Geodesy and Cartography

Winter Semester

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Electronic techniques of measurement - lecture
LECTURER'S NAME:	Krzysztof Deska
E-MAIL ADDRESS OF THE LECTURER:	krzysztof.deska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	class test
COURSE CONTENT:	Geodetic instruments: levels, precision levels, theodolites, EDM, manual and robotic total stations, optical and laser plummets - theoretical background. Construction, principles of operation, software, settings and usage of instruments – theoretical background.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Electronic techniques of measurement - laboratory
LECTURER'S NAME:	Krzysztof Deska PhD
E-MAIL ADDRESS OF THE LECTURER:	krzysztof.deska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	test, written reports, project work
COURSE CONTENT:	Geodetic instruments: levels, precision levels, theodolites, EDM, manual and robotic total stations, optical and laser plummets – practical part. Construction, principles of operation, software, settings and usage of instruments – practical part. Laboratory procedures using collimators for testing, calibrating and adjusting geodetic instruments. Field procedures for testing. Techniques of measurement using geodetic instruments.
ADDITIONAL INFORMATION:	Field procedures for testing geodetic instruments in accordance with ISO 17123 standards.

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FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Engineering geodesy 1
LECTURER'S NAME:	Czesław Suchocki PhD
E-MAIL ADDRESS OF THE LECTURER:	czeslaw.suchocki@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT:	- Horizontal and vertical of route surveying: circular curve, clothoid, methods of setting-out of curve. - Methods for calculating the volume of earth masses in civil engineering. - Types of control network for surveying.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Engineering geodesy 1 laboratory
LECTURER'S NAME:	Czesław Suchocki PhD
E-MAIL ADDRESS OF THE LECTURER:	czeslaw.suchocki@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	project work/ class test
COURSE CONTENT:	Preparation of projects: - geodetic route development - application of methods for calculating the volume in civil engineering - control network for surveying and setting out building
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Higher Geodesy 1
LECTURER'S NAME:	Katarzyna Kraszewska PhD, Miłosława Rutkowska Prof.
E-MAIL ADDRESS OF THE LECTURER:	katarzyna.kraszewska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture, group tutorials
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test, written exam
COURSE CONTENT:	1. Historical development of the geodetic investigation and application. 2. Calculation of the spherical triangles to geodetic purposes. 3. Definition of the earth figure; Approximation of the earth by mathematical surface of the rotational local or global ellipsoid or by geoid. The relationship between geoid and ellipsoid definition. 4. Determination of precise global three dimensional point positions on the earth ellipsoid. 5. Computation of the geodetic points on ellipsoid for big triangle (more than 10000km) using Bessel method, for triangle (about 200km) using mean Gauss method and for small triangle (30km) using Clarke method. 6. Global reference frames; satellite systems in modelling of the Earth figure.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Real Estate Management
LECTURER'S NAME:	Anna Cellmer
E-MAIL ADDRESS OF THE LECTURER:	anna.cellmer@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures, practices
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test, project presentation
COURSE CONTENT:	Lectures: Introduction to real estate management issues - terms conditions, the concept and types of real estates. Legal forms of ownership of real estate (property rights and obligations). Management of the State real estate and local government units (the concept and types of real estate resources, sale, exchange, donation of real estate, putting real estate in permanent management, rental, lease, priority in the purchase of real estate, pre-emption right, pricing rules, discounts, updating fees). Divisions of real estate (legal conditions, procedures and rules for dividing real estate, land designated for public roads). Practices: Introduction to real estate management - legal conditions, basic concepts. Legal forms of real estate ownership. Management of State and local government real estate's (the concept and types of real estate resources, sale, exchange, donation of real estate, putting real estate into permanent management, rental, lease, priority in real estate acquisition, pre-emption right, rules for determining prices, discounts, updating fees). Divisions of real estate in the light of the Real Estate Management Act. Summary.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Cartography
LECTURER'S NAME:	Katarzyna Kraszewska Ph.D
E-MAIL ADDRESS OF THE LECTURER:	Katarzyna.kraszewska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	6
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture, group tutorials
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam
COURSE CONTENT:	Types of maps and methods of their creation. Cartographic projections (azimuth, cylindrical, conical), Gauss Kruger projection. Common planar systems used in Poland after World War II
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Mathematics I
LECTURER'S NAME:	Dr hab. Volodymyr Sushch, Prof. PK
E-MAIL ADDRESS OF THE LECTURER:	volodymyr.sushch@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	6
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30 + 30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture + practice
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam
COURSE CONTENT:	**Linear algebra** **Complex numbers:** the unit imaginary number, the Cartesian form or algebraic form of complex numbers, complex plane, absolute value, conjugation and distance, geometric interpretation of complex numbers, **the operations on complex numbers,** the polar form of complex numbers (the trigonometric form), Euler formula, Moivre's formula, Powers and roots of complex numbers, s**olutions of polynomial equations.** **Matrices:** definition and notation, matrix operations, matrix multiplication, square matrices, determinant of a matrix, properties of determinants, matrix inverses, rank of a matrix . **System of linear equations:** matrix equation, solution set, solving linear systems (eliminations of variable - Gauss-Jordan elimination, Cramer's rule and other methods). **Vectors in Euclidean space:** vector operations, linear combination, linear independence, scalar product, vector product. **Differential calculus** **Differentiation and the derivative of real-valued functions of a single real variable:** definition via difference quotients, the derivative as a function, continuity and differentiability, higher derivatives. **Computing the derivative:** derivatives of elementary functions, product rule, quotient rule, chain rule. **Applications of the derivative:** L'Hospital's rule, critical points, monotone increase and decrease, minimization and maximization, local minima and maxima (the first derivative test), using the second derivative, the concavity of the graph of a function.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Land Surveying and geomatics 1
LECTURER'S NAME:	Marzena Damięcka-Suchocka MSc, Marcin Jagoda PhD
E-MAIL ADDRESS OF THE LECTURER:	marcina.jagoda@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	exam
COURSE CONTENT:	- Distance measurements, - Constriction of the theodolite, measurement of the horizontal and vertical angle, - Large-scale cartography, preparation of maps, - Coordinate calculus, traversing, - Observations and their errors, - Methods of determining area.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Land surveying and geomatics 1 laboratory
LECTURER'S NAME:	Marzena Damięcka-Suchocka MSc, Marcin Jagoda PhD
E-MAIL ADDRESS OF THE LECTURER:	marcina.jagoda@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written reports, class test
COURSE CONTENT:	taping; setting up the theodolite (theodolite centering and leveling process); field measurement of the horizontal and vertical angle; calculation of points coordinates; calculations of travers; calculation of areas of land, symbols of large-scale map
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	GIS 1(Geographic Information System 1)
LECTURER'S NAME:	Zofia Szczepaniak-Kołtun
E-MAIL ADDRESS OF THE LECTURER:	zofia.szczepaniak@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam
COURSE CONTENT:	- main of use GIS, - ways of presenting spatial data, - methods of acquiring spatial data, - data models, creation and updating of spatial data bases, - analysis and presentation of spatial data.
ADDITIONAL INFORMATION:	The course allows you to understand spatial information systems. The student learns the application to use of GIS in everyday life and it's continuous development.

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	GIS 1 (Geographic Information System 1) laboratory
LECTURER'S NAME:	Zofia Szczepaniak-Kołtun
E-MAIL ADDRESS OF THE LECTURER:	zofia.szczepaniak@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	W
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	project work, presentation
COURSE CONTENT:	- spatial analyzes, database, application of the SQL language, - creating your own thematic maps, - raster calibration, - vectorization of objects of various types, supplementing attribute tables, - vector analyzes, topology of objects, - implementation of the project using ArcGIS software, - presentation of projects.
ADDITIONAL INFORMATION:	

Geodesy and Cartography

Summer Semester

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Photogrammetry and remote sensing 2
LECTURER'S NAME:	Tomasz Kogut
E-MAIL ADDRESS OF THE LECTURER:	Tomasz.kogut@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam
COURSE CONTENT:	Introduction to photogrammetry, Mathematical relationship between image and object - Euclidean geometry, projective geometry Image matching Platforms and sensors for aerial image acquisition Aerotriangulation, Automatic orientation of aerial images Advanced problems in image orientation Digital terrain models Rectification and orthoprojection Physical basis in remote sensing Image acquisition and processing Land cover classification Optical sensors: multispectral and hyperspectral Laser scanning Radar
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Photogrammetry and remote sensing 2 laboratory
LECTURER'S NAME:	Tomasz Kogut
E-MAIL ADDRESS OF THE LECTURER:	Tomasz.kogut@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	project work, written exam,
COURSE CONTENT:	Calibration, Aerotriangulation, Digital terrain models, Rectification and orthoprojection, Laser scanning
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Satellite geodesy in engineering practice
LECTURER'S NAME:	Miłosława Rutkowska and Krzysztof Deska
E-MAIL ADDRESS OF THE LECTURER:	miloslawa.rutkowska@tu.koszalin.pl krzysztof.deska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture + group tutorials
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam, written reports, project work
COURSE CONTENT:	Lecture (30 h): Construction of the earth satellites for geodetical and geophysical purpose. Two body problem, formulation of motion equation for artificial satellite. Computation and conversion Keplerian and kartesian orbital elements. Theory of the numerical integration methods for satellite orbit estimation. Osculating and mean orbital elements. Gravitational and nongravitational perturbations of satellite orbits. Description of measurement techniques used to satellite geodesy: Satellite Laser Ranging (SLR), Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS), Global Navigation Satellite Systems (GNSS), Very Long Base Interferometry (VLBI) and Satellite Altimetry. International Terrestrial Reference Frame (ITRF) based on different kind satellite measurements. Group tutorial part I (15 h): 1. Description of construction of selected geodetic satellite. 2 .Computation of satellite orbits. 3. Conversion of Keplerian elements to kartesian elements and kartesian to keplerian elements. 4. Computation of station position and correction caused by plate motion. Group tutorial part II (15 h): Planning of GNSS measurements. Configuration and settings of GNSS receivers. Static and RTK/RTN measurements. Basics of post-processing GNSS observations, report creating.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Real estate cadaster
LECTURER'S NAME:	Anna Cellmer
E-MAIL ADDRESS OF THE LECTURER:	anna.cellmer@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+15
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture, practices
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam, oral exam, class test, written reports, project work, presentation
COURSE CONTENT:	Lectures: civil law and real estate cadaster: entities of civil law, entrepreneurs, representation. Legal action. Deadlines. Claims. Property. Real estate. Ownership and co-ownership of real estate. Rules for the exercise of property. Acquisition, loss, protection of property. Unauthorized possession of real estate. Abolition of joint ownership and perpetual usufruct. Limited rights in rem to real estate. Liabilities: sale, exchange, donation, repurchase, pre-emption. Liabilities: rent, lease, leasing, loan, and other Inheritance law: testamentary inheritance. Inheritance law: statutory inheritance. Farm inheritance. Civil proceedings: cases in the field of property law. Civil proceedings: inheritance law cases. Land registers: construction, role, tasks Principles of keeping and providing access to land and mortgage registers. Practices: Record map and other cartographic materials in the land and building records. Land location determination. Border identification. Accuracy of determining the location of border points. Determining the area of the land plot using the graphic method (own exercise). Determination of the area of the land plot by the mechanical method (own exercise).

	Determining the area of the registration plot by the analytical method (own exercise) Analysis of the results obtained from the determination of the surface area of the land plot (own exercise). Creating geodetic documentation for changes in the land register (own exercise. Building records. Building records (own exercise). Records of premises
ADDITIONAL INFORMATION:	Programs as Autocad, C-Geo, Winkalk will be used, besides internet and copies of parts of cadastral maps, lists of changes in cadastral data, supplementary maps, excerpts etc.

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FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	3D Computer Modeling – Laboratories
LECTURER'S NAME:	Leszek Dawid Ph.D
E-MAIL ADDRESS OF THE LECTURER:	leszek.dawid@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Continuous assessment, class test
COURSE CONTENT:	The course will give out an introduction to AutoCad including basic tools and understanding of workspace. The course will give a background in designing in CAD systems. Furthermore, an introduction will be given on basic conceptions of work in 3D space as well as generating regular solids models. Finally, the course will teach about processing data obtained with photogrammetric methods and laser scanning.
ADDITIONAL INFORMATION:	Prerequisites for the course include background in methods of presenting geometric shapes and solids in drawings as well as ability of reading and understanding the latter. Additionally basic knowledge in general information technology, computer and program use is required.

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Mathematics II
LECTURER'S NAME:	Dr hab. Volodymyr Sushch, Prof. PK
E-MAIL ADDRESS OF THE LECTURER:	volodymyr.sushch@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	6
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	s
HOURS IN SEMESTER:	30 + 30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture + practice
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam
COURSE CONTENT:	**Integral calculus** **The indefinite integral of real-valued functions of a single real variable:** formal definition, properties of integrals, finding the value of an integral (integration). **Techniques for computing integrals:** integration by substitution, integration by parts, integration by trigonometric substitution, integration by reduction formulae, integration by partial fractions, integration using Euler's formula. **The definite integral (the Riemann integral):** definition and properties, fundamental theorems of calculus (the Newton-Leibniz theorem). **Applications of definite integrals:** calculating areas, volumes, arc length. **Improper integrals: convergence of the integral, singularities.** **Ordinary differential equations (ODE)** **Basic concepts and classifying of differential equations:** solutions of differential equations (a particular solution and the general solution of a differential equation), initial-value and boundary-value problems. **First order ODE:** separable equations, homogeneous equations, exact equations, linear equations (homogeneous and non-homogeneous), Bernoulli equations, solved problems. **Second order linear ODE:** linear differential equations (linearly independent solutions, the Wronskian), linear homogeneous ODE with constant coefficients, the characteristic equation, linear non-homogeneous ODE with constant, coefficients, the method of undetermined coefficients, variation of parameters, linear ODE with variable coefficients.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Land surveying and geomatics 2
LECTURER'S NAME:	Bernatowicz Anna Ph.D
E-MAIL ADDRESS OF THE LECTURER:	anna.bernatowicz@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam
COURSE CONTENT:	Standards and specifications for geodetic situational and height control networks; Fundamentals of height measurements; Types of height measurements; Basics of direct levelling ; Technical leveling of benchmarks; Geodetic high-altitude field measurements- leveling of scattered points, grid leveling, profile leveling; Principles of presenting the relief on large-scale maps.; Interpolation and plotting of contours.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Land surveying and geomatics 2 laboratory
LECTURER'S NAME:	Bernatowicz Anna Ph.D
E-MAIL ADDRESS OF THE LECTURER:	anna.bernatowicz@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	class test
COURSE CONTENT:	Instruments for geometric leveling; Types of levels used for Leveling in surveying; Methods of measuring height differences; Level traverse- field procedures, determine the elevation of benchmarks; *Principles of geodetic sketches* for different *surveying* purposes. Orthogonal method in situational measurements; Preparation of a large -scale map. The scattered point leveling method; Profile leveling measurements.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Precise GNSS positioning
LECTURER'S NAME:	Krzysztof Deska PhD
E-MAIL ADDRESS OF THE LECTURER:	krzysztof.deska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	project – group work
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	class test, written reports, project work
COURSE CONTENT:	Reference coordinate systems. Global Navigation Satellite Systems. GNSS observations and standards. Settings and usage of instruments. Field measurements: static, RTK, RTN. Techniques of measurement of hidden-points. GNSS data post-processing software and usage.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Least square adjustment method 2
LECTURER'S NAME:	Miłoslawa Rutkowska Prof.
E-MAIL ADDRESS OF THE LECTURER:	miloslawa.rutkowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam
COURSE CONTENT:	Least squares parametric method for measurement adjustment. Formulation of observation equations for selected techniques (angular, range, level, GNSS, SLR, DORIS, VLBI) and adjustment on the base of observation equations. Analysis of covariance matrix and determination accuracy of estimated unknowns . Exemplary computations performed for different kind of measurements.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Least Square Adjustment Alignment Method 2 Laboratory
LECTURER'S NAME:	Katarzyna Kraszewska Ph.D
E-MAIL ADDRESS OF THE LECTURER:	Katarzyna.kraszewska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory, group tutorials
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT:	Least square method; alignment of networks: levelling, angular, angular-linear; accuracy of alignment; use of computer methods in alignment.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	*Geographic Information System 2*
LECTURER'S NAME:	Tomasz Oberski
E-MAIL ADDRESS OF THE LECTURER:	tomasz.oberski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT:	1. Using Digital Terrain Models for GIS analysis. 2. Network analysis. 3. Task automation with GIS tools.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Geodesy and Cartography
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	*Geographic Information System 2 Laboratory*
LECTURER'S NAME:	Tomasz Oberski
E-MAIL ADDRESS OF THE LECTURER:	tomasz.oberski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
ACADEMIC YEAR:	2021/2022
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	English
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	project work
COURSE CONTENT:	1. DTM analysis (aspect, slope, shaded relief, landform classification, visibility) 2. Network analysis with GIS environment 3. Task automation with GIS tools. 4. Project work.
ADDITIONAL INFORMATION:	