

Study plan

Name of study plan: obor Geodézie a kartografie, zaměření Zeměmístnictví a katastr

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Geodesy and Cartography

Garantor of the study branch: prof. Ing. Martin Štroner, Ph.D.

Program of study: Geodesy and Cartography

Type of study: Follow-up master full-time

Required credits: 120

Elective courses credits: 0

Sum of credits in the plan: 120

Note on the plan: tento studijní plán platí pro nástup do roku 2018 včetně

Name of the block: Compulsory courses

Minimal number of credits of the block: 71

The role of the block: Z

Code of the group: NG20150100

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

Requirement credits in the group: In this group you have to gain 26 credits

Requirement courses in the group: In this group you have to complete at least 5 courses

Credits in the group: 26

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 |
|---------|---|------------|---------|-------|----------|------|
| 101NMG | Numerical Analysis | Z,ZK | 6 | 2P+2C | L | Z |
| 154ING2 | Engineering Surveying 2 Martin Štroner Martin Štroner Martin Štroner (Gar.) | Z,ZK | 5 | 2P+2C | Z | Z |
| 155KANE | Cadastre of Real Estate Karel Benda | Z,ZK | 6 | 3P+2C | | Z |
| 155MSGA | System MicroStation in Geodetic Applications Petr Soukup | Z | 3 | 2C | | Z |
| 155TG3 | Theoretical geodesy 3 Jan Holešovský | Z,ZK | 6 | 3P+2C | Z | Z |

Characteristics of the courses of this group of Study Plan: Code=NG20150100 Name=obor Geodézie a kartografie, 1. semestr

| | | | |
|---------|---|------|---|
| 101NMG | Numerical Analysis | Z,ZK | 6 |
| 154ING2 | Engineering Surveying 2 Planning and evaluating of precision of the geodetic activities, evaluation of precision of measurement and setting-out of distances, angles and verticals including sources of errors. Geodetic setting-out networks positional, altimetric and spatial (derivation of precision), evaluation of precision of positional and altimetric setting-out of elementary parts of a building structure, derivation of main elements of transition curve including solution of circular arcs with transition curves, evaluation of precision and provableness of building structures shifts and deformations. | Z,ZK | 5 |
| 155KANE | Cadastre of Real Estate History of land registration in the CR. Stable and land cadastre. Land registration and development of title registration. Subject and content of cadastre of real estates. Cadastral information system ISKN. Organisation of surveying agency. Administration and maintenance of cadastre - measurements, calculations, visualisation and documentation. Geometric plan. Setting-out of property boundaries. Legal relations to real estates, cadastral registration. | Z,ZK | 6 |
| 155MSGA | System MicroStation in Geodetic Applications | Z | 3 |
| 155TG3 | Theoretical geodesy 3 | Z,ZK | 6 |

Code of the group: NG20150200

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

Requirement credits in the group: In this group you have to gain 22 credits

Requirement courses in the group: In this group you have to complete at least 5 courses

Credits in the group: 22

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 |
|---------|---|------------|---------|-------|----------|------|
| 154ING3 | Engineering Surveying 3 Jaromír Procházka Martin Stroner Jaromír Procházka (Gar.) | Z,ZK | 5 | 2P+2C | L | z |
| 155FTG2 | Photogrammetry 2 Karel Pavelka, Jan Pacina Karel Pavelka Karel Pavelka (Gar.) | Z,ZK | 5 | 2P+2C | L | z |
| 155PKNZ | Law in Cadastre and Surveying | ZK | 3 | 2P | L | z |
| 155TG4 | Theoretical geodesy 4 Jakub Kostelecký Jakub Kostelecký Jakub Kostelecký (Gar.) | Z,ZK | 5 | 2P+2C | | z |
| 155VGM | Field Training in Cadastre Karel Benda | KZ | 4 | 4C | L | z |

Characteristics of the courses of this group of Study Plan: Code=NG20150200 Name=obor Geodézie a kartografie, 2. semestr

| | | | | | | |
|---------|-------------------------------|------|---|--|--|--|
| 154ING3 | Engineering Surveying 3 | Z,ZK | 5 | Legislative regulations for geodetic activities in the capital construction, technical standards, geodetic ground for designing, geodetic activities in the building structures, transportation engineering, water resource management, industry and energetics (specificities of setting-out, check of geometrical parameters of structures, rectification of technological equipment etc.). | | |
| 155FTG2 | Photogrammetry 2 | Z,ZK | 5 | * 1. Evaluation with known external orientation parameters * 2. Requirement of coplanarity, requirement of zero vertical parallax, numerical determination of external orientation elements - overview * 3. Relative orientation (RO), RO of independent stereo-pairs, RO by image attachment, absolute orientation * 4. Complex solution, etape-solution, bundle adjustment * 5. Image triangulation, use, types * 6. Digital photogrammetry, digital image, principle, scanners, scanning, DPI, accuracy, data quantity * 7. Correlation technique, principle, utilization, automatic searching in raster image * 8. Digital orthophoto, types, interpolation, principle, algorithm, usage, problems * 9. Subpixel transformation * 10. Digital workstations, devices and processing systems * 11. Image transformations, Direct and Indirect methods, reasons to use * 12. Aerial laser scanning, utilization and products in the Czech Republic *13. RPAS methods (drones) | | |
| 155PKNZ | Law in Cadastre and Surveying | ZK | 3 | Legal and technical background of the Czech Cadastre, relation between cadastre and land books, cadastral law of 1927. Surveying and cadastral bodies. Basic surveying laws and regulations, special application of subjects. Forms of public rights, current in-force legal documents in surveying sector. | | |
| 155TG4 | Theoretical geodesy 4 | Z,ZK | 5 | Astronomical coordinate systems. Kepler's and disturbed motion of the satellites. Time learning. Precessions and nutation. Phenomena of the aberration type. Observation methods of cosmic geodesy. Geodetic satellites. Dynamic method of space geodesy. Space coordinate systems. Application to determine the Earth's gravity field parameters. Satellite Earth Observation Missions (CHAMP, GRACE, GOCE). | | |
| 155VGM | Field Training in Cadastre | KZ | 4 | Works in minor horizontal control for renewal and administration of cadastre of real estate. Detailed planimetry and altimetry measurements, revision of cadastre, setting-out of property boundaries. | | |

Code of the group: NG20150300

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

Requirement credits in the group: In this group you have to gain 23 credits

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

Credits in the group: 23

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 |
|---------|---|------------|---------|-------|----------|------|
| 154EKZ | Economy in Land Surveying and Cadastre of Real Estates Rudolf Urban Rudolf Urban Rudolf Urban (Gar.) | ZK | 2 | 2P+1C | Z | z |
| 154ING4 | Engineering Surveying 4 Pavel Hánek Rudolf Urban Pavel Hánek (Gar.) | Z,ZK | 5 | 2P+2C | Z | z |
| 154VTIG | Engineering Surveying Fieldwork Training Tomáš Jiřikovský Tomáš Jiřikovský (Gar.) | KZ | 4 | 4C | L | z |
| 155GEPL | Survey Sketches Karel Benda | Z | 2 | 2C | | z |
| 155PRGE | Project - Theoretical Ggeodesy | KZ | 5 | 3C | L | z |
| 155VFG | Photogrammetry -Project Karel Pavelka, Jindřich Hoda Jindřich Hoda Karel Pavelka (Gar.) | KZ | 5 | 3C | Z | z |

Characteristics of the courses of this group of Study Plan: Code=NG20150300 Name=obor Geodézie a kartografie, 3. semestr

| | | | | | | |
|---------|--|------|---|---|--|--|
| 154EKZ | Economy in Land Surveying and Cadastre of Real Estates | ZK | 2 | | | |
| 154ING4 | Engineering Surveying 4 | Z,ZK | 5 | | | |
| 154VTIG | Engineering Surveying Fieldwork Training | KZ | 4 | Measurement and calculation of the geodetic microne트워크 for industry purposes, precise height measurement, method of temporary stations, calculation of setting-out elements, setting-out of a construction with check measurement, setting out of the road arc with transitive curves, longitudinal profile and cross sections, measurement of spatial setting-out network using electronic tachometer, including evaluation of accuracy. | | |
| 155GEPL | Survey Sketches | Z | 2 | | | |
| 155PRGE | Project - Theoretical Ggeodesy | KZ | 5 | | | |
| 155VFG | Photogrammetry -Project | KZ | 5 | practical documentation of historical objects, technology of documentation and data processing by modern methods | | |

Name of the block: Povinné p edm ty zam ení
 Minimal number of credits of the block: 19
 The role of the block: PZ

Code of the group: NG20150002

Name of the group: obor G, zam ení Zem m ictví a katastr, p edm ty zam ení

Requirement credits in the group: In this group you have to gain at least 19 credits

Requirement courses in the group: In this group you have to complete at least 5 courses

Credits in the group: 19

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 |
|---------|---|------------|---------|-------|----------|------|
| 155KAR3 | Cartography 3 Tomáš Janata, Ji í Cajthaml Ji í Cajthaml | Z,ZK | 4 | 2P+2C | | PZ |
| 155DPZE | Remote Sensing Karel Pavelka | Z,ZK | 4 | 2P+2C | L | PZ |
| 155PDM | Project of Digital Map Ji í Cajthaml | KZ | 4 | 3C | L | PZ |
| 155ISKN | Information System of Real Estate Cadastr Petr Sou ek Petr Sou ek Petr Sou ek (Gar.) | KZ | 3 | 1P+2C | Z | PZ |
| 155YCN1 | Real Estate Valuation Eliška Housarová Eliška Housarová Eliška Housarová (Gar.) | Z,ZK | 4 | 2P+2C | Z | PZ |

Characteristics of the courses of this group of Study Plan: Code=NG20150002 Name=obor G, zam ení Zem m ictví a katastr, p edm ty zam ení

| | | | | | | |
|---------|--|--|--|------|--|---|
| 155KAR3 | Cartography 3 | | | Z,ZK | | 4 |
| 155DPZE | Remote Sensing Contactless method of earth surface data collection, its physical basis, their understanding, analysis and applications for various purposes | | | Z,ZK | | 4 |
| 155PDM | Project of Digital Map Map creation in GIS, geodatabases, data model, symbology, elements pf map composition, geographic names, errors in maps. | | | KZ | | 4 |
| 155ISKN | Information System of Real Estate Cadastr | | | KZ | | 3 |
| 155YCN1 | Real Estate Valuation | | | Z,ZK | | 4 |

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

Minimal number of credits of the block: 30

The role of the block: S1

Code of the group: NG20150400_1

Name of the group: obor Geodézie a kartografie, diplomová práce

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

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

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 |
|--------|---|------------|---------|-------|----------|------|
| 101DPM | Diploma Thesis Daniela Jarušková, Michal Beneš, Milan Bo ík, Jakub Šolc, Jana Nosková Daniela Jarušková (Gar.) | Z | 30 | 24C | Z | S1 |
| 102DPM | Diploma Thesis Pavel Novák, Petr Pokorný, Alexey Sveshnikov Ji í Novák | Z | 30 | 24C | Z | S1 |
| 154DPM | Diploma Thesis Martin Štroner | Z | 30 | 24C | Z,L | S1 |
| 155DPM | Diploma Thesis Jind ich Hoda , Jan Holešovský, Zden k Vysko il, Tomáš Janata, Ji í Cajthaml, Petr Sou ek, Lena Halounová, Jan Pytel Ji í Cajthaml | Z | 30 | 24C | Z,L | S1 |

Characteristics of the courses of this group of Study Plan: Code=NG20150400_1 Name=obor Geodézie a kartografie, diplomová práce

| | | | | | | |
|--------|--|--|--|---|--|----|
| 101DPM | Diploma Thesis | | | Z | | 30 |
| 102DPM | Diploma Thesis in accordance with the thesis proposal | | | Z | | 30 |

| | | | |
|--|----------------|---|----|
| 154DPM in accordance with the thesis proposal | Diploma Thesis | Z | 30 |
| 155DPM in accordance with the thesis proposal | Diploma Thesis | Z | 30 |

List of courses of this pass:

| Code | Name of the course | Completion | Credits |
|---------|---|------------|---------|
| 101DPM | Diploma Thesis | Z | 30 |
| 101NMG | Numerical Analysis | Z,ZK | 6 |
| 102DPM | Diploma Thesis in accordance with the thesis proposal | Z | 30 |
| 154DPM | Diploma Thesis in accordance with the thesis proposal | Z | 30 |
| 154EKZ | Economy in Land Surveying and Cadastre of Real Estates | ZK | 2 |
| 154ING2 | Engineering Surveying 2 Planning and evaluating of precision of the geodetic activities, evaluation of precision of measurement and setting-out of distances, angles and verticals including sources of errors. Geodetic setting-out networks positional, altimetric and spatial (derivation of precision), evaluation of precision of positional and altimetric setting-out of elementary parts of a building structure, derivation of main elements of transition curve including solution of circular arcs with transition curves, evaluation of precision and provableness of building structures shifts and deformations. | Z,ZK | 5 |
| 154ING3 | Engineering Surveying 3 Legislative regulations for geodetic activities in the capital construction, technical standards, geodetic ground for designing, geodetic activities in the building structures, transportation engineering, water resource management, industry and energetics (specificities of setting-out, check of geometrical parameters of structures, rectification of technological equipment etc.). | Z,ZK | 5 |
| 154ING4 | Engineering Surveying 4 | Z,ZK | 5 |
| 154VTIG | Engineering Surveying Fieldwork Training Measurement and calculation of the geodetic microne트워크 for industry purposes, precise height measurement, method of temporary stations, calculation of setting-out elements, setting-out of a construction with check measurement, setting out of the road arc with transitive curves, longitudinal profile and cross sections, measurement of spatial setting-out network using electronic tacheometer, including evaluation of accuracy. | KZ | 4 |
| 155DPM | Diploma Thesis in accordance with the thesis proposal | Z | 30 |
| 155DPZE | Remote Sensing Contactless method of earth surface data collection, its physical basis, their understanding, analysis and applications for various purposes | Z,ZK | 4 |
| 155FTG2 | Photogrammetry 2 * 1. Evaluation with known external orientation parameters * 2. Requirement of complanarity, requirement of zero vertical parallax, numerical determination of external orientation elements - overview * 3. Relative orientation (RO), RO of independent stereo-pairs, RO by image attachment, absolute orientation * 4. Complex solution, etape-solution, bundle adjustment * 5. Image triangulation, use, types * 6. Digital photogrammetry, digital image, principle, scanners, scanning, DPI, accuracy, data quantity * 7. Correlation technique, principle, utilization, automatic searching in raster image * 8. Digital orthophoto, types, interpolation, principle, algorithm, usage, problems * 9. Subpixel transformation * 10. Digital workstations, devices and processing systems * 11. Image transformations, Direct and Indirect methods, reasons to use * 12. Aerial laser scanning, utilization and products in the Czech Republic *13. RPAS methods (drones) | Z,ZK | 5 |
| 155GEPL | Survey Sketches | Z | 2 |
| 155ISKN | Information System of Real Estate Cadastr | KZ | 3 |
| 155KANE | Cadastre of Real Estate History of land registration in the CR. Stable and land cadastre. Land registration and development of title registration. Subject and content of cadastre of real estates. Cadastral information system ISKN. Organisation of surveying agency. Administration and maintenance of cadastre - measurements, calculations, visualisation and documentation. Geometric plan. Setting-out of property boundaries. Legal relations to real estates, cadastral registration. | Z,ZK | 6 |
| 155KAR3 | Cartography 3 | Z,ZK | 4 |
| 155MSGA | System MicroStation in Geodetic Applications | Z | 3 |
| 155PDM | Project of Digital Map Map creation in GIS, geodatabases, data model, symbology, elements pf map composition, geographic names, errors in maps. | KZ | 4 |
| 155PKNZ | Law in Cadastre and Surveying Legal and technical background of the Czech Cadastre, relation between cadastre and land books, cadastral law of 1927. Surveying and cadastral bodies. Basic surveying laws and regulations, special application of subjects. Forms of public rights, current in-force legal documents in suveying sector. | ZK | 3 |
| 155PRGE | Project - Theoretical Ggeodesy | KZ | 5 |
| 155TG3 | Theoretical geodesy 3 | Z,ZK | 6 |
| 155TG4 | Theoretical geodesy 4 Astronomical coordinate systems. Kepler's and disturbed motion of the satellites. Time learning. Precessions and nutation. Phenomena of the aberration type. Observation methods of cosmic geodesy. Geodetic satellites. Dynamic method of space geodesy. Space coordinate systems. Application to determine the Earth's gravity field parameters. Satellite Earth Observation Missions (CHAMP, GRACE, GOCE). | Z,ZK | 5 |
| 155VFG | Photogrammetry -Project practical documentation of historical objects, technology of documentation and data processing by modern methods | KZ | 5 |
| 155VGM | Field Training in Cadastre Works in minor horizontal control for renewal and administration od cadastre od real estate. Detailed planimetry and altimetry measurements, revision of cadastre, setting-out of property boundaries. | KZ | 4 |
| 155YCN1 | Real Estate Valuation | Z,ZK | 4 |

