

Koszalin University of Technology
Faculty of Civil Engineering, Environmental and Geodetic Sciences

Catalogue of Courses
Summer Semester
2025/2026

No.	Course	Page
1	3D Computer Modeling Laboratory	3
2	Basics of Surveying Project	4
3	CAD Basics 2	5
4	CAD Laboratory 1	6
5	Chemistry 1	7
6	Chemistry in Civil Engineering	8
7	Computer Aided Design in Building Engineering	9
8	Computer Aided Design in Building Engineering Laboratory	10
9	Final Project Seminar 1	11
10	General Construction 1	12
11	Geographic Information System 1	13
12	Geodetic and Construction Law	14
13	Geographic Information System 1 Laboratory	15
14	Heat Exchange	16
15	Mathematics 2	17
16	Metal Structures 2	18
17	Municipal Waste Management Project	19
18	Photogrammetric Technology Project	20
19	Photogrammetry 2 Laboratory	21
20	Reinforced Concrete Structures Project	22
21	Remote Sensing	23
22	Technical Drawing Laboratory	24
23	Terrestrial Laser Scanning Project	25
24	Town Planning and Architecture	26
25	Unit Processes Laboratory	27
26	Use of Biomass Energy Laboratory	28
27	Wastewater Treatment Systems	29

Elective courses

There are 6 pairs of elective courses. You can choose only one from each pair (E1, E2, E3, E4, E5, E6)

No.	Course	Page
E1	Computer Aided Calculations	31
E1	Computer Methods of Data Analysis	32
E2	Energy Resources	33
E2	Energy Management	34
E3	Mechanical-biological Waste Treatment Installations	35
E3	Thermal Waste Treatment Installations	36
E4	Pumps	37
E4	Fans	38
E5	Satellite Geodesy in Engineering Practice	39
E5	Theory of Movement of the Earth's Artificial Satellites	40
E6	Unit Processes in Water and Wastewater Treatment	41
E6	Unit Processes in Industrial Waste Processing	42

Courses only for students of Geodesy and Cartography or Surveying

No.	Course	Page
G1	GNSS Surveying Project	44
G2	Least Square Adjustment Alignment Method 2	45
G3	Least Square Adjustment Alignment Method 2 Laboratory	46

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	3D Computer Modeling Laboratory
LECTURER'S NAME:	Leszek Dawid, PhD
E-MAIL ADDRESS OF THE LECTURER:	leszek.dawid@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+3DCMlab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
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 introduce AutoCAD, including basic tools and an understanding of the workspace. In addition, the course will give a background in designing in CAD systems. Furthermore, an introduction will be provided on basic conceptions of work in 3D space and 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 a background in methods of presenting geometric shapes and solids in drawings and the ability to read and understand the latter. Additionally, basic knowledge in general information technology, computer and program use is required.

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E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Basics of Surveying Project
LECTURER'S NAME:	Anna Bernatowicz, PhD
E-MAIL ADDRESS OF THE LECTURER:	anna.bernatowicz@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+BSpro
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Project classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test, written reports
COURSE CONTENT:	Horizontal and vertical angle measurements; Level traverse- field procedures, determine the elevation of benchmarks; The scattered point levelling method, An orthogonal and polar method in situational surveying; Preparation of a large-scale map. Total station and some applications in surveying.
ADDITIONAL INFORMATION:	

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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	CAD Basics 2
LECTURER'S NAME:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE LECTURER:	tomasz.dabrowski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+CADB2
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Computer laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Continuous assessment
COURSE CONTENT:	Selecting and filtering objects in the drawing. Advanced layer management, layer isolation. Local coordinate systems. Dynamic blocks. Printing drawings. Working with sheet sets. Parameterization and tool palettes.
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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	CAD Laboratory 1
LECTURER'S NAME:	Renata Pigoń
E-MAIL ADDRESS OF THE LECTURER:	renata.pigon@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+CADlab1
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Computer laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Preparing architectural and construction drawings in AutoCAD and continuous assessment of work in the classroom.
COURSE CONTENT:	<p>The following topics will be taught:</p> <ul style="list-style-type: none"> • Introduction to CAD. • The principal rules of creating a drawing in AutoCAD. • Selecting commands and working with drawing. • Viewing drawings and working with coordinates. • Creating simple entities by using draw commands. • Layers. • Modifying entities. • Getting drawing information. • Working with text and practice. • Dimensioning drawing and practice. • Descriptive elements in the drawing. • Isometric views. • Working with blocks. • Preparing drawings for printing.
ADDITIONAL INFORMATION:	All the above will be conducted following the current standards and regulations.

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E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Chemistry 1
LECTURER'S NAME:	Beata Janowska PhD, DSc, Eng.
E-MAIL ADDRESS OF THE LECTURER:	beata.janowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+Chem1
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT:	<p>Introduction to general chemistry: basic concepts and definitions, fundamental chemical laws. Structure of the atom (Bohr model of the atom, electron configuration). Periodic table of elements. Chemical bonds, the structure of the molecule. Intermolecular interactions. Structure and properties of inorganic compounds. Properties of complex compounds. Characteristics of the physical states of matter. Elements of chemical thermodynamics, thermochemistry (heat of chemical reactions). Types of chemical reactions. Kinetics of chemical reactions.</p> <p>Chemical equilibrium (the law of mass action, Braun-Le Chatelier principle). Surface phenomenon. Chemical Equilibrium in aqueous solutions (constant and degree of dissociation, the ionic product of water, pH, hydrolysis). Theories of acids and bases. Chemistry mineral building materials: setting and hardening a cement, the mechanism of the corrosion processes of mineral building materials.</p> <p>Fundamentals of electrochemistry: electrochemical electrode potential, electromotive force, galvanic cells, electrolysis. The mechanisms of metal corrosion - corrosion protection.</p>
ADDITIONAL INFORMATION:	

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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Chemistry in Civil Engineering
LECTURER'S NAME:	Beata Janowska PhD, DSc, Eng.
E-MAIL ADDRESS OF THE LECTURER:	beata.janowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+CCE
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT:	<p>Fundamentals of general chemistry (atom structure, periodic table, chemical bonds). States of matter. Surface phenomena and their importance in construction.</p> <p>Dispersion systems (colloidal systems, their preparation and properties, classification and application of emulsions). Chemical reactions - characteristics and classification. Chemical equilibrium and kinetics of chemical reactions. Basics of chemical thermodynamics. Phase changes. Structure and properties of water. Water for construction purposes. Chemical reactions in the aquatic environment (hydrolysis and hydration). Chemistry of mineral building materials. Chemistry of mineral binders. Hydraulic and air binders. Processes during the preparation, setting and hardening of mineral binders.</p> <p>Mechanism of corrosion processes of mineral building materials. Metal chemistry. Basic electrochemistry. Corrosion of metals. Protection of metals against corrosion. Introduction to organic chemistry (structure and properties of organic compounds). Chemistry of plastics and bitumen. Synthetic resins and adhesives. Modifications of building materials. The use of composite materials. Recycling of building materials.</p>
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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Computer Aided Design in Building Engineering
LECTURER'S NAME:	dr inż. Kamil Stachecki
E-MAIL ADDRESS OF THE LECTURER:	kamil.stachecki@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
COURSE CODE (USOS):	0511>0000E+CADBE
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT:	<ul style="list-style-type: none"> • General rules of computer aided design. • Modelling of 2-D structures. • Static calculations using linear and nonlinear analysis using computer programs. • Loads, combinations. • Analysis of two-way bent slabs, including determining finite element mesh in span and support zone. • Impact of beam supports and dimensions of finite element mesh on static analysis of slabs • Footings and foundations. • Methodology of modelling and preparing calculation reports.
ADDITIONAL INFORMATION:	

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E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Computer Aided Design in Building Engineering Laboratory
LECTURER'S NAME:	dr inż. Kamil Stachecki
E-MAIL ADDRESS OF THE LECTURER:	kamil.stachecki@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+CADBElab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Group tutorials, seminars, individual consultations
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Project work
COURSE CONTENT:	<ul style="list-style-type: none"> • Basics of computer modelling. • Supports of structures, including spring support. • Loads and their combination according to existing standards. • Static analysis of multi-storey, statically indeterminable frame. • Interpretation of computer aided static analysis. • Ultimate Limit State and Serviceability Limit State. • Dimensioning of the reinforced concrete frame. • Analysis of a slab based on finite element methods using computer programs.
ADDITIONAL INFORMATION:	

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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Final Project Seminar 1
LECTURER'S NAME:	Jacek Domski
E-MAIL ADDRESS OF THE LECTURER:	jacek.domski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+FPS1
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Seminar
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Presentation
COURSE CONTENT:	Layout and structure of the diploma thesis. Methodology of preparing diploma theses. Literature selection, use and citation. The initial concept of the thesis. The subject and purpose of the study. Theses and the scope of the diploma thesis. The use of multimedia techniques in the presentation of the diploma thesis. Presentation of selected chapters of the diploma thesis. Evaluation of the adopted design solutions, comparative analyses, statistical evaluation of the results of experimental studies and numerical calculations. Analysis of calculation and construction errors. Evaluation of the results of empirical research.
ADDITIONAL INFORMATION:	Presentation of articles similar to the diploma thesis. Presentation of unusual, original design solutions (results of experimental tests/numerical modelling) of building structures.

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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	General Construction 1
LECTURER'S NAME:	Maciej Król, PhD
E-MAIL ADDRESS OF THE LECTURER:	maciej.krol@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+GC1
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written / oral exam
COURSE CONTENT:	<p>W1 Introduction to the subject, basic concepts and terminology, systems and building elements.</p> <p>W2 Principles of building work construction systems, spatial stiffness, dilatations, safety and durability.</p> <p>W3 General principles of structure calculations, the method of limit states, checking with the method of partial factors.</p> <p>W4 Dimensional coordination in construction, modular coordination, system design, and dimensioning of elements. W5 Walls and supports, tasks and classification, rules for erecting from small-scale, prefabricated, and monolithic elements.</p> <p>W6 Foundation of a building, principles of cooperation, soil and foundation, types of foundation. Direct and indirect foundation. W7 Ceilings and flat coverings, ceiling tasks, structures of particular types of ceilings. Balconies and bay windows.</p> <p>W8 Elements of vertical communication in the building, stairs, ladders, ramps and elevators. Stair constructions.</p> <p>W9 Roofs and flat roofs, types, shape and structure. Wooden, steel and reinforced concrete structures. Roof drainage.</p> <p>W10 Chimneys in the building. Chimney flues, types, principles of guidance and methods of implementation. Chimney systems.</p>
ADDITIONAL INFORMATION:	<p>1. Fundamentals of Building Construction: Materials and Methods, Edward Allen, Joseph Iano, SBN13 (EAN): 9781119446194, editor: Wiley,</p> <p>2. Handbook for Building Construction: Administration, Materials, Design, and Safety (2021) Christine Fiori, ISBN13 (EAN): 9781260456882, Clifford Schexnayder</p> <p>3. Building Construction Illustrated, Ching, F, ISBN-10: 111958308X, WILEY; Edit 6 (2020)</p>

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E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Geographic Information System 1 (GIS1)
LECTURER'S NAME:	ZofiaSzczepaniak-Kottun / Agnieszka Czajka
E-MAIL ADDRESS OF THE LECTURER:	zofia.szczepaniak@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+GIS1
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written reports or presentations
COURSE CONTENT:	<ul style="list-style-type: none"> - main of use of GIS, - ways of presenting spatial data, - methods of acquiring spatial data, - analysis and presentation of spatial data, - InspireDirective, - Geoportal.
ADDITIONAL INFORMATION:	The course allows you to understand spatial information systems. The student learns the application of GIS in everyday life and its continuous development.

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E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Geodetic and Construction Law
LECTURER'S NAME:	Agnieszka Czajka
E-MAIL ADDRESS OF THE LECTURER:	agnieszka.czajka@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+GCL
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30 lectures + 15 group tutorials
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1 st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture, group tutorials
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	written exam, class test, written reports, project work, presentation
COURSE CONTENT	<p>Lectures: The Geodetic and Cartographic Law. Glossary of statutory terms. Geodetic and cartographic service. Land and building records. Geodetic record of utilities networks. Records of towns, streets and addresses. State geodetic and cartographic resource. Geodetic and cartographic works. Property demarcation. Professional qualifications in geodesy. Spatial planning. Types of planning documents. The Construction Law Act. Basic concepts of the act. Participants in the construction process. Proceedings preceding the commencement of construction works. Construction and commissioning of buildings. Maintenance of construction facilities.</p> <p>Construction disaster. Architectural and construction administration and construction supervision authorities. The role and tasks of the organs.</p> <p>Practical classes: Code of Administrative Procedure. Preliminary issues. General rules in administrative proceedings. Properties of public administration bodies. The concept of the party. Handling matters before public administration bodies. Rules for the delivery of official correspondence. Summons and notices. Time limits for settling matters. Initiation of administrative proceedings. Suspension of the proceedings. Decisions, settlements, provisions. Appeals and Complaints. The reopening of the proceedings. Expiry, revocation, amendment, annulment of the decision.</p>
ADDITIONAL INFORMATION:	Internet, AutoCAD and legal acts will be used.

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E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Geographic Information System 1 Laboratory
LECTURER'S NAME:	Zofia Szczepaniak-Kořtun / Agnieszka Czajka
E-MAIL ADDRESS OF THE LECTURER:	zofia.szczepaniak@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+GIS1lab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	project work, presentation
COURSE CONTENT:	<ul style="list-style-type: none"> - 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, the topology of objects, - implementation of the project using ArcGIS software, - presentation of projects.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Heat Exchange
LECTURER'S NAME:	Sylwia Janta-Lipińska
E-MAIL ADDRESS OF THE LECTURER:	sylwia.janta-lipinska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+HE
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15+15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test, calculation reports.
COURSE CONTENT:	<p>Lectures:</p> <ol style="list-style-type: none"> 1. Heat conduction. 2. Heat transfer. 3. Radiation heat transfer. 4. Composite heat exchange. 5. Heat exchangers. 6. Class Test <p>Practical Classes:</p> <ol style="list-style-type: none"> 1. Calculation exercises of the heat conduction. 2. Calculation exercises of the heat transfer. 3. Calculation exercises of the radiation heat transfer. 4. Calculation exercises of the composite heat exchange. 5. Calculation exercises of the recuperative heat exchanger. 6. Calculation reports
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Mathematics 2
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:	5
COURSE CODE (USOS):	0511>0000E+Math2
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam
COURSE CONTENT:	<p>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, and 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.</p> <p>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, and 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.</p>
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Metal Structures 2
LECTURER'S NAME:	dr inż. Przemysław Krystosik
E-MAIL ADDRESS OF THE LECTURER:	przemyslaw.krystosik@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+MS2
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam, continuous assessment
COURSE CONTENT:	<p>Trusses - applications, principles of design and dimensioning. Industrial halls - types of halls, static schemes, frame corners. Industrial halls - hall bracings (roof and wall bracings); dimensioning of bracing according to EC3.</p> <p>Composite steel and concrete structures - rules for dimensioning beams and composite columns according to EC3. Industrial halls - types of halls with traditional plate girders; with a web of corrugated sheets. Runway beams, flyovers - technological loads, principles of construction and dimensioning in terms of load-bearing capacity, stiffness and durability conditions.</p>
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Municipal Waste Management Project
LECTURER'S NAME:	Prof. Robert Sidelko
E-MAIL ADDRESS OF THE LECTURER:	robert.sidelko@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+MWMpro
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Project classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Project work
COURSE CONTENT:	Legal basics of installations for mechanical and biological processing and examples of real objects at an industrial scale. Balance of municipal waste. Technological calculations. The effectiveness of the applied processes in the context of the recovery of raw materials and energy.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Photogrammetric Technology Project
LECTURER'S NAME:	Piotr Kędzierski
E-MAIL ADDRESS OF THE LECTURER:	piotr.kedzierski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+PTP
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Presentation
COURSE CONTENT:	As part of the course, the student carries out a practical task related to the aerotriangulation of a block of aerial photographs captured by UAV. Designs the layout of ground control points, perform their measurement, and execute the aerotriangulation process. Student create a Digital Terrain Model (DTM) and an orthophotomap. Performs accurate assessment of received products and learns about the possibilities of their use. Creates technical documentation in the form of a measurement report.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Photogrammetry 2 Laboratory
LECTURER'S NAME:	Piotr Kędzierski
E-MAIL ADDRESS OF THE LECTURER:	piotr.kedzierski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+Phot2lab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Project work, written test
COURSE CONTENT:	As part of the course, the student is introduced to the subject and issues related to photogrammetry. Learns about issues related to digital images and their acquisition. Prepares a stereogram of digital photos and checks its accuracy. Based on the created stereograms performs DTM measurements and stereovectorization using a photogrammetric digital workstation. Learns about aerotriangulation and performs it on a block of digital photos.
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Reinforced Concrete Structures Project
LECTURER'S NAME:	Joanna Laskowska-Bury
E-MAIL ADDRESS OF THE LECTURER:	joanna.laskowska-bury@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+RCSpro
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Project exercise
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Project work
COURSE CONTENT:	<ul style="list-style-type: none"> • Exercises involving the design of a beam slab. The student learns the summation of loads, the design of the slab, and beams. • Designing reinforced concrete elements using Ultimate Limit State and Serviceability Limit State. • Designing of elements statically determinate: slab and T-beam. • The rules of making reinforced concrete construction drawings. • Makes construction drawings of elements.
ADDITIONAL INFORMATION:	All the above will be conducted following the current standards and regulations.

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ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Remote Sensing
LECTURER'S NAME:	Tomasz Oberski
E-MAIL ADDRESS OF THE LECTURER:	tomasz.oberski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+RS
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test, presentation
COURSE CONTENT:	<ul style="list-style-type: none"> - Introduction to remote sensing. - Electromagnetic radiation. - Spatial and radiometric resolution. - Sensors. - Histogram. - Extracting objects from an image.
ADDITIONAL INFORMATION:	The course allows you to understand remote sensing fundamentals.

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Technical Drawing Laboratory
LECTURER'S NAME:	Renata Pigoń
E-MAIL ADDRESS OF THE LECTURER:	renata.pigon@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
COURSE CODE (USOS):	0511>0000E+TDL
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test and continuous assessment of work in the classroom.
COURSE CONTENT:	<p>The following topics will be taught:</p> <ul style="list-style-type: none"> • Introduction to technical drawing. Different equipment in manual engineering drawings. Drawing Standards, literature. • Different types of construction drawings, drawing sheet formats, drawing tables, and sheet preparation for classes under the standard requirements. • Different types of lines used in a technical construction drawing and their application. • Graphical markings in the architectural and construction drawings. • Technical writing. • Dimensioning rules on a building drawing as per the standard. • Drawing symbols used on building drawings. • Preparation and marking of cross sections.
ADDITIONAL INFORMATION:	All the above will be conducted following the current standards and regulations.

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Terrestrial Laser Scanning Project
LECTURER'S NAME:	Prof. Czesław Suchocki
E-MAIL ADDRESS OF THE LECTURER:	czeslaw.suchocki@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+TLSpro
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	group tutorials
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	project work
COURSE CONTENT:	<ul style="list-style-type: none"> - Applications of terrestrial laser scanning in civil engineering - theory. - TLS data acquisition - planning and implementation of TLS measurements. - Pre-processing of datasets (registration, data filtration, subsampling of point clouds). - Post-processing of datasets (3D modeling and reconstruction, radiometric analysis of point clouds, defect detection of the building's walls).
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Town Planning and Architecture
LECTURER'S NAME:	Maciej Siekierski
E-MAIL ADDRESS OF THE LECTURER:	maciej.siekierski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+TPA
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	lecture
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	presentation
COURSE CONTENT:	<p>Architecture and urban planning - comparison of concepts.</p> <p>Principles of city design.</p> <p>Types of cities.</p> <p>The history of construction solutions in architecture.</p>
ADDITIONAL INFORMATION:	The course is based on examples from Europe, Asia, Central America and South America

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Unit Processes Laboratory
LECTURER'S NAME:	Renata Świdorska-Dąbrowska
E-MAIL ADDRESS OF THE LECTURER:	renata.swiderska-dabrowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+UPlab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written reports
COURSE CONTENT:	Laboratory tests of the following processes: gravitational sedimentation, flocculation, centrifugal sedimentation, centrifugal filtration, adsorption and granulometric analysis – screening. Calculation of mixture composition parameters. Balance equations of medium flow through devices.
ADDITIONAL INFORMATION:	

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FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Use of Biomass Energy Laboratory
LECTURER'S NAME:	Bartosz Walendzik
E-MAIL ADDRESS OF THE LECTURER:	bartosz.walendzik@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	1
COURSE CODE (USOS):	0511>0000E+UBElab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written reports
COURSE CONTENT:	<p>Determination of the bulk density in selected forms of biomass.</p> <p>Determination of moisture and ash in biomass sample.</p> <p>Determination of carbon content in biomass chosen samples.</p> <p>Testing the calorific value in selected biomass samples. Dry distillation of selected forms of biomass. Application of gas chromatography with mass spectrometry (GC-MS) for determining Volatile Organic Compounds in biomass. The use of the AAS technique to determine the content of main and trace elements in biomass and ash from biomass.</p>
ADDITIONAL INFORMATION:	

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Wastewater Treatment Systems
LECTURER'S NAME:	Krzysztof Piaskowski
E-MAIL ADDRESS OF THE LECTURER:	krzysztof.piaskowski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+WWTS
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written test
COURSE CONTENT:	Lectures include topics on current issues of municipal wastewater treatment. The essential quality parameters of wastewater, their impact on the environment, processes and technologies used in sewage treatment plants and devices are discussed. Particular attention is paid to the processes of biological removal of nutrients from wastewater and the diversity of integrated wastewater treatment systems.
ADDITIONAL INFORMATION:	Lectures are multimedia and end with a visit to the municipal sewage treatment plant.

Elective courses

Elective courses E1

You can choose **Computer Aided Calculations** or **Computer Methods of Data Analysis**, not both

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FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Computer Aided Calculations
LECTURER'S NAME:	Jacek Piekarski
E-MAIL ADDRESS OF THE LECTURER:	jacek.piekarski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
COURSE CODE (USOS):	0511>0000E+CAC
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15+30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Project work
COURSE CONTENT	<p>Lecture: Basics of algorithms (block diagrams), the implementation of algorithms, the characteristics of the selected programming language (LAZARUS) and basic instructions, procedures and functions enabling the calculation of basic parameters of pump systems, in particular: density of transported suspension, linear and local losses, effective lifting height, power of the engine driving the pump, maximum geometric suction height, etc.</p> <p>Practical classes: Method of creating applications for calculations of a suction-pressure pump system.</p>
COURSE CONTENT :	<p>Lecture: Basics of algorithmics (flowcharts), implementation of algorithms. Characteristics of the selected programming language. Structure of a program written in the selected programming language. Basic instructions, procedures and functions of chosen applications supporting data analysis.</p> <p>Practical classes: Data analysis by linear, polynomial and central point approximation methods. Data analysis by nonlinear estimation method. Creation of computer programs for data analysis (LAZARUS). Data analysis using selected numerical applications (EXCEL, STATISTICA, GNUPLLOT).</p>
ADDITIONAL INFORMATION:	

Elective courses E1

You can choose **Computer Aided Calculations** or **Computer Methods of Data Analysis**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Computer Methods of Data Analysis
LECTURER'S NAME:	Jacek Piekarski
E-MAIL ADDRESS OF THE LECTURER:	jacek.piekarski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
COURSE CODE (USOS):	0511>0000E+CAC
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15+30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Project work
COURSE CONTENT	<p>Lecture: Basics of algorithms (block diagrams), the implementation of algorithms, the characteristics of the selected programming language (LAZARUS) and basic instructions, procedures and functions enabling the calculation of basic parameters of pump systems, in particular: density of transported suspension, linear and local losses, effective lifting height, power of the engine driving the pump, maximum geometric suction height, etc.</p> <p>Practical classes: Method of creating applications for calculations of a suction-pressure pump system.</p>
COURSE CONTENT	<p>Lecture: Basics of algorithmics (flowcharts), implementation of algorithms. Characteristics of the selected programming language. Structure of a program written in the selected programming language. Basic instructions, procedures and functions of chosen applications supporting data analysis.</p> <p>Practical classes: Data analysis by linear, polynomial and central point approximation methods. Data analysis by nonlinear estimation method. Creation of computer programs for data analysis (LAZARUS). Data analysis using selected numerical applications (EXCEL, STATISTICA, GNPLOT).</p>
ADDITIONAL INFORMATION:	

Elective courses E2

You can choose **Energy Resources** or **Energy Management**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Energy Resources
LECTURER'S NAME:	Magdalena Orłowska
E-MAIL ADDRESS OF THE LECTURER:	magdalena.orlowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+ER
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT	<p>The role and importance of energy in the country's economy. Energy resources in Poland and their extraction. Fossil fuels, their distribution and extraction. Natural gas and crude oil transport systems. Types of power plants.</p> <p>Energy law - basic information. Environmental issues, rules and regulations. Structure of energy resources in the production of energy and electricity. Energy consumption in selected countries of the world. Development of energy systems in the country.</p>
ADDITIONAL INFORMATION	

Elective courses E2

You can choose **Energy Resources** or **Energy Management**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Energy Management
LECTURER'S NAME:	Magdalena Orłowska
E-MAIL ADDRESS OF THE LECTURER:	magdalena.orlowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+EM
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT	Energy acquisition and use. National energy system. Energy subsystems: solid fuels, liquid fuels, gas and electricity. Energy subsystems: thermal energy and renewable energy sources. Energy and the environment. Human-friendly energy. Nuclear energy and distributed energy. Rationalization of energy use. Conventional Energy resources. Selected issues of fuel combustion. Elemental analysis of solid fuels. Associated energy management. Energy issues in water and sewage management.
ADDITIONAL INFORMATION	

Elective courses E3

You can choose **Mechanical-biological Waste Treatment Installations** or **Thermal Waste Treatment Installations**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Mechanical-biological Waste Treatment Installations
LECTURER'S NAME:	Prof. Robert Sidelko
E-MAIL ADDRESS OF THE LECTURER:	robert.sidelko@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
COURSE CODE (USOS):	0511>0000E+MBWTI
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written / oral exam, written reports
COURSE CONTENT	<p>Lectures: The current legal status of waste management and circular economy. Collection and disposal of waste. Waste segregation. Municipal waste recycling. Waste neutralization technologies. Modern technologies for the construction of landfills. Processes of mechanical and biological waste treatment. Methods of biological waste treatment. Basics of the composting process. Composting of municipal waste. Examples of technical solutions for the oxygen processing of the organic fraction of waste. Composting process and equipment.</p> <p>Practical classes: Capital expenditure on construction and operation of a municipal waste landfill. Impact of the facility on the natural environment and people. Capital expenditure and construction costs of a waste sorting plant, mechanical and biological plant (MBP), composting and fermentation facilities. Examples of land area calculations for a compost heap. Comparative analysis of the processing costs of composting, mechanical-biological and thermal methods.</p>
ADDITIONAL INFORMATION:	

Elective courses E3

You can choose **Mechanical-biological Waste Treatment Installations** or **Thermal Waste Treatment Installations**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Thermal Waste Treatment Installations
LECTURER'S NAME:	Prof. Robert Sidelko
E-MAIL ADDRESS OF THE LECTURER:	robert.sidelko@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	4
COURSE CODE (USOS):	0511>0000E+TWTI
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written / oral exam, written reports
COURSE CONTENT	<p>Lectures: The current legal status of waste management and circular economy. Collection and disposal of waste. Waste segregation. Municipal waste recycling. Characteristics of waste for thermal processing. Technologies of thermal waste neutralization. Examples of installations operating in Poland and other European Union countries. Collection and preparation of waste for incineration. Construction of a municipal waste incineration chamber. Methods of heat recovery from combustion and its management. Emissions of pollutants from the incineration process. Methods of exhaust gas treatment. Examples of incineration of municipal waste and other organic waste. The impact of incineration plants on the natural environment and people.</p> <p>Analysis of exemplary costs of building incineration plants. Future of municipal waste incineration plants in Poland.</p> <p>Practical classes: Calculations of energy generated from the incineration of the organic fraction of municipal waste. Calculations of the emission of volatile pollutants generated in the process of incineration of municipal waste. Analysis of the degradation kinetics of selected groups of toxic organic compounds. Comparative analysis of the processing costs of composting, mechanical-biological and thermal methods.</p>
ADDITIONAL INFORMATION:	

Elective courses E4

You can choose **Pumps** or **Fans** , not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Pumps
LECTURER'S NAME:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE LECTURER:	tomasz.dabrowski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+Pump
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15+15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Exam test
COURSE CONTENT	<p>Lectures: Pumps and pumping systems, calculations, parameters, energy balance. Pump characteristics. Construction and operation of vortex pumps. Construction and operation of reciprocating and special pumps. Cavitation phenomenon. Anti-cavitation surpluses. Installation, start-up and operation of pumps.</p> <p>Practical classes: Pump calculations. Pump characteristics. Pump performance regulation. Calculations of the pumping system.</p>
ADDITIONAL INFORMATION:	

Elective courses E4

You can choose **Pumps** or **Fans** , not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Fans
LECTURER'S NAME:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE LECTURER:	tomasz.dabrowski@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+Fans
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15+15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures + Practical classes
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Exam test
COURSE CONTENT	<p>Lectures:</p> <p>Division and scope of application of fans and compressors. Construction and operation of fans. Operating parameters of fans and compressors. General principles of operation of fans and compressors. General characteristics of motors used in pumps, compressors and blowers.</p> <p>Practical classes:</p> <p>Calculations of parameters of fans and compressors. Calculating the efficiency of fans and their cooperation with the network. Selection of fans, compressors and motors for their drive.</p>
ADDITIONAL INFORMATION:	

Elective courses E5

You can choose **Satellite Geodesy in Engineering Practice** or **Theory of Movement of the Earth's Artificial Satellites**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
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:	5
COURSE CODE (USOS):	0511>0000E+SGEP
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture + group tutorials
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
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	<p>Lecture (30 h):</p> <p>Construction of the earth satellites for geodetic and geophysical purposes. Two body problems, formulation of motion equation for artificial satellite. Computation and conversion of Keplerian and Cartesian 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 kinds of satellite measurements.</p> <p>Group tutorial part I (15 h):</p> <ol style="list-style-type: none"> 1. Description of construction of the selected geodetic satellite. 2. Computation of satellite orbits. 3. Conversion of Keplerian elements to Cartesian elements and Cartesian to Keplerian elements. 4. Computation of station position and correction caused by plate motion. <p>Group tutorial part II (15 h):</p> <p>Actual GNSS status. Static and kinematic (RTK/RTN) measurements. Planning of GNSS measurements. Analysis using Trimble GNSS Planning Online.</p>
ADDITIONAL INFORMATION:	

Elective courses E5

You can choose **Satellite Geodesy in Engineering Practice** or **Theory of Movement of the Earth's Artificial Satellites**, not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Theory of Movement of the Earth's Artificial Satellites
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:	5
COURSE CODE (USOS):	0511>0000E+TMEAS
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30+30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture + group tutorials
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
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	<p>Lecture (30 h):</p> <p>Construction of the earth satellites for geodetic and geophysical purposes. Two body problems, formulation of motion equation for artificial satellite. Kepler's laws. Newton's laws. Three cosmic speeds. Elliptical and circular orbits. Computation and conversion of Keplerian and Cartesian orbital elements. Theory of the numerical integration methods for satellite orbit estimation. Orbital software (e.g. GEODYN, BERNESE). 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. Satellite missions: Champ, Grace, Goce.</p> <p>Group tutorial part I (15 h):</p> <ol style="list-style-type: none"> 1. Description of construction of the selected geodetic satellites. 2. Computation of satellite orbits. 3. Conversion of Keplerian elements to Cartesian elements and Cartesian to Keplerian elements. <p>Group tutorial part II (15 h):</p> <p>Actual GNSS status. Static and kinematic (RTK/RTN) measurements. Planning of GNSS measurements. Analysis using Trimble GNSS Planning Online.</p>
ADDITIONAL INFORMATION:	

Elective courses E6

You can choose **Unit Processes in Water and Wastewater Treatment** or **Unit Processes in Industrial Waste Processing** , not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Unit Processes in Water and Wastewater Treatment
LECTURER'S NAME:	Renata Świdorska-Dąbrowska
E-MAIL ADDRESS OF THE LECTURER:	renata.swiderska-dabrowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+UPWWT 0511>0000E+UPIWP
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT	Classification of mixtures. Separation process of gravitational sedimentation including coagulation and flocculation, as unit processes supporting gravitational sedimentation. Separation of suspensions under the influence of centrifugal force. Theoretical basics of the filtration and adsorption process. Other methods of water and wastewater treatment. Technical novelties in the field of water and wastewater treatment.
ADDITIONAL INFORMATION:	

Elective courses E6

You can choose **Unit Processes in Water and Wastewater Treatment** or **Unit Processes in Industrial Waste Processing** , not both

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	Unit Processes in Industrial Waste Processing
LECTURER'S NAME:	Renata Świdorska-Dąbrowska
E-MAIL ADDRESS OF THE LECTURER:	renata.swiderska-dabrowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+UPIWP
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	15
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lectures
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Class test
COURSE CONTENT	<p>Technological basics of the screening process. Characteristics of selected devices for the screening process.</p> <p>Technological basics of the grinding process. Characteristics of selected devices for the grinding process.</p> <p>Theoretical basics of the flotation process. Systematic of flotation reagents and principles of their operation. Characteristics of selected devices for the flotation process.</p> <p>Application of the flotation process in various industries.</p> <p>Other methods of processing industrial waste. Technical novelties in the field of industrial waste processing.</p>
ADDITIONAL INFORMATION:	

**The following courses are only for students of
Geodesy and Cartography
or Surveying**

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
ERASMUS COORDINATOR OF THE FACULTY:	Tomasz Dąbrowski
E-MAIL ADDRESS OF THE COORDINATOR:	tomasz.dabrowski@tu.koszalin.pl
COURSE TITLE:	GNSS Surveying Project
LECTURER'S NAME:	Krzysztof Deska
E-MAIL ADDRESS OF THE LECTURER:	krzysztof.deska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+GNSSSpro
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Project
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
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:	As part of the course, a student works in a team to carry out a project concerning the establishment of a small network using the static GNSS method, configures the GNSS receiver for static measurements, plans, performs measurements, performs post-processing (alignment vectors and networks), assesses accuracy and prepares technical reports. As part of the course, a student also carries out a project in a team regarding: GNSS measurements in real time, configures GNSS receiver for kinematic measurements. They perform situational and height measurement using the GNSS RTK/RTN technique and using various networks of reference stations. They perform GNSS real time measurements (RTK and RTN) along with an assessment of the conditions and possibilities of their implementation, ongoing assessment of accuracy and preparation of technical reports.
ADDITIONAL INFORMATION:	<u>Course only for students of Geodesy and Cartography or Surveying</u>

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
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
LECTURER'S NAME:	Prof. Miłoslawa Rutkowska
E-MAIL ADDRESS OF THE LECTURER:	miloslawa.rutkowska@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	3
COURSE CODE (USOS):	0511>0000E+LSAM2
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
ASSESSMENT METHOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam
COURSE CONTENT:	<p>Least squares parametric method for measurement adjustment. Formulation of observation equations for selected techniques (angular, range, level, GNSS, SLR, DORIS, VLBI) and adjustment based on observation equations. Analysis of covariance matrix and determination accuracy of estimated unknowns.</p> <p>Exemplary computations performed for different kinds of measurements.</p>
ADDITIONAL INFORMATION:	<u>Course only for students of Geodesy and Cartography or Surveying</u>

FACULTY:	Civil Engineering, Environmental and Geodetic Sciences
FIELD OF STUDY:	Civil Engineering, Environmental and Geodetic Sciences
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:	Prof. Marcin Jagoda
E-MAIL ADDRESS OF THE LECTURER:	marcin.jagoda@tu.koszalin.pl
ECTS POINTS FOR THE COURSE:	2
COURSE CODE (USOS):	0511>0000E+LSAM2lab
ACADEMIC YEAR:	2025/2026
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30
LEVEL OF THE COURSE: (1 st cycle, 2 nd cycle, 3 rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Laboratory, group tutorials
LANGUAGE OF INSTRUCTION:	<ul style="list-style-type: none"> • English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 international Erasmus+ students enrolled/accepted.
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:	<u>Course only for students of Geodesy and Cartography or Surveying</u>