



UNIVERSITY OF PRISHTINA  
“HASAN PRISHTINA”

FACULTY OF CIVIL ENGINEERING  
DEPARTMENT HYDROTECHNICS – BSc.

2015 – 2019

## Study Program: HYDROTECHNICS

Description (name) of the academic programme	Study Program Hydrotechnics
NFQ Level (BA, MA, PhD, doctorate programme, university course)	Level 6 BA
Academic degree or certificate, spelled out in full and in abbreviated form	Bachelor of Civil Engineering – Study Program: Hydrotechnics
Study area according to Erasmus Subject Area Codes (ESAC)	06.4. Civil Engineering
Profile of the academic programme / Scientific position	Hydrotechnics
Minimum period of study	Minimum 3 study years
Study form (regular, distance learning, etc.)	Full time
Number of ECTS	180 ECTS , 60 ECTS per year
Program (short overview)/Courses	Mandatory courses:  <ol style="list-style-type: none"> <li>1. Introduction to Civil Engineering</li> <li>2. Mathematics I</li> <li>3. Geometry</li> <li>4. Physics</li> <li>5. Foreign Language</li> <li>6. Informatics</li> <li>7. Mathematics II</li> <li>8. Mecanics I</li> <li>9. Building Materials I</li> <li>10. Measurement Techniques in Geodesy</li> <li>11. Strength of Materials I</li> <li>12. Mecanics II</li> <li>13. Building Materials II</li> <li>14. Numerical Methods</li> <li>15. Soil Mechanics</li> </ol>

	<p>16. Statics  17. Strength of Materials II  18. Tecnology of Concrete  19. Fluid Mechanics  20. Concrete Structures  21. Hydraulics  22. Hydrology  23. Urban Water Management  24. Hidrotechnical Structures  25. River Engineering  26. Water Treatment  27. The Use of Water Power  28. Organisation and Construction Technology  28. Diploma Work</p> <p>Elective courses:</p> <p>1. Probability and Statistics  2. Buiding Constructions  3. Environmental Protection  4. Building Law  5. Professional Ethics  6. Geology in Civil Engineering  7. Road Design  8. Engineering Geotechnics  9. Water Resorces and Environment  10. Steel Constructions  11. On Site Decentralized Waste Water Mangement Systems  12. Building Engineering Physics  13. Internship</p>
Number of student places	Proposed by the Council of CEA Faculty/60 students
Person in charge of the academic programme	Prof. asoc. dr. Zekirija Idrizi
Scientific/artistic staff (number per staff category)	Prof. Dr. (6) Prof.asoc.dr. (8) Prof.asis. dr. (6) Lecturer Mr.sc. (3) Lector (1)
Tuition fees	According to UP tarriffs

The study program

First Year - Semester I			Hours/weeks			Professor
Nr.	M/E	Subject	L	Ex.	ECTS	
1	M	Introduction to Civil Engineering	2	0	3	Prof.ass.dr.Hajdar Sadiku
2	M	Mathematics I	3	2	9	Prof. dr. Isak Hoxha
3	M	Descriptive Geometry	2	2	6	Prof.asoc.dr. Flamur Doli
4	M	Physics	2	2	6	Prof.dr. Rashid Maliqi
5	M	Foreign Language	2	0	3	Nedime Belegu
6	M	Informatics	2	2	3	Prof.asoc. dr. Enver Hamiti (FIEK)
		Total	13	8	30	
7	E	Professional Ethics	2	0	3	
<b>Semester II</b>						
1	M	Mathematics II	3	2	9	Prof.dr.Isak Hoxha
2	M	Mecanics I	3	2	6	Prof .asoc. dr. Misin Misini
3	M	Building Materials I	2	2	6	Prof.asoc.dr.Naser Kabashi
4	M	Surveying Techniques in Geodesy	2	2	6	Prof.asoc.dr. Perparim Ahmeti
		Total	10	8	27	
5	E	Probability and Statistics	2	1	3	Prof.dr. Fevzi Berisha
6	E	Building Constructions	2	2	3	Prof.asoc.dr.Violeta Nushi
<b>Second Year – Semester III</b>						
1	M	Strength of Materials I	3	2	9	Prof.asoc. dr. Misin Misini
2	M	Mecanics II	2	2	6	Prof.asoc. dr. Misin Misini
3	M	Building Materials II	2	2	6	Prof.asoc.dr.Naser Kabashi
4	M	Numerical Methods	2	2	6	Prof. dr. Abdullah Zejnullahu
		Total	9	8	27	
5	E	Environmental Protection	2	0	3	Prof.dr. Fetah Halili (FSHMN)
6	E	Building Law	2	0	3	Mr.sc.Illir Rodiqi
<b>Semester IV</b>						
1	M	Soil Mechanics	3	2	6	Prof.dr.Fikret Ahmedi
2	M	Construction Statics	3	2	6	Prof.asoc.dr.Fatos Pllana
3	M	Strength of Materials II	2	2	6	Prof.asoc.dr.Misin Misini
4	M	Technology of Concrete	2	2	6	Prof.asoc.dr.Naser Kabashi
5	M	Fluid Mechanics	2	2	3	Prof.asoc.dr.Zekirija Idrizi
		Total	12	10	27	
6	E	Geology in Civil Engineering	2	0	3	Prof.ass.dr.Islam Fejza ( FXM)
7	E	Road Design	2	2	3	Prof.asoc.dr.Naim Hasani
<b>Third year – Semester V</b>						

1	M	Concrete Constructions	3	2	6	Prof. ass. dr. Kadri Morina
2	M	Hydraulics	3	2	6	Prof.asoc.dr.Naim Hasani
3	M	Hydrology	3	2	6	Prof.asoc.dr.Naim Hasani
4	M	Urban Water Management	2	2	3	Prof.ass. dr. Figene Ahmed
5	M	Hydrotechnical Structures	2	2	3	Prof.asoc.dr.Zekirija Idrizi
		Total	13	10	24	
6	E	Engineering Geotechnics	2	2	3	Prof.ass.dr. Qani Kadiri
7	E	Water Resources and Environment	2	1	3	Prof.ass. dr. Laura Kusari
8	E	Steel Constructions	2	0	3	Mr.sc.Faik Hasani
Semester VI						
1	M	River Engineering	2	2	3	Prof.ass. dr. Laura Kusari
	M	Water Treatment	3	2	6	Prof.asoc.dr.Naim Hasani
3	M	The Use of Water Power	2	2	3	Prof.dr.Sylejman Daka
4	M	Organisation and Building Technology	2	2	3	Mr.sc.Ilir Rodiqi
5	M	On Site Decentralized Waste Water Mangement Systems	2	2	3	Prof.ass. dr. Figene Ahmed
		Total	11	10	18	
6	E	Building Engineering Physics	2	1	3	Mr.sc.Cene Krasniqi/Prof.asoc.dr.Naser Kabashi
7	E	Internship			3	
8	M	Bachelor thesis			9	

## Course Description

### INTRODUCTION TO CIVIL ENGINEERING

Short introduction: Introduction with basic terms on construction science: basic requirements to be filled, for an engineering structure; structural units; construction, its importance in human life; construction materials, wood, concrete, steel structures, types of works and their importance, building site visits; working process in design office; projecting stages.

Learning objectives and learning outcomes: After finishing this curs (learning subject), student should be able to know, understand, and to use correctly basic terms of construction science, in order to stand as easy as possible, duties which are coming along basic studies.

Teaching and learning methods: Regular learning in group form, with individual home works and with construction site visits.

Evaluation methods and passing criteria:

Concretization tools/ IT: projector, computer, Table's folders, markers.

Ratio between theory and practice:

Theoretical part	Practical part
90 %	10 %

#### Basic course literature

Prof. Ass. Dr. Hajdar Sadiku Hyrje në Ndërtimtari (ligjërata), FNA, Prishtinë

Prof. Dr. Fetah Jagxhiu, Mekanika I (ligjërata), FNA, Prishtinë

Prof asoc. Dr. Fisnik Kadiu, Teknologjia e materialeve të ndërtimit, FIN, Tiranë

R.S. Narayanan, A.W.Beeby: Introduction to Design for Civil Engineers, Spon Press, London 2001;

D. Doran:Eminent Civil Engineers Whitles Publishing Caithness 1999;

## MATHEMATICS I

Short introduction: The set of real and complex numbers. Basic operations with numbers. The field of real numbers as a subfield of complex numbers. Linear Equations and Matrices. Matrix addition and Vectors. Matrix Multiplications. The transpose of a Matrix. Applications to Linear systems. Matrix inverse. Rank of a matrix. Determinants. Basic properties of the determinant. Systems of linear equations. Gaus and Kramer Methods. The scalar product, vector product and combined product. Equations of plan in space. The straight line in a space. Second degree surfaces.

Learning objectives and learning outcomes: After the completion of the course the student will be able to:

- To understand and adopt basic knowledge of matrices, determinants, systems and vectors.
- To be able to work independently, to solve different tasks, to verify the results, to compare different types of problems.
- To be able to formulate similar problems with solved problems, to describe and compare them.
- To be able to have a good knowledge of vectors and their applications, in solving problems of plans equations and straight equations.

Teaching and learning methods: Lectures, work seminars, home works.

Evaluation methods and passing criteria: Evaluations of presence 10 %, Mid- term evaluations 40%, final term of evaluations 40%, group seminar 10%. Exam: Written test and oral test.

Concretization tools/ IT: Computers, Black table, Projector, Notebook, etc.

Ratio between theory and practice: Theoretical part 60%, Practical part 40%.

Basic course literature:

1. I.Hoxha, Matematika I, FNA Prishtinë
2. I.Hoxha, Matematika Elementare FNA, Prishtinë
3. L.Lipschutz, Linear Algebra, N.York 1968

## DESCRIPTIVE GEOMETRY

Short introduction: Projection methods. Point projection. Quadrants. Octants. Projection of lines with every kind of position; projection of lines with special position. Projection of the line drawn through a point. Projection of two lines. Definition of line imprints in projection planes. Projection of plane. Plane imprints. Projection of plane in which lays a line with a point. Projection of planes with two given lines. Intersection of two planes. Intersection of the line with a plane. Transformation of point, line and the geometric figure. Transformation of a body. Rotation of point, line and body. Method of falling-fitting of the plane. Intersection of polyedric and rotating bodies.

Learning objectives and learning outcomes: Basic preparation for professional and technical presentation of three-dimensional forms, architectural designs as well as development of capabilities to understand three-dimensional space and the spatial thinking in context of articulating elementary concepts in the profession of architecture. the course belongs in the group of preparatory subjects and enables gaining of basic knowledge for further studies in the subject of architecture and spatial planning.

Teaching and learning methods: Teaching method of Descriptive geometry consists in giving lectures and making exercises, weekly for particular study units, doing graphic works and models for defined study units.

Evaluation methods and passing criteria: First evaluation 30%, Second evaluation 30%, Evaluation of practical part 30%, evaluation of models 5%; Presence 5%; if the students does not pass the first and second evaluation s/he will need to take the final exam

Concretization tools/ IT: Projector, Computer, blackboard

Ratio between theory and practice:

Theoretical part	Practical part
50%	50%

### Basic course literature

1. Flamur DOLI, Gjeometria Deskriptive, Prishtinë, 1990
2. Flamur DOLI, Perspektiva gjeometrike, Prishtinë, 1997
3. B. QURÇIQ, Vizatim teknik me Gjeometri deskriptive, Prishtinë 1983
4. And all other relevant literature available in the specific field



## PHYSICS

Short introduction: Physics and measurement. Motion in two and three dimensions. Newton's laws. Work and Kinetic energy. Potential energy and conservation of energy. The theory of gravity. Oscillatory motion, waves. Fluid properties. Temperature and ideal gases. Thermodynamics. Electric field. Magnetic field. Electromagnetic waves.. Light, mirrors and lenses. Interference, diffraction and polarization of light. Quantum physics.

Learning Objectives and Learning Outcomes:

- Using the physical laws to solve the basic problems of engineering.
- To introduce students to the basic concepts of kinematics, dynamics, thermodynamic etc.
- Using the physical laws of physics in modeling and solving specific engineering problems
- Students should understand the basic knowledge of physics to the level of general engineering culture
- Knowledge of physics at the basic level, using the methods of mathematical analysis.

Teaching and learning methods: Lectures, exercises, laboratory works, (Laboratory includes some basic physics experiment); numerical methods; work seminar group.

Evaluation Methods and passing Criteria: Evaluations of presence 10%, midterm evaluations 40% ; final term of evaluation 40% ; group seminar work 10%.; Exam (written test form an oral )

Concretization tools/ IT: video projector; computer; black table; notebook, etc

Ratio between theory and practice:

Theoretical part	Practical part
60 %	40 %

Basic course literature:

1. S.Skenderi, R. Maliqi, Fizika, FNA, 2005, Pristine
2. I.Serway, Physics for scientistis and engineerings, Thomson Books, 2004
3. D. Halliday, R. Rechnick, etc, Fundamentals of Physics, Jon Wiley & Sons, 2006

## ENGLISH LANGUAGE

Short introduction: The course develops the English language skills of reading, speaking, writing and listening and grammar presented in a way which provides exercises and overcoming common problems in the structure and application of tenses. It also develops and enriches the professional technical vocabulary of three directions of Civil Engineering Faculty and Architecture.

Learning objectives and learning outcomes: The objective of the course is to:

- Increase students' skills in reading, writing, listening and communication in speech.
- To enhance students' ability to communicate in English in speaking and writing.
- To enrich their vocabulary through independent reading and listening to English.
- To acquire knowledge in grammar teaching and practice grammar in context.
- To enrich the vocabulary of technical terms, by writing and using written words, translate and comment in English.

Teaching and learning methods: Ex-cathedra discourse and discussion of topics related to interactive lectures with students. Exercises developed through seminar papers, various articles in the field of Civil Engineering and Architecture, probationary tests, exercise unfamiliar words and mutual discussions.

Evaluation methods and passing criteria: Participation in lectures and exercises 10%; Writing seminar paper 20%; Presentation of the workshop 10%; Test 30%; Final exam (oral) 30%.

Concretization tools / IT: projector, laptop could, table.

Ratio between theory and practice:

The theoretical part	The practical part
30%	70%

Basic course literature

New Headway Advanced Student's Book (2007).

Oxford University Press. Oxford UK.

Oxford Dictionary. Oxford University Press. Oxford UK.

Research on the internet for the written materials, such as professional brochures and magazines.

Printed and electronic dictionaries with professional terminology.

## INFORMATIKA

Short introduction: Computer Hardware; Software. Operating system- DOS. Operating system WINDOWS. Windows configurations. The basics of computer graphics. Text processing program. Program for presentation and data calculations. Preparation of presentations. Information and communications.

Learning objectives and learning outcomes: Students should know the trends of the development of computer technology and prepare for the efficient use of this technology in solving professional problems and corresponding projects in the field of Civil Engineering.

Learning outcomes: After the course students should be able:

1. To know basic concepts of computers.
2. To explain operating system functions.
3. To explain application programs.
4. To use operating system in solving different practical problems.
5. To use application programs in solving different practical problems.

Teaching and learning methods: Lectures, computer exercises , seminars, discussions.

Evaluation methods and passing criteria: The first evaluation: 25% ; The second evaluation 25% ; presentation 5% ; seminars dhe homework 15% ; final exam 30% ; Total 100%

Concretization tools/ IT: projector, computer, Table's folders, markers.

### Basic course literature

1. 1. Enver Hamiti Kompjuterika, Ligjërata kompjuterike të autorizuar Prishtinë, 2001, 2. "Kompjuteri për të gjithë", autorë Dr. Agni Dika, Seb Rodiqi
2. "Programe Kompjuteri" , autorë Harallamb Papakroni
3. Literatura në gjuhën angleze për: Windows
4. XP, MS Office XP, etj.

## PROFESSIONAL ETHICS

Short Introduction: The basic notion of the code of ethics in Civil Engineering. Contents of preliminary design, main design and implementing design. Meanings of technical regulation, standards and technical norms in terms of professional ethics. Professional exams - certification, norms and criteria. The effect of description of work activities. Method Statement for the construction.

Learning Objectives and Learning Outcomes: Basic preparation for the professional and technical presentation of preliminary design, main design and detail design. The Content of preliminary, main and detail design. Understanding the content of technical rules, norms and standards in civil engineering. Certificate of Engineer for the various filed in civil engineering. Upon completion of the course student will be able to: explain the contents for the preliminary, main and detail design. Analyzes and explains contents of technical description of construction works.

Teaching and Learning Methods: Method of Learning courses for professional Ethics consist on weekly unit lectures. Demonstrates various occasions of contents and description of projects. For learning methods should be use interactive discussions and working groups of students methods.

Evaluation Methods and Passing Criteria: Evaluation from attendance 5%, first Colloquium 20 %, second Colloquium 20%, semester work 55 %.

Concretization Tools/ IT: projector, Computer, table, working books, markers.

Ratio between Theory and Practice:

Theoretical Part	Practical Part
100%	0%

Basic course literature:

- (1) Ligji i ndërtimit, Kosovë
- (2) Standardet, rregullat teknike dhe Normat në Ndërtimtarë EC.

## MATHEMATICS II

Short introduction: The functions with one variable. Inverse functions. Periodic functions. Limit of a function and continuity. The derivate and its application. Application of derivate in mechanics, and geometric interpretation. Basic rules of derivate. The differential of a function. Geometrically and mechanically interpretation. Apply of derivate in a study of functions and their graphically representation. Functions with some variables. Partial derivate. Extremes. Integral calculus. Rules and methods of integration. Implementation of integral in calculation of area, volume and length of arc. Double and treble integrals. The ordinary differential equations and their applications.

Learning objectives and learning outcomes: After the completion of the course the student will be able to:

- To understand and adopt basic knowledge in the field of differential and integral
- To be able to work independently, to solve different tasks, to verify the results, to compare different types of problems.
- To be able to formulate similar problems with solved problems, to describe and compare them.
- To be able to adopt the derivate and integrate techniques of different functions.
- To be able to apply in practice the theoretical problems of derivate and integrals.
- To solve practical problems of differential equations.

Teaching and learning methods: Lectures, work seminars, home works.

Evaluation methods and passing criteria: Evaluations of presence 10 %, Mid- term evaluations 40%, final term of evaluations 40%, group seminar 10%.Exam: Written test and oral test.

Concretization tools/ IT: Computers, Black table, Projector, Notebook, etc.

Ratio between theory and practice:Theoretical part 60%, Practical part 40%.

Basic course literature:

1. I.Hoxha, Matematika II, FNA Prishtinë
2. I.Hoxha, Matematika Elementare FNA, Prishtinë
3. Calculus, R.E.Larson, R.P.Hostetler, B.H Edwards 1994, USA

## MECHANICS I

Short introduction: In this course of mechanics the first part of the mechanics, in other words static problems are treated. For introduction of statics as natural science, the balance of the material objects by the action of forces is studied. Problems arise as two parts: static of rigid body in flat and static of rigid body in space.

Learning objectives and learning outcomes: Introduction to the necessary basic knowledge of Mechanics I (Statics) of the scientific disciplines of mechanics, for primary level, the scientific disciplines of mechanics. After completing this course / subject / student will be able to recognize, understand and use basic concepts of statics, in order to more easily handle awaiting difficulties during and after these studies.

Teaching and learning methods: Frontal and individual with lectures and exercises.

Evaluation methods and passing criteria: The final assessment is based on the overall engagement of the student during the whole semester, in accordance with the following: first assessment 20%, second 20%, attendance 5%, activities during lectures 10%, final exam 45%.

Concretization tools/ IT: projector, computer, Table's folders, markers.

Ratio between theory and practice:

The theoretical part	Practical Part
40%	60%

Base course literature:

F. Jagxhiu: Mekanika I (Statika), Prishtinë, 1995.

F. Jagxhiu: Përmbledhje detyrash të zgjidhura nga Mekanika I, Prishtinë, 1996.

P.B. Ferdinand, E.R. Johnston, R.E. Flori: Mechanics for engineers, Statics, McGraw-Hill, 2007

## BUILDING MATERIALS I

Short introduction: General knowledge for building Materials and properties of Materials : physics; mechanics ;physic-mechanics; chemical. Applied the Building Matrials such basic materials for constructions: Stone; Aggregate; Clay Materials; binder Materials: Lime; Cement and Gypsum. Laboratory examinations of properties of materials and apply those materials with adequate properties requested for different positions of structures.

Learning objectives and learning outcomes: To inform the students with the first step of apply the building materials in engineering structures. To have the chance to make the examinations of properties in laboratory works directly, and to evaluate the fulfilling the requested properties.

- to know the building materials using during the different eras in constructions.
- to know the properties of building materials: physics; mechanics; physics-mechanics and chemistry.
- to know to determinate and to evaluate the properties in laboratory works.
- to be involved in development technology of building materials.
- to be able to orient the producer of building materials in fulfilling the requested according the European Standards.

Teaching and learning methods: Lectures, laboratory works; numerical methods; work seminar group.

Evaluation methods and passing criteria: Evaluations of presence 10%, midterm evaluations 40% ; final term of evaluation 40% ; group seminar work 10%.; Exam (written test form an oral )

Concretization tools/ IT: video projector; computer; black table; notebook, ect

Ratio between theory and practice:

Theoretical part	Practical part
60 %	40 %

Basic course literature

1. N.Kabashi, Materialet Ndertimore I,(ligjerata te autorizuar) FNA, Prishtine
- 2.F. Kadiu: Teknologjia e Materialeve te Ndërtimit, FIN, Tirane

3. Neil Jackson and Ravindra K. Dhir: Civil Engineering Materials, Palgrave Macmillan; 5th edition edition

## SURVEYING TECHNIQUE IN GEODESY

Short Introduction: Initially will be developed knowledge on basic surveying methods and calculations of unknown coordinates of points, coordinate systems in geodesy, basic tasks of geodesy, establishment of polygonal networks, applications of geodetic methods in civil engineering, building stakeout, deformation analysis of buildings. The course ends with the development of basic knowledge on GPS and its application to land surveying for different purposes.

Learning Objectives and Learning Outcomes: Main objective is to develop knowledge on surveying methods in geodesy and its application on solving various tasks in civil engineering. After completion of this course, student should be familiar with: Types of coordinate referent systems; Geodetic base when geodetic surveying are referenced; Calculation of unknown coordinate points; Basic tasks in geodesy; To design different professional projects independently related to land surveying for civil engineering purposes.

Teaching and Learning Methods: Advanced lectures; discussions, individual work, group work, presentations.

Evaluation Methods and Passing Criteria: Colloquium 1 10%; Colloquium 2 10%; Homework 5%, Attendance 20%, Final exam 55%.

Concretization Tools/ IT: video projector, laptop, blackboard.

Ratio between Theory and Practice:

Theoretical Part	Practical Part
50%	50%

Basic course literature:

- 1) Kahmen, H: Vermessungskunde, Berlin, 2005
- 2) Nela, K: Gjeodezia Praktike I, Prishtine, Kosove, 2005.
- 3) Nela, K: Gjeodezia Praktike II, Prishtine, Kosove, 2005



## PROBABILITY AND STATISTICS

Short introduction: The subject concentrates on the achievement of knowledge from the field of Statistics and Probability theory which can be used to facilitate the knowledge from other subjects and can be applied in solving problems from the field of hydro-technics. It introduces concept of the sample space. Classical, Geometrical and Axiomatic definition of Probability. Proofs of the elementary formulas of probability, the formula of the total propability and the Bayes formula. Probability distribution laws. Some important Probability distribution laws which are applied in hydro-technics are also introduced. Parameters of the random variable. Types of convergence. Elements of the Mathematical Statistics. A statistical analysis using algebraic and positional mean while applying indicators of absolute and relative variance. Application of well known statistical programs used in hydrotechnic engineering.

Learning objectives and learning outcomes: At the end of this course students will be able to use and to understand concepts of Mathematical Statistics with the aim to apply this knowledge as an aide in other subjects.

Upon the completion of this subject students will:

1. Obtain theoretical knowledge from the content of the subject Statistics and probability for students of hydro-technics.
2. Know different methods for solving problems from the field of hydro-technics by using known concepts of statistics and probability.
3. Gain knowledge and get accustomed to use efficient methods in solving different problems from the field of hydro-technics.
4. Be able to apply obtained knowledge of Statistics and probability as a facilitating factor for the attainment of the knowledge from other subjects, as planned by the studying program of the hydro-technics science.

Teaching and learning methods: Frontal and individual with lectures and exercises.

Evaluation methods and passing criteria: The final assessment as follows: first assessment 20%, second 20%, attendance 5%, activities during lectures 10%, final exam 45%.

Concretization tools/ IT: Chalk, table, projector, computer, notebook, markers.

Ratio between theory and practice:

Theoretical part	Practices –Exercises
40 %	60 %

Basic course literature

1. Sh. Leka – Teoria e probabilitetit dhe statistika matematike, 1998, Tiranë.
2. Marilyn K. Pelosi, Theresa M. Sandifer- Elementary statistics, 2003, USA
3. William Navidi- Statistics for Engineers and Scientists, 2006 USA

## BUILDING CONSTRUCTION

Short introduction: relevant knowledge that will lead to a solution of practical problems and needs for building construction and technical contest for students to develop skills for understanding, design and implementations of plans for various types of facilities, standards and building codes. Introduction to construction technology. Constructive systems. Supportive constructive elements, such as: columns, beam, plates, rope and shell. Wrapper constructive elements, such as: foundations, walls, floors, ceilings, stairs, ramps, lifts, escalators, doors, windows, facades, flat roofs and steep. For all constructive elements are addressed issues: form, function, embodiment, dimensions and preliminary calculation.

Learning objectives and learning outcomes: Upon completion of the course candidates will be able to conceptualize and develop implementation plans for construction by applying knowledge of building constructions for supportive and wrapper constructive elements of the facility; be familiar with the standards and codes applicable in construction; be able to prepare and apply architectural and constructional projects.

Teaching and learning methods: lecture, seminar work, individual work and study visit.

Evaluation methods and passing criteria: 10% rating by the presence exercises - individual work 40% and 60% written examination.

Concretization tools / IT: projector, computer, table, drawing tools, A3 format.

Ratio between theory and practice:

Teorical part	Pjesa praktike
60 %	40 %

Basic course literature

[1] Nushi, V., "Leksionet e përmbeldhura në KN", Universiteti i Prishtinës, 2009.

[2] Francis, D.K.Ch., "Building construction illustrated", USA, 2006

[3] Peulic, Dj., "Konstruktivni Elementi Zgrada", Zagreg, 1989

[4] Papanikolla, I., “Konstruktionet Arkitektonike”, Tiranë, 1988

## STRENGTH OF MATERIALS I

Short introduction: Introduction, Theories of Stress and Strain, Analysis of stress, Analysis of Strain, Stress and Strain Relations, Linear Theory of Elasticity, Equilibrium of rigid Body, Free-Body Diagrams, Axial Load, Shear Forces and Bending Moments, Torsion, Geometry Properties and Moments of Inertia, Stress in Beams, Application of Plane Stress, Deflection of Beams. Analysis of Indeterminate Beams.

Learning objectives and learning outcomes: At the end of this course students will be able to use and to understand concepts of Strength of Materials with the aim to use this knowledge as an aide in other subjects which use concept of fundamental theories of the Strength of Materials.

Students successfully completing this course will:

- Understand the concept of fundamental theories of the Strength of Materials I
- Be able to simplify a complex Strength of Materials problem down to one that can be analyzed.
- Understand the significance of the solution to the problem of any assumptions made.
- Be able to apply obtained knowledge of Strength of Materials as facilitating factor for the attainment of the knowledge from other subjects, as planned by the studying program of the Structural engineering.

Teaching and learning methods: Frontal and individual with lectures and exercises.

Evaluation methods and passing criteria: The final assessment is based on the overall engagement of the student during the whole semester, in accordance with the following: first assessment 20%, second 20%, attendance 5%, activities during lectures 10%, final exam 45%.

Concretization tools/ IT: table, projector, computer, notebook, black table, markers.

Ratio between theory and practice:

Theoretical part	Practices –Exercises
40 %	60 %

Basic course literature

1. F. Jagxhiu: Rezistenca e materialeve pjesa e parë, Prishtinë 1995
2. Sherif Dunica: Otpornost materiala, Beograd, 1994

3. Simic Vicko: Otpornost materiala, Zagreb, 1992
4. Wiliem A. Nash; Stregth of Materils,Mc Graw-Hill

## MECHANICS II

Short introduction: In this course of the mechanics will be covered the second part mechanics – kinematics and the third part - dynamics. For the presentation of kinematics, will be examined kinematics of the material point and kinematics of the material body. Dynamics course will be divided into: the dynamics of material point, the system dynamics and rigid body dynamics.

Learning objectives and learning outcomes: Necessary knowledge of the kinematics and dynamics basis, for the level of the first cycle for the scientific disciplines of mechanics. After completing this course / subject / student will be able to recognize, understand and use basic concepts and problems of the kinematics and dynamics, in order to handle difficulties much easier during and after these studies.

Teaching and learning methods: Frontal and individual with lectures and exercises.

Evaluation methods and passing criteria: The final assessment is based on the overall engagement of the student during the whole semester, in accordance with the following: first assessment 20%, second 20%, attendance 5%, activities during lectures 10%, final exam 45%.

Concretization tools/ IT: projector, computer, Table's folders, markers.

Ratio between theory and practice:

The theoretical part	Practical Part
40%	60%

### Basic course literature

F. Jagxhiu : Mekanika II (kinematika), Prishtinë,1996

F. Jagxhiu : MekanikaIII (dinamika) Prishtinë,1996

Hajdin Berisha: Përmbledhje detyrash të zgjedhura nga Mekanika II,2002

EUROCODE-8 : Design of Structures for earthquake resistance, CEN, Bruxelles,2004

Fajfar P., Osnove dinamike, FAGG, Ljubljana, 1980

## BUILDING MATERIALS II

Short introduction: Basic knowledge of components of concrete such building materials. Properties of concrete, including fresh and hardening properties. Mortars, properties and apply in civil engineering works. Steel, such a building material, properties and applications. Light metals and applications in civil engineering structures. Wood , laminate wood and properties. Thermo and hydro insulations materials. Bituminous materials, properties and using in asphalt pavement structures.

Learning objectives and learning outcomes: To have the information about the concrete , such building material. To determine the properties of concrete , including the fresh and hardening concrete using the laboratory equipment. Comparable the concrete with other most popular materials. The functionality of concrete depend of the constituent materials. Basic knowledge about the wood and steel, such alternative materials . Basic knowledge for bituminous materials and apply.

- to know the concrete such building material and evolutions of concrete
- to know to examination the properties of concrete, including the fresh and hardening properties
- to know to prepare , to maintenance and to calculate the class of concrete.
- To apply the steel and to know the classifications of steel.
- To apply the light metals in engineering structures.
- To know the evaluate the properties of bituminous materials
- To know to prefer the production according the European Standards.

Teaching and learning methods: Lectures, laboratory works; numerical methods; work seminar group.

Evaluation methods and passing criteria: Evaluations of presence 10%, midterm evaluations 40% ; final term of evaluation 40% ; group seminar work 10%.; Exam (written test form an oral )

Concretization tools/ IT: video projector; computer; black table; notebook, ect

Ratio between theory and practice:

Theoretical part	Practical part
60 %	40 %

Basic course literature

1. N.Kabashi, Materialet Ndertimore I,(ligjerata te autorizuara) FNA, Prishtine
- 2.F. Kadiu: Teknologjia e Materialeve te Ndërtimit, FIN, Tirane

3. Neil Jackson and Ravindra K. Dhir: Civil Engineering Materials, Palgrave Macmillan;  
5th edition edition  
NUMERICAL METHODS

Short introduction: The subject concentrates on the achievement of knowledge from the field of Mathematics which can be used to facilitate the knowledge from other subjects and can be applied in solving problems from the field of hydro-technique. The class contains: computer arithmetic, approximate methods for solving equations with one variable, numerical linear algebra, approximate methods for solving systems of linear equations, numerical differentiation and numerical integration

Objectives and Intended learning outcomes: At the end of this course students will be able to use and to understand concepts of Higher Mathematics with the aim to use this knowledge as an aide in other subjects which use mathematical apparatus.

Learning objectives and learning outcomes:

Obtain theoretical knowledge from the content of the subject Numerical Analysis for students of hydro-technique

Know different methods for solving problems from the field of hydro-technique by using known mathematical apparatus.

Gain knowledge and get accustomed to use efficient methods in solving different problems from the field of hydro-technique.

Be able to apply obtained knowledge of Numerical Analysis as a facilitating factor for the attainment of the knowledge from other subjects, as planned by the studying program of the hydro-technique science.

Teaching and learning methods: Frontal and individual with lectures and exercises.

Evaluation methods and passing criteria: The final assessment is based on the overall engagement of the student during the whole semester, in accordance with the following: first assessment 20%, second 20%, attendance 5%, activities during lectures 10%, final exam 45%.

Concretization tools/ IT: Chalk, table, projector, computer, notebook, markers.

Ratio between theory and practice:

Theoretical part	Practices –Exercises
40 %	60 %

Basic course literature:

1. Margarita Qirko , Syti Hysko ; Analiza Numerike , 2004 ,Tiranë
2. Richard L. Burden , J.Douglas Faires ; Numerical Analysis ,1997,ITP

## ENVIRONMENTAL PROTECTION

Short Introduction: The environmental notions and its components: air, water, soil, their pollution; Endangering and the Biodiversity; The threats and pressure: urbanism, noise, waste and chemicals, recycling - ecological design. Human activities: energy, transport, industry, forestry and tourism; Global challenges: climate changes, thinning of ozone layer, acidification, effects on materials properties in the human health.

Learning Objectives and Learning Outcomes: To introduce students with the basic notions of the ecology, chemistry, physics and environmental geology. Implement the measures and criteria for environmental protection during the design, reconstruction, usability of space, and working tools (natural and climatic criteria, manufacturing technology, urban design etc.). Create new models of individual behavior towards to the environment, to not attacked, and to actively participate in solving environmental problems at the local, regional and global levels ("think globally, act locally"). Collect and process the relevant scientific data from different sources for the current environmental problems in local and global levels. Explain the human-environmental ratio (rural, urban, industrial) and account causes of the environmental crises and manage with waste. Implement the principles of urban ecology in human settlements, Kosovar environmental legislation and international conventions on biodiversity, climatic change.

Teaching and Learning Methods: Regular lectures, interactive teaching with students, working group, discussion, debates, etc.. Evaluation forms: Regular and Bolonja (intermediate assessments).

Evaluation Methods and Passing Criteria:

Concretization Tools/ IT:

Ratio between Theory and Practice:

Theoretical Part	Practical Part
100%	0

Basic course literature:

D.A.Rozhaja,M.Jablanovic: Ndotja dhe mbrojtja e ambientit jetësor, Prishtinë  
F. Halili, A. Gashi dhe H. Ibrahim (2007): Ekologjia e mjedisve të ndotura  
Grup autorësh...dhe Halili, F.( 2010).“Paketa e Gjelbër – Green Pack”.  
Përmbajtje nga fusha e edukimit mjedisor dhe zhvillimi i qëndrueshëm.

## BUILDING LAW

Short Introduction: This course explains the basic legal knowledge related to the our country - Kosovo. Proceedings for the drafting initiative for the new law in Kosovo. Approval procedures to Kosovo law. Construction law. Processing applications for construction permits. Building permits, conditions and criteria. Professional licenses, criteria and procedures.

Learning Objectives and Learning Outcomes: For the knowledge of the professional staff and for the better offer to the labor market, the Student should be introduce with the judicial rules of the country, construction law, and professional licensing procedures. Upon completion of this course the Student has to be able: Explain and ranging the procedures for the professional licensing - Civil Engineer and Architect. Ranging the activities for the building permit.

Teaching and Learning Methods: Interactive Lectures with Students, presentation of the law and comments-interpret the construction law. Work in group for the practical cases on different building permit and their category

Evaluation Methods and Passing Criteria: The Evaluation are as follow: Attendance 10%, first Colloquium 40%, second Colloquium 40%.

Concretization Tools/ IT: projector, computer, table, working notice, markers.

Ratio between Theory and Practice:

Theoretical Part	Practical Part
80 %	20 %

Basic Course Literature:

Ligji i ndërtimit, Kosovë

Udhëzuesit administrativ për licencim



## SOIL MECHANICS

Short introduction: Research of soil from the ground surface, "In situ" tests. Phases of soil material, porosity of soil, specific gravity, humidity and soil consistency, Compaction of soil, laboratory and field testing. Permeability of soils, laboratory testing of coefficient of filtration of soil in laboratory and field. Resistance of soil to slip. Compressibility of soil. The distribution of stress in the soil, Boussinesq equations, methods of Newmark and Steinbrenner. Consolidation of soils. Slope stability. Earth pressures on walls. Bearing capacity of soils.

Learning objectives and learning outcomes: Upon completion of lectures of this course students will better understand the fundamental principles of soil mechanics, will be able to perform the examinations laboratory and field tests, interpretation of laboratory data reviews and field tests. Will application of physico-mechanical engineering and soil engineering properties in practice, to recognize all the methods of calculating the analysis of stability, compile geomechanical program reviews for geotechnical construction of the respective object construction.

Teaching and learning methods: The course is offered on a regular basis with the theory and the numerical and laboratory exercises. Also, the course foresees exercises and development of homework tasks that will be part of the final evaluation of the student.

Evaluation methods and passing criteria: Assessment through two evaluative tests that the first test 40%, second test 40%, 20% of homework tasks. Final exam.

Concretization tools / IT: projector, computer, tables, notebooks, markers.

Ratio between theory and practice:

The theoretical part	The practical part
70%	30 %

Basic course literature

Kadiri, Q. – Soil mechanics, Authorized lectures,

Das, B. : Geotechnical Engineering,

Ahmedi, F. : - Mekanika e dherave

## STATICS

Short introduction: Analysis of statically determinate structures, determination of internal forces MVN, influence lines of frame and truss structures by the static and kinematic methods, deflection diagrams of beams, frames and trusses. Analysis and compute of generalized displacements influence lines of beams, frames and trusses.

Learning objectives and learning outcomes: Students will be able to compute statically determinate structures such as frames and trusses. Methods that are applied for calculation of these structures and to understand influence lines. Be prepared and able to pursue master studies. Upon completion of this course the student have to: analyse and compute static systems of building constructions, plot internal forces diagrams MVN, plot influence lines diagrams of frames and trusses by the static and kinematic methods, plot deflection diagrams of beams, frames and trusses, plot displacements influence lines of frames and trusses. The complete analysis of frame and truss structures.

Teaching and learning methods: Lectures and tutorials. During the lecture of special units there will be solved numerical examples that refer the lecture. Students must solve assignments that present to the subject assistent.

Evaluation methods and passing criteria: attending to lecture and tutorial is mandatory. Written examination 40% and oral examination 60%.

Concretization tools/IT: blackboard and chalk.

Ratio between theory and practice

Theory	Practice
60%	40%

Basic course literature:

”Statika e Konstruksioneve I”, Fatos Pllana, Ligjërata të autorizuar,

“Statika e ndërtimit” pjesa I,pjesa II dhe pjesa III Skënder Skënderi

“Statika Konstrukcija”, Milan Djuric

“Teorija linijskih nosaca”, Miodrag Sekulovic

“Matricna analiza na konstrukciite”, Vladimir Simonqe

“Teoria e Strukturave”, S.Skenderi, N.Lako,N.Pojani,F.Softa

“Macierzowa analiza Konstrukcji”,Jacek Pietrezak,Gustaw Rakowski,Kazimierz Wrzesniowski

## STRENGTH OF MATERIALS II

Short introduction: Buckling and Stability of Columns, Critical Force and Critical Stress, Euler's Column, Elastic and Inelastic Column Behavior, Design Formulas for Columns, Combined Bending and Tension or Compression, Oblique or Unsymmetrical Bending, Determine the position of the Neutral Axis, Eccentric load, Core of Cross Section, Applications of Energy Methods, Work and Energy, Principle of Stationary Potential Energy, Principle of Minimum Potential Energy, The general Expression for Strain Energy, Application of Castiglino Theorem in Solution of Statically Indeterminate Beams, Principle of Virtual Forces and Unit Load Method, Influence Coefficients and Reciprocal.

Learning objectives and learning outcomes: At the end of this course students will be able to use and to understand concepts of Strength of Materials.

Students successfully completing this course will: Understand the concept of fundamental theories of the Strength of Materials I, Be able to simplify a complex Strength of Materials problem down to one that can be analyzed.

- Understand the significance of the solution to the problem of any assumptions made.
- Be able to apply obtained knowledge of Strength of Materials as facilitating factor for the attainment of the knowledge from other subjects, as planned by the studying program of the Structural engineering.

Teaching and learning methods: Frontal and individual with lectures and exercises.

Evaluation methods and passing criteria: The final assessment is based on the overall engagement of the student during the whole semester, in accordance with the following: first assessment 20%, second 20%, attendance 5%, activities during lectures 10%, final exam 45%.

Concretization tools/ IT: table, projector, computer, notebook, black table, markers.

Ratio between theory and practice:

Theoretical part	Practices –Exercises
40 %	60 %

Basic course literature

F. Jagxhiu: Rezistenca e materialeve pjesa e dytë, Prishtinë 2000

Sherif Dunica: Otpornost materiala, Beograd, 1994

Simic Vicko: Otpornost materiala, Zagreb, 1992

## TECHONOLOGY OF CONCRETE

Short introduction: Basic knowledge of constituent materials of concrete: aggregate, cement, water, mineral admixture and chemical admixture. Fulfilling the requests of constituent materials for producing the concrete. Mix Design of Concrete from different point of view: class of concrete; class of expositions, etc. according to the EN 206-1. Deformable properties and especial properties for different kind of concrete. Indicate of conditions and other factors in Design of durability of Concrete, Different kind of Concrete: SCC; HPC, etc.

Learning objectives and learning outcomes: To inform the students with ingredients of concrete and the examinations of properties of ingredients according the request of concrete. Mix Design of different types concrete of and methods. Producing; transport; casting, maintenance and evaluations of concrete. Typical properties of different kind of concrete and comparable with common concrete.

- to know to make the examinations of properties of ingredients in laboratory and to evaluate
- to know to design the concrete in wider specter, including the different class of concrete, using the properties of concrete.
- to have skills for preparing and examinations of concrete samples
- to have skills in examine and evaluate the properties of fresh and hardening concrete.
- to have skills to guide the producers and executors of engineering works to achieve the request properties according the EN 206-1

Teaching and learning methods: Lectures, laboratory works; numerical methods; work seminar group.

Evaluation methods and passing criteria: Evaluations of presence 10%, group seminar work 20%. Exam (written test form an oral ) 70 %

Concretization tools/ IT: video projector; computer; black table; notebook, laboratory equipment ect .

Ratio between theory and practice:

Theoretical part	Practical part
50 %	50 %

Basic course literature

1. N.Kabashi, Teknologjia e Betonit ligjerata te autorizuara) FNA, Prishtine
- 2.F. Kadiu: Teknologjia e Materialeve te Ndërtimit, FIN, Tirane
- 3.A.M.Nevile: Proerties of Concrete

## FLUID MECHANICS

Short introduction: General knowledge on fluid mechanics, concepts and basic physical properties of fluid media. Hydrostatic pressure and its properties, instruments for pressure measurement, hydrostatic force and pressure over the flat and curved surfaces. Types of motions of fluid. The equation of continuity. Bernoulli equations for steady motion of an ideal and real fluid media. Laws of fluid flow, properties and losses in laminar and turbulent flow regimes. Local hydraulic losses for different cases. Fluid flow over small openings. Steady flow on systems under pressure. Literature citation. Bibliography

Learning objectives and learning outcomes: Upon course completion, candidates will be able to write various reports and they will be able to complete, in a narrative manner, one professional work including the Bachelor thesis.

Teaching and learning methods: Lectures, seminar and individual work.

Evaluation methods and passing criteria: Participation in class 10%, first colloquium 30%, second colloquium 30% and semestral work 30%. Written exam.

Concretization tools/ IT: projector, computer, whiteboard, workbook, markers.

Ratio between theory and practice:

Lecture part	Practice part
60 %	40 %

Basic course literature

Z.Idrizi. " Mekanika e Fluideve " ligjërata te autorizuarra 2008

Joseph H. Spurk ; Nuri Aksel " Fluid Mechanics " ( second edition ) 2008

Bernard Massey " Mechanics of Fluids " ( eighth edition ) 2006 by Taylor & Francis

## GEOLOGY IN CIVIL ENGINEERING

Short introduction: Branches and scope of geology. Earth, its position in the solar systems. Surface features and internal structure. Work of natural agencies like lakes, oceans, atmosphere, wind, streams, sea, glacier. Earth movements. Types of weathering. Mountains and mountain building. Geological Time Scale. Mineralogy- Definition of crystal and a mineral. The study of the physical properties of minerals. Mineral classifications . Petrology - Formation and classification of rocks into three types, Igneous, sedimentary and metamorphic rocks. Description of physical properties for constructional purposes of granite, pegmatite, dolerite, gabbro, basalt, sandstone, conglomerate, breccia, limestone, shale, schist, marble, quartzite, slate, gneiss, andesite etc. Structural geology- Strike and dip, outcrops, volcanoes, overlaps, Inliers and outliers. Types classification of folds, faults, joints, unconformities. Ground water. Zones of ground water. Water table and perched water table. Water bearing properties of rocks. Occurrence of ground water. Springs. Earthquakes and landslides. Geological investigation – Interpretation of geological maps, use of aerial maps in geological surveying. Geophysical methods as applied to civil engineering.

Learning objectives and learning outcomes: At the end of this course the student shall be able to understand about geological formations, classification and morphology of rocks, and the importance of the study of geology for civil engineers with regard to founding structures like dams, bridges, buildings, etc.

Teaching and learning methods: Lectures -power point presentations, discussions; Working in groups, tests, seminars etc

Evaluation methods and passing criteria: Presence at lectures 10%, first test 30% second test 30%, seminar 10%. and Oral exam 20%

Concretization tools/ IT: projector, computer, table, marker, samples of minerals and rocks etc

Ratio between theory and practice:

Theoretical	Practical
60%	40%

Basic course literature

1. Islam Fejza., 2013. Gjeologjia në ndërtimtari( Ligjërata të autorizuara),
2. Nikolla Konomi, 2002. Gjeologjia inxhinierike. Shtëpia botuese e librit Universitar. Tiranë
3. Haki Dakolli, 2007. Hidrogjeologjia. Universiteti politeknik. Tiranë

## ROAD DESIGN

Short Introduction: General Knowledge for the traffic lines - roads. Categorization of roads. Road Components. Intersection of the traffic lines in one level and on many levels. Buildings on the road. Road Design under the European Standards. Road Traffic Signs.

Learning Objectives and Learning Outcomes: Basic Knowledge of road categorizations. Identify components of the traffic road lines, culverts, protection walls, bridges, building pass of the different situation, etc. Design of main roads, roads of category IV and local roads. Longitudinal and cross section road profiles, surveyor stations, earth filling, excavation etc. Upon completion of this courses the student will be able to: approach and read the road design of different categories. Design the short segments of local roads and main new alignment.

Teaching and Learning Methods: Lectures, interactive discussions with students, presentation, work in groups, test exam and seminars.

Evaluation Methods and Passing Criteria: Evaluation from attendance 20 %, first part of exam 30%, second part of exam 30%, seminar work 20%.

Concretization Tools/ IT: Projector, Computer, Table, working notes, unit materials from the sites.

Ratio between Theory and Practice:

Theoretical Part	Practical Part
60%	40%

Basic Course Literature:

N. Hasani, Projektimi i rrugëve, Prishtinë 2010

## CONCRETE STRUCTURES

Short Introduction: The base of concrete structure course provide the knowledge, usability, examination and design of cross section of concrete structural elements and the reinforcement. In this course the students will be introduced with the physical and mechanical characteristics of the concrete and reinforcement, design of cross section for the bending structural elements, axial pressure and tension of the concrete elements, "T" cross section, transversal forces, torsion.

Learning Objectives and Learning Outcomes: Introduce the base materials for the RC Structure. With this course the Student will be prepared for the design of cross section of RC Structural elements having in consideration for the different load combination and also the very different cross section of structural elements. Fundamental regulation and rules for the construction of reinforcement in different cross section. Upon to completion of course the student well be able to: explain the types of the materials and their technical characteristics for creating and constructing of RC Structure. Design the cross section and the reinforcement area for different cases of external action and the rectangular and T section.

Teaching and Learning Methods: Teaching Lectures which include the fundamental of concrete Structure. Every hour of lectures are associates with concrete examples for better clarification of particular lecture. The Student has obligation to do the design numerical examples during the semester, which at the end of semester every students has to prove the exams in front of assistant.

Evaluation Methods and Passing Criteria: From first Colloquium 10%, second Colloquium 10 %, numerical semester exams 15%, Attendance 5%, final exams 60%. Concretization Tools/ IT: table and choke.

Ratio between Theory and Practice:

Theoretical Part	Practical Part
50 %	50%

Basic Course Literature:

Bazat e konstruksioneve të betonit, dispence K. Morina , H. Sylejmani dhe N. Hoxha  
EC 1, EC 2

Ivan Tomičić: Konstruksionet e betonit Zagreb

K. Negovani dhe N. Verdho Konstruksionet prej betoni të armuar, Tiranë

Andrej Spasov : Konstruksionet e betonit Shkup.



## HYDRAULICS

Short introduction: Hydrostatics, Hydrodynamics, open channel flow, closed channel flow, hydrotechnical structures and ground waters.

Learning objectives and learning outcomes: the student should know and understand hydrostatic problems in hydrotechnic structures, to calculate the hydrostatic pressure, hydrodynamic problems. Calculates discharge, the flow velocity and the dimensions.

Teaching and learning methods: Lectures, laboratory works; numerical methods; work seminar group.

Evaluation methods and passing criteria: Evaluations of presence 10%, midterm evaluations 40% ; final term of evaluation 40% ; group seminar work 10%.; Exam (written test form an oral )

Concretization tools/ IT: video projector; computer; black table; notebook, ect

Ratio between theory and practice:

Theoretical part	Practical part
60 %	40 %

Basic course literature

1. Isuf Reçi: HIDRAULIKA, Tiranë
2. RÖSSERT, R. Hydraulik im Wasserbau, Verlag Oldenbourg

## HYDROLOGY

Short introduction: The analyze of Water balance, Rainfalls, Flows, Evapotranspiration, Hydrometry, Correlative reations, Hydrology forecast. Learning objectives: Fundamentals of hydrology.

Learning objectives and learning outcomes: to be familiar with measurement tools in hydrology, to select tools and processes for measurement, to select the methods for the inputs assesment, and to evolve the hydrologic inputs for the certain problems.

- Volume and needed time of work (hours per semester 2+2, 3 ECTS)

Teaching and learning methods: regulary teaching in groups,

Ratio between theory and practice:

Theoretical part	Practical part
60%	40%

### Basic course literature

Dr. Naim Hasani: Lectures and excercises: Hydrology

B. Shehu dhe K. Karanxha: Hidrologjia Inxhinierike I  
(Publishing University book's house - Tirane)

Manik: Hidrologie und Wasserwirtschaft

## URBAN WATER MANAGEMENT

Short introduction: Introduction to urban water management. Water characteristics and water quality. Requirement of drinking water, production and drinking water supply. Wastewater and pollutants. Urban drainage and wastewater treatment. Planning of urban water infrastructure.

Learning objectives and learning outcomes: to provide basic knowledge of water supply, sewerage and water treatment, as urban water management topics. After the course, students will be able: to assess water quality referring to water constituents; to plan for water treatment processes; to determine water quantities for different water users; to plan the infrastructure of water supply and sewerage.

Teaching and learning methods: Regular teaching in form of lectures and excersises. Also, home work assignments will be carried out by students.

Evaluation methods and passing criteria: Evaluation will be carried out throug tests. First test 35% , the second test 35%, and the homewrok assignement 30%. Participation in border line cases. Final exam.

Concretisation tools/TI: projector, computer, marker, blackboard, whiteboard.

Ratio between theory and practice:

Theoretical	Practical
60 %	40 %

### Basic course literature

Ahmedi, F., Lecture notes given by the lecturer

Jahic. M., Urbani Vodovodni Sistemi. Sarajevo, 1988.

Metcalf & Eddy, Inc. Wastewater Engineering: Treatment and Reuse. 4th ed, McGraw Hill, Inc., New York, 2003

Daka. S., Furnizimi me ujw, 2007

Butler. D., Davies. J. Urban Drainage, 2000

## HYDROTECHNICAL STRUCTURES

Short introduction: General knowledge in hydrotechnical structures, types and basic classification. Filtering through the foundation and the structure, determination of loads, load analysis, effect of seismic actions, static and dynamic analysis. Materials of construction, geotechnical characteristics of the construction site. Dams: classification and characteristics of different types of dams. Earth-fill dam types, considering homogenous and heterogeneous (with clay core, dams with concrete core, reinforced concrete and asphalt-concrete). Concrete dams: Gravitational dams and arch dams. Dams from high-compaction concrete. Osculation of dams. Environmental impact of hydrotechnical structures.

Learning objectives and learning outcomes: Upon course completion, candidates will be able to write various reports and they will be able to complete, in a narrative manner, one professional work including the Bachelor thesis.

Teaching and learning methods: Lectures, seminar and individual work.

Evaluation methods and passing criteria: Participation in class 10%, first colloquium 30%, second colloquium 30% and semestral work 30%. Written exam.

Concretization tools/ IT: projector, computer, whiteboard, workbook, markers.

Ratio between theory and practice:

Lecture part	Practice part
60 %	40 %

Basic course literature

P.Novak; A.I.B. Moffat; C.Nalluri and R.Navayanan “ HIDRAULIC STRUCTURES “

Fourth Edition 2007 by Taylor & Francis

L.Tancev “ Dams and Appurtenant Hidraulic Structures” 2005

Z.Idrizi “ Objektet Hidroteknike “ ligjërata te autorizuar

## GEOTECHNICAL ENGINEERING

Short introduction: Fundamentals for the design of foundations, soil improvement and replacement of soils, shallow foundation, static analysis of the foundation, the foundation stability control, Spread foundations, Determining the size and height of the foundation, foundations of prefabricated columns, anchor foundations, band foundations, calculation of band foundation on elastic foundation, slab foundations, insurance sides of the foundation pit, reinforced concrete walls, foundation on piles.

Learning objectives and learning outcomes: Upon completion of this course lectures students will better understand the fundamental principles of the foundations, will understand the basics necessary preliminary to the design of foundations, to know how to make the design of foundation size, to make stability control of foundation, to make selection type of foundation depending on the load of object, geotechnical terrain profile, physico-mechanical and engineering characteristics of soil, the allowable load and settlement of soil, make foundation of objects in difficult terrain on the piles, well foundations and massive foundations.

Teaching and learning methods: The course is offered on a regular basis with the theory and the numerical and laboratory exercises. Also, the course foresees exercises and development of homework tasks that will be part of the final evaluation of the student.

Evaluation methods and passing criteria: Assessment through two evaluative tests that the first test 40%, second test 40%, 20% of homework tasks. Final exam.

Concretization tools / IT: projector, computer, tables, notebooks, markers.

Ratio between theory and practice:

The theoretical part	The practical part
70%	30 %

Basic course literature

Kadiri, Q. – Foundations, Authorised lectures,,

Das, B. : Principles of geotechnical analysis,

Ahmedi, F. : - Foundations 1&2,

Bowles, J. : Foundation analysis and design

## WATER RESOURCES AND ENVIRONMENT

Short introduction: Introduction, composition and characteristic of natural waters. Water quality characteristics and standard methods of determination of important physical and chemical parameters of water quality. Water quality representation and standards, water quality criteria, guidelines and standard for various uses. Water resources pollution. Natural factors affecting water quality and pollution from various wastes. Mechanisms of surface water pollution. Water quality in receiving water bodies, lakes and impoundments. Water quality in rivers. Ground water quality.

Learning objectives and learning outcomes: Student will gain knowledge on the water resources, characteristics and their relation to environment. Water resources pollution and its impact on the water quality will be more familiar after finishing this course. Also, student will gain knowledge on the water quality standards for various users.

By the end of this course, students will have prior knowledge on the environmental aspects of the subjects that will be offered in the higher education levels.

Teaching and learning methods: Regular teaching in form of group lectures.. Also, excersises will be carried out in the class and home work assignments will be given to students.

Evaluation methods and passing criteria: Evaluation will be carried out through tests, the first one 40%, the second one also 40% and homework assignment 20% of the final grade. Final Exam.

Concretisation tools/IT: projector, computer, board,

Ratio between theory and practice:

Theoretical part	Practical part
70%	30%

Basic course literature

Kusari, L. Lecture notes given by the lecturer;

Kiely, Gerard. Environmental Engineering. The McGraw –Hill Companies, 1997.

Wang, L., Yang. Ch., Water Resorces Engineering, Springer Science, 2014.

## STEEL CONSTRUCTIONS

Short Introduction: Methods of graining steel grade, types of assortments of final products. Basic of Design and construct the steel structure. Connectors for the connection of steel structural elements: ordinary bolts, high quality bolts, and different welding (angular and head to head). Calculation and construction for connection of structural axial tension elements with bolt and welding. Calculation and construction of truss joints with bolts and welding. Design of steel structural elements, axial loaded in compression and tension. Design of steel welding beams.

Learning Objectives and Learning Outcomes: The Student will get a general knowledge of the separate structural elements which are assembly creating the main steel structure, and to know very good the Design, construction and calculating of connections with the bolts and welding. Upon to complete the course the student will be able to: Design the cross section of steel structural elements, calculate and controlling the structural stability of every assembled member. Detail designs of the connection of steel structural elements depends from the maximal internal value of M, T, N.

Teaching and Learning Methods: Teaching Lectures which include the Base Steel Structure. The Student Design the study exam for the case of building steel structure frame system, which at the end of semester every students has to prove the exams in front of assistant.

Evaluation Methods and Passing Criteria: From first Colloquium 10%, second Colloquium 10 %, numerical semester exams 15%, Attendance 5%, final exams 60%. Concretization Tools/ IT: table and choke.

Ratio between Theory and Practice:

Theoretical Part	Practical Part
50	50%

Basic Course Literature:

Bazat e strukturave metalike (Milosavlevic,Radojkovic dhe kuzmanovic)  
Strukturat metalike 1 dhe 2 nga autorët (Boris Androic,Darko Dujmanovic, Ivica Dzeba)  
Handbook of structural Engineering (editor-in Chief W.F.CHEN)  
Eurocode 1 dhe  
Eurocode 3

## RIVER ENGINEERING

Short introduction: Introductory matters, river characteristics and the use of rivers. Aims, problems and the scope of river engineering. River Hydraulics, steady and non steady flow. Sediment transport, bed form and alluvial processes, transport formulae. River morphology, planform, longitudinal profile and channel characteristics. Quality of river water, sampling, monitoring and biological observations. River surveys. Planning and designing of river training works.

Learning objectives and learning outcomes: Student will gain knowledge on river morphology and hydraulics as well as the sediment transport processes. The water quality, sampling and monitoring will be also known by them. Students will be familiar with the possibilities of using the benefits of rivers and at the same time minimising the damages that an unregulated river may cause. By the end of the lectures, students should know to calculate a real river section and to make river alignment changes if needed and also should know to choose type of training works and their position in a river.

Teaching and learning methods: Regular teaching in form of group lectures and excersises. Also, home work assignments will be carried out by students.

Evaluation methods and passing criteria: Evaluation will be carried out through tests, the first one 40%, the second one also 40% and homework assignment 20% of the final grade. Final Exam.

Concretisation tools/IT: projector, computer, board,

Ratio between theory and practice:

Theoretical part	Practical part
60%	40%

Basic course literature:

Kusari, L. Lecture notes on River Engineering.

Jansen et al. Principles of River Engineering - The non Tidal Alluvial River. Published by Pitman Publishing Limited, London.

Blazejewski, R.,et al. River Training Techniques: Fundamentals, Design and Applications. Published by A. A. Balkema, Netherlands, 1997.



## WATER PROTECTION

Short introduction: Water needs, preparation, distribution, discharge and water treatment.

Learning objectives and learning outcomes: Basic knowledge on water supply, discharge and treatment. . To acknowledge the water needs, and to be familiar with the water treatment. To foresee the development for needs, security, environment and economic use.

Teaching and learning methods: Lectures, laboratory works; numerical methods; work seminar group

Evaluation methods and passing criteria: Evaluations of presence 10%, midterm evaluations 40% ; final term of evaluation 40% ; group seminar work 10%.; Exam (written test form an oral )

Concretization tools/ IT: video projector; computer; black table; notebook, ect

Ratio between theory and practice:

Theoretical part	Practical part
60 %	40 %

Basic course literature

1. Dr. Naim Hasani: Ligjëratat dhe ushtrimet Pastrimi i ujerave
2. Prof Sylejman Daka Furnizimi me uje, Prishtine

## THE USE OF WATER POWER

Short introduction: Introduction to the use of water power, Theoretical elementary understanding of the subject – the use of water power, Hydrological analyses of utilized water reserves and of energy potentiality, chronograms, curves of monthly and annual duration, weekly, seasonal, monthly, annual and overyears water flow regulation and analytical and graphical methods of water flow calculation. Calculation and dimensioning of hydrotechnical objects.

Learning objectives and learning outcomes: Evaluation of water power reserves of a catchment. Calculation of utilized water power and of hydro-power plant. Approximate solution of hydro-power system. Results during the learning (competences, knowledges and abilities):

Student should know to calculate water reserves for the energetic purposes of a river,

Student should know to calculate energetical potentiality of river

Student should know to solve the hydro-power scheme for utilization.

Teaching and learning methods: Teaching will be provided through regular method, in group form with regular and group exercises, field practical visits and through seminars organisations.

Ratio between theory and practice:

Theoretical part	Practical part
70%	30%

Basic course literature

Lectures provided by the lecturer: Shfrytëzimi i energjisë së ujrave, Prof. Dr. Sylejman Daka, and

Prof. Dr. Branislav Djordjevic, Koriscenje vodnih snaga I, II

## ORGANISATION AND CONSTRUCTION TECHNOLOGY

Short Introduction: Knowledge is learned on work organizing principles including: basics of work organizing and leading, regulation of yard, technology of construction; processes of bidding and contraction; human aspects and the cycle of construction project

Learning objectives and learning outcomes:

1. Showing contemporary knowledge and view related with construction organization.
2. General access which all aspects of construction organization are included in construction site level and construction project.
  1. Knows the nature of construction works, the cycle of construction project and organizing of construction enterprises.
  2. Meets with construction processes at construction site during practice visits.
  3. Compiles time dynamic plans and resources
  4. Manages projects and construction contracts.
  5. Develops skills for work team.

Teaching and learning methods: Lectures, study cases, practice project and teamwork in construction site.

Evaluation methods and passing criteria: Internal Evaluation 20%; Practical work 35%; Regular attendance of 5%; 40% final exam.

Concretization tools/ IT;  
Projector, Computer/ Laptop

Ratio between theory and practice:

Theoretical part	Practical part
50%	50%

Basic course literature:

1. Rodiqi, I.: "Menaxhimi i ndërtimit", FNA, PR, 2004
2. Rodiqi I.: OTN – Përmbledhje detyrash (skript), 1993
3. Harris, F. & R. McCaffer (2001) Modern Construction Management, Blackwell Science.

## ON-SITE DECENTRALIZED WASTEWATER MANAGEMENT SYSTEMS

Short introduction: Constituents in wastewater, sources and average flowrates. Wastewater pretreatment processes. Alternative wastewater collection systems. Biological treatment. Single-pass and multi-pass packed filters. Effluent disposal for on-site decentralized systems. Biosolids and septage management. Management of on-site decentralized wastewater systems.

Learning objectives and learning outcomes: to present the importance of on-site decentralized systems, where complete sewerage of the country may not be possible or desirable; to demonstrate the types of on-site decentralized systems; to provide management concepts of on-site decentralized systems. After the course, students will be able: to reflect the reason of the use of on-site decentralized system; to distinguish types of on-site decentralized systems; to interpret and choose management steps of on-site systems.

Teaching and learning methods: Regular teaching in form of lectures and exercises. Also, home work assignments will be carried out by students.

Evaluation methods and passing criteria: Evaluation will be carried out through tests. First test 35% , the second test 35%, and the homework assignment 30%. Participation in border line cases. Final exam.

Concretisation tools/IT: projector, computer, marker, blackboard, whiteboard.

Ratio between theory and practice:

Theoretical	Practical
60 %	40 %

### Basic course literature

Ahmedi, F., Lecture notes given by the lecturer

Crites, R., Tchobanoglous, G. Small and Decentralized Wastewater Management Systems, McGraw-Hill, 1998

US EPA. Onsite Wastewater Treatment Systems Manual, 2002

Metcalf & Eddy, Inc. Wastewater Engineering: Treatment and Reuse. 4th ed, McGraw Hill, Inc., New York, 2003

## BUILDING ENGINEERING PHYSICS

Short introduction: The module in Building Engineering Physics aims to provide a detailed knowledge of main scientific principles of heat, light and sound in the building engineering context. It assumes very little previous knowledge of science or mathematics. Where a numerical approach is required step-by-step worked examples are used, offering greater understanding of some topics. Topics include thermal insulation in buildings, energy use in buildings, air control in buildings, artificial lighting, natural lighting, noise and sound insulation and room acoustics

Learning objectives and learning outcomes: - The module in Building Engineering Physics aims to provide:

- ability to apply simple quantitative methods and engineering software in order to analyze an engineering problem,.
- a thorough understanding of current practice and its limitations, and some appreciation of likely new developments
- ability to identify, classify and describe performance of building systems and components using fundamental building engineering physics knowledge.
- to know to design according to the request from investment toward the request on the thermo insulation; acoustic insulation and other specific request.

Teaching and learning methods: Lectures, laboratory works; numerical methods; work seminar group.

Evaluation methods and passing criteria: Evaluations of presence 10%, midterm evaluations 40% ; final term of evaluation 40% ; group seminar work 10%.; Exam (written test form an oral )

Concretization tools/ IT: video projector; computer; black table; notebook, ect

Ratio between theory and practice:

Theoretical part	Practical part
50 %	50 %

Basic course literature

1. N.Kabashi; C.Krasniqi, Fizika Ndertimore dhe izolimet,(ligjerata te autorizuara) FNA, Prishtine
2. A.Pech; Ch.Pohn: Bauphysik, Springer Wien New York
3. Schaffler;Bruy;Schelling, Baustoffkunde,Vogel Fachbuch