Study plan

Name of study plan: Geodézie a kartografie

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Geodesy and Cartography

Type of study: Bachelor full-time

Required credits: 180 Elective courses credits: 0 Sum of credits in the plan: 180

Note on the plan: p echod na nový studijní plán, plat pro nástup 2021 a 2022

Name of the block: Compulsory courses Minimal number of credits of the block: 165

The role of the block: Z

Code of the group: BG20190100

Name of the group: Geodézie a kartografie, 1. semestr

demonstrated using Matlab. A web-based course in the Moodle system is used for teaching.

Requirement credits in the group: In this group you have to gain at least 29 credits

Requirement courses in the group: In this group you have to complete at least 6 courses

Credits in the group: 29 Note on the group:

Note on the group.							
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role	
101KOGG	Constructive Geometry Hana Lakomá, Petra Vacková, Jozef Bobok, Iva Malechová, Iva Slámová Hana Lakomá Hana Lakomá (Gar.)	Z,ZK	5	2P+2C	Z	Z	
101MM1G	Mathematics 1G Jozef Bobok, Iva Malechová, Jan Chleboun, Milan Bo ík Jan Chleboun Ivana Pultarová (Gar.)	Z,ZK	5	2P+2C	Z	Z	
102FY_1	Physics 1G Jií Novák Jií Novák Jií Novák (Gar.)	Z,ZK	5	2P+2C	Z	Z	
154GED1	Geodesy 1 Rudolf Urban Jaroslav Braun Rudolf Urban (Gar.)	Z,ZK	5	2P+3C	Z	Z	
155GEP1	Geodetic instruments 1 Zden k Vysko il Zden k Vysko il (Gar.)	Z,ZK	5	2P+2C	Z	Z	
155IGS1	Interactive Graphical Systems 1 Petr Soukup Petr Soukup (Gar.)	KZ	4	1P+2C	Z	Z	

Characteristics of the courses of this group of Study Plan: Code=BG20190100 Name=Geodézie a kartografie, 1. semestr

101KOGG	Constructive Geometry	Z,ZK	5				
In the first part the course contains the basics and principles of projections of the space. It applies and practices this knowledge when displaying solids, surfaces, geodetic curves, the							
reference sphere with n	neridians and parallels, when using cartographic projections and in the constructive photogrammetry. The 3D program Sketch	nUp is used for vis	sualization and				
solving geometric probl	ems. In the second part, the course presents the basics of spherical trigonometry and its use in mathematical geography and	d astronomy.					
101MM1G	Mathematics 1G	Z,ZK	5				
https://mat.fsv.cvut.cz/v	yuka/bakalari/zs/MA1G/	'					
102FY_1	Physics 1G	Z,ZK	5				
This course focuses on	basic physical phenomena and applications of classical mechanics, thermodynamics and thermal properties of materials, ele	ectricity and magn	etism. Individual				
topics arecomplemente	d by technical applications with a special focus on surveying and measurement methods.						
154GED1	Geodesy 1	Z,ZK	5				
Historical development	of geodesy, representation of the Earth and reduction of measured quantities. Basic geodetic instruments (theodolites, distar	nce meters) and a	ids and their				
parts. Instrument errors	and their elimination. Theoretical basics of measuring horizontal and vertical angles and lengths. Centering of measured qua	antities. Point field	s, geodetic				
reference systems in th	e Czech Republic. Basic coordinate calculations. Introduction to Error Theory and Balancing Calculus.						
155GEP1	Geodetic instruments 1	Z,ZK	5				
The subject aims at the	principles of optical devices and their functional parts. Simple optical tasks lead to an understanding of the principles of optical	cal measurement.					
155IGS1	Interactive Graphical Systems 1	KZ	4				
The subject of practical training is the Kokes system - an interactive graphic editor for working with digital maps. The exercises consist of solving practical tasks in a number of areas							

of the system's use. Lectures are focused on an introduction to algorithmization of (geodetic) tasks. Flow charts are used to write the algorithms. The functionality of the algorithms is

Code of the group: BG20190200

Name of the group: Geodézie a kartografie, 2. semestr

Requirement credits in the group: In this group you have to gain at least 28 credits

Requirement courses in the group: In this group you have to complete at least 7 courses

Credits in the group: 28 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
101MM2G	Mathematics 2G Jozef Bobok, Iva Malechová, Jan Chleboun, Milan Bo ík Jan Chleboun Jan Chleboun (Gar.)	Z,ZK	5	2P+2C	L	Z
102FY_2	Physics 2G Ji í Novák, Pavel Novák Ji í Novák Ji í Novák (Gar.)	Z,ZK	5	2P+2C	L	Z
154GED2	Geodesy 2 Rudolf Urban, Martin Štroner Jaroslav Braun Martin Štroner (Gar.)	Z,ZK	5	2P+3C	L	Z
154VY1	Fieldwork Training of Geodesy 1,2 Michal Seidl Michal Seidl (Gar.)	KZ	2	4C	L	Z
155GEP2	Geodetic instruments 2 Zden k Vysko il Zden k Vysko il (Gar.)	Z,ZK	5	2P+2C	L	Z
155GIT1	Informatics 1 Jan Holešovský, Martin Landa, Jaroslav Šedina Martin Landa Aleš epek (Gar.)	KZ	5	2P+2C		Z
155VGP	Fieldwork training in geodetic instruments Zden k Vysko il Zden k Vysko il Zden k Vysko il (Gar.)	KZ	1	2C	L	Z

101MM2G	Mathematics 2G	Z,ZK	5
Core course focused	on integral calculus of functions of one variable, differential calculus of functions of several variables, and elements of ordina	ry differential equation	ns. This course
s taught only in Cze	ch. More information on https://mat.fsv.cvut.cz/vyuka/bakalari/ls/MA2G/		
102FY_2	Physics 2G	Z,ZK	5
	s students to the basic concepts and applications of electromagnetic waves, optics, optical devices, laser principles, thermal rad nted by technical applications with a special focus on surveying and metrology.	diation and photodete	ctors. Individua
154GED2	Geodesy 2	Z,ZK	5
determination of dim	Czech Republic. Methods of detailed topographic measurement and its numerical and graphical processing. Marking tasks (ensions. Initial information about the real estate cadastre of the Czech Republic, BIM, GNSS, Laser scanning, photogramment	try.	
154VY1 The course provides	Fieldwork Training of Geodesy 1,2 practical experience with filed work and ability to apply knowledge from courses Geodesy 1 a Geodesy 2 in several thematic	tasks.	2
55GEP2	Geodetic instruments 2	Z,ZK	5
•	he principles of operation of electro-optical geodetic instruments (rangefinders, theodolites, laser instruments) and other inst 5. From a practical point of view, the subject is oriented towards working with GNSS and the subsequent processing of meas		surveying -
55GIT1	Informatics 1	KZ	5
	nductory courses in bachelor's study program into applied informatics. The course is focused on practical tasks which may be unt is stressed together with loops, if-statements and user-defined functions.	extended in following	g courses.
	Fieldwork training in geodetic instruments	KZ	1
55VGP			

Code of the group: BG20180300

Name of the group: Geodézie a kartografie, 3. semestr

Requirement credits in the group: In this group you have to gain at least 30 credits

Requirement courses in the group: In this group you have to complete at least 6 courses

Credits in the group: 30 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
101MA3G	Mathematics 3G Jozef Bobok, Iva Malechová, Jan Chleboun, Milan Bo ík Jan Chleboun Zden k Skalák (Gar.)	KZ	5	2P+2C	Z	Z
101PMSG	Probability and Statistics Jozef Bobok, Jana Nosková Jana Nosková (Gar.)	Z,ZK	5	2P+2C	L	Z
154GED3	Geodesy 3 Martin Štroner Martin Štroner (Gar.)	Z,ZK	5	2P+3C	Z	Z

154TCV1	Theory of Errors and Adjustment Calculus 1 Martin Stroner Martin Stroner (Gar.)	Z,ZK	5	2P+2C	Z	Z
155IN2G	Informatics 2 Jan Pytel Jan Pytel (Gar.)	Z,ZK	5	2P+2C	Z	Z
155MAPO	Mapping Martin Tauchman Martin Tauchman (Gar.)	Z,ZK	5	2P+3C	Z	Z

Characteristics of	the courses of this group of Study Plan: Code=BG20180300 Name=Geodézie a kartografie	, 3. semestr					
101MA3G	Mathematics 3G	KZ	5				
https://mat.fsv.cvut.cz/v	yuka/bakalari/zs/MA3G/						
101PMSG	Probability and Statistics	Z,ZK	5				
Fundamental concepts	and terminology, random variables, descriptive and inferential statistics. Discrete and continuous random variables, normal dis	stribution, log- noi	rmal distribution.				
Classical and nonparan	netric methods of estimation and hypotheses testing. Simple and multivariate linear regression.						
154GED3	Geodesy 3	Z,ZK	5				
Altitude system of the C	zech Republic. Methods of stabilization of altitude points. Geometric levelling from the centre, technology of precision and tec	chnical levelling in	ncluding errors				
and accuracy character	istics. Method of trigonometric determination of height differences. Methods of suppressing the effect of refraction on the mea	sured zenith angle	e. Centering and				
mathematical reduction	of measured quantities. Detailed altimetry measurements include older and newer technologies of the tachymetric method accord	ing to the available	e instrumentation				
up to the production of	the altimetry plan.						
154TCV1	Theory of Errors and Adjustment Calculus 1	Z,ZK	5				
Measurement errors an	d their division, two and multidimensional errors. Measurement properties, characteristics of random variables. Probability dis	tributions. Law of	accumulation of				
real errors, standard de	viations. Characteristics of precision. Equalization of measurements. Least squares method (equating measurements of interi	mediate, conditior	nal, intermediate				
with conditions). Alignm	ent of bound and free geodetic grids. Regression and correlation analysis - linear regression. Basics of statistical hypothesis	testing.					
155IN2G	Informatics 2	Z,ZK	5				
In the course, students	are introduced to the relational model, session normalization, integrity constraints, logical and physical database schema, co	nceptual schema	, as well as				
database model design methodology, E-R diagrams and data flow diagrams.							
155MAPO	Mapping	Z,ZK	5				
A set of lectures describ	ing ways of renewing the cadastral documentation, the historical development of cadastral mapping in the Czech Republic a	nd the creation of	digital technical				

Code of the group: BG20180400

Geodesy 4

Geodesv 4

maps, including the issue of their updating.

Name of the group: Geodézie a kartografie, 4. semestr

Requirement credits in the group: In this group you have to gain at least 30 credits

Requirement courses in the group: In this group you have to complete at least 7 courses

Credits in the group: 30 Note on the group:

154GFD4

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
154GED4	Geodesy 4 Zden k Sko epa Zden k Sko epa Zden k Sko epa (Gar.)	Z,ZK	5	2P+2C	L	Z
154VY3	Geodesy 4 Lenka Línková Zden k Sko epa (Gar.)	KZ	2	4C	L	Z
155IN3G	Informatics 3 Jan Pytel, Tomáš Bayer Jan Pytel Aleš epek (Gar.)	Z,ZK	5	2P+2C	L	Z
155KAR1	Cartography 1 Ji í Cajthaml Ji í Cajthaml (Gar.)	Z,ZK	5	2P+2C		Z
155KNEM	Cadastre of Real Estate Martin Tauchman Martin Tauchman Karel Benda (Gar.)	Z,ZK	5	2P+2C	L	Z
155VYMK	Fieldwork Training in Mapping and Cadastre Martin Tauchman Martin Tauchman Karel Benda (Gar.)	KZ	3	4C	L	Z
1551GIS	GIS 1 Martin Landa, Lena Halounová Lena Halounová (Gar.)	Z,ZK	5	2P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=BG20180400 Name=Geodézie a kartografie, 4. semestr

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Attention is paid to the p	roblem coordinate transformation in the plane with an redundant number of identical points (Helmert transformation, congru	ent transformation	n), coordinate
transformation in space,	to the calculation of coordinates of free station with least squares adjustment, formulation and solution of the error model of	basic intersection	n problems
(covariance matrix of co	ordinates, mean ellipse errors, isolines for coordinate standard deviation), calculation of the traverse with least squares adju	stment and the ef	fect of errors in
the centering of an instr	ument and the target on the measured polar coordinates.		

Surveying and calculation of points of the geodetic network - a flat special-purpose network with measured horizontal directions and lengths, determination of trigonometric height differences from simultaneously and bilaterally measured zenith angles and slope lengths using a total station, determination of the height of one point of the network by geometric levelling from the centre (precise levelling), use of GNSS (RTK measurements in the CZEPOS network of reference stations), calculation according to the method of least squares. Detailed positional and height measurements (tachymetry) of the specified location in the extravilan at a scale of 1:500 and preparation of a digital terrain model. Measurement of the actual state of the building for the planned reconstruction and preparation of documentation at a scale of 1:50 (plan drawing).

155IN3G Informatics 3 Z,ZK

This introductory C++ programming course introduces students to the basic elements of the language, program structure and data types. The course progresses from elementary concepts such as variable declarations, constants, variable initialization, expressions, statements, functions, and pointers. Emphasis is placed on the object-oriented features of the language and the use of selected tools of the standard C++ library, such as vector and map containers, and their use in dynamic memory allocation, which is essential for programming simple geodesic tasks and solving buffer calculus problems, for example. This introductory course does not aim to exhaustively cover all features of C++ (e.g., the issue of templates is only hinted at), but it does aim to introduce students to C++ in sufficient detail so that they can actively program and be prepared for subsequent study of object-oriented programming.

155KAR1 Cartography 1 The importance of mathematical cartography. Reference surfaces and coordinate systems. Cartographic distortions. Classification of cartographic representations. Representation of an ellipsoid on a sphere. Simple conic, cylindrical and azimuthal representations. Irregular, polyconic, polyhedral and general representations. An overview of representations used in the Czech Republic and worldwide. Selection, identification and evaluation of displays. Reference coordinate systems in GIS Cadastre of Real Estate A set of lectures describing the complex issues of the digital real estate cadastre from a technical and legal point of view. While in the subject of mapping the student learns to understand the principle of creating a new cadastral map, in the subject of real estate cadastre the principle of updating it is explained to him. Emphasis is placed on technical activities in cadastre.

At the end of the 2nd year, the teaching of the subjects of mapping and real estate cadastre is appropriately rounded off with field activities. Theoretical knowledge is applied in the creation of a cadastral map, from the construction of a point field to the detailed measurement of the topography. Students learn the possibilities of measuring in cadastre and finding often complex solutions, how to deal with the basic technical tasks of the cadastre, whether it is geometric plan or the marking of a boundary in the terrain.

1551GIS GIS 1

GIS 1 is a set of lectures describing basic terms, principles, models and tools how to use geographic information systems for various applications and purposes. Vector and raster data applications are explained.

Code of the group: BG20180500

Name of the group: Geodézie a kartografie, 5. semestr

Fieldwork Training in Mapping and Cadastre

Requirement credits in the group: In this group you have to gain at least 30 credits

Requirement courses in the group: In this group you have to complete at least 6 courses

Credits in the group: 30 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
155FTG1	Photogrammetry 1 Karel Pavelka, Jan Pacina Karel Pavelka Karel Pavelka (Gar.)	Z,ZK	5	2P+2C	Z	Z
155KAT2	Cartography 2 Ji í Cajthaml, Tomáš Janata Ji í Cajthaml Tomáš Janata (Gar.)	Z,ZK	5	2P+2C	Z	Z
155PJIN	Project - Informatics Martin Landa, Jaroslav Šedina, Ond ej Pešek Martin Landa Martin Landa (Gar.)	KZ	5	3C	Z	Z
155PUG	Land Consolidation Josef Vlasák Josef Vlasák (Gar.)	KZ	5	2P+2C	L	Z
155TGD1	Theoretical geodesy 1 Jakub Kostelecký Jakub Kostelecký (Gar.)	Z,ZK	5	2P+2C	Z	Z
1552GIS	GIS 2 Martin Landa, Lena Halounová Lena Halounová (Gar.)	Z,ZK	5	2P+2C	L	Z

Characteristics	of the courses of this group of Study Plan: Code=BG20180500 Name=Geodézie a kartograf	ie, 5. semestr	
155FTG1	Photogrammetry 1	Z,ZK	5
Introduction to photo	ogrammetry. Analogue, analytic and digital solutions in photogrammetry. Internal and external orientation of photos, elements of	forientation. Single in	mage terrestria
photogrammetry, int	ersection and stereophotogrammetry. Survey metric cameras, methods of interpreting of photos, aerial photogrammetry, aerial	and terrestrial laer s	scanning- an
overview.			
155KAT2	Cartography 2	Z,ZK	5
The course builds or	n the basics of mathematical cartography and introduces students to the topographic and thematic parts of cartography. It also inc	cludes an excursion i	nto polygraphic
techniques, theory o	of colour, copyright and editorial work. As a part of the course, an excursion to the offices of COSMC is organized.		
155PJIN	Project - Informatics	KZ	5
The course follows (up three preceding courses in applied informatics. Students work in groups on selected project.		
155PUG	Land Consolidation	KZ	5
The course provides	the basic theoretical and practical background in land consolidation in the Czech Republic and includes the synthesis of sub-is	ssues in a planning o	documents. Th
students create a si	mple land consolidation project within the course in the selected area including designing of new features in common measure	s plan.	
155TGD1	Theoretical geodesy 1	Z,ZK	5
Theoretical geodesy	1 introduces the issue of creating positional, height and gravity geodetic foundations, definition and implementation of geodetic	reference systems -	worldwide and
for the Czech Reput	olic. It provides information about their origin and development, including the necessary theoretical basis of higher geodesy.		
1552GIS	GIS 2	Z,ZK	5
GIS 2 is focused on	a wide range of advanced analyses in the raster GIS using map algebra, on interpolation and extrapolation in 2D and 3D, on stati	istical data descriptio	n, geostatistic

Code of the group: BG20230600

and graph theory for optimisation tasks of network analysis.

Name of the group: Geodézie a kartografie, 6. semestr

Requirement credits in the group: In this group you have to gain at least 18 credits

Requirement courses in the group: In this group you have to complete at least 4 courses

Credits in the group: 18 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
154INGE	Engineering Surveying Jaroslav Braun Jaroslav Braun Martin Štroner (Gar.)	Z,ZK	5	2P+2C	L	Z
154TCV2	Theory of Errors and Adjustment Calculus 2 Martin Štroner Martin Štroner (Gar.)	Z,ZK	5	2P+2C	L	Z
155GPL1	Survey Sketches 1 Ji í Cajthaml, Zden k Valenta Ji í Cajthaml Ji í Cajthaml (Gar.)	KZ	3	2C	L	Z
155TGD2	Theoretical geodesy 2 Jakub Kostelecký Jakub Kostelecký Leoš Mervart (Gar.)	Z,ZK	5	2P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=BG20230600 Name=Geodézie a kartografie, 6. semestr

154INGE	Engineering Surveying	Z,ZK	5
History, Terminology and	d Symbols in Engineering Surveying. Planning for measurement accuracy. Measuring and setting out lengths, angles and vertic	cals and evaluatin	ng their accuracy.

History, Terminology and Symbols in Engineering Surveying. Planning for measurement accuracy. Measuring and setting out lengths, angles and verticals and evaluating their accuracy. Positional, height and spatial marking networks, positional and height marking. Solving and setting out arcs. Measurement and evaluation of displacements and deformations of buildings. Application of geodesy in construction.

154TCV2 Theory of Errors and Adjustment Calculus 2

,ZK

5

Alignment of intermediaries, repetition of measurement errors and basic procedures. The law of the accumulation of weights. General law of accumulation of standard deviations. Robust methods of compensation. Finding outlying measurements. Special procedures in alignment: Elimination of unknowns. Sequential equalization. Errors in the initial quantities. Approximation of relationships. Regression and correlation analysis. Equating line and plane. Approximation by empirical polynomial. Harmonic analysis. Fourier transform. Equalization of conditionals with unknowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equations. Direct solution, inversion, pseudoinversion.

155GPL1	Survey Sketches 1	KZ	3
155TGD2	Theoretical geodesy 2	Z,ZK	5

Theoretical Geodesy 2 introduces students to the issue of Global Navigation Satellite Systems (GNSS) and their use in practice. It expands students' knowledge from the previous subject (Geodetic instruments) on the issue of satellite movement around the Earth, errors in GNSS measurements and methods of their elimination, methods of processing GNSS measurements and detailed information on current GNSS.

Name of the block: Povinná t lesná výchova, sportovní kurzy

Minimal number of credits of the block: 0

The role of the block: PT

Code of the group: BTV_POV

Name of the group: Povinná t lesná výchova

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 2 courses

Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
TV1	Physical Education	Z	0	0+2	Z	PT
TV2	Physical Education	Z	0	0+2	L	PT

Characteristics of the courses of this group of Study Plan: Code=BTV_POV Name=Povinná t lesná výchova

TV1	Physical Education	Z	0
TV2	Physical Education	Z	0

Name of the block: Jazyky

Minimal number of credits of the block: 3

The role of the block: J

Code of the group: BF20190101_I

Name of the group: Povinn volitelný jazyk, 1. semestr

Requirement credits in the group: In this group you have to gain at least 1 credit

Requirement courses in the group: In this group you have to complete at least 1 course

Credits in the group: 1 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
104YCA1	English 1 Karolína Synková, Alexandra Steinerová, Elena Da eva, Jarmila Fu íková, Sandra Giormani, Hana Horká, Petra Martincová, V ra ermáková, Michaela Németh, Svatava Boboková Bartíková Sandra Giormani (Gar.)	Z	1	2C	Z,L	J
104YCN1	German 1 Svatava Boboková Bartíková Svatava Boboková Bartíková Svatava Boboková Bartíková (Gar.)	Z	1	2C	Z,L	J

Characteristics of the courses of this group of Study Plan: Code=BF20190101_I Name=Povinn volitelný jazyk, 1. semestr

104YCA1 | English 1 | Z | 1

English 1 Course code: 104Y CA1 Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata: Professional English for Civil Engineering (Units 1 - 5)

104YCN1 German 1

The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel: Deutsch im Bauwesen

Code of the group: BF20190202_I

Name of the group: Povinn volitelný jazyk, 2. semestr

Requirement credits in the group: In this group you have to gain at least 2 credits

Requirement courses in the group: In this group you have to complete at least 1 course

Credits in the group: 2 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
104YC2A	English 2 Karolína Synková, Alexandra Steinerová, Elena Da eva, Jarmila Fu íková, Sandra Giormani, Hana Horká, Petra Martincová, V ra ermáková, Michaela Németh, Svatava Boboková Bartíková Sandra Giormani (Gar.)	Z,ZK	2	2C		J
104YC2N	German 2 Svatava Boboková Bartíková Svatava Boboková Bartíková Svatava Roboková Bartíková (Car.)	Z,ZK	2	2C		J

Characteristics of the courses of this group of Study Plan: Code=BF20190202_I Name=Povinn voliteIný jazyk, 2. semestr

104YC2A | English 2 | Z,ZK | 2 | English 2 Course code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory English course is to enhance

English 2 Course code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit and an examination. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata: Professional English for Civil Engineering (Units 6 10)

104YC2N | German 2
The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel:

Deutsch im Bauwesen

Name of the block: Povinn volitelné p edm ty, doporu ení S1

Minimal number of credits of the block: 12

The role of the block: S1

Code of the group: BG20180600_1

Name of the group: Geodézie a kartografie, bakalá ská práce

Requirement credits in the group: In this group you have to gain at least 12 credits Requirement courses in the group: In this group you have to complete at least 1 course

Credits in the group: 12

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
154BAPG	Bachelor project Martin Štroner Martin Štroner (Gar.)	Z	12	10C	L,Z	S1
155BAPG	Bachelor Project Zden k Vysko il, Jaroslav Šedina, Jan Pytel, Ji í Cajthaml, Jind ich Hoda , Tomáš Janata Jind ich Hoda Ji í Cajthaml (Gar.)	Z	12	10C	Z,L	S1
101BAPG	Bachelor Project Milan Bo ík, Jana Nosková Jana Nosková Jana Nosková (Gar.)	Z	12	10C	L,Z	S1
102BAPG	Bachelor Project Petr Pokorný, Václav Nežerka Ji í Novák	Z	12	10C	L,Z	S1

Characteristics of the courses of this group of Study Plan: Code=BG20180600_1 Name=Geodézie a kartografie, bakalá ská práce

154BAPG	Bachelor project	Z	12
Final thesis, prepared a	ccording to the assignment.		
155BAPG	Bachelor Project	Z	12
Processing according to	the work assignment		'
101BAPG	Bachelor Project	Z	12
Please contact your tea	cher or guarantor of this subject.		'
102BAPG	Bachelor Project	Z	12
in accordance with the	hesis proposal		·

List of courses of this pass:

Code	Name of the course	Completion	Credits
101BAPG	Bachelor Project	Z	12
	Please contact your teacher or guarantor of this subject.	1	ı
101KOGG	Constructive Geometry	Z,ZK	5
	course contains the basics and principles of projections of the space. It applies and practices this knowledge when displaying solids	1	I
reference sphere	with meridians and parallels, when using cartographic projections and in the constructive photogrammetry. The 3D program SketchL	lp is used for visual	ization and
solving	geometric problems. In the second part, the course presents the basics of spherical trigonometry and its use in mathematical geogra	aphy and astronomy	y.
101MA3G	Mathematics 3G	KZ	5
	https://mat.fsv.cvut.cz/vyuka/bakalari/zs/MA3G/		'
101MM1G	Mathematics 1G	Z,ZK	5
	https://mat.fsv.cvut.cz/vyuka/bakalari/zs/MA1G/		'
101MM2G	Mathematics 2G	Z,ZK	5
Core course focus	ed on integral calculus of functions of one variable, differential calculus of functions of several variables, and elements of ordinary dif	ferential equations.	This cours
	is taught only in Czech. More information on https://mat.fsv.cvut.cz/vyuka/bakalari/ls/MA2G/		
101PMSG	Probability and Statistics	Z,ZK	5
	epts and terminology, random variables, descriptive and inferential statistics. Discrete and continuous random variables, normal distri	bution, log- normal	distribution
	Classical and nonparametric methods of estimation and hypotheses testing. Simple and multivariate linear regression.		
102BAPG	Bachelor Project	Z	12
	in accordance with the thesis proposal		'
102FY_1	Physics 1G	Z,ZK	5
This course focuse	es on basic physical phenomena and applications of classical mechanics, thermodynamics and thermal properties of materials, electi	ricity and magnetisr	n. Individua
	topics are complemented by technical applications with a special focus on surveying and measurement methods.		
102FY_2	Physics 2G	Z,ZK	5
The course introdu	ices students to the basic concepts and applications of electromagnetic waves, optics, optical devices, laser principles, thermal radiation	and photodetector	rs. Individua
	topics are complemented by technical applications with a special focus on surveying and metrology.		
104YC2A	English 2	Z,ZK	2
English 2 Course	code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsor	y English course is	to enhance
•	lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus	•	
	nical style) and communicative competence within the construction industry. The course also seeks to teach students to read technic		
produce essential	written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit a		. Literature:
	Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 6 1	1	1
104YC2N	German 2	Z,ZK	2
	purse - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction indus		-
texts, and learning	g the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Lite Deutsch im Bauwesen	rature: A.Hanáková	, J.Dressel
104YCA1	English 1	Z	1
English 1 Course of	code: 104Y CA1 Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit The aim of the compulsory English cour	se is to enhance the	knowledge
of lexis and gra	mmar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on profes	ssional language (i.	e., ESP -
• •	d communicative competence within the construction industry. The course also seeks to teach students to read technical literature and	•	
written discourse a	and to express themselves in writing on issues in their field of study. The end of course requirements are a credit. Literature: Horká Hana	a, Giormani Sandra	, Martincov
	D (A)		

Petra, Nivenová Renata : Professional English for Civil Engineering (Units 1 - 5)

104YCN1	German 1	Z	1
	German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction indust		
texts, and learning the ne	ecessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Litera	ature: A.Hanáková	, J.Dressel:
4540400	Deutsch im Bauwesen	7	40
154BAPG	Bachelor project	Z	12
454CED4	Final thesis, prepared according to the assignment.	7 71/	
154GED1	Geodesy 1	Z,ZK	5
•	of geodesy, representation of the Earth and reduction of measured quantities. Basic geodetic instruments (theodolites, distance s and their elimination. Theoretical basics of measuring horizontal and vertical angles and lengths. Centering of measured quar	•	
parts. Instrument error	reference systems in the Czech Republic. Basic coordinate calculations. Introduction to Error Theory and Balancing Calculutions.		geodelic
154GED2	Geodesy 2	Z,ZK	5
	pht point fields, height systems, measurement methods, devices and aids for technical leveling). Geodetic position bases, coord		_
	ech Republic. Methods of detailed topographic measurement and its numerical and graphical processing. Marking tasks (circul	-	
determin	nation of dimensions. Initial information about the real estate cadastre of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, Laser scanning, photostatic process of the Czech Republic, BIM, GNSS, BIM, GNSS, BIM, GNSS, BIM, GNSS, BIM, GNSS, BIM,	togrammetry.	
154GED3	Geodesy 3	Z,ZK	5
Altitude system of the Ca	zech Republic. Methods of stabilization of altitude points. Geometric levelling from the centre, technology of precision and technology	nical levelling inclu	ding errors
and accuracy characterist	tics. Method of trigonometric determination of height differences. Methods of suppressing the effect of refraction on the measure	ed zenith angle. Ce	entering and
mathematical reduction of	measured quantities. Detailed altimetry measurements include older and newer technologies of the tachymetric method according to	to the available inst	rumentation
	up to the production of the altimetry plan.		
154GED4	Geodesy 4	Z,ZK	5
	problem coordinate transformation in the plane with an redundant number of identical points (Helmert transformation, congruen		
· · · · · · · · · · · · · · · · · · ·	e, to the calculation of coordinates of free station with least squares adjustment, formulation and solution of the error model of least squares adjustment, formulation and solution of the error model of least squares adjustment, and solution of the transfer of the tran		
(covariance matrix of cod	ordinates, mean ellipse errors, isolines for coordinate standard deviation), calculation of the traverse with least squares adjustm the centering of an instrument and the target on the measured polar coordinates.	ent and the effect	or errors in
454INIOE		7 71/	_
154INGE	Engineering Surveying	Z,ZK	5
	Symbols in Engineering Surveying. Planning for measurement accuracy. Measuring and setting out lengths, angles and verticals tial marking networks, positional and height marking. Solving and setting out arcs. Measurement and evaluation of displacements	_	- 1
i ositional, neight and spa	Application of geodesy in construction.	and delormations	or buildings.
154TCV1	Theory of Errors and Adjustment Calculus 1	Z.ZK	5
	their division, two and multidimensional errors. Measurement properties, characteristics of random variables. Probability distribu	, ,	
	ations. Characteristics of precision. Equalization of measurements. Least squares method (equating measurements of intermed		
	ins). Alignment of bound and free geodetic grids. Regression and correlation analysis - linear regression. Basics of statistical hy		
154TCV2	Theory of Errors and Adjustment Calculus 2	Z,ZK	5
Alignment of intermedia	aries, repetition of measurement errors and basic procedures. The law of the accumulation of weights. General law of accumula	ation of standard d	eviations.
Robust methods of comp	pensation. Finding outlying measurements. Special procedures in alignment: Elimination of unknowns. Sequential equalization.	Errors in the initial	quantities.
Approximation of relations	phing Degreesion and correlation analysis. Equating line and plans. Approximation by ampirical polynomial. Harmonic analysis, E		
Approximation of relations	ships. Regression and correlation analysis. Equating line and plane. Approximation by empirical polynomial. Harmonic analysis. F	Fourier transform. E	Equalization
	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation		-
of conditionals with unk	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion.	ns. Direct solution,	inversion,
of conditionals with unk	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion. Fieldwork Training of Geodesy 1,2	ns. Direct solution,	-
of conditionals with unk	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion. Fieldwork Training of Geodesy 1,2 provides practical experience with filed work and ability to apply knowledge from courses Geodesy 1 a Geodesy 2 in several	KZ thematic tasks.	inversion,
of conditionals with unknown 154VY1 The course 154VY3	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion. Fieldwork Training of Geodesy 1,2 e provides practical experience with filed work and ability to apply knowledge from courses Geodesy 1 a Geodesy 2 in several Geodesy 4	KZ thematic tasks.	inversion, 2
of conditionals with unknown of conditional with unknown of con	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion. Fieldwork Training of Geodesy 1,2 e provides practical experience with filed work and ability to apply knowledge from courses Geodesy 1 a Geodesy 2 in several Geodesy 4 on of points of the geodetic network - a flat special-purpose network with measured horizontal directions and lengths, determin	KZ thematic tasks. KZ ation of trigonome	inversion, 2 2 etric height
of conditionals with unknown of conditional with unknown of co	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion. Fieldwork Training of Geodesy 1,2 e provides practical experience with filed work and ability to apply knowledge from courses Geodesy 1 a Geodesy 2 in several Geodesy 4 on of points of the geodetic network - a flat special-purpose network with measured horizontal directions and lengths, determin neously and bilaterally measured zenith angles and slope lengths using a total station, determination of the height of one point	KZ thematic tasks. KZ ation of trigonome of the network by	2 2 tric height geometric
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154VY1 The course 154VY3 Surveying and calculated differences from simultal levelling from the centre	nowns. Statistical hypothesis testing 2. Reliability. Optimization of geodetic measurements. Methods for solving normal equation pseudoinversion. Fieldwork Training of Geodesy 1,2 e provides practical experience with filed work and ability to apply knowledge from courses Geodesy 1 a Geodesy 2 in several Geodesy 4 on of points of the geodetic network - a flat special-purpose network with measured horizontal directions and lengths, determin neously and bilaterally measured zenith angles and slope lengths using a total station, determination of the height of one point (precise levelling), use of GNSS (RTK measurements in the CZEPOS network of reference stations), calculation according to eight measurements (tachymetry) of the specified location in the extravilan at a scale of 1:500 and preparation of a digital terra	KZ thematic tasks. KZ ation of trigonome of the network by the method of leas in model. Measure	2 2 tric height geometric st squares.
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155IN2G	Informatics 2	Z.ZK	5
	tudents are introduced to the relational model, session normalization, integrity constraints, logical and physical database schema, cor	,	1
, , , , , , , , , , , , , , , , , , , ,	database model design methodology, E-R diagrams and data flow diagrams.	.,	
155IN3G	Informatics 3	Z,ZK	5
This introductory	C++ programming course introduces students to the basic elements of the language, program structure and data types. The course	progresses from e	lementary
concepts such as	variable declarations, constants, variable initialization, expressions, statements, functions, and pointers. Emphasis is placed on the o	bject-oriented fea	tures of the
anguage and the	use of selected tools of the standard C++ library, such as vector and map containers, and their use in dynamic memory allocation, whic	h is essential for p	rogramming
simple geodesic t	asks and solving buffer calculus problems, for example. This introductory course does not aim to exhaustively cover all features of C+	+ (e.g., the issue of	of templates
is only hinted at), b	ut it does aim to introduce students to C++ in sufficient detail so that they can actively program and be prepared for subsequent study of	object-oriented p	rogramming.
155KAR1	Cartography 1	Z,ZK	5
The importance of	mathematical cartography. Reference surfaces and coordinate systems. Cartographic distortions. Classification of cartographic repre	sentations. Repre	sentation of
an ellipsoid on a s	phere. Simple conic, cylindrical and azimuthal representations. Irregular, polyconic, polyhedral and general representations. An overv	iew of representat	ions used in
	the Czech Republic and worldwide. Selection, identification and evaluation of displays. Reference coordinate systems in Gl	S.	
155KAT2	Cartography 2	Z,ZK	5
	on the basics of mathematical cartography and introduces students to the topographic and thematic parts of cartography. It also include:	'	polygraphic
	techniques, theory of colour, copyright and editorial work. As a part of the course, an excursion to the offices of COSMC is organized the course, an excursion to the offices of COSMC is organized to the course, an excursion to the offices of COSMC is organized to the course, an excursion to the offices of COSMC is organized to the course, an excursion to the offices of COSMC is organized to the course, and the course of the course	nized.	
155KNEM	Cadastre of Real Estate	Z,ZK	5
A set of lectures de	ı secribing the complex issues of the digital real estate cadastre from a technical and legal point of view. While in the subject of mapping th	e student learns to	understand
the principle of cre	ating a new cadastral map, in the subject of real estate cadastre the principle of updating it is explained to him. Emphasis is placed on	technical activities	in cadastre.
155MAPO	Mapping	Z,ZK	5
	secribing ways of renewing the cadastral documentation, the historical development of cadastral mapping in the Czech Republic and		ital technical
	maps, including the issue of their updating.	3	
155PJIN	Project - Informatics	KZ	5
	The course follows up three preceding courses in applied informatics. Students work in groups on selected project.	ı	!
155PUG	Land Consolidation	KZ	5
The course provide	set he basic theoretical and practical background in land consolidation in the Czech Republic and includes the synthesis of sub-issues	। s in a planning doc	uments. The
stuc	lents create a simple land consolidation project within the course in the selected area including designing of new features in common	measures plan.	
155TGD1	Theoretical geodesy 1	Z.ZK	5
	sy 1 introduces the issue of creating positional, height and gravity geodetic foundations, definition and implementation of geodetic refer	rence systems - wo	orldwide and
Ü	for the Czech Republic. It provides information about their origin and development, including the necessary theoretical basis of higher	•	
155TGD2	Theoretical geodesy 2	Z.ZK	5
	desy 2 introduces students to the issue of Global Navigation Satellite Systems (GNSS) and their use in practice. It expands students	,	_
	instruments) on the issue of satellite movement around the Earth, errors in GNSS measurements and methods of their elimination, r	•	•
	measurements and detailed information on current GNSS.		-
155VGP	Fieldwork training in geodetic instruments	KZ	1
	e subject consists of seven tasks, which are solved by students in two- to four-member teams over five days. GNSS, laser scanning, v	ery precise levelin	g - with the
	digital leveling device, trigonometric leveling, underground line search and more. Tasks are continuously changed and innova	ted.	•
155VYMK	Fieldwork Training in Mapping and Cadastre	KZ	3
	2nd year, the teaching of the subjects of mapping and real estate cadastre is appropriately rounded off with field activities. Theoretical	· · · · · ·	_
	stral map, from the construction of a point field to the detailed measurement of the topography. Students learn the possibilities of mea		
	complex solutions, how to deal with the basic technical tasks of the cadastre, whether it is geometric plan or the marking of a boundary	-	3
TV1	Physical Education	Z	0
TV2	Physical Education	Z	0
1 7 2	1 Hydioai Education		

For updated information see http://bilakniha.cvut.cz/en/FF.html Generated: day 2025-06-01, time 21:29.