



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Infrastructure Asset Management and Urban Planning

### Course

Field of study

Environmental Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

English

Requirements

elective

### Number of hours

Lecture

15

Laboratory classes

Tutorials

15

Projects/seminars

Other (e.g. online)

### Number of credit points

6

### Lecturers

Responsible for the course/lecturer:

dr inż. Jędrzej Byłka

email: [jedrzej.bylka@put.poznan.pl](mailto:jedrzej.bylka@put.poznan.pl)

tel. 616652443

Wydział Inżynierii Środowiska i Energetyki

Berdychowo 4

Responsible for the course/lecturer:

### Prerequisites

1. Knowledge:

Basic knowledge of the design and operation of water, sewage, and remote heating systems.

2. Skills:

Appreciation of external conditions for development and analyses of engineering solutions in their socio-economic, geopolitical and historical contexts.

3. Social competencies:



Awareness of the need for continuous updating and expanding knowledge and skills, including team cooperation

### Course objective

Presentation of knowledge in the area of urban and regional planning as a context in performing professional functions in environmental engineering as well as providing basic skills and knowledge required in solving typical problems found in built environment and related to goals formulation and demand forecasting. Familiarization with modern methods of asset management in the context of urban planning. Show the possibilities of using Geographic Information Systems (GIS) to support spatial planning

### Course-related learning outcomes

#### Knowledge

1. Student knows fundamental principles of urban design and town planning as well as used/available means
2. Student knows and understands basic legal framework and most important planning documents
3. Student knows and understands principles of developing urban technical infrastructure in a context of organisational, technical and economic limitations
4. Student has basic knowledge about GIS and knows how to use spatial analysis to support urban planning and infrastructural asset management
5. Student knows the basic norms and standards of network infrastructure management

#### Skills

1. Student can describe aims and goals of town planning in regard to a given type of infrastructure
2. Student can identify conditions, barriers and limitations and forecast development trends for a given type of infrastructure
3. Student can analyse planning documentation as an expression of inter alia investor needs and abilities
4. Student can use norms and standards as infrastructural asset management tools

#### Social competences

1. Student appreciates necessity of continuous updating and expanding his / her professional competencies according to the changing tools and rules for infrastructure planning
2. Student understands the need for utilization of teamwork in solving engineering problems both theoretical and practical

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures: Final test during the last class. The test consists of closed and open-ended questions with various points. Threshold 50%. Issues and results available via the Moodle platform



Exercises: The final grade consist of: the results of test (50%) and the grade from the presentation, which students prepare individually or in groups (50% of the grade). The test consists of closed and open-ended questions. Issues and results available via the Moodle platform

### Programme content

1. Basic definitions (urban design, town-planning, land development, technical infrastructure, spatial planning).
2. Urban design as a response to environmental (as well as other) challenges.
3. Urbanization and accompanying phenomena in the environmental setting.
4. Aims and goals of planning, plan systems, planning documentation and other analyses.
5. Legal framework for planning activities and land management (land development).
6. Studies and analyses in planning.
7. Principles of urban design (parameters, standards and indices).
8. Technical infrastructure in town-planning.
9. Principles of location of infrastructure elements in the urban space.
10. Review of standards in the field of infrastructure resource management: PAS55, ISO55000, ISO 20760.
11. Development and management of technical infrastructure as an element of spatial planning
12. Infrastructure development in the context of Sustainable Development Goals
13. GIS as a tool for support the urban planning and infrastructural asset management.

### Teaching methods

Multimedia presentation. Issues are discussed in terms of problems, a practical method - student developing given issue (own work) and present the results for the group.

### Bibliography

Basic

1. Alegre H., Performance Indicators for Water Supply Services. IWA Publishing, Londyn 2000
2. Hall P., Urban and regional planning /Routledge London, New York 2002
3. Pelorosso R. Modeling and urban planning: A systematic review of performance-based approaches Sustainable Cities and Society, 1(52) 2020



4. Goodier, J. , "Encyclopedic Dictionary of Landscape and Urban Planning: Multilingual Reference Book in English, Spanish, French and German", Springer 2010

Additional

1. ISO 37122:2019 Sustainable cities and communities — Indicators for smart cities
2. ISO 55000:2014 Asset management — Overview, principles and terminology

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	150	6,0
Classes requiring direct contact with the teacher	35	1,5
Student's own work (literature studies, preparation for tutorials, preparation for tests, presentation preparation) <sup>1</sup>	115	4,5

<sup>1</sup> delete or add other activities as appropriate