

Type of programme: full-time master 3-semesters with no of hours /week and ECTS

**Field of education: Spatial Planning, specialization: Environmental Conditions in Spatial Planning**

No.	Course	Sem. I			Sem. II			Sem. III					
	l - lecture, e - exercices, p - project, E - exam	1	e	p	ECTS	1	e	p	ECTS	1	e	p	ECTS
<b>General courses including humanities and economics, and major for the field of education</b>													
1	Facultative class 1: Conflict Situations – Possibilities of Their Development, Negotiations							<b>2</b>			<b>2</b>		
2	Facultative class 2: Public Relations and Advertising in Contemporary World									<b>2</b>			<b>2</b>
3	Facultative class 3					<b>1</b>				<b>1</b>			
4	Professional foreign language										<b>2</b>		<b>1</b>
<b>Basic courses</b>													
5	Hazards and Protection of the Earth Surface /E	<b>1</b>		<b>2</b>	<b>4</b>								
6	Environmental Monitoring	<b>2</b>			<b>3</b>								
7	Spatial Management in Rural Areas /E	<b>1</b>		<b>2</b>	<b>4</b>								
8	Landscape Planning	<b>1</b>		<b>2</b>	<b>4</b>								
9	Theory of Organisation and Management						<b>2</b>			<b>2</b>			
<b>Profiled courses</b>													
10	Environmental Development Planning and Management in the EU	<b>1</b>			<b>2</b>								
11	Regional Politics and European Law in Spatial Management /E	<b>2</b>			<b>2</b>								
12	Town Planning in European Union Countries		<b>2</b>		<b>2</b>								
13	Territorial Marketing										<b>1</b>		<b>1</b>
14	Business Models										<b>2</b>		<b>2</b>
15	Regional Planning	<b>1</b>		<b>1</b>	<b>2</b>								
16	Legislative Techniques in Planning						<b>2</b>			<b>2</b>			
17	Revitalization of Devastated Areas	<b>1</b>		<b>2</b>	<b>3</b>								
18	Modelling in Spatial Management								<b>1</b>	<b>2</b>			
19	GIS Technologies	<b>1</b>		<b>2</b>	<b>4</b>								
20	Cartographic Modelling /E						<b>1</b>		<b>2</b>	<b>3</b>			
21	Remote Sensing in Spatial Management								<b>2</b>	<b>2</b>			
22	Facultative class 4						<b>2</b>			<b>2</b>			
23	Facultative class 5						<b>1</b>			<b>1</b>			
<b>Specialization courses</b>													
24	Remote Sensing of Environment										<b>1</b>		<b>1</b>
25	Environmental Assessment /E						<b>1</b>		<b>1</b>	<b>2</b>			
26	Threats and Protection of Urban Ecosystems						<b>1</b>		<b>3</b>	<b>3</b>			
27	Mineral Resources Managing /E						<b>1</b>		<b>2</b>	<b>3</b>			
28	Property Valuation for Spatial Management/E						<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>			
29	Graduate Seminar ŠUGP						<b>1</b>		<b>1</b>		<b>1</b>		<b>1</b>
30	Diploma work												<b>20</b>
	<b>TOTAL</b>	<b>11</b>	<b>2</b>	<b>11</b>	<b>30</b>	<b>15</b>	<b>2</b>	<b>13</b>	<b>30</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>30</b>

**Courses descriptions**

General courses

	Facultative class 3: Ecoinnovations in Companies	Effects of eco-innovative activities: impact on the competitive position of enterprises, e.g. in the form of reducing energy consumption costs, improving working and living conditions, reducing pollutant emissions. Pro-ecological activities as an important problem due to the still unsatisfactory condition of the environment in Poland, e.g. air and water pollution. Adaptation to EU regulations and initiatives to improve the quality of the natural environment, reduce the emissions of the economy, increase the share of renewable energy and build a bioeconomy. Activities in the area of resource-efficient and less emission production processes, e.g. in industry, transport, construction, reducing greenhouse gas emissions. A strategy of values, following pro-ecological values at individual stages of business processes (production, logistics, waste management, etc.) and cooperation with other entities (e.g. suppliers), and also including care for the natural environment in the mission. Synergic interaction of different types of eco-innovation and their environment; building a competitive advantage ensuring appropriate working and living conditions, resulting, inter alia, from maintaining the good condition of the natural environment with the simultaneous development of enterprises.
	Facultative class 3: Environmental economics	Connecting the socio-economic system with the environment, economic and social effects of environmental pollution, costs of use and environmental protection, effects of implementation of projects in environmental protection, methods of assessing the effectiveness of protective measures, environmental protection policy, legal and administrative instruments in environmental protection, economic instruments in protection environment, financing of environmental protection projects, social instruments in environmental protection, basics of environmental management, environmental management strategies in the enterprise and the commune, implementation of environmental management systems in the enterprise and commune.

### Basic courses

	<b>Hazards and Protection of the Earth Surface</b>	Lecture: Legal basis for the protection of the Earth's surface (the environmental protection law). Threats to the Earth's surface with a division on the scale of: global threats, regional (European) threats, local threats (occurring in Poland). Case studies of local threats in Poland. Causes and consequences of threats. Ways to protect endangered resources, including through legal and administrative instruments, financial resources, scientific and research activities, as well as through appropriate spatial planning. Ways of reducing the effects of the above-mentioned threats. Highlighting the role of planners and spatial planning in the protection of the Earth's surface. Project: Selected threats to the Earth's surface recognized as the most important in the world. Interpretation of threats to the Earth's surface with a division on a global and local scale. Interconnection of global and local threats. Causes, consequences, methods of protection against the above-mentioned threats, as well as ways of eliminating them. The importance of spatial planning in the protection of the Earth's surface. Current challenges of spatial planning in the context of Earth protection. Practical solutions related to the protection of the Earth's surface used on a local scale in workplaces or institutions.
	<b>Environmental Monitoring</b>	Discussion of the principles of monitoring the qualitative and quantitative state of the environment in Poland, primarily based on the State Environmental Monitoring (SEM) system in relation to the European Commission. In this regard, the sources and causes of environmental pollution, its current qualitative and quantitative status as well as quality indicators are discussed. The lectures include: Fundamentals of environmental monitoring: definitions, legal regulations, goals and tasks, operational diagram, measurement network, quality indicators and evaluation / classification system. Organization of the monitoring of the natural environment in Poland in the national, regional and local terms. Monitoring of air quality (the amount and variability of emissions and immissions in Poland against the background of Europe, national network of pollution background assessment according to international programs - EMEP, GAW / WMO), air protection program. Monitoring of the quality of surface and underground waters and the Baltic Sea. Soil and land monitoring. Nature monitoring (Monitoring of Polish Birds, Monitoring of species and natural habitats, Monitoring of forests, Integrated assessments of the state of the natural environment) in connection with European monitoring. Monitoring of the acoustic climate. Ionizing radiation monitoring. Monitoring of electromagnetic fields. The results of the SEM are the basis for the presentation of the qualitative and quantitative state of individual components of the environment. There are also presented statistical methods of processing the results of observations and basic legal requirements concerning the quality of surface water, groundwater, rainwater, air and soil.
	<b>Spatial Management in Rural Areas</b>	Lecture: Selected agricultural and arrangement works as an element of shaping space in rural areas in Poland and in selected European Union countries. The role of the local spatial development plan in the area subject to arrangement and agricultural works. The process of dividing agricultural real estates, merging and dividing real estates as well as merging and dividing real estates as tools for shaping land for development (mainly housing) in areas excluded from agricultural and forestry production. Fundamentals of forest land management, in particular the forest management plan and the simplified forest management plan, regulation of the agro-forest border.
	<b>Landscape Planning</b>	Project: The use of Project-Based Learning (PBL), where students develop comprehensive design solutions for the research area, both taking into account the ownership and spatial structure of plots, as well as landscape aspects, analyzed for the same research area within the subject of Shaping landscape, using the additional knowledge gained in other subjects and during the meeting with residents and field inventory. The detailed content of the project is: 1. Analysis of the ownership, spatial structure and use of registration plots on the basis of materials obtained from geodetic and cartographic resources. 2. Initial assessment of the current state. 3. Getting to know the problems of spatial management in a selected commune during a meeting with employees of the commune office, councilors and other interested people. Inventory of the use, investment status and development of research facilities in the field. 4. Development of an up-to-date map of use and photographic documentation based on field work. 5. Development of the concept of the functional and spatial division project for the selected area (precinct), taking into account the available data and local needs. Proposing remedial tools for the spatial structure and governance structure that will allow for rational, respecting the principles of sustainable development, development of the area. 6. Discussion on the solutions used in the projects in a group of students, and then presentation of the projects and discussion with the residents. Participation of students in meetings with residents not only allows for the verification of design solutions with expectations, but also shows the problems related to communication between people and informing residents, very important in spatial planning (especially when changing the function of the area).

	Theory of Organisation and Management	Basic concepts: the essence of management, types, functions of management, management and leadership. Evolution of organisational and management theory. Planning, types of planning (strategic, tactical), business plans, causes of failure in planning: organizational structures - models and parameters of organisational structures. Human resources management - hiring employees, motivating employees. Case studies - successes and failures of managers in the management of companies.
<b>Profiled courses</b>		
	Environmental Development Planning and Management in the EU	1. First lecture. General introduction to the subject 2. Second lecture. Features of space in the EU 3. The third lecture. The structure of space in the EU 4. Fourth lecture. Economic rationale influencing management space in the EU 5. Fifth Lecture. The role of spatial planning as a control instrument development in the EU 6. Lecture six. The concept and structure of spatial management in the EU 7. Basic problems included in spatial management in the EU 8. Final test
	Regional Politics and European Law in Spatial Management	TUTORIALS: As part of the exercises, students prepare a report and a presentation on a selected topic related to planning at the voivodeship level, e.g. comparison of the documents of the applicable voivodeship development strategy and the design of the voivodeship development strategy, comparison of the development strategy of selected voivodeships, comparison of spatial development plans of selected voivodeships, comparison of the voivodeship spatial development plan and the voivodeship development strategy. The report should include, inter alia, the purpose of the work, the legal basis of the discussed documents, comparison of the structure and scope of the content of the documents, reference to the document implementation monitoring system, evaluation of cartographic and graphic studies being part of the documents.
	Town Planning in European Union Countries	A comprehensive analysis of urban regeneration and development projects from individual EU countries. The scope of analysis includes in particular the following issues: 1) Project initiation - reason/ basic objectives; 2) 'Actors' and their role; 3) Form of governance - complexity of structures/ interdependence/ cooperation/ coordination; 4) Urban design - links to city structure/ environmental/ historical conditions/ etc.; 5) Project implementation process - role of mediation and its thematic scope; 6) Sources of funding; 7) Spatial development method - e.g. private/municipal land development, cooperation with local government, etc., 8) Spatial planning system - regulation/ informality; 9) Other conditions
	Territorial Marketing	Functional and spatial concept for the selected option (issues compliant with the Act on spatial planning and development)
	Business Models	The student shall develop plans and diagrams illustrating the adopted concept.
	Regional Planning	LECTURES: The content of the lectures includes, inter alia, the concepts of regional planning in spatial management, the scope of voivodship spatial development plans, the scope of the voivodship development strategy, the administrative and statistical division of the country on the example of the Mazowieckie voivodship, NUTS classification, European planning models. TUTORIALS: As part of the exercises, students prepare a report and a presentation on a selected topic related to planning at the voivodeship level, e.g. comparison of the documents of the applicable voivodeship development strategy and the design of the voivodeship development strategy, comparison of the development strategy of selected voivodeships, comparison of spatial development plans of selected voivodeships, comparison of the voivodeship spatial development plan and the voivodeship development strategy. The report should include, inter alia, the purpose of the work, the legal basis of the discussed documents, comparison of the structure and scope of the content of the documents, reference to the document implementation monitoring system, evaluation of cartographic and graphic studies being part of the documents.
	Legislative Techniques in Planning	1)Basic concepts of law - law, legal norm and its types, provision and norm, legal relationship; 2)Law-making process, building a normative act, the law-making process in Poland; 3)Constitutional sources of law - sources of universally binding law and sources of internal law; 4)The concept of local law act; 5)Publication of legal acts, including local law acts;6) The process of enacting the local law acts; 7)Basic principles of act legislative technique and other formal requirements to be met by a local law act; 8)Building of local law act; 9)The basic of issuing the local law acts, 10)Typical measures of legislative technique; 11)Designation of regulations and their systematization in a local law act;12)The way of editing the provisions of the local law acts;13)Annexes to local law acts;14)Amendment to local law acts;15)The local spatial development plan as a local law act.
	Revitalization of Devastated Areas	LECTURES: 1. Introduction and introductory issues. The concept of revitalization in spatial planning. Motives for undertaking the revitalization problem. Explanation of the basic concepts and definitions (degraded land, devastated land, reclamation, revitalization). Legislation on brownfields and brownfields. The scale of degradation of areas in Poland. Environmental degradation in urban areas. Classification of degraded areas (post-industrial areas, post-military, post-rail and post-port areas, degraded urban areas). Susceptibility of different types of areas to different types of degradation. The process of revitalization of devastated areas. Restrictions on transformations and revitalization of degraded areas. Forms of further use of post-industrial areas. 2. Selected aspects of nature in the revitalization process. Ecological balance. Legal acts in the field of natural issues. Environmental audit in the revitalization process. Natural environment in industrial areas. Integrated environmental analysis. Site analysis. 3. Selected case studies of post-industrial regeneration. Factors determining the use of post-industrial areas. Barriers to the development of new functions in post-industrial areas. Selected examples of post-industrial areas adaptation (Polish and foreign examples).

		<p>PROJECTS: The projects classes consist of two projects. Students carry out projects: 1. Analysis and detailed assessment of a selected project to revitalize a degraded area. 2. Study of a post-industrial area located in an urban area with the proposed concept of revitalization and development. Analysis of the environmental conditions of the area. The program of project classes includes a meeting with an expert during which the process of reclamation and development of a degraded area is presented. During the presentation, problems related to the revitalization of post-industrial areas in cities will be presented. The classes use the e-learning form of remote education (MS Teams platform).</p>
	Modelling in Spatial Management	<p>1. Basic concepts of modeling, simulation and forecasting; 2. Econometric modeling, types of econometric models, regression modeling; 3. Indicators of the correctness of the selection of the econometric model: root mean square error, coefficient of determination, corrected coefficient of determination; 4. The basics of forecasting: types of inference about the future, forecast functions, self-fulfilling and self-fulfilling forecasts; 5. Types of prognostic methods: mathematical and non-mathematical; 6. Forecasting based on time series: constant and with a trend; time series components; 7. Assessment of the accuracy of the forecast: ex ante and ex post; 8. Forecast of the financial effects of the local development plan and the use of econometric modeling in its implementation; 9. The use of numerical taxonomy and machine learning methods in forecasting changes in the value of planning space.</p>
	GIS Technologies	<p>LECTURE: Revision of concepts in the field of GIS and GIS technology. 3D GIS, 3D data sources, 3D data acquisition and 2D to 3D data transformation. Methodology of solving tasks in the field of land suitability analysis. Tools and algorithms for 3D spatial analysis. Introduction to modeling using GIS, generating various scenarios and forecasts in solving current problems and meeting socio-economic needs. Standardization of the results of spatial analyzes. Geometry transformations, spatial databases, defining and controlling topological rules. Introduction to network analysis, data sources for selected types of networks, review and examples of applications of selected network analysis algorithms. PROJECT: Project 1: The use of GIS technology to assess the attractiveness of city space (visibility analysis, criteria for assessing the attractiveness due to the view from the window). Assessment of the impact of a newly designed high-rise building on the surroundings - visibility analysis and shading analysis using 3D data and 3D spatial analysis algorithms. The project is carried out individually. Project 2: Determining the location of elements of urban infrastructure with the use of multi-criteria spatial analysis and network analysis. Automation of the process of multi-criteria spatial analysis - building geoprocessing models with the use of variables. An important stage of the project is reviewing, selecting and acquiring data for the proposed criteria and testing various algorithms of network analysis, generating variants of the location of infrastructure elements and comparing the obtained results, including the location proposals obtained from external sources (proposals from local government units or proposed e.g. as a result of conducted public consultations). Project implemented in project groups.</p>
	Cartographic Modelling	<p>LECTURE: 1) Concept and issues of cartographic modeling. Stages of cartographic modeling: Data selection, conceptual model development, database organization, data processing and analysis, cartographic presentation. Cartography as a research tool. Map as a model of selected aspects of reality. INSPIRE technical guidelines for land use information—the problems of lack of standardization - various data models in planning documents. 2) Basics of spatial data analysis and geographic information modeling. Spatial autocorrelation. Neighboring relation for vector and raster data. Methods for analyzing the distribution of geographic objects and the value of attributes of geographic objects. Linear regression model OLS and geographically weighted linear regression model GWR: conditions, analysis stages, and interpretation of the results. Kriging - basic information. LAB: Development of planning data in the GIS following the INSPIRE technical guidelines and the Polish regulation. Spatial data analysis. Development of the relative risk map and spatially smoothed risk. Spatial autocorrelation analysis. Analysis of the OLS and GWR regression model, evaluation and model selection, interpretation of the obtained results. Probabilistic interpolation by the kriging method. Application of multi-criteria analysis methods based on the exceedance relationship for discrete problems. The classes use the e-learning form of remote education (MS Teams platform and Moodle ePW platform).</p>
	Remote Sensing in Spatial Management	<p>Particular exercises included in the course form a sequence of stages of selecting, obtaining and processing optical and thermal remote sensing data into the form of thematic information layers and cover the following topics: 1. Availability of remote sensing data - review of websites that provide remote sensing data, open remote sensing data, types of available satellite image products and their analysis for the aim of their subsequent processing. 2. The use of optical images in spatial planning: Color composites, proper selection of spectral bands and methods of contrast enhancement aimed at interpretation of the selected phenomenon with the use of satellite images. Assessment of the suitability of various color composites, incl. the purposes of identifying various types of land cover / land use, determining the share of biologically active surfaces, the share of impermeable surfaces, assessing the condition of urban green areas and forests. Development of the thematic layer of land cover / land use using the supervised classification method (selection of training fields, assessment of their homogeneity and separability, selection of the classification algorithm, selection of spectral bands, accuracy assessment , postprocessing, development of cartographic visualization: selection of the palette color, creation of a legend, conversion from raster to vector). 3. Application of remote sensing spectral indices to estimate the share of urban green areas, biologically active areas. Advantages and disadvantages of various spectral indices. 3. Application of thermal images in spatial planning: Analysis of the surface urban heat island phenomenon: - selection of satellite images, - calculation of the surface temperature, - calculation of the intensity of the surface urban heat island. Exercises are conducted in TerrSet / IDRISI, ERDAS Imagine, ArcGIS or QGIS software.</p>

	Facultative class 4 Multicriteria Analyses in Geographic Information Systems	LECTURE: Introduction to the multi-criteria analyzes in the geographic information systems.2. Basic methods, elements, and stages of multi-criteria analysis in GIS. 3. Examples of applications and solutions - based on Polish and foreign literature (discussions): a) spatial aspects and the use of geographic information systems in multi-criteria analysis; b) multi-criteria spatial analysis with the group of decision-makers participation - support for social participation, c) applications, approaches, and methods.
	Facultative class 4: Physical Geography of Poland	Structure and geological past of Poland. The genesis of the terrain. Characteristic landforms. Soils and their distribution in Poland. Surface and groundwater. Climate Polish. Vegetation - potential and actual. Fauna Polish. Links between individual components of the natural environment. Physical-geographical division Polish. Overview of selected lands Polish. Structure and geological past of Poland. The genesis of the terrain relief. Characteristic landforms. Soils and their distribution in Poland. Surface and groundwater. Polish climate. Vegetation - potential and actual. Polish fauna. Links between individual components of the natural environment. Physical-geographical division of Poland. Overview of selected lands in Poland.
	Facultative class 5: Applications of remote sensing techniques in spatial management	The course lecture covers the following topics: 1. Introduction to the course. Basic issues in the field of aerial and satellite remote sensing. A synthetic review of remote sensing technologies in the context of their use for spatial planning. 2. Availability of photogrammetric and remote sensing data: a. Data from the state geodetic and cartographic resource and their characteristics; b. Open remote sensing data and their applicability for different purposes (license types); c. The Copernicus program and the possibilities of using Copernicus data in spatial management. Available databases on land cover / land use created with the use of remote sensing data. d. Remote sensing data (satellite and aerial) available on a commercial basis and ordering; e. Types of available products - processing levels of optical satellite data.
	Facultative class 5: Forecasting of Financial Consequences of Adoption of Local Zoning Plans	Place and significance of the forecast of the financial effects of the enactment of the local spatial development plan in the shaping of the spatial policy by the municipality. Objective and scope of the forecast of financial effects of the enactment of the local spatial development plan. Legal basis for the study. Substantive data sources. Substantive assumptions of the forecast elaboration. Description of the property status. Principles and procedure for determining potential municipality revenues: - planning fees for growth of real estate value, - betterment levies due to division of land property, - betterment levies due to consolidation and division of land property, - betterment levies due to participation in the costs of construction of technical infrastructure, - increase in property taxes, - income from the sale of municipality's land. Principles and procedure for determining potential costs: - costs related to the purchase of land for public purpose investments, - costs related to planning claims, - costs of implementing local public purpose investments in the field of technical infrastructure. Balance of financial effects of plan enactment. During lectures, it will be present practical tasks for the determination of selected income and costs of the municipality resulting from the provisions of the plan.
<b>Specialization courses</b>		
	Remote Sensing of Environment	Lecture 1. Remote sensing data as an information source for the inventory of the current state of land cover / land use. Inventory of topographic and environmental objects. European and global projects which study land cover changes. 2. Possibilities of using photogrammetric and remote sensing data in urban planning. Monitoring of urbanized areas and change detection, urban and rural development, assessment of the level of expansion and development of cities in Europe and in the world. MOLAND, MURBANDY and UrbanAtlas projects. 3. Remote sensing in monitoring, management and protection of the environment. Assessment of the condition of the environment, its degradation or improvement. 4. Remote sensing in agricultural and forestry applications. Forest management plans versus aerial and satellite data. Planning the development of rural areas. 5. Vegetation indices and soil indices as parameters of the quality of the environment. 5. Thermal remote sensing in environmental studies on a local and global scale. 6. Hyperspectral remote sensing and its applications in environmental research.
		Project: The aim of the project is to perform an analysis of changes in the area / ecosystem (selected by the students) using LANDSAT or Sentinel satellite data. Students, in small teams of 2-3 people, are tasked with: 1. defining the purpose of the task (e.g. analysis of land cover changes in ..... in the years ...., analysis of seasonal changes in the water level in the lake .....), analysis of the level of deforestation / afforestation of the area .....), analysis of the dynamics of deforestation in the area .....), Analysis of the level of plant succession in the area of .....), Analysis of the score of land degradation ...., analysis of the impact of land development on the urban heat island, etc.); 2. obtaining an optimal set of satellite images from the LANDSAT or (available free satellite data archive from 1972) or Sentinel (available from 2015), 3. performing the defined task using known methods of digital images processing (methods learned on the course "Remote sensing in land management"), 4. presenting the obtained results, their interpretation and conclusions in the form of a report or a presentation.

	<b>Environmental Assessment</b>	Lecture: Environmental Impact Assessment (EIA) system in Poland and Europe. European Union Directives on EIA and Strategic Environmental Assessment (SEA). Supplementary Directives. Various types of EIA: projects, plans, strategies and programs, spatial planning, ecological reviews, integrated permits. Competences of government and self-government administration bodies. Procedures to be followed in the Environmental Impact Assessment and Strategic Environmental Impact Assessment of plans, strategies and / or programs. Methods used in EIA and SEA. EIA report. Decision on environmental conditions for the implementation of the investment. Environmental impact forecast. Sources of information on spatial data and threats. Projects: Introduction to projects, nature of the impacts analyzed in the EIA. Determining the scope of the EIA. The scope and content of the environmental impact assessment report. Report examples. Description of the investment and technical characteristics of its surroundings. Preliminary environmental impact assessment of the selected investment. Environmental impact assessment of the selected investment - identification of significant environmental aspects with the use of a descriptive list. Assessment of indirect and secondary environmental impacts of a selected investment with the help of a cause and effect network. Choosing the optimal investment variant. Environmental impact assessment in a report or forecast. Credit for projects - communication and social discussion of the results of environmental assessments, the role and tasks of environmental assessors in planning and investment processes.
	<b>Threats and Protection of Urban Ecosystems</b>	Lectures: The city as an ecosystem. Ecosystems in the city. Functioning of ecological systems in urban ecosystems. Ecosystem services. Contemporary threats to urban ecosystems: climate change, urbanization, anthropopressure. The scale of degradation of Polish cities. Environmental protection issues in city programming. Sustainable socio-economic development in the functioning of urban ecosystems. Project: a case study of a selected city. - preparing competition entry for LE:NORTE Landscape Forum. Diagnosis of the condition and functioning of urban ecosystems with the socio-economic background. Identification of problem areas and ranking of threats to the natural, social and economic order. Determining the needs and potential for shaping the Green Infrastructure on the scale of the city, the selected housing estate and human scale. Formulating assumptions for the concept of green infrastructure on the three mentioned scales. Development of an ideological concept of green infrastructure on the before mentioned scales with guidelines for strategic and planning documents oriented towards its implementation. Presentation of the results in the form of a lecture and discussion during classes. Classes are conducted using the Project Based Learning (PBL) method.
	<b>Mineral Resources Managing</b>	LECTURE: natural resources, minerals, minerals, rocks, and minerals; static and dynamic theory of mineral resources; basic terms used in geological and mining law, ownership of mineral deposits in Poland, concessions; geological information, geological survey in Poland, Polish Geological Institute, state mining authority, other legal acts related to the exploitation of deposits; the impact of geology and mining on spatial planning; groundwaters and spatial management. CLASSES: estimation of the boundaries and resources of the lignite deposits based of borehole network; preparation of elements of the environmental impact assessment of lignite mining.
	<b>Property Valuation for Spatial Management</b>	LECTURES: · Introduction. Legal basis and procedure for property valuation. · Planning (re-zoning) fee and compensation claims. · Valuation of real property for the purpose of calculating betterment levies: o for the supply of technical infrastructure, o for the division of real property, due to consolidation and division of real property. · Right of perpetual usufruct: o Valuation of the right of perpetual usufruct. o Revision of perpetual usufruct fees, taking into account expenditures incurred by the perpetual usufructuary. o Transformation of the right of perpetual usufruct of land into the right of ownership - new legal regulations. · Valuation of selected limited property rights. Examples of valuations: o Determination of the right of use. o Determination of the value of easement for the purpose of determining the amount of payment for its establishment. o Determination of the value of easement for the purposes of expropriation. o Determining the value of transmission easement and payment for its establishment and payment for non-contractual use of real estate by transmission companies. o Determination of the value of the cooperative ownership right to the premises for the needs of transformation of title. · Valuation of the right to life annuity. · Valuation of real property purchased, intended or taken for construction of public roads for the purpose of determining the amount of compensation. · The role of the real estate valuer in the revitalization process.
		Solving of problems to demonstrate practical use of theoretical knowledge gained from lectures. PROJECT: Project consisting in the preparation of a valuation report based on the determined market value of an undeveloped land property according to its permissible use before and after the introduction of (an amendment to) the local spatial development plan for the needs of calculating the planning (re-zoning) fee. As part of the course students make a study visit to the Municipal Spatial Planning and Development Strategy Department in Warsaw where they will gain practical knowledge on the implementation of subsequent stages of the forecast of financial impact of the adoption of a local development plan and on common issues encountered when preparing such forecast.
	<b>Diploma Seminar</b>	Depending on the scope of the diploma thesis, deepening the knowledge on the selected topic, solutions to the main problems posed in the form of proposals for their solutions. the issues relate to the broadly understood environmental issues that determine the proper spatial development of the studied space. The proposed solutions must meet the basic goal, ie be consistent with the principles of Sustainable Social Development with the environment.

	Diploma work	A student doing a master's thesis is to demonstrate in-depth knowledge of basic theoretical and experimental knowledge in the field of spatial management and the ability to solve problems requiring the use of modern methods in the field of theoretical, research, computational and experimental analyzes. The subject of the master's thesis may be in particular: - performance of a research task in the field of study and specialization of studies, - development or improvement of a research, computational, measurement, and analytical method, - study and design work on a specific problem, made on the basis of the state of knowledge and technology, with an independent analysis and precise conclusions. The master's thesis should contain new results of analyzes, research, theoretical or computational research or a new solution to a given problem in the field of study. The diploma thesis in the form of a design, computational, study or research study should contain, among others formulated task and purpose of the work, description of the state of knowledge, concept and assumptions for solving the task, solving the problem, e.g. through experimental research, computational analyzes, drawings and charts, conclusions, list of literature and materials used in the work. The basic content is to familiarize students with: 1. Formulation and selection of a scientific problem 2. Selection of research methods and verification of a scientific thesis 3. Critical analysis of the obtained results of scientific research 4. Analysis of the current state of knowledge in the area of a selected scientific discipline 5. Using modern IT database resources scientific.
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