UNIVERSITY OF PRISHTINA
“HASAN PRISHTINA”

FACULTY OF CIVIL ENGINEERING

DEPARTMENT GEODESY – BSc.

2012 – 2015

9.5 Study program for Survey Engineering (Geodesy) - Bachelor Level

Application Form for Study Program Accreditation

Description (name) of the institution	**Faculty of Civil Engineering and Architecture** **Faculty of Civil Engineering**
Description (name) of the academic programme	**Study program: Survey Engineering**
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 – Department of survey engineering Bsc. of Civil Engineering**
Profile of the academic programme / Scientific position	**Geodesy**
Target group	**The candidates who have completed high school**
Minimum period of study	**Minimum 3 years of study**
Type, structure and cycle (full time or part time)	**Regular**
Number of ECTS	**180 ECTS ,** **60 ECTS per year**
Programm (short overview)/Courses	**Obligatory:** 1. Linear Algebra and Analytical Geodesy 2. Programming 3. Geoinformatics and basic informatics 4. Measuring Instruments and Introduction to Geodesy 5. Foreign Language 6. Physics 7. Computational Geometry 8. Mathematical Analysis 9. Measurement of land 10. Analysis and processing of the geodesic measurements 11. Database 12. Differential Geometry

	13. Cadaster 14. Geodetic plans (maps) 15. Cartography 16. Geodesic Reference Circles 17. Photogrammetry 18. Using Geoinformations 19. Modeling Geoinformations 20. Satellite Positioning 21. The Basics of Engineering Geodesy 22. Research from the Distances 23. Land Consolidation 24. Engineering Geodesy 25. State Measurements 26. Cartographic Projections 27. Diploma paper **Elective:** 1. Field Surveying 2. The basics of rights and land registration 3. Spherical Trigonometry 4. Topography 5. Practical Work with Surveying Instruments 6. Land information services 7. Topographic mapping 8. Geoinformatic infrastructure 9. WEB Mapping 10. Geodesic Astronomy 11. Hydrographic Measurements
Number of student places	287 students
Person in charge of the academic programme	Prof.ass.dr. Perparim Ahmeti
Scientific/artistic staff (number per staff category)	11 teachers and 10 assistants
Tuition fees	According to the fees of UP 50 Euro per semester

Goal and profile of Study Program: Geodesy / Bachelor Level

- To make skilled students understand and recognize the concepts of the technical sciences of geodesy including the theoretical part which is the basis and the practical part as the necessity in the replenishment of the theoretical part.
- To provide/secure for the market of the Republic of Kosovo and with all the personnel who may be in the role of technical leaders of private and public companies; with basic elements the works of geodesy as separate works or accompanying the work of construction
- To provide knowledge for the incessant of studies or scientific research for masters and PhD levels

Learning Outcomes

- To recognize the concepts of survey engineering technical science
- To know how to apply the theoretical knowledge practically and in the experimental part of construction
- To know how to use the newest technological geodesic instruments and to apply them in the solving of individual problems, using data in from the Cadastral Offices also in works related to the construction.
- To know with their own knowledge how to help update data with the applicable international systems, to form the national points (coordinates) and the local ones when applying for property issues etc.

Study Program relation with leading principles of Institution

The Survey Engineering study program provides the particular part of the studies at the Construction Department and is in full accordance to the mission defined for the development of the Faculty, respectively to the leading principles of the institution.

Study program level

This study program is the program of the level 6 according to NFQ respectively the Bachelor level.

Conditions for admission of students and selection procedures

All candidates are set up for the admission test. The selection of candidates is done according to the following criteria:

- Participation of success: max 20 points
- Participation of maturity: max 20 points
- Admission test: max 30 points (the admission test is held by Mathematics)
- The minimum for qualification: 30 % from the part of the admission test
- Ranked by the required number of the competition

Title of academic degree

Bachelor of civil engineering – the study program: Survey Engineering

Exam Regulation

– relies on the Regulation for Bachelor studies (ref. 234/1, date 10.03.2010) and the Regulation for Master studies (ref. 1451/1, date 02.07.2010). Relevant extracts of these regulations are attached to the appendix.

Diploma Supplement

At the UP still isn't implemented the Diploma Supplement.

Study form, structure and duration

Studies of Survey Engineering research program in the Bachelor level are regular studies with permanent presence in lectures and exercises. Courses are organized in semesters and years, while the minimum duration of studies is 3 years.

International comparability of study program and academic degree

The program of the Geodesic studies on Bachelor Level is 85 % comparable with the University of Zagreb – Faculty of Civil Engineering in Zagreb.

Study Plan:

First year – First semester					
No.	**Course**	**Hours**	**ECTS**	**Obligatory**	**Teacher**
GjI01.	Linear Algebra and Analytical Geometry	2+2	6	Ob	Prof. dr.Fevzi Berisha
GjI02	Programming	2+2	6	Ob	Prof.asoc.dr.Enver Hamiti
GjI03	Geoinformatics and basic Informatics	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
GjI04	Surveying Instruments and Introduction to Geodesy	2+2	6	Ob	Prof.ass.dr.Ismail Kabashi
GjI05	Foreign Language	2+0	3	Ob	Nedime Belegu
GjI06	Physics	2+2	3	Ob	Prof. dr. Rashid Maliqi (FIEK)
	Total	**22**	**30**		

First year – Second Semester					
No.	**Course**	**Hours**	**ECTS**	**Obligatory**	**Teacher**
GjII01	Computational Geometry	2+2	6	Ob	Prof.dr.Abdullah Zejnullahu
GjII02	Mathematical Analysis	2+2	6	Ob	Prof. dr.Fevzi Berisha
GjII03	Land Measurement	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
GjII04	Analysis and processing of land measurements	2+2	6	Ob	Dr.sc.Kamer Nela
	Total	**18**	**27**		
	Course	**Hours**	**ECTS**	**Optional**	**Teacher**
GjII05	Field measurements	2+2	6	Op	Prof.ass.dr. Perparim Ahmeti
GjII06	The Basics of Rights and Registration of Land	2+2	6	Op	Prof.asoc.dr. Murat Meha
GjII07	Spherical Trigonometry	2+2	6	Op	Prof. dr. Fevzi Berisha

Second year – Third semester					
No.	**Course**	**Hours**	**ECTS**	**Obligatory**	**Teacher**
GjIII01	Database	2+2	6	Ob	Prof ass.dr. Ismail Kabashi
GjIII02	Differential Geometry	2+2	6	Ob	Prof. dr.Abdullah Zejnullahu
GjIII03	Cadaster	2+2	6	Ob	Prof.asoc.dr. Murat Meha
GjIII04	Geodesic maps	2+2	6	Ob	Prof.ass.dr.Bashkim Idrizi
	Total	**16**	**24**		
No.	**Course**	**Hours**	**ECTS**	**Optional**	**Teacher**
GjIII05	Topography	2+1	6	Op	Prof.ass.dr.Bashkim Idrizi
GjIII06	Practical work with measuring instruments	2+2	6	Op	Prof.ass.dr. Perparim Ahmeti

Second year – Fourth semester					
No.	**Course**	**Hours**	**ECTS**	**Obligatory**	**Teacher**
GjIV01	Cartography	2+2	6	Ob	Prof.ass.dr.Bashkim Idrizi
GjIV02	Geodesic Reference Circles	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
GjIV03	Photogrammetry	2+2	6	Ob	Prof ass.dr. Ismail Kabashi
GjIV04	Using Geoinformations	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
GjIV05	Modeling Geoinformation	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
	Total	**20**	**30**		
No.	**Course**	**Hours**	**ECTS**	**Optional**	**Teacher**

Third year – Fifth semester					
No.	**Course**	**Hours**	**ECTS**	**Obligatory**	**Teacher**
GjV01	Satellite Positioning	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
GjV02	The Basics of Engineering Geodesy	2+2	6	Ob	Prof ass.dr. Ismail Kabashi
GjV03.	Research from the Distance	2+2	6	Ob	Prof.asoc.dr.Murat Meha
GjV04	Regulation of the lands	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
	Total	**16**	**24**		
No.	**Course**	**Hours**	**ECTS**	**Optional**	**Teacher**
GjV05	Land information services	2+2	6	Op	Prof.asoc.dr.Murat Meha
GjV06	Topographic Mapping	2+2	6	Op	Prof.ass.dr.Bashkim Idrizi

Third Year – Sixth semester					
No.	**Course**	**Hours**	**ECTS**	**Obligatory**	**Teacher**
GjVI01	Engineering Geodesy	2+2	6	Ob	Prof ass.dr. Ismail Kabashi
GjVI02	State Measurements	2+2	6	Ob	Prof.ass.dr. Perparim Ahmeti
GjVI03	Cartographic Projections	2+2	6	Ob	Prof.ass.dr.Bashkim Idrizi
GjVI04	Diploma Paper		9	Ob	
	Total	**12**	**27**		
No.	**Course**	**Hours**	**ECTS**	**Optional**	**Teacher**
GjVI06	Geoinformatic Infrastructure	2+2	3	Op	Prof.ass.dr. Perparim Ahmeti
GjVI07	WEB Mapping	2+2	3	Op	Prof.ass.dr.Bashkim Idrizi
GjVI08	Geodesic Astronomy	2+2	3	Op	Prof.dr.Rasim Bejtullahu
GjVI09	Hydrographic Measurements	2+2	3	Op	Prof ass.dr. Ismail Kabashi

Course Description: **LINEAR ALGEBRA WITH THE ANALYTICAL GEOMETRY**

Content: Realistic numbers; Complex numbers; Matrices; Operations with matrices; Systems of linear equations; Analytical Geometry in space; Equation of the plane and the straight; Surfaces

Purposes of learning: Introduction to the mathematical knowledge needed to apply for the science of geodesy. Recognizing the concepts of linear algebra and analytical geometry in space.

Learning outcomes: Students should be able: to implement numeral groups in analyses and in the presentation of other meanings from algebra but also from mathematical analysis; to know the meaning of the matrix and determinants as well as solve the equation system; to know the meaning of vector, linear acts such as non-linear; to present various forms of the equation of the plane and the straight in space as well as their mutual positions; to present the form of the surfaces in space in geometrical and analytical forms.

Required Volume and amount of work (hours per semester, ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	15	15	30
Theoretical/laboratory exercises	2	15	15	30
Tutorial (practical work)				
Contacts with teachers/consultation	1	15	15	15
Field exercises				
Test,seminars	2	1	2	4
Homework				
Students individual work (library or at home)	2	15	15	30
Preparation for final exaam	2	1	7	4
Time spent on assessment (tests,quizzes,final exam)	2	1	1	2
Projects, presentations, etc.				
Total				125

Forms/methods of the teacher: (Advanced lectures; discussions, individual work, group work, presentations)

The relationship between theoretical and practical study

Theoretical part	**Practical part**
100 %	0 %

The basic literature used in the course:

1. Fevzi Berisha-Abdullah Zejnullahu: Matematika- për arkitekturë , 1996, Prishtinë.
2. Fevzi Berisha: Përmbledhje detyrash të provimit nga matematika1,2, Prishtinë 2006.
3. Ismet Dehiri – Matematika I, I I, Fakultet Teknik, Prishtinë ,

Course Description: **THE BASICS OF GEOINFORMATICS AND INFORMATICS**

Content: Absolute and relative measurements, cartographic projections, spatial relationships between objects, reference surfaces, coordinate systems, transformations of coordinates, topology

Purposes of learning: Understanding the basic elements of Geoinformatics and informatics, the importance of Geoinformation in Geodesy, application and use of Geoinformation in geodesy, the contribution and interaction of geospatial information and informatics in Geodesy.

Learning outcomes: to develop basic knowledge of geoinformation, to have skills and to determine every geoinformation necessary correctly, the use of geospatial information for geodesic needs

Required Volume and amount of work (2+2, 6 ECTS)

Activety	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	2	1	2	4
Contacts with teachers/consultation	2	1	15	30
Field exercises	0	0	0	0
Test,seminars	2	2	2	4
Homework	1	5	5	5
Students individual work (library or at home)	2	15	10	20
Preparation for final exaam	5	4	4	20
Time spent on assessment (tests,quizzes,final exam)	2	2	2	4
Projects, presentations, etc.	1	1	1	1
Total	24			148

Forms/Methods of the teacher:
Regular teaching, in lectures, in groups

The relationship between theoretical and practical study

Theoretical part	**Practical part**
60%	40%

The basic literature used in the course:
Perparim Ameti, Skripta: Bazat e Gjeoinformacionit
GIS, principles and aplications Maguire, D.J. at al (1991).
GIS – a Computing Perspective, Worboys, M. (2003)

Course Description: **SURVEYING INSTRUMENTS**

Content: The course starts with knowledge of the instruments and the equipment of geodesy, knowledge upon the theodolite total stations and the levels. Geodesic measurements and the inaccuracies of the measurements. The fundamental optics which are used for the instruments. Recognition of the main parts of the instruments and their characteristics. Review of the impact of individual axis errors of the instruments during the measurement; Electronic and automatic measurement of angles and lengths. The purpose and the use of the total station measurements. The principle of the GPS receiver's function.

Purpose of Learning: Includes topics which belong to the instruments for geodesic measuring. Basic knowledge on the use of theodolite, leveling instruments, distant electronic measuring, total stations, GPS receivers. Measurement of the directions, of the vertical angles, the interchanges, lengths. Measurement of angles in the series.

Learning Outcome: The student should be familiar with the geodesic instruments and the use of them. To be able: to bring to horizon and centralize the geodesic instrument on certain points or on any free points, violent centralization, to possess the fulfillment of the three requirements of the theodolite and the level as well as to do their rectification, to make the measurement of directions (horizontal angles), vertical angles, lengths, interchanges, the horizontal angle in the series.

Required Volume and amount of work:

Activety	**Hours**	**Days/Weeks**	**Total**
Lectures	2	15	30
Theoretical/laboratory exercises	1	15	15
Tutorial (practical work)	1	15	15
Contacts with teachers/consultation	5	1	5
Field exercises	1	15	15
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			150:25 = 6 KREDI

Forms/Methods of the teacher: Regular teaching. Lectures with presentations and practical demonstrations of the instruments and other equipment, numeral and practical exercises, semestrial seminar with concrete homework.

The relationship between theoretical and practical study

Theoretical part	**Practical part**
50%	50%

The basic literature used in the course:

1. Kabashi, I. (2011): Materiali nga ligjëratat, 2. Nela, K. (2004): Gjeodezia praktike I, FNA-Prishtinë, 2004.3. Kahmen, H. : Vemessungskunde 20. Auflage, de Gruyter Lehrbuch, Berlin New York, 2006.4.Deumlich, F., Staiger, R. (2002): Instrumentenkunde der Vermessungstechnik,9., völlig neubearb. und erw. Aufl. . - Heidelberg :Wichmann, 2002.

Course Description: **ENGLISH LANGUAGE**

Content: The course of English language develops the skills of reading, speech, writing and hearing and presents the grammar in a way which offers exercises and fulfillment of the usual problems in structure and the application of time. It also develops and enriches the technical professional vocabulary of three directions in Civil Engineering and Architecture. The course contains different themes from everyday life, culture and authentic texts which have the goal of increasing the level of reading and the understanding of oral communication and with writing between various activities, presentations, essays, seminar works, vocabulary, listening, discussing etc.

Purpose of Learning:

- Increases the student's skills of reading, writing, listening and oral communication.
- To increase student's skills of communication in oral and written English.
- To enrich their vocabulary by reading and listening to the English language.
- To acquire knowledge in grammar by learning and practice the grammar in context.
- To enrich their vocabulary with technical terminology by writing and using words which are written, transcribed and commented in the English language, as well as translated into the Albanian language.

Learning Outcome (competencies, knowledge, skills) After the student has finished learning, the student should:

- Have skills in speech, hearing, writing and reading which enable efficient forms of communication in real situations of an academic level.
- Perceive the styles of the English language.
- Communicate with people from different profiles.
- Understand technical terminologies such as: constructive, geodesy and hydro.
- Be freer in the design of different technical projects in the English language.

Required Volume and amount of work (hours per semester 2+0, ECTS 3)

Activety	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2		15	30
Theoretical/laboratory exercises				
Tutorial (practical work)	2		5	10
Contacts with teachers/consultation	1		15	15
Field exercises				
Test,seminars				
Homework				
Students individual work (library or at home)				
Preparation for final exaam	1		15	15
Time spent on assessment (tests,quizzes,final exam)	2		2	4
Projects, presentations, etc.	1		1	1
Total				75

Forms/Methods of the Teacher:

Development of practical work with seminar presentations. Also the exam is held in a test form.

The relationship between theoretical and practical study

Theoretical part	**Practical part**
50%	50%

The base of literature used in the course:
Course Description: **PHYSICS**

Content:
The SI. system with constant and changing speed. The laws of Newton in mechanics. Elasticity. The law of Hook. Gravity. The laws of energy conservation. The dynamics of rotations. Fluids. Hydrostatics and hydrodynamics. Thermal phenomena. Spreading of the heat. Spreading of heat and wetness on the walls of buildings. Harmonic oscillations of waves. Sound waves. Spreading of sounds and noises. Electrostatics. Magnetic Field. Electromagnetic waves. Reflection and refraction of light. Optical mirrors and lenses. Interference, diffraction, polarization and dispersion of light. The laws of radiation. Lasers.

Purpose of Learning:
The students to recognize physical bases of engineering science.
To learn and know how to apply the laws of physics in technical science
The development and deepening of competences from physical science necessary for the meaning of the problematics which are studied.

Learning outcome:
To be able to coherence between the sizes and phenomena of physics and apply them during the solving of technical problems
To develop skills of independent work and be able to make proper conclusions
To finish practical measurements in the laboratory, to analyze the gained results and to interpret them etc.

Required Volume and amount of work: 2+1+1, no ECTS credits: 3

Activity	Hours	Days	Weeks	Total
Lectures	2	1	15	30
Theoretical/laboratory exercises	1+1	1	15	30
Tutorial (practical work)				
Contacts with teachers/consultation	2	1	15	30
Field exercises				
Test,seminars	3	5		15
Homework	2	5		10
Students individual work (library or at home)	3	10		30
Preparation for final exaam	10	1		10
Time spent on assessment (tests,quizzes,final exam)	3	3		9
Projects, presentations, etc.	2		15	30
Total	29	27	45	164

Forms/Methods of the Teacher:
Regular teaching in groups, lectures, numeral and laboratorial exercises, seminars.

-The relationship between theoretical and practical study

Theoretical part	Practical part
75 %	25 %

The base of literature used in the course:
1. S. Skenderi dhe R. Maliqi, Fizika påer studentët e Fakultetve teknike, ligjerata Prishtinë, 2005
2. D. Halliday, R. Resnick, J. Walker, Fundamentals of Physics, John Wiley & Sons, 201.
3. D. Giancoli, Physics for Scientists and Engineers, Prentice Hall, New Jersy, 2000

Course Description: **COMPUTIONAL GEOMETRY**

Content: The course contains the following main parts: plane transformations, homogeneous coordinates and plane transformations, homogeneous coordinates and transformations.

Purpose of Learning: Introduction to knowledge from geometry in an analytical form and in particular different transformations as well as different coordinates especially the quaternions and their application in Geodesy

Learning Outcome: (competencies, knowledge and skills): After completion of this course/subject the student should be able to use and understand concepts of computational geometry with the aim to apply the knowledge in geodesy in particular in the transformation of the different surfaces and in the compilation of any software for the lam of geodesy.

Required Volume and amount of work (hours per semester 2+2, 6 ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	15	15	30
Theoretical/laboratory exercises	2	15	15	30
Tutorial (practical work)				
Contacts with teachers/consultation				8
Field exercises				
Test,seminars				10
Homework				15
Students individual work (library or at home)				25
Preparation for final exaam				24
Time spent on assessment (tests,quizzes,final exam)				8
Projects, presentations, etc.				
Total				150

Forms/Methods of the teacher: lecture

The relationship between theoretical and practical study

Theoretical part	**Practical part**
50%	50%

The base of literature is used in the course: (list the necessary literature – up to three titles.)
Duncan Marsh , Applied Geometry for Computer Graphics and CAD,2004,Springer

Course Description: **MATHEMATICAL ANALYSIS**

Content: Numerical strings; Progressions; Functions; The limitation and continuity of functions; Derivatives of functions; Review of the functions; Definite and indefinite integral; Application of definite integral

Purpose of Learning: Noticing necessary mathematical knowledge for applying in the science of geodesy. To recognize the concepts of linear algebra and analytical geometry in space.

Student Outcome: Students should be able: to build strings when they are given their general borders; to enforce the characters of arithmetic and geometry in the solving of different problems: to graphically represent the basic core functions; to find the indefinite integral for some classes of the functions; to enforce the definite integral in geometry and mechanics.

Required Volume and amount of work (hours per semester, ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	15	15	30
Theoretical/laboratory exercises	2	15	15	30
Tutorial (practical work)				
Contacts with teachers/consultation	1	15	15	15
Field exercises				
Test,seminars	2	1	2	4
Homework				
Students individual work (library or at home)	2	15	15	30
Preparation for final exaam	2	1	7	4
Time spent on assessment (tests,quizzes,final exam)	2	1	1	2
Projects, presentations, etc.				
Total				125

Forms/Methods of the teacher: Advanced lectures; discussions, individual work, group work, presentations.

The relationship between theoretical and practical study

Theoretical Part	**Practical Part**
100 %	0 %

The base of literature is used in the course:

1. Fevzi Berisha-Abdullah Zejnullahu: Matematika- për arkitekturë , 1996, Prishtinë.
2. Fevzi Berisha: Përmbledhje detyrash të provimit nga matematika1,2, Prishtinë 2006.
3.Ismet Dehiri – Matematika I,I Fakultet Teknik, Prishtinë

Course Description: **LAND MEASUREMNTS**

Content: The basis of geodesy for measurement of soil. Geodesic polygon. Measurement of the angles in polygon. Measurement of the distances. Reconciliation of polygonal networks. Geometric leveling, reconciliation of leveling. Trigonometric leveling. Impacts on the measurement of angles, distances and heights. Polar and orthogonal methods of the detail's significance. Leveling detail.

Purpose of Learning: Replacement on the soil's surface of the local geodesic base. Preparation for the determination of the coordinates Y, X, H of the basic points of geodesic in a commune – cadastral area. Measurement of objects and infrastructure on land.

Learning Outcome: Stabilization of polygonal points and the milestones on the field. Determination of the coordinates of polygonal points. Determination of the milestones' heights. Determination of coordinates of the detail points.

Required Volume and amount of work: (2+2, 6 ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	4	1	3	12
Contacts with teachers/consultation	1	1	15	15
Field exercises	2	1	4	8
Test,seminars	2	1	4	8
Homework	3	1	5	15
Students individual work (library or at home)	2	1	8	16
Preparation for final exaam	3	8	2	24
Time spent on assessment (tests,quizzes,final exam)	2	2	2	4
Projects, presentations, etc.	2	1	1	2
Total				164

Methods/forms of the teacher: regular teaching; in lectures, in groups, individual works of the students.

The relationship between theoretical and practical study:

Theoretical part	**Practical part**
40%	60%

The base of literature is used in the course: Kamer Nela, Gjeodezia II, Ilmi Zherka: Gjeodezija-Rilevimi i terrenit,Nivelimi i terrenit, Kahmen:Vermessungkunde Berlin.

Course Description: **FIELD MEASUREMENTS**

Content: Organization of the work on the field. Methods of measurements of the directions and the angles. Determination of the coordinates of the geodesic points. Observation of the directions from the eccentric point. Measuring methods of the distances. Determination of approximate coordinates with the cutting of the forth and back directions and the cutting of the arches. The basics of trilateration.

Purpose of Learning: Measurement of the distances and the angles in triangles. Calculation of direction and distance. Cutting of the arcs. Cutting of the internal directions. Cutting of the external directions.

Student Outcome: Determination of the distances and their equalization on triangles. Determination of coordinates to approximate trigonometric points.

Required Volume and amount of work: (2+2, 6 ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	3	1	3	9
Contacts with teachers/consultation	1	1	15	15
Field exercises	2	1	4	8
Test,seminars	2	1	5	10
Homework	3	1	6	18
Students individual work (library or at home)	2	1	8	16
Preparation for final exaam	3	8	2	24
Time spent on assessment (tests,quizzes,final exam)	3	2	2	6
Projects, presentations, etc.	2	1	1	2
Total				168

- Forms/Methods of the teacher: regular teaching; in lectures, in groups, individual works of the students.

-The relationship between the theoretical and practical study:

Theoretical part	**Practical part**
50%	50%

- The base of literature is used in the course: Nela, Gjeodezia II, Ilmi Zherka: Gjeodezija-Rrjetat trigonometrike, Bencic:Mjerni instrumenti ... Zagreb.

Course Description: **THE BASICS OF RIGHTS AND REGISTRATION OF LAND**

Content: The basis of the registration of rights for land is the individual part of the geodesic curriculum. This relates to the legal registration of the cadastral units in the cadastral register of the property. In this module the function is clarified in the registration for the rights of the property. The process of registration of the property is clarified. The registration begins from the moment the request for registration is submitted. Afterwards the treatment of the course continues in the legal and technical aspect. Making of the decision for registration, placement of the information table and definitive register of the property in cadaster.

Purpose of Learning:
The aim of this course is to provide students the geodesic field of the bachelor level:
Theoretical information on the juristic basis of the properties
Information on the legal treatment of the properties for registration in the cadaster
Practical knowledge on legal registration of the property in the cadaster

Learning Outcome:
At the end of this module the student has to be able:
To have the proper skills for the use of the juristic state system
To count the laws for the registration of the property
To do comparisons of the systems of property registration on the spot and outside
To describe the legal forms of the registration on the cadastral units

Required Volume and amount of work (hours per semester 2+2, 6 ECTS)

Activity	Hours	Days	Weeks	Total
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	4	1	2	8
Contacts with teachers/consultation	1	1	10	10
Field exercises	2	1	3	6
Test,seminars	2	1	3	6
Homework	1	1	1	1
Students individual work (library or at home)	3	1	6	18
Preparation for final exaam	15	1	2	30
Time spent on assessment (tests,quizzes,final exam)	2	1	2	4
Projects, presentations, etc.	1	1	3	3
Total	35		62	146

-Forms/Methods of the teacher:
Regular teaching, oral lecturing, grouping by doing practical presentations on PPT. Theoretical and practical teaching corresponding to the above written table.

- The relationship between the theoretical and practical study:

Theoretical part	Practical part
50 %	50%

- The base of literature is used in the course:
Meha, M. Baza juridike e regjistrimit te pronës, dorëshkrim Universiteti i Prishtinës Prishtinë 2007,
Meha M, Steiwer.F. Bublaku H. 2011. Procedurat për regjistrimin e pronës dhe shërbimet në kadastër. Agjencioni Kadastral i Kosovës. Prishtine. http://www.kca-ks.org/.

Course Description: **SPHERICAL TRIGONOMETRY**

Content: Geometry in the sphere; Spherical triangle; Basic formulas of spherical trigonometry; Solution of the spherical triangle in a right angle; Solution of the spherical triangle; Formulas that give the angles of the triangles by the side of the ribs; General ways of solving the spherical triangle

Purpose of Learning: Introduction to the knowledge of necessary spherical trigonometry for applying the concepts of geodesy and especially in determining the geodesic points of the distances.

Learning Outcome: The students should be able: to understand the spherical circles, the spherical triangle and their types; to apply the elements of spherical trigonometry in the perception of geodesy; to define and prove the basic formulas of the spherical trigonometry; to solve the spherical triangle on the right angle; to apply all possible cases for solution; to solve the spherical triangle whatsoever

Required Volume and amount of work (Hours per semester, ECTS)

Activety	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	15	15	30
Theoretical/laboratory exercises	1	15	15	15
Tutorial (practical work)				
Contacts with teachers/consultation	2	8	8	16
Field exercises				
Test,seminars	2	8	8	16
Homework				
Students individual work (library or at home)	4	7	7	28
Preparation for final exaam	2	2	2	4
Time spent on assessment (tests,quizzes,final exam)	2	1	1	2
Projects, presentations, etc.				
Total				125

Forms/Methods of the teacher: Advanced lectures; discussions, individual work, group work, presentations

The relationship between the theoretical and practical study:

Theoretical part	**Practical part**
100 %	0 %

The base of literature used in the course:

1. J.Casy: ATratise on Spherical Trigonometry and Its Applications to Geodesy and Astronomy, Merchant Boocs,2007.
2.Vladimir Jorgji-Trigonometria sferike,1973, Tiranë.
3. A.Zejnullahu ,F.Berisha –Matematika III,1997,Prishtinë

Course Description: **DATABASES (BDH)**

Content: The courses beings with the recognition of the fundamental concepts of data, information, information systems, organizational systems. Data models. Database management system. Design of BDH: conceptual, ZBATIMOR and physical design. Logical data models: hierarchical, network, object-orientation, object-relational, deductive. Development of the matter continues with the entities and relationships. Relational algebra. Interrogative languages. SQL, types of the SQL datum. Definition of the SHEMA in SQL. Various interrogative tables. Primary and foreign keys. Object-relation of BDH. Free and commercial system managements of BDH.

Purposes of Learning: To be mastered in the fundamentals of modern databases with particular emphasis on the geospace data. The benefits of the individual, fundamental using with packages of the free and commercial programs for the database. To achieve fundamental knowledge about the concepts of databases which are becoming industrial standards in the beginning of the professional career.

Learning Outcome: The student should be able to: master the theory of databases, to understand the natures and characteristics of databases, to review interesting applications for the process of databases, to reach a full understanding of the tables and the relationships, to understand how the components of the database systems are described and to clarify their function (e.g. Microsoft Access), to define the term of system management of databases (DBMS) and to clarify the function of DBMS.

Required Volume and amount of work: (2+2; 6 ECTS)

Activity	Hours	Days/Weeks	Total
Lectures	3	15	45
Theoretical/laboratory exercises	2	15	30
Tutorial (practical work)	1	15	15
Contacts with teachers/consultation	5	1	5
Field exercises			
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	2	10	20
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	1	1
Total			155

Forms/Methods of the teacher: regular teaching. Lectures, presentations, discussions, exercises, group work, terminal seminars,

The relationship between theoretical and practical study:

Theoretical part	Practical part
50%	50%

The base of literature used in the course:

Kabashi, I. (2010): Baza e tëdhënave, PP-Prezentim. 2. David, M. (1992): Database processing: fundamentals, design, implementation, New York. 3. Bernard/Fitzke/Wagner (2005): Geodateninfrastruktur: Grundlagenund Anwendungen, WichmannVerlag.

Course Description: **DIFFERENTIAL GEOMETRY**

Content: The course contains these main parts: fundamental understandings of vector algebra, curves and surfaces in space.

Purpose of Learning: To study the vector functions, curves in space, surfaces in space as well as different understandings around them which are necessary for the application of the fields of geodesy.

Student Outcome (competencies, knowledge and skills: After completion of this course/subject the student will be able to define different elements of the curve and the surface in space and also use them for concrete problems which have something to do with the geodesic field.

Required Volume and amount of work (hours per semester 2+2, 6 ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	15	15	30
Theoretical/laboratory exercises	2	15	15	30
Tutorial (practical work)				
Contacts with teachers/consultation				8
Field exercises				
Test,seminars				10
Homework				15
Students individual work (library or at home)				25
Preparation for final exaam				24
Time spent on assessment (tests,quizzes,final exam)				8
Projects, presentations, etc.				
Total				150

Forms/Methods of the teacher: lecture

The relationship between the theoretical and practical study:

Theoretical part	**Practical part**
50%	50%

The base of literature used in the course (list the essential literature – up to three titles.)
Blanka Zarinac-Francula ; Diferencijalna Geometrija , 1990, Zagreb

Course Description**: CADASTER**

Content:
Content of curriculum of Cadaster, represents the field of geodesic and cadastral works in general. The works are divided according to the content and the purpose. The cadastral measurements correspond to the activities of the field and with those of the office. The description of cadastral measurement accuracy. Update of the cadaster from the measurements of the cadastral units on the field. Definitive preparation of the data conforming the legal registration of the property in the cadastral information system.

Purpose of Learning:
The aim of the course is to offer the student theoretical and practical knowledge on the cadaster, to finish geodesic cadastral measurements, to provide information on the equation of the surfaces in the cadaster. The use of cadastral data, creation of the cadastral information system and the use of the cadastral model, are the mail goals of this curriculum.

Learning Outcome:
After completion of this course, the student will be prepared to:
Describe cadastral measurements;
Do cadastral measurements for the establishment of the property
Equalize the surfaces of cadastral units
To prepare cadastral information according to the standards and the requested cadastral model

Required Volume and amount of work (hours per semester 2+2, 6 ECTS)

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	4	1	2	8
Contacts with teachers/consultation	1	1	10	10
Field exercises	2	1	3	6
Test,seminars	2	1	3	6
Homework	1	1	1	1
Students individual work (library or at home)	3	1	6	18
Preparation for final exaam	15	1	2	30
Time spent on assessment (tests,quizzes,final exam)	2	1	2	4
Projects, presentations, etc.	1	1	3	3
Total	35		62	146

Forms/Methods of the teacher
Regular teaching, oral lecturing, groups doing practical presentations also with PPT.
Theoretical and practical teaching corresponded to the table above.

- The relationship between theoretical and practical study:

Theoretical part	**Practical part**
50%	50 %

- The base of literature used in the course:
Meha, M. Kadastri, doreshkrim Universiteti i Prishtinës Prishtinë 2006,
Meha M. Editor 2005.Matjet Kadastrale ne Kosove, Agjencioni kadastral i Kosoves. Prishtine.
Meha M. Buschhoff K. 2011. Rindërtimi i informacioneve kadastrale. Agjencioni Kadastral. Prishtine.
http://www.kca-ks.org/

Course Description: **GEODESIC PLANS/MAPS**

Content: Characteristics, classification and designation of the geodesic plans as well as with the developed materials, method of use and the conditions which have to be fulfilled for their maintenance, maintenance of the geodesic plans by processing all the elements which contain the geodesic plans according to the foreseen standards of the topographic key, then their dimensions, the method of forming their labels and their identification numbers (nomenclature), as well as the maintenance of the topographic key and the use of the signs displayed on it. Compilation and reproduction of geodesic plans. The formation of parcel groups in the framework of the cadastral areas and their counting. Use of the geodesic plans and the calculating methodology of the surfaces of existing plans in Kosova with the methods of compensation of the surfaces in the past, as to end the formation of the surface's formula.

Purpose of Leaning:
Basic theoretical and practical knowledge on the geodesic plans and their categorization according to several factors.
Methods and technology that is used in the past for the development of Kosova's existing maps and the calculation of the surfaces of the cadastral parcels, the groups of parcels and the cadastral areas.
Electronic means of development, use, maintenance, updating and archiving geodesic plans.
Using special software for automation of process for works with geodesic plans.
Use of geodesic plans.

Learning Outcome:
The student knows the geodesic plans
The student knows the content of the geodesic plans
The student knows the methodology – the standards of creating geodesic plans and the topographic key
The student knows the contemporary trends in the development of the geodesic plans and their use
The student knows the methods of measurements and calculation of the geodesic plan

Required Volume and amount of work (hours per semester 2+2;6 ECTS)

Activity	Hours	Days/Weeks	Total
Lectures	2	15	30
Theoretical/laboratory exercises	2	15	30
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	5	5
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			150

Forms/Methods of the teacher: Lectures with practical presentations and demonstrations of maps. Numeral exercises; Terminal seminars with concrete tasks.

The relationship between theoretical and practical study:

Theoretical part	Practical part
50 %	50 %

The base of literature used in the course:
Idrizi B.: Plane gjeodezike – dispensë, FNA, Prishtinë, 2009; **Meha M**.: Hartografia, Prishtinë 2000;**Idrizi B**.: P ërpilimi i hartave dhe përgjithësimi hartografik, Shkup 2006.; **Idrizi B**.: Hartografi, Shkup 2006. ; **Shehu A., Nikolli P.**: Elementet e hartografisë, Tiranë, 2010.

Course Description**: TOPOGRAPHY**

Content: The course begins with Earth's geological composition, continues with the forms of the landscape of Earth's surface, afterwards the geometric methods follow for the digital form of the landscape and the use of the landscape's data from the digital formed map, to continue the methods for analyzing precision of the landscape shown on the map, to finish with the knowledge of the methods on the necessary data observation for the presentation of the landscape on the map. The course finishes with practical learning for the presentation of landscape with the geometric methods in digital form and the presentations of the individual works of the student's seminars.

Purpose of Learning
Fundamental knowledge of theory and practice for the scientific topography as well as the discipline in function of the geodesy.
Geodesic composition of Earth and the types of the surface's landscape of the Earth.
Presentation and analysis of the landscape on the map
Analysis and evaluation of the precision of the landscape presented on the map
Recognition of the Earthly methods, the necessary data for the suborbital and orbital presentation for the observation of the landscape.

Learning Outcome
The student knows the geological structure of Earth
The student knows the presented methods of the landscape with the geometrical methods
The student knows the methodology for the evaluation of the landscape's precision on the map
The student knows the methods of observation on the necessary data for the presentation of the landscape

Required Volume and amount of work (hours per semester 2+2, 6 ECTS)

Activity	**Hours**	**Days/Weeks**	**Total**
Lectures	2	15	30
Theoretical/laboratory exercises	1	15	15
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	5	5
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)			
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			125

- Forms/Methods of the teacher: Lectures with presentations and demonstrations of the maps; numeral exercises; terminal seminars with concrete tasks; Discussions during the lectures; Exercises in groups

-The relationship between the theoretical and practical study:

Theoretical part	**Practical part**
50 %	50 %

- The base of literature used in the course:
Idrizi B., 2009, Topografia - dispensë.FNAPrishtinë. **Cigrovski-Detelic B.**: Topografia (skripta), Zagreb 2007; **GrudaGj.**:Gjeomorfologjia, Tiranë 2003. ; **Papa A.**: Bazat e gjeologjisë, Tiranë 1971. ; **Corbett M.**: Corneal topography, BJM books 1999

Course description: **TOPOGRAPHIC CARTOGRAPHY**

Content: The course starts with the definition, characteristics, classification and importance of the topographic maps, then the different ways of the formation of the names and the nomenclatures of the topographic maps according to the international standards and those of the topographic maps of Kosova, to continue with a directed clarification of the content of the topographic in a scale of 1:25000 to 1:200000. Following, the methods and the technology of the PERPILLIMIT is presented in the topographic maps, accompanied with all the standards which the topographic maps contain. At the end the methods and the used techniques of the topographic maps are clarified for orientation of the motion in nature, direct measurement of the geometric elements, the analysis of the mistakes during the process of the measurements and the accuracy of the elements taken from the topographic maps.
Purpose of Learning: Fundamental theoretical and practical knowledge on the topographical cartography as well as in the scientific discipline and the topographic maps.; Nomenclature, naming of topographic maps, and the content of the topographic maps.; Methodology and the process of their PERIPILLIM.; The control of the quality and the standards of the topographic maps.; The usage of the topographic maps.

Learning Outcome: The student knows the topographical cartography as science and the production of the topographic cartography; The student knows the processes, the methodology and the standards for PERPILLIMIN of the topographic maps; The student knows the division and naming of the topographic maps; the Student knows the methods of measurement on topographic maps and the orientation and movement on the field with the topographic map.

Required Volume and amount of work (hours per semester, ECTS)

Activity	**Hours**	**Days/Weeks**	**Total**
Lectures	2	15	30
Theoretical/laboratory exercises	2	15	30
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	5	5
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			**150:25 = 6 CREDITS**

Forms/Methods of the teacher: Lectures with practical presentations and demonstrations of the maps; Numeral exercises; Terminal seminars with concrete tasks; PERPILLIM of the topographical map as individual terminal work; Discussions during the lectures; Exercises in groups

The relationship between theoretical and practical part

Theoretical part	**Practical part**
50 %	50 %

The base of literature used in the course:
Idrizi B.: Hartografia topografike, dispensë, FNA, prishtinë, 2010.
Hatzopoulos J.: Topographic mapping. Florida, USA, 2008.

Idrizi B.: Hartografi, Shkup 2006.
Course Description: **GEODESIC REFERENTIAL CIRCLES**

Content:
Includes all the general and specific elements of the referential geodesic frames. Explains the placement of the global and regional frames as well as the definition of the coordinate reference systems.

Purpose of Learning:
Achievement of the theoretical and practical knowledge in the field of geodesic framework and the determination of the national geodesic dating.

Learning Outcome:
Achievement in solving of the problems of geodesic reference frames.
Knowledge with the geodesic base where the geodesic measurements are referred to.
Compilation of various professional independent-like projects.

Required Volume and amount of work: 2+2, 6 ECTS

Activity	Hours	Days	Weeks	Total
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	4	2	3	12
Contacts with teachers/consultation	2	1	15	30
Field exercises	0	1	0	0
Test,seminars	4	2	2	8
Homework	1	10	10	10
Students individual work (library or at home)	1	15	15	15
Preparation for final exaam	30	5	2	60
Time spent on assessment (tests,quizzes,final exam)	8	5	1	8
Projects, presentations, etc.	1	1	15	15
Total	55	/	/	218

Forms/Methods of the teacher:
Lectures, Seminars, Works, Group works.

The relationship between the theoretical and practical study

Theoretical part	Practical part
60 %	40 %

The base of literature used in the course:
Qemal Skuka, Gjeodezia e Larte, Libër Universitar, 2008, Tirane
Seber, G.: Satellite Geodesy, 2nd Edition, Walter de Gruyter, 2003.
Torge, W.: Geodesy, 3rd Edition, Walter de Gruyter, 2001.

Name of course: **PHOTOGRAMETRY**

Content: Recognition of the concept and its importance in the field of geodesyThe basics of photography and coverage. Cameras and photographic systems. Image measuring, coordinate systems in photogrametry, transformation of coordinates in the plane. Photogrametry continues with terrestric photogrametry,knowledge, equipment, and implementation of photogrametry. airphotogrametry, Equipment, Field Preparation and Planning of the shooting. stereophotogrametry, eye, stereoscopic observation subjective model, the principles of stereo measurements, analytical and digital systems. Orientation, internal orientation, absolute and relative orientation, deformation of the model; aerotriangulationit products, etc. ortofotos. Accuracy of measurements photogrammatic. Digital Photogrametry.

Learning Objectives: To tell students that photogrametry is the art and science of determining the position and shape of objects from pictures, whether analog or digital. It aims to inform students that unless the methods of terrestric measuring (geodetic measuremnts) photogrametric methods (terrestric, ais-photogrametry) are those that enable the introduction of relief to land on the map or plan depending on the degree of reduction tnga required accuracy and presentation of the model 3D terrain.

Results of learning the subject: The student must be able to: distinguish the aquired photo with photography camera from those taken with photo-theodolite, and also from those taken from the Air-photogrametry, be able to schedule them with photo-theodolite measurements, to calculate the measurements that affect the quality of the photograph (exposure time etc.), be able to take photographs through photo-theodolite, make the coordinate transformation of a plane or coordinate system to another, to prepare the territory for aerial photography, to interact.

Volume and quantity of work required:

Activity	Orë	Ditë/Javë	Gjithësejt
Lectures	**2**	**15**	**30**
Theoretical/laboratory exercises	**2**	**15**	**30**
Tutorial (practical work)	**1**	**10**	**10**
Contacts with teachers/consultation	**5**	**1**	**5**
Field exercises			
Test,seminars	**1**	**15**	**15**
Homework	**1**	**15**	**15**
Students individual work (library or at home)	**1**	**10**	**10**
Preparation for final exaam	**1**	**15**	**15**
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	**1**	**15**	**15**
Total			**150**

Forms/ Methods of teaching: Regular instruction, Powerpoint lectures/presentations, discussions, exercises/group works, semestral seminar with concrete tasks, discussions during the lectures,semestral essays on a given topic, tests, etc.

Relationship between theorical and practical study:

Theorical part	Practical part
50%	50%

The base of literature used in the course:

Kraus, K.: Fotogrametria, Libri1., përkthimnëgjuhënshqipe, Tiranë, 2009.

-**Name of course: Using Geoinformations**

-CONTENT: Use of gjeoinformations order their transformation formats of the data analysis to be enabled further. Examples of the use of gjeoinformations are the conversion of RASTERI in vector , generalization of the lines, linking attributes, changing the projection and management of transactions.

Learning-Goals: The user often must make decisions about when and how to use the informations..There are a different types of data structure, data models, projections and presentations of data space - time.

Volume and quantity of work required 2+2, 6 ECTS

Activity	**Orë**	**Ditë**	**Javë**	**Gjithësejt**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	1	1	5	5
Contacts with teachers/consultation	0,5	1	15	8
Field exercises	0	0	0	0
Test,seminars	2	1	4	8
Homework	1	1	6	6
Students individual work (library or at home)	2	1	8	16
Preparation for final exaam	3	6	2	18
Time spent on assessment (tests,quizzes,final exam)	2	2	2	4
Projects, presentations, etc.	2	1	2	4
Total				129

- Forms / methods of teaching: Regular teaching, in lectures, in groups, individual work
-Relationship between theorical and practical course:

Theorical part	**Practical part**
40%	60%

- **The base of literature used in the course:**, Ilmi Zherka: Perdorimi i gjeoinformacioneve – perkthim nga kroatishtja F.gjeod. Zagreb.,www.....

Course Description: **SATELLITE POSITIONING**

Content:
Includes general and specific elements of satellite geodesy. Provides general knowledge of current satellite systems (GPS<GLONAS<GALILEO). Explains the methods of measurement and processing through satellites and reconciliation in the respective coordinate systems.

Purpose of Learning:
Achievement of the theoretical and practical knowledge in the field of satellite geodesy in general and satellite positioning in general.

Learning Outcome:
Achievement in solving the problems of satellite geodesy.
Knowledge of geodetic basis determined by GPS.
Compilation of various professional projects independently.

Required Volume and amount of work: 2+2, 6 ECTS

Activity	Hours	Days	Weeks	Total
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	4	2	3	12
Contacts with teachers/consultation	2	1	15	30
Field exercises	0	1	0	0
Test,seminars	4	2	2	8
Homework	1	10	10	10
Students individual work (library or at home)	1	15	15	15
Preparation for final exaam	30	5	2	60
Time spent on assessment (tests,quizzes,final exam)	8	5	1	8
Projects, presentations, etc.	1	1	15	15
Total	55	/	/	218

Forms/Methods of the teacher:
Lectures, Seminars, Works, Group works.

The relationship between the theoretical and practical study:

Theoretical part	Practical part
60 %	40 %

The base of literature used in the course:
Eduard Isufi, Sistemi i Pozicionimit Global - GPS , 2006, Tirane
Seber, G.: Satellite Geodesy, 2nd Edition, Walter de Gruyter, 2003.
Torge, W.: Geodesy, 3rd Edition, Walter de Gruyter, 2001.

Course Description: **The BASICS OF GEODESIC ENGINEERING**

Content: The course starts with entering the geodesic engineering, its definition and role in geodesy; design, construction and exploitation of construction objects. The method of demarcation of point and direction. Horizontal and vertical demarcation. As follows, various methods are presented for the calculation of elements of the track as well as demarcation points, straight lines, curves , cubic parabola, etc. with the polar method, orthogonal to the first cutting, free stationing and accuracy analysis. GPS-RTK method. Finalization of the level.

Purpose of Learning:
The purpose of this course is that the student first makes the difference with STERILEVIMIT and demarcation (note). The student gets trained and possesses the demarcation of geometric elements (point, straight, curve, etc.) with different geodetic: orthogonal, polar, polar, cuttings, the free stationing, GPS-RTK etc. Also part of this course is also estimated volumes of various geometrical bodies with different methods.

Student Outcome:
The student should be able to understand how to distinguish surveying from demarcation, be trained to do the delineation of different geodetic elements (point, straight lines, circular arch, KLLOTOIDA etc.) with different methods (orthogonal, polar, STACIONIM I LIRE etc.), Demarcation of the plane with the given slope etc., to calculate the average error of demarcation and to analyze the accuracy of demarcation, makes calculating volumes of various geometrical bodies etc.

Required Volume and amount of work:

Activity	Hours	Days/Weeks	Total
Lectures	**2**	**15**	**30**
Theoretical/laboratory exercises	**1**	**15**	**15**
Tutorial (practical work)	**1**	**10**	**10**
Contacts with teachers/consultation	**5**	**1**	**5**
Field exercises	**1**	**15**	**15**
Test,seminars	**1**	**15**	**15**
Homework	**1**	**15**	**15**
Students individual work (library or at home)	**1**	**10**	**10**
Preparation for final exaam	**1**	**15**	**15**
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	**1**	**15**	**15**
Total			**150**

Forms/Methods of the teacher: Regular teaching. Lectures – presentations with powerpoint, discussions, exercises – group work, terminal seminars with concrete tasks, discussion during the lectures, terminal essays with specific subjects, testing etc.

The relationship between the theoretical and practical study

Theoretical part	Practical part
50%	50%

The base of literature used in the course:
1.Kabashi, I. (2008):GjeodeziaInxhinierike I. Dispencë, FNA-Prishtinë,
2. Uren, J., Price, W. F. (1992): Surveying for Engineers. MacMillan Press Ltd, London,

Course Description**: RESEARCH FROM THE DISTANCES**

Content : Research from a distance is also known as Remote Sensing or Teledetection. The subject introduces the process of acquiring satellite images until their use. The necessary geoinformations that can be collected by means of satellite images that the mathematical model is based on the Reference image. Rating and analysis of the images.

Purpose of Learning:
The module for the student provides:
Theoretical information on satellite images
Sufficient explanation for the construction of satellite systems and platforms
Practical examples of research with satellite images
Access to geodetic measurement on demand
To do the exact interpretation of data from the satellite

Learning Outcome:
After completing this module, the student will be able to:
Describe with competence the process of the benefit of satellite images,
Make the interpretation of satellite images by themes,
Knowledge for the connection of ground with satellite measurements,
Mathematical models gained skills,
Have competence for georeference of satellite images at the level of studies

Required Volume and amount of work (hours per semester, ECTS)

Activity	Hours	Days	Weeks	Total
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	4	1	2	8
Contacts with teachers/consultation	1	1	10	10
Field exercises	2	1	3	6
Test,seminars	2	1	3	6
Homework	1	1	1	1
Students individual work (library or at home)	3	1	6	18
Preparation for final exaam	15	1	2	30
Time spent on assessment (tests,quizzes,final exam)	2	1	2	4
Projects, presentations, etc.	1	1	3	3
Total	35		62	146

Forms/Methods of the teacher:
Regular teaching, oral lecturing, groups doing practical presentations and powerpoint presentations. Theoretical and practical teaching corresponding to the above table.

The relationship between the theoretical and practical part

Theoretical part	Practical part
50%	50%

The base of literature used in the course: (list the essential literature – up to three titles.)
Gjata, G.2007. Imazhet Satelitore (Teledeteksioni). SHBLU. Tirane 2007.
Meha, M. 2009. Materiali doreshkrim per lenden. Prishtine
Nikolli P. 2009. Perfitimi dhe perpunimi i imazheve satelitore (Disa kapituj). SHBLU, Tirane.
http://landsat.gsfc.nasa .gov; http://www.isprs.org

Course Description**: LAND CONSOLIDATION**

Content: Agrarian operations. Expropriation and geodetic works in their implementation. Consolidation of agricultural land. Assessment of agricultural land in urban consolidation. Evaluation of facilities in urban consolidation. Juridical and technical administrative documentation in real estate changes. Description of real estate, old and new owners. Preparing documents for juridical decisions for the landlords.

Purpose of Learning: The study of the legal basis in the replacement procedures of owners. Field measurements before expropriation of land for the new user. The measurement of old plots before land exchange in the consolidation procedure. The projection of roads and canals in the territory of consolidation.

Learning Outcome: Preparation of technical administrative documentation of expropriation. Allocation of new plots of land under pedagogical assessment. Field note of the new parcel boundaries.

Required Volume and amount of work 2+2, 6 ECTS

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	3	1	3	9
Contacts with teachers/consultation	1	1	7	7
Field exercises	2	1	4	8
Test,seminars	2	1	5	10
Homework	2	1	12	24
Students individual work (library or at home)	2	1	8	16
Preparation for final exaam	3	5	2	15
Time spent on assessment (tests,quizzes,final exam)	4	2	2	8
Projects, presentations, etc.	2	1	3	6
Total				164

Forms/Methods of the teacher: regular teaching, in lectures, in groups, student presentations of particular chapters, individual student works.

The relationship between the theoretical and practical study:

Theoretical study	**Practical study**
40%	60%

The base of literature used in the course: Ilmi Zherka: Detyrat e ekspertit gjeodezik ne Komasacion., Ilmi Zherka:Komasacioni i tokave ne Kosove,www. land consolidation, Ligji per shpronesim G.Z.,Ligji per Komasacion G.Z.

Course description: **TOPOGRAPHIC CARTOGRAPHY**

Content: The course starts with the definition, characteristics, classification and importance of the topographic maps, then the different ways of the formation of the names and the nomenclatures of the topographic maps according to the international standards and those of the topographic maps of Kosova, to continue with a directed clarification of the content of the topographic in a scale of 1:25000 to 1:200000. Following, the methods and the technology of the PERPILLIMIT is presented in the topographic maps, accompanied with all the standards which the topographic maps contain. At the end the methods and the used techniques of the topographic maps are clarified for orientation of the motion in nature, direct measurement of the geometric elements, the analysis of the mistakes during the process of the measurements and the accuracy of the elements taken from the topographic maps.

Purpose of Learning:

Fundamental theoretical and practical knowledge on the topographical cartography as well as in the scientific discipline and the topographic maps.

Nomenclature, naming of topographic maps, and the content of the topographic maps.

Methodology and the process of their PERIPILLIM.

The control of the quality and the standards of the topographic maps.; The usage of the topographic maps.

Learning Outcome:

The student knows the topographical cartography as science and the production of the topographic cartography

The student knows the processes, the methodology and the standards for PERPILLIMIN of the topographic maps

The student knows the division and naming of the topographic maps

The student knows the methods of measurement on topographic maps and the orientation and movement on the field with the topographic map.

Required Volume and amount of work (hours per semester, 2+2, 6 ECTS)

Activity	**Hours**	**Days/Weeks**	**Total**
Lectures	2	15	30
Theoretical/laboratory exercises	2	15	30
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	5	5
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			**150**

Forms/Methods of the teacher: Lectures with practical presentations and demonstrations of the maps; Numeral exercises; Terminal seminars with concrete tasks; PERPILLIM of the topographical map as individual terminal work; Discussions during the lectures; Exercises in groups

The relationship between theoretical and practical part

Theoretical part	**Practical part**
50 %	50 %

The base of literature used in the course:

Idrizi B.: Hartografia topografike, dispensë, FNA, prishtinë, 2010. ; **Hatzopoulos J.:** Topographic mapping. Florida, USA, 2008.; **Idrizi B**.: Hartografi, Shkup 2006.

Course Description: **GEODESIC ENGINEERING**

Content: The subject starts with numerical and graphical contents of geodesic project for the special designing phase. Specifications of geodesic base. Geodesic base for RILEVIM and PIKETIM. 1D and 2D horizontal networks, measurement methods and instruments .operational polygon. Demarcation (mapping) of the transverse and longitudinal profiles. Further will be elaborate bridges and VIADUKTET. The basis for the demarcation and their demarcation (mapping). Tunnels and associated works in the tunnel. Geodesic base outside the tunnel and the tunnel. Necessary requirement of the accuracy of geodesic base. Accuracy and tolerance during the opening of tunnels and faults.

Purpose of Learning: The purpose of this module is to give knowledge of geodesic affairs during the design, demarcation and control of roads, railways, bridges, tunnels, LARGPERQUESVE, hydro facilities, settlements and tracking deforming objects (bridges, dams, tunnels, etc.) and the terrain's such as landslides, subsidence increases, horizontal and vertical movements of the terrain and to become their monitory.

Learning Outcome: The student must understand that before the execution of works on site surveying to know them and sketches control, then all numerical data (coordinates, heights, etc.) Demarcation of objects made and later referred to escort correctness of the construction. The student gets trained to perform geodesic works as network design and placement of geodesic networks, demarcation of bridges, interchanges with the appointment of various geodesic methods, demarcate and follow the tunnel works and monitoring of geodesic methods

Required Volume and amount of work:

Activity	Hours	Days/Weeks	Total
Lectures	2	15	30
Theoretical/laboratory exercises	1	15	15
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	15	15
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			150:25 = 6 CREDITS

Forms/Methods of the teacher: Regular teaching. Lectures-presentations; discussions, exercises-group work, terminal seminars with concrete tasks.

The relationship between the theoretical and practical part

Theoretical part	Practical part
50%	50%

The base of literature used in the course:

1. Kabashi, I. (2008):GjeodeziaInxhinierike I. Dispencë, FNA-Prishtinë,
2. Uren, J. Price, W. F. (1992): Surveying for Engineers. MacMillan Press Ltd, London,
3. Müller,G. (2002)**:**HandbuchIngenieurgeodäsie2.,völligneubearb. underw. Aufl., VEB VerlagfürBauwesen, Berlin,

Course Description: **STATE MEASUREMENTS**

Content: State measurements, importance and goals of triangulation, trilateration, leveling, gravimetric, geodesic astronomy and modern methods of global positioning. Geodetic datum and global frameworks and local geocentric. Coordinate systems, global geocentric system, local ELIPSOIDAL, TOPOCENTRIK and connection among them.

Purpose of Learning: To get to know the methodology of the state measurements, with the importance the reference measurement networks behold, measurement accuracy, the importance of sea level heights in geodesic measurements.

Student Outcome: To develop basic knowledge on solving the problems of the referential geodesic frames, to recognize the basics of geodesy where the measurements of geodesy are referred to, to recognize geodesic datum as a base for geodesic measurement.

Required Volume and amount of work 2+2, 6 ECTS

Activity	**Hours**	**Days**	**Weeks**	**Total**
Lectures	2	1	15	30
Theoretical/laboratory exercises	2	1	15	30
Tutorial (practical work)	3	2	3	9
Contacts with teachers/consultation	2	1	15	30
Field exercises	0	0	0	0
Test,seminars	4	2	2	8
Homework	1	10	10	10
Students individual work (library or at home)	1	15	15	15
Preparation for final exaam	8	5	3	24
Time spent on assessment (tests,quizzes,final exam)	3	5	2	6
Projects, presentations, etc.	2	1	1	2
Total	55			164

Forms/Methods of the teacher: Regular teaching, in lectures, in groups

The relationship between theoretical and practical study

Theoretical part	**Practical part**
60%	40%

Required Volume and amount of work

Torge, W.: Geodesy, 3rd Edition, Walter de Gruyter,2001.
Bauer, M.: Vermessung und OrtungmitSatelliten, Wichmannverlag, 2003.

Course Description: **CARTOGRAPHIC PROJECTIONS**

-Content: The course begins with geometric elements in elipsoid approximatet Earth, sphere and plane, showing all calculations, mathematical models of geometric elements in the three mentioned models, transformations and relations between them, coordinate systems in them, mathematical models and transformations differential rotations, and Calculations of the size of Earth. Then continues with the theory of cartographic projections, respectively, scale and distortions, the classification of cartographic projections and mutual relations between the projections of the right, transverse and oblique. In addition, will be given all the details of the mathematical models azimutale of perspective projections, cylindrical, conical, polikonike, pseudoconical, pseudocylindrical, **pseudoazimutale** and aksonometrical. Projections of the Gauss-Kryger and UTM's are projections with special treatment like projections used in the coordinate system of the state of Kosovo and international use. The course ends with the automatic construction of cartographic projections with computer software, and automatic conversion of data between different coordinate systems using computer software.

-Learning goals: basic theoretical and practical knowledge about the shape and dimensions of the Earth, and approximation between elipsoidit, sphere and plane. ; The types of cartographic projections and the importance of using them during the presentation of spatial objects in the map.; Distortions of lengths, angles and surfaces during the design process in the plane; Mathematical models for the creation of cartographic projections and transformations / links between them; Ways automatic creation and transformation of coordinate systems.

-Learning outcome of the course: The student recognizes the scientific disipline mathematical cartography, the shape and dimensions of the Earth, and cartographic projections; The student recognizes patterns in mathematical and geometric elements and domain elipsoid; ; The student recognizes the standards-setting methodology and use of cartographic projections; The student recognizes the contemporary trends in mathematical cartography**-)**

Required Volume and amount of work 2+2, 6 ECTS

Aktiviteti	Orë	Ditë/Javë	Gjithësejt
Lectures	2	15	30
Theoretical/laboratory exercises	2	15	30
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	5	5
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			150

-Forms / methods of teaching: Lectures with presentations and practical demonstrations of maps, numerical exercises.; Semester seminar with concrete tasks.; Preparation of the map as individual work semester.: Essays on the topic given semester; discussions during the lectures.; Exercises in groups.
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Relationship between theorical and practical course

Theorical part	**Practical part**
50 %	50 %

Required Volume and amount of work

Idrizi B.: Hartografia matematike – dispensë, FNA, Prishtinë, 2010.
Shehu A., Samimi E.: Hartografia 1 – hartografia matematike, Tiranë, 1985.
Çene S., Skuka Q.: Gjeodezia e lartë 1, Tiranë, 1995.
INSPIRE: MapprojectionsforEurope, EuropeanCommision, 2001.

Course Description: **WEB MAPPING**

Content: The subject starts with the needed settings for web mapping, by explaining the types of web maps, contemporary trends in web mapping, modeling necessary web geoinformation maps and spaces on Internet for web publication of maps., Following are presented ways of using maps from the Internet, paying special importance of getting their way, publishing, downloading, online use, economic aspects, limitations and rights of authorship to them, and their potential users. Then continues with mapping standards for modeling electronic maps for publication on the Internet, designing the interface for users and their online publication. Subject ends with practical lessons for developing web mapping and presentation of individual and terminal works and students of the students

Purpose of Learning: Basic theoretical and practical knowledge for web mapping as a new scientific discipline and web maps; Needed settings for web cartography and contemporary trends in web mapping; Potential users and ways of using web maps. The methodology of compilation, modeling and creating the user interface; the rights of authorship and publishing online maps as web maps.

Student Outcome: The student knows the web mapping as a new scientific discipline and web mapping products. The student knows the processes for developing electronic maps for web. The student knows the content of web maps; Student recognizes the standard methodology of compiling and publishing web maps.

- Required Volume and amount of work (orët për semestër, ECTS)

Activity	Orë	Ditë/Javë	Gjithësejt
Lectures	2	15	30
Theoretical/laboratory exercises	2	15	30
Tutorial (practical work)	1	10	10
Contacts with teachers/consultation	5	1	5
Field exercises	1	5	5
Test,seminars	1	15	15
Homework	1	15	15
Students individual work (library or at home)	1	10	10
Preparation for final exaam	1	15	15
Time spent on assessment (tests,quizzes,final exam)			
Projects, presentations, etc.	1	15	15
Total			150

Forms/Methods of the teacher: Lectures with practical presentations and demonstrations of the maps; Numeral exercises; Terminal seminars with concrete tasks; PERPILLIM of the web map as an individual terminal work; Discussions during the lectures; Group work.

-The relationship between theoretical and practical study

Theoretical part	**Practical part**
50 %	50 %

The base of literature used in the course:

MennoJanKraak; AlllanBrown: WebCartography, TaylorandFrancis, NewYork, 2001.
http://en.wikipedia.org/wiki/Web_mapping
http://opengeo.org/products/consulting/cartography/
http://mapserver.org/