real numbers (definition of monotonity, limitedness, convergence and divergence); limit value and continuity of functions; types of discontinuity; definition of tangents; differential calculus of functions in one variable, differential quotients, derivative, relation between differentiability and continuity; rules of derivation, derivatives of algebraic functions; integral calculus: definition of the primitive function and indefinite integral, properties of indefinite integrals, basic integrals, integral processes, definition of the Riemann integral, its geometric and physical meaning, integral function, Newton-Leibniz theory.

Students learn the basics of mathematics enabling them to interpret and understand engineer sciences and through solving elementary tasks they deepen their basic theoretical knowledge in the field of engineering. The material of the practicals matches the requirements of the different specialisations.
Course materials:

- George B. Thomas, Jr.: Thomas's Calculus , Pearson Addision Wesley,2005.
- Anthony J. Pettofrezzo: Vectors and Their Applications , Dover Books on Mathematics,2005.

Descriptive Geometry 1.
Lecturers: Dr. Vörös László
Subject supervisor: Dr. Vörös László
Allotment of hours per week: 2 L, 2 P
ECTS Credits: 4
Requirement: semester mark
Brief Syllabus: The objective of this subject is to teach students the fundamentals of descriptive geometry, giving them practical skills through following topics; characteristics of the science, geometrical construction, theoretical sciences, basics of symbolic logic, geometrical transformation, projection representation, simple statements, representation of space structures, relations, the Monge system, universal existence, the fit, section, distance and angle of space structures.
In addition to these topics students will study the basic concepts of set theory, finite and infinite sets, representation of geometrical bodies, the basics of geometry, principles of axonometry, the theory of parallelism and axiom, distance and angles in normal and oblique axonometry, classification of two-dimensional figures, regular geometrical bodies, index number representation (I section - fit, II distance - angle, III projective geometry), ideal space structures, second-order curves, surfaces and the construction of flat slab floors.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- G. Young, H. E. Baxter, Descriptive Geometry,New York, The Macmillan Company, 1921. http://www.ebooksread.com/authors-eng/george-young/descriptive-geometry-hci-78.shtml
- E. F. Watts, J. T. Rule, Descriptive Geometry,Prentice-Hall, INC 1946 http://archive.org/details/descriptivegeome033051mbp
- H.S.M. Coxeter, Projective Geometry,New York Springer-Verlag 1987 2nd ed.
- G. R. Bertoline, E. W. Wiebe, C. L. Miller, L. O. Nasman Communication, Engineering Graphics communication,R.D. Irwin Inc., Chicago 1995
- K. Standiford, Descriptive Geometry: An Integrated Approach Using AutoCAD,
- P. Ledneczki, Descriptive Geometry, BUTE, Budapest, http://www.epab.bme.hu/oktatas/2008-2009-1/e-DGeo1/DG1_Lecture_notes.pdf
- V. Szirovicza, Descriptive Geometry,Self-published, Zagreb, Croatia

Philosophy
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: The objective of this subject is to provide future engineers with a general philosophical education as well as with one corresponding to their special fields. On this basis, there are two topics to be covered: philosophy of human being (philosophical anthropology) and philosophy of the arts. The first topic reveals the basic personality traits shown in significant trends of the 19th and 20th centuries. The second topic deals with the philosophical aspects of art throughout the history of philosophical thinking in chronological order, pointing out and comparing the characteristic ideas. The primary objective of the course is to teach students how to comprehend and interpret authentic texts.
The following topics are covered: introduction to philosophy; the nature and historical approach of philosophical ways of thinking, tradition, philosophy of the Ancient East, beginnings of antique philosophy in antiquity, ontological systems; the Ancient Age of Enlightenment, classic philosophy in Athens, Plato and Aristotle; Ancient Greek philosophy; philosophy in the Middle Ages; Christianity, Patristics and Scholasticism; natural and social philosophy of the Renaissance, Bacon; metaphysical systems, Descartes and Spinoza; the Age of the English Enlightenment, Locke, Berkeley, Hume; the Age of the French Enlightenment, Diderot, Montesquieu, Voltaire, Rousseau; German classic philosophy, Kant and Hegel; Irrationalism, Schopenhauer, Kirkegaard, Nietzsche; new metaphysics, Freud, Jung.
Course materials:

- E. Craig, Philosophy: A Very Short Introduction, Oxford University Press, Oxford, 2002.

Architectural Drawing 1.
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This practical based course enables students to acquire skills in free-hand drawing, laying special emphasis on familiarizing themselves with the use of different perspective systems and introducing them to their regularities. As a basic objective, students are expected to cope with drawing models, acquire basic drawing techniques as well as apply different drawing methods in order to develop their visual form capabilities and use of tools. As a supplementary activity, students are provided with tasks which are

suitable for improving and developing their spatial vision, combination skills and creativity.
Utilising the knowledge obtained during the courses of Basics of the Fine Arts I, II as well as of Space and Object Representation I, II, students deal only with the regularities of representing built space. During the course students familiarize themselves with the modelled representation of exterior and inner spaces. In accordance with their design programme, students are introduced to the characteristics of preparing drafts and drawing methods with which built space can be expressed.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Construction Materials
Lecturers: Dr. Orbán Zoltán
Subject supervisor: Dr. Orbán Zoltán
Allotment of hours per week: 2 L, 2 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This lecture and practical based subject intends to provide students with a useful knowledge concerning the fundamentals of construction materials and covers the following topics: chemical, physical and mechanical properties of construction materials; features and application of heat and sound insulation materials; waterproofing materials, bitumen, damp-proof layers, methods for later drying out of wet walls; production, testing and properties of construction ceramics, choice and application of ceramic masonry elements; types of mortar and their testing and properties, application of special mortars in the construction industry; construction with stone and their testing and application; types of timber, structure, physical and mechanical properties of wood, defects in wood and wood protection; metal and reinforced concrete, production, testing and mechanical properties of steel; architectural glass; properties of plastic materials and their application in the construction industry.
Through the examination of "changes in materials", chemical and physical processes can be examined, and by studying corrosion, degradation and compatibility of materials we can find the means to minimise damage or protect against degradation. Students also learn to classify the ever expanding range of construction materials, analyse the dangers originating from environmental changes and explain application directives and their boundary conditions.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Manfred Hegger, Volker Auch-Schwelk, Matthias Fuchs, Thorsten Rosenkranz, Construction Materials Manual, 2006.
- K. L. Murty (ed.) Materials ageing and degradation in light water reactors: Mechanisms and management, 2012.

Basics of Architecture Module A
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This subject provides the groundwork for architecture, and gives an insight into architecture found in various cultures and in science. Using contemporary architectural work as examples, students can gain an insight into the aesthetics, functional and structural roles of architecture. The basic concepts of architecture are also covered and the interrelations between nature and architecture and architecture and the environment. Students learn about the objects of architecture and built structures and the value of the building is introduced covering aesthetics, functionality, style and philosophy. The permanence or temporality of architecture is examined through examples of contemporary architecture. Students also look at scale, size, and relations between settlements and architecture, and how architectural drawing, as a tool of expressiveness, is utilised.
Course materials:

- Nikolaus Pevsner: An Outline of European Architecture,Harmondsworth, 1963. (later editions)

Basics of Architecture Module B
Lecturers: Dr. Medvegy Gabriella
Subject supervisor: Dr. Medvegy Gabriella
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: Through the introduction of common problems related to the design of buildings and the architectural environment, Basics of Architecture aims to help students approach the essence and inner structure of a building. Through examples of national and international contemporary architecture, students study the methodology of the design process as well as those important factors which determine the location, geometry, etc. of the future building. Students must be able to interpret certain architectural solutions and situations.
In the framework of getting prepared for design, students study operating buildings with similar functions and examples published in professional literature. On this basis they finalize their design project. In addition to their final drawing plans, they hand in their assignments at the end of the semester. Also assessed are the preliminary studies, the

evaluation of different alternatives and the technical description of the concept together with the necessary sketches. The buildings are modelled as well.
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

Basics of Architecture Module C
Lecturers: Dr. Zoltán Erzsébet Szeréna
Subject supervisor: Dr. Zoltán Erzsébet Szeréna
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This subject provides a basis for later courses and introduces the following topics: dealing with building constructions, presenting basic construction structures and their location in buildings, and the fundamentals of the requirements and application fields of building constructions.
Building is considered as an arrangement of spaces enclosed by surfaces of various functions and this subject implies that building design, construction and operation are interrelated and that an integral approach is necessary. Types of plan and the characteristics of block plans and detail drawings are also presented.
To complement the main objective students learn about the expert use of drawing tools, letter-scripts, scales, different plans and the objectives of documents, defining building structures, structure encyclopaedia and constructional skills, preparation and utilizing studies and research.
Course materials:

- Malcolm Millais, Building Structures: From Concepts to Design

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SEMESTER 2

Mechanics 2.
Lecturers: Dr. Ghaemi Mohsen
Subject supervisor: Dr. Iványi Péter
Allotment of hours per week: 3 L, 0 P
ECTS Credits: 4
Requirement: semester mark
Brief Syllabus: Students continue to learn the fundamentals of mechanics, compression and stressing of bar structures, which helps them with dimensioning basic structural components of construction and selecting the most appropriate materials. To assist with this, students learn the rules of technical and building constructional representations and various structural systems.
In particular, students cover the following topics: stress and deformation, Hookes Law, axial prestressing and compression of bar structures, pure shear, design of bolted joints, wooden joints, bending stress, perpendicular and oblique bending, shear stresses with

simultaneous bending, eccentric stresses of materials with and without tension strength, issues of design and examination, EUROCODE's and Hungarian standards.
Course materials:

- Wight, J. K, MacGregor J. Reinforced concrete mechanics & design, Pearson, 2012.
- Iványi, Miklós: Stability and Ductility of Steel Frames (in English)POLLACK PRESS, Pécs, 2010, p. 420.

Mathematics b/2.
Lecturers: Dr. Perjésiné Dr. Hámori Ildikó
Subject supervisor: Dr. Klincsik Mihály
Allotment of hours per week: 3 L, 0 P
ECTS Credits: 4
Requirement: semester mark
Brief Syllabus: This lecture and practical based subject aims to extend students mathematics knowledge and its application to engineering and architecture through the following topics: definition of definite and indefinite integrals, calculus of definite integrals using the Newton-Leibniz theory, application of definite integrals to engineering (architectural) problems, calculation of volume and centres of gravity, analysis of multivariable functions, interpretation and application of partial derivatives, definition, calculus and application of double integrals in authentic practical problems.
Students will also learn about transcendental functions: notable limit values and their derivation, application of differential calculus, Rolle's theorem, Lagrange's mean value theorem, rule of L'Hospital, testing functions, differentials of differentiable functions and their application for fault calculation, tangency of curves, osculating circles, curvature of the plane curve at P0, Taylor-polinoms, integration with replacements, partial integration, special integrals, geometric and engineering applications of definite integrals, improprius integrals, numeric integration, examples with common differential functions, definition of differential equations, their classification and solutions, solution of differential equations of the first and second order, definition of multivariable functions, partial derivatives, gradients, extreme values of the multivariable function, definition of the double integral and its calculus in the standard range.
The practical sessions are designed to meet the requirements of the different specialisations.
Course materials:

- George B. Thomas, Jr.: Thomas's Calculus , Pearson Addision Wesley,2005.
- Anthony J. Pettofrezzo: Vectors and Their Applications , Dover Books on Mathematics,2005.

Descriptive Geometry 2.
Lecturers: Dr. Vörös László
Subject supervisor: Dr. Vörös László
Allotment of hours per week: 1 L, 2 P

ECTS Credits: 4
Requirement: semester mark
Brief Syllabus: The objective of this subject is to teach students engineering representation skills and the construction of various curved surfaces using representation techniques learnt in Descriptive Geometry I. Topics covered by this subject are as follows: points of intersection and plane sections of plane-sided geometric bodies, contour and points of intersection of curved surfaces, plane sections of curved surfaces, intersection of plane-sided shapes, intersection of curved surfaces, architectural applications (cupolas, vaults, spiral staircases), architectural applications in axonometry, construction of shadows (Monge and axonometric), systems of central mapping, representation of space structures, central images of plane-sided bodies, central images of curved surfaces, construction of shadows in central mapping.
Students attending this course will become acquainted with the geometric properties of all complex second-order surfaces and through learning how to construct their contours, shadow and sections, students perception of space and construction skills are improved and it also helps them understand the aspects (benefits in terms of form, structure or statics) of architectural application. Students will be able to construct views, sections, contours and shades of objects of their own design. This knowledge is required so that they can practically use the curved surfaces of computer representation in CAD systems.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- G. Young, H. E. Baxter, Descriptive Geometry,New York, The Macmillan Company, 1921. http://www.ebooksread.com/authors-eng/george-young/descriptive-geometry-hci-78.shtml
- E. F. Watts, J. T. Rule, Descriptive Geometry,Prentice-Hall, INC 1946 http://archive.org/details/descriptivegeome033051mbp
- H.S.M. Coxeter, Projective Geometry,New York Springer-Verlag 1987 2nd ed.
- G. R. Bertoline, E. W. Wiebe, C. L. Miller, L. O. Nasman Communication, Engineering Graphics communication,R.D. Irwin Inc., Chicago 1995
- K. Standiford, Descriptive Geometry: An Integrated Approach Using AutoCAD,
- P. Ledneczki, Descriptive Geometry, BUTE, Budapest, http://www.epab.bme.hu/oktatas/2008-2009-1/e-DGeo1/DG1_Lecture_notes.pdf
- V. Szirovicza, Descriptive Geometry,Self-published, Zagreb, Croatia

History of Architecture 1.
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: examination
Brief Syllabus: This course forms a basis for the history and theory of architecture, which summarises historical events in monumental architecture in both Eastern and Western

ancient cultures, and describe characteristics of architecture. It covers the following topics: the concepts of the history of architecture, megalithic architecture in Europe, architecture of Ancient Egypt, the Necropolis, the centre of the Ancient Empire and the architecture of pyramids, architectural remains of the New Empire, the culture and architectural remains of Crete and Mycenae, Greek culture, archaic, classical and Greek art, the Etruscan culture and its influence on the art of Rome, architecture in the Roman Empire, technical achievements and engineering architecture in the Roman Empire, Early Christian architectural remains in Rome and Ravenna and the cultural influence of the Byzantium age.
Through studying palaces, churches and temples, tombs, houses, public buildings and urban planning of antiquity, students can gain an insight into the evolution of spatial design and functional relationships in architecture and the history of structural and technical development.
Course materials:

- Nikolaus Pevsner: An Outline of European Architecture,Harmondsworth, 1963. (later editions)
- Nikolaus Pevsner: A History of Building Styles. Pinceton, 1976.
- Dora Wiebenson - József Sisa (ed.): The Architecture of Historic Hungary. MIT Press, Cambridge, Mass. - London, 1998.
- Bachman Z: Bachman Zoltán, Vince Kiadó, 2010.

Architectural Drawing 2.
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This practical based course enables students to acquire skills in free-hand drawing, laying special emphasis on familiarizing themselves with the use of different perspective systems and introducing them to their regularities. As a basic objective, students are expected to cope with drawing models, acquire basic drawing techniques as well as apply different drawing methods in order to develop their visual form capabilities and use of tools. As a supplementary activity, students are provided with tasks which are suitable for improving and developing their spatial vision, combination skills and creativity.
In addition to learning the basics of colour theory, students are expected to use a wide range of drawing techniques (e.g. pencil, crayon, ink and wash drawings) to express spatial arrangement and shadow effects.
The course is the continuation of Architectural Drawing I. In accordance with their design programme and through more and more complex tasks, students are introduced to the process of preparing drafts and using drawing methods with which built space can be expressed.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.

Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Building Constructions 1.
Lecturers: Dr. Zoltán Erzsébet Szeréna
Subject supervisor: Dr. Zoltán Erzsébet Szeréna
Allotment of hours per week: 3 L, 4 P
ECTS Credits: 7
Requirement: examination
Brief Syllabus: This subject intends to teach the following topics: requirements of building constructions; history of wall structures; walls built from small bricks, general rules of brick joints; modern masonry materials, skeleton ceramics, partition walls; lintels for openings of load-bearing wall structures, discharge of loads; masonry lintels, stone arches, reinforced concrete joists; requirements and planning aspects of stairs, interior stairs, structural solutions for radial stairs, interior stairs made of reinforced concrete, metal and wood, stair structures of residential and public buildings, structural design of monolithic reinforced concrete stairs, stair structures made of stone and cast stone, pre-fabricated stair structures, entrance stairs, terrain stairs.
In addition students will be introduced to the regulations and requirements of flat floor structures, wooden ceiling structures, ceiling structures with steel beams, pre-fabricated reinforced concrete ceiling structures, the relationship between reinforced concrete beams and their lining, structural design of ring beams, monolithic reinforced concrete ceilings, floor coverings, structural breakthroughs in ceiling structures, curved ceiling structures, the historical development, types and structural design of vaults.
This course provides a sound basis for students to improve their construction and structural design skills, through both the theory based lectures and through the practical element of the course, where students are introduced to the construction process of a residential building.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Malcolm Millais, Building Structures: From Concepts to Design

Building Design 1.
Lecturers: Dr. Medvegy Gabriella
Subject supervisor: Dr. Medvegy Gabriella
Allotment of hours per week: 1 L, 3 P
ECTS Credits: 5
Requirement: semester mark
Brief Syllabus: This course serves as an introduction to the home environment and gives students a theoretical and practical basis for designing residential buildings. To achieve

this, lectures are given in the following topics: arrangement of space in a house, fixtures in a house, suitable floor plan layout of spaces, external appearance of the building (familiarisation with an emphasis on the deviations and differences depending on sitting arrangements), service requirements, types of residential building, and the history of residential buildings.
In their semester assignment, students present the problems arising from mass formation and the sitting arrangements of buildings and during the practical sessions they prepare models and are taught techniques and tools of representation (drawing tools, methods and tools for modelling).
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

SEMESTER 3

Application of Computers 1.
Lecturers: Dr. Halada Miklós
Subject supervisor: Dr. Halada Miklós
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: This subject aims to provide an introduction to the use of computers in architectural design. Students are introduced to the theory behind Computer Aided Design software and their practical use through the following topics: geometric construction and 3D modelling using architectural CAD software, application of materials and textures to the design components, preparation of explanatory and 3D images, phase drawings and animations, export of vector and pixel-graphic datafiles for image processing and editing programs, insertion of processed data and other digital images and texts into CAD drawings, preparation of presentation material.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:
No book is required.

Economics 1.
Lecturers: Prof. Dr. Varga Attila
Subject supervisor: Prof. Dr. Varga Attila
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3

Requirement: examination
Brief Syllabus: This is an introductory course in the basic concepts and principles of microeconomics. The course gives the students the ability to handle the tools (e.g. curves, functions) and to make simple consumer and business decisions.
This subject intends to teach architect students the basic concepts and types of economics and their relations through the following topics: concept of economics, its basic categories and relations; organisation of economy; principles of markets; theory of usefulness; optimal decision of households; cost theory; optimal decisions of business organisations on the competitive and monopolised market of common goods; the theory of production; optimal decisions of business organisations in the market of production; characteristics of the capital market, labour market and the market of natural elements.
This subject aims to explain how economic agents interact and how economic analysis is applied throughout society, in business finance and government, in production,distribution, and consumption of goodsand services.
This subject is intended to create a basis for economic knowledge, to prepare architecture students for a career in a business world and for achieving high-level, responsible positions in business in general. It aims to provide future architects with an economic background necessary for taking part in a development and investment process.
Course materials:

- David Begg, Stanley Fischer, Rudiger Dornbusch: Economics. Part 1–3. McGraw-Hill (seventh or newer edition)
- Economics workbook of Smith – Begg. McGraw-Hill. http://highered.mcgraw-hill.com/sites/0077099478/student_view0/

History of Architecture 2.
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: examination
Brief Syllabus: This subject is a follow up course in the history and theory of architecture, and summarises ancient Christian events and architecture in the Middle Ages based on monumental architecture. The objective of the subject is to present the mainstreams of development, the evolution of medieval architecture and intends to improve knowledge of theoretical and historical aspects of architecture. Aesthetic standards and awareness are improved through the following topics: spread of Christianity, sacred and profane architecture in the Middle Ages, outstanding architectural monuments of Romanticism and Gothicism in Europe and Hungary.
Through presenting the main spiritual movements and social changes in Europe, and their influence on architectural approach through characteristic buildings and sculptor's studios, students discover the concept of architecture and the different types of drawings characteristic of this era.
Course materials:

- Nikolaus Pevsner: An Outline of European Architecture,Harmondsworth, 1963. (later editions)
- Nikolaus Pevsner: A History of Building Styles. Pinceton, 1976.
- Dora Wiebenson - József Sisa (ed.): The Architecture of Historic Hungary. MIT Press, Cambridge, Mass. - London, 1998.

Architectural Drawing 3.
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This practical based course enables students to acquire skills in free-hand drawing, laying special emphasis on familiarising themselves with the use of different perspective systems and introducing them to their regularities. As a basic objective, students are expected to cope with drawing models, acquiring basic drawing techniques and applying different drawing methods, from pencil to collage to computer imaging, in order to develop their visual form capabilities and use of tools. This way the students can learn to choose from a variety of instruments for representing architectural design. As a supplementary activity, students are provided with tasks which are suitable for improving and developing their spatial vision, combination skills and creativity.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Heat and humidity technologies
Lecturers: Dr. Fülöp László
Subject supervisor: Dr. Fülöp László
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The objective of this subject is to summarise the basics of building physics, the energy balance of structures, energy-conscious architecture, passive solar systems and methods of energy design.
This subject matter is taught through the following topics: basic forms of heat transmission, the heat transmission coefficient, strata boundary temperatures, thermal bridges, ribbed structures, resultant heat transmission coefficient, structures in contact with the ground, non-stationary processes of thermal mass, absorption, phase lag, heat absorption of floors, weather conditions, geometry and energy yields of solar radiation, the greenhouse effect, equivalent heat transmission coefficient of transparent structures, energy balance of structures, building energetics and components of energy balance,

requirements, specific heat requirement, methods and processes of energy design and testing, efficiency of heat insulation, energy-conscious architecture and passive solar systems.
In addition to energy and buildings, students study about the properties of vapour diffusion in stationary cases, sorption, moisture content of structures, filling-up time, vapour condensation on surfaces, capillary condensation, conditions for fungoid diseases, moisture balance of rooms and factors affecting how we sense temperature and how it is measured and temperature sensing in winter and summer.
Because European regulations are getting more strict, buildings must be increasingly more energy efficient. This subject introduces students to methods of achieving energy efficiency and concepts for energy efficient architecture.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Shan K. Wang, Handbook of Air Conditioning and Refrigeration, McGraw-Hill, 2000.
- Fülöp László, Active Solar and PV Systems, IPA Building energetics, 2012.
- Magyar Z. Indoor environmental quality and EPBD, IPA Building energetics, 2012.
- Zöld A. Energy efficiency in buildings, CIENE, Athén, 1995.

Building Constructions 2.
Lecturers: Dr. Zoltán Erzsébet Szeréna
Subject supervisor: Dr. Zoltán Erzsébet Szeréna
Allotment of hours per week: 3 L, 4 P
ECTS Credits: 7
Requirement: examination
Brief Syllabus: The primary intention of this subject is to teach students the following theoretical topics: drawing representation of roof structures, wooden roof structures and joinery, Chevron roof structures, vacant and collar beam roof structures, purlin roof structures, roof structures with one, two and multiple support members, roof structure with slanted support members, purlin roofs with struts, mansard roof structures, hipped roof structures, carpenter joints, suspended roof structures, structural solutions for building in attics, damp-proofing requirements and their materials (bitumen and plastic layers), structural requirements of damp-proofing against soil moisture, horizontal and vertical wall insulation, horizontal floor insulation, insulation of footings, waterproofing against ground water, constructional solutions for structures penetrating insulation and connecting structures, types and requirements of foundations, systematisation and rules of flat foundations, production of continuous footings, roofing, imbricate roof structures, tough roofing systems, tile roofing, concrete roof tiles, slate roofs, wooden and thatched roofs, boarded roofs, flashing and guttering, breakthroughs in roofing, metal plates, chimneys and gravitational ventilation.

The topics listed above serve as a basic theoretical knowledge for students and are complimented by practical sessions where students work through the design of a residential building.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).

Course materials:

- Heino Engel, Structure Systems, 2007.
- Klaus Sedlbauer, Eberhard Schunck, Rainer Barthel, Hartwig Künzel, Flat Roof Construction Manual, 2010.

Building Design 2.
Lecturers: Dr. Medvegy Gabriella
Subject supervisor: Dr. Medvegy Gabriella
Allotment of hours per week: 1 L, 3 P
ECTS Credits: 5
Requirement: semester mark
Brief Syllabus: This course introduces to the students the theory and professional elements of architecture and reveals the general correlation necessary for further studies. The lectures and practicals cover the methods of site arrangement and building types applied to them together with their specific requirements, and a historic development of building types with an analysis of practically applied solutions.
The main objectives of practicals in this semester is to have students practice the basics of housing design, to develop their skills in problem identification and decision-making, to improve their architectural skills and to teach them how to get an overview over a range of housing designs. Students prepare several assignments in the course of the semester. The subject covers design problems of the main types of residential buildings (detached houses, semi and terraced housing, blocks of flats) and experience is gained through the practical component in architectural planning, deepening the fundamentals of designing residential buildings. Problems sensing skills are developed through a specified task on designing residential buildings. To assist with representation, techniques are taught including model construction.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

SEMESTER 4

Application of Computers 2.
Lecturers: Dr. Halada Miklós
Subject supervisor: Dr. Halada Miklós
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: Students' experience of CAD systems is expanded through this practical based course in the application of computers in the field of architecture and design. The course is made up of units including the following topics: modelling building construction details using CAAD software, preparation of plans presenting engineering components and spatial illustrative figures, attaching engineering specifications and descriptions to components and the entire model, selecting and sorting existing geometric and assigned data, processing data and attaching the results to drawings using word processing and spreadsheet programs.
By the end of the semester students will be familiar with CAAD systems to a level which will enable them to complete their engineering design project.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:
No book is required.

History of Architecture 3.
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: examination
Brief Syllabus: The purpose of this course is to outline the main streams of development throughout the ages and to interpret them adopting present concepts of architecture. In lectures, the theoretical and historical relations of architecture are investigated from a general historical, artistic, architectural and, on occasion, structural aspect. Architecture of the bourgeois society, which developed in the course of changes in history, is analysed based on the historicism of the 19th century and events of the turn of century. Thus, early antecedents of present architectural trends and the value of the existing architectural environment are revealed.
The following topic are covered in the lectures: architecture theory in the Renaissance, outstanding architects and new characteristic buildings of the era; architecture of the Contra-Reformation and Roman baroque; manor-house and garden architecture of French baroque; sacred and profane architecture in Hungary in the 17th and 18th centuries; characteristic pursuits of classicism; architecture of the French revolution; ambitions in urban planning; Hungarian classicism; historicism and its forms in European architecture; engineering architecture in the 19th century; the arts and crafts movement; secession

workshops in Europe, Ödön Lechner and the issue of national formal language, secession architecture in Hungary.
Course materials:

- Nikolaus Pevsner: An Outline of European Architecture,Harmondsworth, 1963. (later editions)
- Nikolaus Pevsner: A History of Building Styles. Pinceton, 1976.
- Barry Bergdoll: European Architecture 1750–1890. Oxford, 2000.
- Dora Wiebenson - József Sisa (ed.): The Architecture of Historic Hungary. MIT Press, Cambridge, Mass. - London, 1998.
- TASCHEN's Basic Architecture Series
    - Karl Friedrich Schinkel

Construction Technology 1.
Lecturers: Dr. Kondor Tamás
Subject supervisor: Dr. Kondor Tamás
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: This subject introduces students to the characteristics of the construction industry, the relationship between construction technology and the related scientific fields, the key processes behind construction preparation and subsurface construction works related to surface construction. It also covers the basic principals of planning, managing and controlling construction works, beginning with the take-over of a construction site, preparatory works and demolition works. Other topics covered include: earthworks, marking out the working site, preparation of foundations, machinery management, earthworks machinery, quality control measures such as SWOT analysis and its role in quality assurance, foundations, damp-proofing and waterproofing, construction of vertically walled load-bearing structures and construction of slabs from prefabricated components.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- R. Chudley and R. Greeno. Construction technology, Pearson Education Limited, England, Harlow, 1973, 2005.
- Gerald Staib, Andreas Dörrhöfer, Markus Rosenthal, Components and Systems, 2008.

Geodesy 1.
Lecturers: Dr. Orbán Zoltán
Subject supervisor: Dr. Orbán Zoltán
Allotment of hours per week: 2 L, 2 P
ECTS Credits: 4
Requirement: examination

Brief Syllabus: Students are taught the geodesic activities of surveying and marking out the natural and built environment. This assists with the design, construction and operation of engineering projects. Students cover the following aspects of geodesic studies: shape of the Earth, principle of localization on Earth, projection systems, geodetic equipment, methods and equipment for measuring altitude and their applications, methods and equipment for horizontal measurement and their applications, methods to determine base and detail points, multi-angular measurements, orthogonal sub-measurements, tachymetry, basic geodetic calculations, and fundamental photogrammetric operations.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).

Course materials:

- W. Torge Geodesy, de Gruyter, Berlin, 2001.

Architectural Drawing 4.
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: This practical based course gives students further experience in free-hand drawing building upon what they have previously learned in the previous Architectural Drawing classes.
As a basic objective, students are expected to cope with drawing models, develop their basic drawing techniques as well as apply different drawing methods in order to develop their visual form capabilities and use of tools. As a supplementary activity, students learn how to draw from imagination, how to represent internal and external spaces of architectural components and are given supplementary tasks for improving their spatial vision, combination skills and creativity.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Ventilation and lighting
Lecturers: Dr. Fülöp László
Subject supervisor: Dr. Fülöp László
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: examination

Brief Syllabus: The objective of this subject is to teach students about physics relating to natural light, sound and ventilation in the architectural environment and covers the following topics: basic correlations of natural lighting, types of transparent and light reflecting surfaces, the coefficient of natural lighting; characteristics and roles of light source components in the design of natural lighting; requirements for natural lighting; basic principles of acoustics, sound insulation and absorption, noise absorption from air and footsteps, paths of sound transmission, acoustic qualification of structures; natural ventilation; pressure conditions in multi-storied, cellular and varioustypes of buildings; pressure diagrams, lifting power, funnel effects, wind effects.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Shan K. Wang, Handbook of Air Conditioning and Refrigeration, McGraw-Hill, 2000
- Fülöp László, Active Solar and PV Systems, IPA Building energetics, 2012.
- Magyar Z. Indoor environmental quality and EPBD, IPA Building energetics, 2012.
- Zöld A. Energy efficiency in buildings, CIENE, Athén, 1995.

Building Design 3.
Lecturers: Dr. Medvegy Gabriella
Subject supervisor: Dr. Medvegy Gabriella
Allotment of hours per week: 1 L, 3 P
ECTS Credits: 5
Requirement: semester mark
Brief Syllabus: Building design in this semester concentrates on raising standards of design with an emphasis on integration into the architectural environment and managing cultural and aesthetic values. Students are also introduced to the theoretical issues in environmental design, especially with architectural environment design, and the practical element of the course works through the design problems.
This course covers the following topics: developing continuity of design in rows of buildings and empty building sites in urban settings, developing the essentials of residential building design through practical application, developing problem-sensing and decision-making skills in the design process, comprehension skill acquisition, developing architectural expression and independent creative skills, layout of the designed content on ground plans, external appearance of buildings, volume design practice, model construction, representation techniques.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

Building Constructions 3.
Lecturers: Dr. Zoltán Erzsébet Szeréna
Subject supervisor: Dr. Zoltán Erzsébet Szeréna
Allotment of hours per week: 3 L, 4 P
ECTS Credits: 7
Requirement: examination
Brief Syllabus: This course expands students' knowledge from what they learned in previous Building Constructions courses and covers the following topics: design and construction of monolith reinforced frame constructions; pile foundations; reinforced concrete frame stairs; expansion joints; methods of waterproofing and damp-proofing, traditional and modern waterproofing techniques (felt, sprayed, insulation coating etc.), materials of waterproofing and their application; utilised roofs, roofs open to pedestrian traffic, terraces, parking roofs and roofs with vegetation; internal structuresfor enclosing space, dry wall systems; mounted constructions, suspended ceilings and mounted floors, internal surfacing, floors and internal coverings; cavity walls design, external wall claddings; historic development of windows and doors; anatomy of windows and doors, glazing, physical installation aspects; traditional and modern windows and doors from wood, metal and plastic; skylights; shading.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Theodor Hugues, Ludwig Steiger, Johann Weber, Dressed Stone, 2005.
- Prof. Dr.-Ing. Bernhard Weller and others, Glass in Building, 2009.

SEMESTER 5

Theory of Architecture
Lecturers: Dr. Bachmann Bálint
Subject supervisor: Dr. Bachmann Bálint
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: examination
Brief Syllabus: This subject expands on previously taught material and deals with the theory and history of architecture. Students are introduced to the evolution of international and Hungarian architecture, where trends are presented and analysed and the theory of architectural ideology and approach is examined in the 20th century, especially theory dealing with modernism and contemporary architecture. Through these studies, which give students a strong theoretical base, students are expected to develop and expand on their own personal perception of architecture and architectural design.
Course materials:

- Bachman Z: Bachman Zoltán, Vince Kiadó, 2010.

Art History 1.
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The objective of the course is to present the periods of art history from the ancient times to the Renaissance and provide students with basic knowledge of the specified eras.
Course materials:

- Ernst Gombrich: The Story of Art. 1950 (later editions)
- Kenneth Clark: Civilisation, London, 1969.

Construction Technology 2.
Lecturers: Dr. Kondor Tamás
Subject supervisor: Dr. Kondor Tamás
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Construction processes of in-situ casting and pre-cast reinforced concrete structures are presented in the course, and the processes involved with concrete technology and finishing concrete structures. In particular the following topics are covered: classification of machinery in the construction industry; allocation of machinery operating hours; performance documentation in practice, machinery logbooks, expenses for machinery, compulsory reports for machinery; elements in concreting chains, their operation and applications; preparation of conventional formworks; preparation of steel reinforcing and concreting processes; mortar machine technology and tools; exterior and interior plastering; floor tiling with conventional and modern techniques; application of cranes and elevators in the construction industry; relations between building services engineering works and master builder works; dry construction systems; preparation of roofing and flashing; house painting and floor laying; steel and timber structures.
This course aims to give students a basis for planning, managing and controlling construction work.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- R. Chudley and R. Greeno.Advanced Construction technology, Pearson Education Limited, England, Harlow, 1973, 2005.
- Martin Peck, Concrete, 2006.
- Karsten Tichelmann, Jochen Pfau, Dry Construction

Architectural Drawing 1. MSc
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 3 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: During the course, students deal with the rules of representing built space and practise the observational representation of external and internal spaces. In accordance with the design course, they are introduced to the specific technique of creating 3D designs and practise drawing methods which gives them a more diverse means to represent built space.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Urban Studies 1.
Lecturers: Dr. Gyergyák János
Subject supervisor: Dr. Tiderenczl Gábor
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: In lectures and practical classes, students are introduced to the principles, functions, structure and operational mechanism of settlements as well as to the nature and content of regional relations and their influence on settlement formation. Students gain an insight into the social-economic processes influencing settlement development and the characteristic features of the individual periods of modern urbanisation.
The lectures deal with the authorities and people involved in town development and administration, documents of regional settlement planning in Hungary, analysis of the town plan and its working phases as well as with the town plan itself. In addition, the objective of the subject is to familiarise students with the national and local regulations on urban planning, the so-called specific legal regulations facilitating urban planning, the regional aspects of settlement development and the international practice of urban planning.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Kevin Lynch, The Image of the City

Building Design 4.
Lecturers: Dr. Hutter Ákos
Subject supervisor: Dr. Hutter Ákos
Allotment of hours per week: 2 L, 3 P
ECTS Credits: 5
Requirement: semester mark
Brief Syllabus: Students are required to complete design work relating to public buildings and an actual building site. Students are required to submit all their plans documenting their work on the design and are assessed on the following aspects: architectural design, development concept, functionality, volume forming and space composition. For the preliminary and final plans only free-hand graphics can be used. Students are also required to complete a model of the final plan in a material of their choice.
The following aspects of public building design are covered: design work of specified types of public buildings, content programmes, optimal layout of the designed content on the floor plan, external appearance of the building (deviation from residential buildings and emphasis on the differences), volume design practice, methods of representation, and preparation of colour designs.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

Foundation
Lecturers: Dr. Orbán Zoltán
Subject supervisor: Dr. Orbán Zoltán
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: General geotechnical education starts with an introduction to the geological–engineering aspects of building sites so students can get acquainted with the basic physical, dynamic and water permeability properties of soils. Students learn about the different methods, types and application aspects of foundations, their constructions and construction technologies. They are taught the design principles of flat and deep foundations. They study geotechnical reasons for damage to buildings and possible approaches for reinforcing foundations and strengthening soils. Special emphasis is given to the effect foundations and their loads have on the surrounding soil.
Course materials:

- K. Széchy, L. Varga. Foundation engineering, Akadémiai Kiadó, 1978.

Building Constructions 4.
Lecturers: Dr. Zoltán Erzsébet Szeréna
Subject supervisor: Dr. Zoltán Erzsébet Szeréna

Allotment of hours per week: 3 L, 4 P
ECTS Credits: 7
Requirement: examination
Brief Syllabus: This subject aims to increase students knowledge of building constructions through lectures and practicals covering the following topics: wall and frame constructions applying various materials and technologies; load-bearing, space-enclosing and partitioning structures and the principles of selecting and designing such structures; framework from prefabricated reinforced concrete, UNIVÁZ, BVM-TIP; framework for reinforced pre-stressed concrete: IMS; steel framework; multi-storeyed timber framework; construction aspects of deep foundations; waterproofing and damp-proofing; underground insulation (bitumen, plastic and volume); damp-proofing walls; waterproofing against groundwater; external wall glazing (service walls, curtain walls, climate external walls, point mounted glass walls); glass roofs; mounted coverings for external walls (brick, stone and metal); other external wall coverings; metal plate (titanium zinc) roofs; suspended ceilings; basic construction rules, design principles and application possibilities.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Margit Pfundstein, Alexander Rudolphi, Martin H. Spitzner, Roland Gellert, Insulating Materials, 2008.

Building Services Engineering
Lecturers: Dr.Fülöp László
Subject supervisor: Dr.Fülöp László
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: This subject introduces students to the field of building services engineering and its relation to other professional fields and covers the following topics: energy consumption of buildings and location of consumption meters; space demand and location of building services equipment and centres; water supply, complete plumbing systems of buildings, cold water, hot water supply, sewerage systems, water use in architectural activities; heating technology, elements of central heating systems, energy saving in central heating; gas supply, role of gas supply and gas use in the energy supply of buildings, gas equipment in buildings, gas fittings and fixtures; renewable energy sources, passive and active utilisation of solar energy; geothermal energy; handling air, cooling and air conditioning systems, loading of rooms, comfort parameters; ventilation, cooling and heating; electricity supply and networks; electrical appliances in buildings, elements of electric wiring networks of buildings.

This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Shan K. Wang, Handbook of Air Conditioning and Refrigeration, McGraw-Hill, 2000
- Fülöp L., Active Solar and PV Systems, IPA Building energetics, 2012.
- Magyar Z. Indoor environmental quality and EPBD, IPA Building energetics, 2012.
- D. Chadderton. Building services Engineering, Taylor & Francis, 2000.

SEMESTER 6

Art History 2.
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The history of European art in the 16th, 17th and 18th centuries. Artistic centres of the Baroque and Rococo eras. Classicism.Acquisition of the basics of art history, improvement of aesthetic standards and visual memory.
Course materials:

- Ernst Gombrich: The Story of Art. 1950 (later editions)
- Kenneth Clark: Civilisation, London, 1969.

Architectural Drawing 2. MSc
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 3 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: This is a continuation of the material covered in Architectural Drawing 1. In accordance with the design courses, students are introduced to the specific technique of creating 3D designs and, through increasingly complex tasks, they practise drawing methods which enables them to represent built space in a more diverse way. This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Construction Management 1.
Lecturers: Dr.Kondor Tamás
Subject supervisor: Dr.Kondor Tamás
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: Students are introduced to those processes of construction which they will have to face once they are qualified architects. If we accept that construction is an answer to a social or economic problem within the field of construction investment, it is important that students learn about the different aspects of construction projects to solve this question. Management aspects of construction projects, especially in the preparation work, design, execution and operation, are covered through the following topics: definition, content and preparation processes of cost estimates; aids for preparing cost estimates; types and content of standards; standards for working hours, material utilization and machine operating hours; budget preparation, profile plans, measurement calculations; price analysis, essentials of costs, direct and indirect costs; elements and calculation of construction budgets; preliminary and subsequent calculation; tendering, cost planning; budget preparation software; layout of the construction site; content of detailed organizational layout designation; temporary and utility buildings; public utilities and power supply on the construction site; utility buildings and roads; definition and application of production management; production management in the construction industry; elements of construction operations; methods and representation of operation sequences; preparation and content of linear time schedules.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- F. Harris, R. McCaffer, F. Edum-Fotwe. Modern Construction Management, Blackwell Publishing, West Sussex,2006.

Load-Bearing Structures 1. (Reinforced Concrete Structures)
Lecturers: Dr. Orbán Zoltán
Subject supervisor: Dr. Orbán Zoltán
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: This course deals with loadbearing concrete structures and covers the following topics: history of concrete and reinforced concrete structures; components of reinforced concrete and their connections; regulations related to the design work of reinforced concrete structures; Hungarian and European standards; strength of reinforced concrete structures; load-bearing capacity of structures (bending, stress states, shear, torsion, complex design, axial and eccentric compression, load-bearing line); serviceability limit states (limits of deformation and cracking); principle of prestressing;

design and force interaction of reinforced concrete structures; construction principles, prefabricated and monolith structures, joints, statically determinate and indeterminate structures; structure, shape, function; inspections of condition, maintenance, reinforcement, built heritage and its restoration.
The practical element of the course deals with the design of traditional and modern structures, construction technologies, approaches to solving architectural problems arising during construction. This course material aims to develop students' independent construction ability through tailored tasks.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Wight, J. K, MacGregor J. Reinforced concrete mechanics & design, Pearson, 2012.

Building Constructions 5.
Lecturers: Dr. Kistelegdi István jr.
Subject supervisor: Dr. Kistelegdi István jr.
Allotment of hours per week: 2 L, 4 P
ECTS Credits: 7
Requirement: examination
Brief Syllabus: This subject presents the methodology of structural design through the following lectures introducing students to wall and frame construction: systematization of halls and their load-bearing structures, the design and construction principles of components, framework, roof structures and external walls of prefabricated reinforced concrete halls; framework, external walls and roof structures of steel-framed halls; framework of timber-framed halls; skylighting.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Heino Engel, Structure Systems, 2007.
- Gerald Staib, Andreas Dörrhöfer, Markus Rosenthal, Components and Systems, 2008.

Building Design 5.
Lecturers: Dr. Hutter Ákos
Subject supervisor: Dr. Hutter Ákos
Allotment of hours per week: 2 L, 3 P
ECTS Credits: 5
Requirement: semester mark

Brief Syllabus: This subject teaches students ways of recognising impacts the immediate and wider environment have on building design and, using relevant urban design programmes, finding ways of integrating the building into that programme.
The practical classes focus on the following topics: design of a public building set in the town fabric on the basis of the site plan and programme; floor plans, building volume, design of building structures under the supervision of a consultant, emphasis on the importance of fitting into the environment; acquisition of complex design knowledge. In addition students must prepare concept plans of a specified design task applying the knowledge that they have learnt (aiming at synthesis). Students are also taught how to improve technical techniques for creating high quality presentations and model construction.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

Design 1.
Lecturers: Dr. Gyergyák János
Subject supervisor: Dr. Medvegy Gabriella
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: The objective of the subject is to introduce students to the design and creation of modern objects as well as acquaint them with the changes in form and materials over the past 50 years. During the lectures students gain an insight into present-day design trends and styles, and learn about the most notable designers. At the start of the semester students are given a topic and, in accordance with the syllabus, they must complete a study+plan+model by the end of the semester.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- P. M. Fiell, Ch. Fiell. Design now!, Taschen, 2008.

Preservation of Built Heritage 1.
Lecturers: Dr. Kovács-Andor Krisztián
Subject supervisor: Dr. Kovács-Andor Krisztián
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Introduction to the history of protection of historical buildings and sites from ancient times to now. Historical building protection statutes and their

significance.Materials science and methods of protecting historical places.Issues of contemporary historical heritage protection.
Course materials:

- Ollich-Castanyer I. (ed.) Archaeology, New Approaches in Theory and Techniques, InTech, 2012.

SEMESTER 7

Art History 3.
Lecturers: Dr. Sisa József
Subject supervisor: Dr. Sisa József
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The history of European art in the 19th century. Style pluralism, the appearance of modernism.Historicizing approach.The concept of industrial arts, all-artistic endeavours.Fine arts and industrial arts of the turn of century.Acquisition of the basics of art history, improvement of aesthetic standards and visual memory.
Course materials:

- Ernst Gombrich: The Story of Art. 1950 (later editions)
- Kenneth Clark: Civilisation, London, 1969.

Architecture 1.
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The architecture of the period preceding modernism. Premodern designers. Vienna, Arts and Crafts, De Stijl, Deutscher Werkbund, Russian constructivism. The Bauhaus school. Walter Gropius, Ludwig Mies van der Rohe. Le Corbusier. American architecture, Frank Lloyd Wright. Alvar Aalto. Weissenhofsiedlung.
Course materials:

- TASCHEN's Basic Architecture Series
  Adolf Loos, Alvar Aalto, Antoni Gaudi, Bauhaus, Frank Lloyd Wright, Hans Scharoun, Jean Prouvé, Josef Hoffmann, Le Corbusier, Ludwig Mies van der Rohe, Otto Wagner, Walter Gropius
- Peter Gössel, Gabriele Leuthäuser, Architecture in the Twentieth Century

Architectural Drawing 3. MSc
Lecturers: Dr. Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 3 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Through practical tasks, students are inspired to acquire free-hand drawing skills concentrating on the application and regularities of different perspective systems. As a basic activity, students familiarise themselves with figure drawing, acquire conventional graphic techniques and apply a wide range of drawing methods in order to develop their visual culture and extend their tool range. As a supplementary task, students are given tasks which help develop their perception of space, combination skills and creativity.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Construction Management 2.
Lecturers: Dr.Kondor Tamás
Subject supervisor: Dr.Kondor Tamás
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 2
Requirement: semester mark

Brief Syllabus: The lectures and practicals of this subject introduce students to those aspects of management which are innovative in assisting construction work and covers the following topics: definition and application of production management in the construction industry; elements of the construction process, their representations and relations; methods of production and construction management, their comparisons and potential applications; essentials of linear and progress chart scheduling, elements and contents of time schedules; methods and conditions for the sequencing of processes, calculating the demand for labour; the influence of money as a resource on construction scheduling; computer aided methods for construction management; types of management methods using flowcharts; essentials of the critical path method (CPM), its principles and preparation process; analysis of flowcharts from logical and chronological points of view.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- B. Cooke and P. Williams. Construction Planning, Programming and Control, Blackwell Publishing, West Sussex, 2004.

Timber structures
Lecturers: Dr. Bakó Tibor
Subject supervisor: Dr.Orbán Zoltán
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The objective of the subject is to introduce students to modern timber structures of buildings underlining the special characteristics of wood as an orthotropic material. Students must be able to use the introduced structures in a technically correct way. Wood as a building material and its characteristic features.History of wooden structures.Traditional structures.Engineering joints.Modern, engineered ceilings and floor structures.Glued-laminated timber structures. Wooden buildings, log homes, framing structures, prefabricated structures. Non-load-bearing wooden structures.Manufacturing load-bearing timber structures.Protective treatment of timber structures.
Course materials:

- Julius Natterer, Wolfgang Winter, Thomas Herzog, Roland Schweitzer and Michael Volz, Timber Construction Manual, 2004.
- Theodor Hugues, Ludwig Steiger, Johann Weber, Timber Construction, 2004.

Load-Bearing Structures 2. (Steel Structures)
Lecturers: Dr. Fülöp Attila
Subject supervisor: Dr. Fülöp Attila
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 2
Requirement: examination

Brief Syllabus: This subject aims to provide a theoretical and practical knowledge necessary for the design, production and mounting of steel structures used in engineering and includes the following topics: definition, types and division of steel structures, their advantages and disadvantages; design principles and methodology; Eurocode 3; components of steel bars, basic materials, different joints; constructural design of pre-stressed bars; compressed bars; design of trusses; relationship between the built environment and steel structures; modelling steel materials; design principles; process of planning steel structures; structural bars: classification, structural design, limit states, standard dimensions; bars and beams subject to eccentric tension or compression; bolted, riveted and welded joints: classification, technology and application; design, application and dimensioning of simple structures, latticed and solid-web girders, split-section beams; stability limit states of structural bars, turning out and plate buckling; effects of strength and stability on the behaviour of structural bars, design principles; structural design, behaviour and dimensioning of beam-beam and column-beam joints; classification, application and construction principles of complex steel structures; harmonising the design of steel structures and artistic viewpoints.
To complete the course students must be able to create a technically and aesthetically suitablesolution for building with steel structures.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Alexander Reichel, Peter Ackermann, Alexander Hentschel, Anette Hochberg, Building with Steel, 2007.
- Ivanyi, M. - Skaloud, M.: Stability Problems of Steel Structures (in English) CISM Courses and Lectures No 323, International Centre for Mechanical Sciences, SPRINGER - Verlag, Wien - New York, 1992, p. 415.
- Iványi, M. - Skaloud, M.: Steel Plated Structures (in English), CISM Courses and Lectures No 358, International Centre for Mechanical Sciences,SPRINGER - Verlag, Wien - New York, 1995, p. 373.
- Iványi, Miklós: ORTHOTROPIC STEEL BRIDGES. Theory, Design and Construction (in English) Helsinki Technical University, Laboratory of Bridge Engineering, TKK-SRT-33 Műegyetemi Kiadó, Budapest, 2003, p. 323.
- Iványi, Miklós - Iványi, Péter: EUROCODE Manual: Design of Multi-storey Steel Buildings (in English-Hungarian)POLLACK PRESS, Pécs, 2008, p. 380.
- Iványi, M. Miklós - Bancila, Radu - Iványi, Péter - Iványi, Miklós: Stability and Ductility of Planar Plated Steel Structures (in English)POLLACK PRESS, Pécs, 2010, p.305.
- Iványi, M. Miklós - Iványi, Miklós - Iványi, Péter: Multi-Storey Steel Frames with Semi-Rigid Connections. Experimental Analysis (in English)POLLACK PRESS, Pécs, 2011, p. 175.
- Iványi, M. Miklós - Iványi, Miklós: Refurbishment of Steel Bridges (in English)POLLACK PRESS, Pécs, 2011, p. 107.
- Iványi, M. Miklós - Iványi, Miklós: Plastic Design of Steel Structures (in English)POLLACK PRESS, Pécs, 2013, p. 157.

Building constructions 6.
Lecturers: Dr. Kistelegdi István jr.
Subject supervisor: Dr. Kistelegdi István jr.
Allotment of hours per week: 2 L, 2 P
ECTS Credits: 5
Requirement: examination
Brief Syllabus: The aim of the course is to give students an overview of the load bearing structures used in building construction, to describe the forces in particular structures and to examine how these structures are used through the analysis of load bearing structures of existing buildings. Students analyse and learn about the relationship between material, structure, function and form. After a brief overview of historical structures, first of all structures with no shear resistance (pressure line shaped structures, rope structures, tents, fabrics), then shell and membrane structures, cold formed curved structures (frames, wall frame systems, sheet frames, halls), and finally box structures (external box structures, internal box structures, complex box structures, tube frame structures) are discussed. Students learn about the works of several architects excelling at structural design (J. Pelikán, L. Kollár, J. Dulánszky, T. Matuscsák, P.L. Nervi, F. Otto, E. Freisinet, S. Calatrava). This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Heino Engel, Structure Systems, 2007.
- Jan Knippers, Jan Cremers, Markus Gabler, Julian Lienhard, Construction Manual for Polymers + Membranes, 2011.

Architectural graphics
Lecturers: Dr.Bachmann Erzsébet
Subject supervisor: Dr. Németh Pál
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: The aim of the course is to help students master architectural graphic representation skills and to enable them to use a wide variety of graphic representation techniques so that they will be able to choose techniques which are best adapted to particular design tasks.
Course content includes traditional architectural graphic representation techniques, various graphic and technical representation methods and the complex use of architectural graphic representation methods. Techniques include traditional ones (graphite) and modern computer generated graphics, with line-drawing, textured, plastic and photorealistic representation modes.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.

Course materials:

- M. Dobó, Cs. Molnár, A. Peity, F. Répás:Reality Concept Drawing in Architectural Drawing, Műszaki Könyvkiadó, 1999.

Building Design 6.
Lecturers: Dr. Hutter Ákos
Subject supervisor: Dr.Hutter Ákos
Allotment of hours per week: 0 L, 4 P
ECTS Credits: 6
Requirement: semester mark
Brief Syllabus: The subject revises and deepens the previously taught knowledge of architectural design. The task is architecturally exciting: to design a public building of interesting volume design and layout. Students can freely choose their topic of interest with the approval of the head of practical classes. The finished project is presented on posters with a rich architectural content and high quality representation at a scale of 1:100, and with detail drawings at a scale of 1:50 and less, for a suitably sized final model building. Students' acquired knowledge is assessed over the course of the semester.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

Preservation of Built Heritage 2.
Lecturers: Dr. Tamás Anna Mária
Subject supervisor: Dr.Kovács Andor Krisztián
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: Putting the theoretical methods of historical heritage protection into practice. Damage mapping; preparation of surveys and stability survey documentation of a historical building or buildings located in a world heritage site. During the course students acquire skills to help research, document, conserve and continuously preserve buildings with historic and artistic values; they learn damage mapping as well as the preparation of surveys and stability survey documentation.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- Bachman Z: Bachman Zoltán, Vince Kiadó, 2010.

Design Methods 1.
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Having acquired a sound knowledge of basic design principles and methods in Design Methods courses students explore a wider context of architectural design methods with special emphasis on social, sociological and settlement structure implications. The aim of the course is to acquaint students with the design principles and methods of historical and contemporary design ateliers. It will enable them to analyse and see architectural objects in the context of the history of architecture and to put architecture in the wider context of urban design and sociology. Students are encouraged to find and combine methods and form concepts for particular design tasks. The main topic of lectures and workshops is the design of residential buildings.
Course materials:

- Frampton K.,Modern Architecture: A Critical History, Thames & Hudson, Limited, 2007

SEMESTER 8

Sociology
Lecturers: Dr. Füzér Katalin
Subject supervisor: Dr. Füzér Katalin
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Course content covers the science and history of sociology, methodology, social structure, social stratification, inequality and poverty, culture, values and norms, socialisation, deviation.
Course materials:

- M. L. Andersen, H. F. Taylor Sociology, Thomson Learning, 2006.

Architecture 1. MA
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Course content includes excerpts on design theory from the history of modernist architecture in Hungary; contemporary architecture; second part of the world

history of modern architecture; discussion of trends; architects and theories; arts related to architecture and techniques for architectural analysis of buildings.

Course materials:

- Csengel-Plank Ibolya, Hajdó Virág, Ritoók Pál, Light and Form: Modern architecture and photography, Vince Kiadó, 2010.
- Bachman Z: Bachman Zoltán, Vince Kiadó, 2010.

Construction Management 3.
Lecturers: Dr. Kondor Tamás
Subject supervisor: Dr.Kondor Tamás
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: This subject intends to provide students with the engineering and economic knowledge necessary for responsible participation in a development and investment process and covers the following topics: improvement of networks, essentials and elements of MPM (Metra Potential Method) diagrams; computer aided processes of networks; essentials and application of the continuous production management method and sequence programming; essentials, roles and elements of spatial organization; systems, types and content of organization plans; controlling the construction site, rights and duties of the site manager; technical administration on the construction site; technical supervision and the role of the design foreman in construction.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- R. Chudley and R. Greeno. Building Construction Handbook, Butterworth-Heinemann, England, Oxford, 2010.
- P. Fenn, R. Gameson. Construction Conflict Management and Resolution, Taylor & Francis, London, 2003.

Furniture Design and History
Lecturers: Dr. Gyergyák János
Subject supervisor: Dr. Zoltán Erzsébet Szeréna
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: Space and mass are closely interrelated notions in architecture, which means that there is no hierarchical relationship between architectural design and ‘interior design’. Architecture as a profession is indivisible, however the practice of sharing design tasks has led to the development of certain specialised fields like ‘urban design’ and

'interior design'. (The greatest architects in history had never given up the complexity of the profession. They were successful architects, urban designers, interior designers and furniture designers at the same time.) The main focus of lectures is on the works of outstanding designers. In seminars students consult the instructor and discuss potential solutions to design assignments.
Course materials:

- P. M. Fiell, Ch. Fiell. Industrial Design A-Z, Taschen, 2006.

Building Design 7.
Lecturers: Dr. Hutter Ákos
Subject supervisor: Dr.Hutter Ákos
Allotment of hours per week: 0 L, 4 P
ECTS Credits: 7
Requirement: semester mark
Brief Syllabus: The course assignment to be completed by students with the guidance of the instructor is designing a public building with special emphasis on functional features in a designated multifunctional urban area. Students are required to carry out an urban design analysis and write an essay on successful examples of implemented architectural projects. The design assignment is to be completed using effective graphic tools and an architectural model is also to be presented.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data

Landscape and garden design 1.
Lecturers: Dr. Kovács-Andor Krisztián
Subject supervisor: Dr. Kovács-Andor Krisztián
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: This subject covers the basic aspects design, including architectural aspects, in the green environment. In addition to teaching the encyclopaedic knowledge of the specialised field, the history of garden design provides a theoretical background for the creation of artificial environments and the optimal establishment of a connection between green surfaces and gardens and buildings. Studying the notion of landscape, its basic categories, development and management ensure the maintenance of the wider environment of the settlements and their sustainable development. Mastering the methods and components of environmental protection provides students with the means that enable them to effectively protect environmental values.
Course materials:

- Philip Jodidio, Landscape Architecture Now!

Urban Studies 2
Lecturers: Dr. Gyergyák János
Subject supervisor: Dr.Tiderenczl Gábor
Allotment of hours per week: 1 L, 1 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: Through a series of practical classes as well as group and individual consultations, students prepare the arrangement plan of a chosen district of a town or a smaller village taking the local regulations and the concepts of settlement development acquired during the preceding semester into consideration. On the basis of the arrangement plan, students prepare the layout plan, of a chosen project. This plan is published and discussed in the group.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Retrofitting Suburbia, Updated Edition: Urban Design Solutions for Redesigning Suburbs
- Javier Mozas, Aurora Fernández Per, Density. Condensed edition, New collective housing, 2006.
- Sustainable Urbanism: Urban Design With Nature

Ecology in Architecture 1.
Lecturers: Dr. Kistelegdi István jr.
Subject supervisor: Dr.Kistelegdi István jr.
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: semester mark
Brief Syllabus: The main objective of this subject is to introduce students to the major concepts of sustainable development and sustainable construction. The engineering means towards sustainable, environment-conscious construction are presented using the concepts of ecology. The theoretical unit of the subject covers the following topics: topicality, importance and necessity of ecological way of thinking in architecture; exact definition and systematization of ecological, energetic and solar terms; development conditions of ecological construction and their political and economic motives, psychological background; comprehensive retrospective examples from the beginning to industrialization; chronological evolution of ecological architecture from the late 1960's to now; typology of residential buildings and evolution of the integration of active energy utilization techniques; development of solar architectural concepts, passive energy utilization and the prototypes of combined energy utilization; climate systems utilizing environmental energy evolved from external walls which are not only rigid boundaries but serve as energy utilizing changeable shells reacting to climate changes; energetic and ecological feasibility and importance of condensed ways of construction; appearance and evolution of ecological urbanism where the solar house converts into a solar city;

architecture psychological aspects of ecological thinking; change and maturation of scientific and designer's attitude, a comprehensive organic design approach to the relationship between energy and ecology.
Course materials:

- Gerhard Hausladen, Michale de Saldanha, Petra Liedl: ClimateSkin Building-skin Concepts that Can Do More with Less Energy
- Gerhard Hausladen, Michael de Saldanha, Petra liedl, Chirsitna Sager: ClimateDesign Solutions for Buildings that Can do More weith Less Technology
- Rudolf Finsterwalder (ed.): Form Follows Nature
- Mary Guzowski: Towards Zero Energy Architecture New Solar DesignKrsitin
- Eiresiss and Lukas Feireiss (ed.) Architecture of Change 1 and 2 Sustainability and Humanity in the Built Environment
- Robert Kronenburg: Flexible Architecture tha Responds to Change
- Michaela Busenkel, Peter Cachola Schmal (ed.) Breathing ARchitecture
- Paul Oliver: DwellingsThe Vernacular House World Wide
- Claus Daniels : Advanced Building Systems A technical Guide for Architects and Engineers
- Klaus Daniels: Low-Tech Light-Tech High-Tech Building in the Information Age
- Dirk U. Hindrichs, Klaus Daniles (ed) Plusminus20/40latitude Sustainable building desing in tropical and subtropical regions
- Sophia and Stefan Behling : Sol Power the evolution of solar architecture

Design Methods 2
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Having acquired a sound knowledge of basic design principles and methods in Design Methods courses, students explore a wider context of architectural design methods with special emphasis on social, sociological and settlement structure implications. The aim of the course is to acquaint students with the design principles and methods of historical and contemporary design ateliers. It will enable them to analyse and see architectural objects in the context of the history of architecture and to put architecture in the wider context of urban design and sociology. Students are encouraged to find and combine methods and form concepts for particular design tasks.
The main topic of lectures and workshops is the design of public buildings. Hungarian and international architects invited to the workshops analyse their task specific methods through the introduction of their works. Field trips are organised as conditions allow.
Course materials:

- Frampton K.,Modern Architecture: A Critical History, Thames & Hudson, Limited, 2007

Design of building structures 1.
Lecturers: Dr. Halada Miklós
Subject supervisor: Dr. Kistelegdi István jr.
Allotment of hours per week: 2 L, 2 P
ECTS Credits: 4
Requirement: examination
Brief Syllabus: The objective of this subject for the students is to deepen their knowledge of structural design through solving specific tasks. They are required to establish the connections between individual structures and produce a design which takes them into account. In some of the lessons students work along guided instructions (using the blackboard), while at other times they work individually or as a team. One of the most essential objectives of the subject is to make students learn the preparation process of the structural drawing. In this term we deal with the structure of a medium-scale public building. In addition to schedules, architectural plans and cross-sectional views, the students are required to prepare plans for insulation, façades and false ceilings of a building.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Jan Knippers, Jan Cremers, Markus Gabler, Julian Lienhard, Construction Manual for Polymers + Membranes, 2011.
- DETAIL engineering 2: Building design at Arup, 2012.
- Christian Schittich, Gerald Staib, Dieter Balkow, Matthias Schuler, Werner Sobek, Glass Construction Manual, 2006.

SEMESTER 9

Enterprise Management
Lecturers: Dr. Kondor Tamás
Subject supervisor: Dr.Kondor Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: The objective of this subject is to introduce students to the general aspects of enterprise management including legal, economic and administrative aspects. In particular the following topics are covered: theoretical concepts related to enterprise, reproduction and enterprise; definition of enterprise and management and the connections between them; economic environment of enterprise; markets and competition; definition of enterprise strategy and tactics; types of enterprises; special enterprise issues in the market of construction investments, phases of the construction implementation cycle; tendering according to FIDIC offers, tendering in EU countries, methods of tendering, types of contracts, elements of contract strategy.

Course materials:

- A. Norton, J. Hughes Enterprise Management, Cima Publishing, 2009.

Legal Studies for Architects
Lecturers: Dr. Visegrády Antal
Subject supervisor: Dr. Visegrády Antal
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: This subject intends to provide architecture students with a theoretical and practical basis so they can understand the legal background of design and construction activities and adapt their knowledge in their professional work following graduation. During the course, the legal background to contract law, compensation law and company law of the mentioned activities are discussed in detail. In addition, students are provided with an inside view of regulations related to consent processes as well as of the topic of proprietorship concerning plans and their utilization.
A further aim of this subject is, that students acquire a knowledge of how to make simple legal papers and can explain legal terms and check solutions proposed by the lawyer which is based on a legal basis.
In particular, the following topics are covered: legislation, hierarchy of rules, enactment, validity and effectiveness in Hungarian legislation; organizations with and without legal entity; capacitation; property; general rules of contracts in terms of civil rights; compensation for damage; faulty performance; types of contracts; employment; regulations of public administrative procedures and authorities; public procurement procedures; intellectual property; safeguarding of industrial rights; copyright law; economic law; documentation.
For students of architecture, civil engineering and urban planning the following are covered: legal and professional responsibilities and relationships of parties involved in construction projects; technical inspector, chief engineer, designer, constructor and investor, as well as building and supervisory authorities.
Course materials:

- The Architects Handbook of Professional Practice, John Wiley & Sons, New Jersey, 2008.

Architecture 2. MA
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: Course content includes excerpts on the signs of crisis in modernism; modernism 2 and contemporary architecture in Southern Europe; modernism 2 and contemporary architecture in France; modernism 2 and contemporary architecture in

Great Britain; modernism 2 and contemporary architecture in German speaking countries; modernism 2 and contemporary architecture in Northern Europe; modernism 2 and contemporary architecture in the US; Japanese architecture; postmodernism; deconstructionism; neo-modernism; regionalism; analogous architecture.
Course materials:

- TASCHEN's Basic Architecture Series
  Eero Saarinen, Erich Mendelsohn, Gio Ponti, Jean Nouvel, Louis Kahn, Marcel Breuer, Oscar Niemeyer, Renzo Piano, Richard Meier, Richard Neutra, Santiago Calatrava, Shigeru Ban, Tadao Ando, UN Studio, Zaha Hadid
- Peter Gössel, Gabriele Leuthäuser, Architecture in the Twentieth Century
- Vukoszávlyev Zorán, Szentirmai Tamás, Contemporary Portuguese Architecture, TERC, 2010.

Town- and Spatial Planning
Lecturers: Dr. Gyergyák János
Subject supervisor: Dr. Tiderenczl Gábor
Allotment of hours per week: 1 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: The subject uses a morphological approach to examine the connection between the shapes and functions of the built environment and its role in the structure of the settlement. The approach is two-sided: on the one hand it considers the mass, and on the other, the lack of mass. In the subject 'Design theory' we show how it is possible to create complex shapes with the combination of basic spatial forms. Through the analysis of historical and contemporary examples we examine the interaction and the aesthetic quality of urban architecture and the particular culture.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Sustainable Urban Design: An Environmental Approach
- Aurora Fernández Per, Javier Mozas, Javier Arpa, Density is Home, Housing, 2011.
- Aurora Fernández Per, Javier Mozas, Javier Arpa, DBOOK, Density, Data, Diagrams, Dwellings, 2007.

Landscape and garden design 2.
Lecturers: Dr. Kovács-Andor Krisztián
Subject supervisor: Dr. Kovács-Andor Krisztián
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: The objective of this subject is to offer the basic aspects of the design of the green environment including its architectural points. The purpose is to teach students

the basics of urban environmental design and give them the means to create a new approach used in urban environments, including the specialised knowledge and that related to architectural work. The elements of urban environment, their inspection and presentation possibilities and design aspects are listed. The relationship between the architect and the landscape designer in community places and densely populated settlements is also covered.
Course materials:

- Philip Jodidio, Landscape Architecture Now!
- Digital Landscape Architecture Now

Ecology in Architecture 2.
Lecturers: Dr. Kistelegdi István jr.
Subject supervisor: Dr.Kistelegdi István jr.
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 3
Requirement: examination
Brief Syllabus:This course builds upon the previous ecology in architecture paper and provides an opportunity for students to expand their knowledge, as well as improving their application of solutions through the practicals. The following topics are covered: the evolution of ecological architecture from late 1960's to today; office blocks and high-rise blocks: sick-building-syndrome – unhealthy, energy-wasting architecture of air-conditioned office blocks and glass towers; development of a multi-layered building shell; systems of natural lighting and ventilation; new building functions: ecological construction concepts of sports facilities, industrial sites, shopping centres, zoos, libraries; climate halls: recreation centres, shopping centres, sports facilities, office blocks, cultural establishments, flats and combinations of such; creation of a microclimate independent from weather and climate for bigger living spaces and town districts; glass halls, pneumatic shell constructions; passive structures, building elements: conservatories, glass structures, rigid and mobile transparent/translucent shading systems, opaque shading systems, rigid and mobile transparent/translucent insulation systems, opaque insulation systems (lamellas, exterior shutters, prisms, holographic optical systems, light conducting and refracting glasses, light raster systems, wall heating, blown foil elements); types of active techniques: thermal solar systems, liquid and gas energy-bearing media, photovoltaic solar systems; construction materials: concrete, brick, glass, timber and plastic structures and elements; importance and role of timber in ecological architecture; modern materials, achievements of scientific research – basic essentials of present and future ecological architecture: poured wood, textile concrete, translucent concrete, phase change materials, multilayer systems, foamed materials, nanoproducts, nanocoverings, LED materials, smart materials; manipulators, using solar systems as the shell.
Course materials:

- Gerhard Hausladen, Michale de Saldanha, Petra Liedl: ClimateSkin Building-skin Concepts that Can Do More with Less Energy
- Gerhard Hausladen, Michael de Saldanha, Petra liedl, Chirsitna Sager: ClimateDesign Solutions for Buildings that Can do More weith Less Technology

- Rudolf Finsterwalder (ed.): Form Follows Nature
- Mary Guzowski: Towards Zero Energy Architecture New Solar DesignKrsitin
- Eiresiss and Lukas Feireiss (ed.) Architecture of Change 1 and 2 Sustainability and Humanity in the Built Environment
- Robert Kronenburg: Flexible Architecture tha Responds to Change
- Michaela Busenkel, Peter Cachola Schmal (ed.) Breathing ARchitecture
- Paul Oliver: DwellingsThe Vernacular House World Wide
- Claus Daniels : Advanced Building Systems A technical Guide for Architects and Engineers
- Klaus Daniels: Low-Tech Light-Tech High-Tech Building in the Information Age
- Dirk U. Hindrichs, Klaus Daniles (ed) Plusminus20/40latitude Sustainable building desing in tropical and subtropical regions
- Sophia and Stefan Behling : Sol Power the evolution of solar architecture

Design of Interior Spaces
Lecturers: Dr. Gyergyák János
Subject supervisor: Dr. Zoltán Erzsébet Szeréna
Allotment of hours per week: 0 L, 3 P
ECTS Credits: 3
Requirement: examination
Brief Syllabus:Course content includes the discussion of the role of interior design in shaping spaces and the human environment; the tools of shaping spaces; scale, proportion and size in the context of interior spaces; theory and practice in the integration of structure; form and function in interior design; setting the balance of function and aesthetics; main trends in interior design and examples of contemporary design.This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- A. Taschen Interiors Now! 1., Taschen, 2010.

Preservation of Built Heritage 3.
Lecturers: Dr. Tamás Anna Mária
Subject supervisor: Dr.Kovács Andor Krisztián
Allotment of hours per week: 0 L, 2 P
ECTS Credits: 2
Requirement: semester mark
Brief Syllabus: Students study the complex rules of the ethical architectural attitude towards historical buildings and the protected environment. Using examples from both Hungary and abroad, students are introduced to the architectural approach of contemporary historical heritage protection. The objective of the subject is to give students a means of establishing a correct attitude towards historical heritage and to find sensitive solutions to architectural planning tasks.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.

Course materials:
No book required.

Design Methods 3.
Lecturers: Dr. Molnár Tamás
Subject supervisor: Dr. Molnár Tamás
Allotment of hours per week: 2 L, 0 P
ECTS Credits: 2
Requirement: examination
Brief Syllabus: The aim of the course is to introduce students to design principles and methods of contemporary ateliers and to current trends in architectural principles as well as to make them aware of the importance of an interdisciplinary approach in architecture. It will enable them to analyse and see architectural objects in the context of the history of architecture and to put architecture in the wider context of urban design and sociology. Hungarian and international architects, artists, critics and experts operating on the borders of architecture invited to the workshops share their experience about contemporary design principles. The main focus of lectures and workshops is on mapping and analysing contemporary design principles and current trends in modern architecture.
Course materials:

- Frampton K.,Modern Architecture: A Critical History, Thames & Hudson, Limited, 2007

Design of building structures 2
Lecturers: Dr. Halada Miklós
Subject supervisor: Dr. Kistelegdi István jr.
Allotment of hours per week: 2 L, 2 P
ECTS Credits: 4
Requirement: examination
Brief Syllabus: The objective of this subject for the students is to deepen their knowledge of structural design through solving specific tasks. They are required to establish the connections between individual structures and produce a design which takes them into account. In some of the lessons students work along guided instructions (using the blackboard), while at other times they work individually or as a team. One of the most essential objectives of the subject is to make students learn the preparation process of the structural drawing. In this term we deal with the structure of a medium-scale public building. In addition to schedules, architectural plans and cross-sectional views, the students are required to prepare plans for insulation, façades and false ceilings of a building.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can practice and further develop the content of the lectures (marked with an **L**).
Course materials:

- Jan Knippers, Jan Cremers, Markus Gabler, Julian Lienhard, Construction Manual for Polymers + Membranes, 2011.
- DETAIL engineering 2: Building design at Arup, 2012.
- Christian Schittich, Gerald Staib, Dieter Balkow, Matthias Schuler, Werner Sobek, Glass Construction Manual, 2006.
- Malcolm Millais, Building Structures: From Concepts to Design

Complex Design Project
Lecturers: Dr. Bachmann Bálint
Subject supervisor: Dr. Bachmann Bálint
Allotment of hours per week: 0 L, 5 P
ECTS Credits: 8
Requirement: examination
Brief Syllabus: The purpose of this course is to introduce students to architectural design from a complex view, that is, covering those parts of the planning process which are supervised by specialised departments. Furthermore, this subject intends to have students practise the design phase related to documentation required for planning permission. During the preparation period, students study existing buildings with similar functions and examples in special scientific literature, and on this basis, they finalize their design project. During the design process, they continuously consult with the appointed or chosen teachers from the Department of Design and Architectural Studies, the Department of Strength of Materials and Load-Bearing Structures, the Department of Building Constructions, the Department of Electrical Networks and the Department of Building Services Engineering as well as with external specialists, if needed. In the course of the Complex Design Project, students finalize the load-bearing, building construction and building services systems of the building and the construction technology. In addition to their final drawings, at the end of the semester they submit their essay which includes preliminary studies, the assessment of the different alternatives, the technical description of the architectural unit and the necessary drafts. Students normally construct a model as well. Their work is evaluated by the different departments with 70% of the total awarded for architectural work and the three co-departments give 30% (=3x10%).
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data
- Heino Engel, Structure Systems, 2007.

SEMESTER 10

Diploma Design Project
Lecturers: Dr. Bachmann Bálint

Subject supervisor: Dr. Bachmann Bálint
Allotment of hours per week: 0 L, 15 P
ECTS Credits: 30
Requirement: examination
Brief Syllabus: This subject completes the study of students attending the M.Sc. programme. It aims to assess students' knowledge and expertise, and determine whether they satisfy the requirements of an M.Sc. degree. Students have to prepare an essay with diagrams on the chosen topic of building constructions (minimum 35 A/4 pages), in the framework of independent student's work. Preparation of drawings and through working through their design in the Complex Design Project plan for planning permission of a building, they complete the engineering working drawings documentation (ground plans, sections, elevations 1:50), with a sufficient number of detail drawings (1:10, 1:5). They should also include tasks related to the specialised fields: statics-structures and load-bearing structures, calculations and design as well as elaborating on technological and construction tasks. The specialised tasks are related to the building and their documentation is presented in the essay. The diploma design project (essay) must be prepared and submitted in one bound copy and on a CD/DVD. The drawing tasks must be backed up and attached on CD/DVD to the diploma design project.
This subject includes an architectural design project in the practical part (marked with a **P**) where students can develop their architectural skills.
Course materials:

- Ernst and Peter Neufert, Neufert Architects' Data
- Heino Engel, Structure Systems, 2007.a