COURSE DESCRIPTION CARD - SYLLABUS

Course name
Landscape and Energy-Saving Architecture

Course

Field of study
Sustainable Building Engineering
Area of study (specialization)

Level of study
First-cycle studies
Form of study
full-time

Year/Semester
I / 1
Profile of study
general academic
Course offered in
English
Requirements
compulsory

Year/Semester
I / 1
Profile of study
general academic
Course offered in
English
Requirements
compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15		
Tutorials	Projects/seminars	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
PhD Eng. Arch. Marta Pieczara
marta.pieczara@put.poznan.pl
Faculty of Architecture
Poznań University of Technology
ul. Jacka Rychlewskiego 2
61-131 Poznań

Responsible for the course/lecturer:

Responsible for the course/lecturer:

Prerequisites

Students entering this course should have basic knowledge in the fields of mathematics and physics.

They should also be able to obtain information from specified literature sources and use it in a critic way to write a short article on individually selected topic.

Course objective

Providing students with basic knowledge in the fields of sustainable landscaping as well as energy-efficient architecture and passive building.

Course-related learning outcomes

Knowledge

Student has basic knowledge of land planning and energy planning, relations between architecture and urban planning, technical and economic potential of building engineering as well as the effect of building investment on the built sustainable environment.

Student knows the problems of landscape architecture and land sustainable development.

Student has knowledge about the methods of assessing the quality of the landscape and estimating the impact of the designed object on the existing landscape.
Student has basic theoretical knowledge about passive construction and the use of renewable energy sources in construction.
Student has basic knowledge about the certification programs for energy-efficient buildings.

Skills

Student is able to critically analyse and evaluate the way of performance of a given technical solution in the field of environmental engineering.
Student can communicate in a foreign language (also other than English), including technical terminology in the field of sustainable building engineering
Student understands mutual relations between object and surroundings, are able to identify the existing functional-spatial resources, evaluate them and formulate correct conclusions on possible transformations in urban scale; are able to prepare a development plan with growing degree of complexity.
Student has the ability to obtain information on a selected topic from the sources and perform their critical analysis.

Social competences

Student is able to adapt to new and changing circumstances, can define priorities for performing tasks defined by themselves and other people, acting in the public interest and with regard to the purposes of sustainable development.
Student is ready to autonomously complete and broaden knowledge in the field of modern processes and technologies of building engineering.
Student understands the need to transfer to the society the knowledge about sustainable building engineering, transfers the knowledge in a clear and easily comprehensible manner.
Student understands the ethical issues related to the activities of the engineer. He understands his responsibility for the environment and the landscape.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The credit is obtained on the basis of a written essay on a selected topic, included in the discussed program content. In order to write the essay, the student: independently selects a topic, acquires literature on it, uses the information obtained from it in a critical way to analyze the problem. The work ends with self-drawn conclusions.

The paper is evaluated in the following categories: relevance of the topic (0-5 points); critical use of literature (0-5 points); technical compatibility (0-5 points); presentation clarity (0-5 points); own intellectual contribution (0-5 points). Maximum number of points: 25 points Pass score: 13 points

Programme content

1. Typology and classification of landscape forms.
2. Genesis of landscapes. Expression of human social and psychological needs in the landscape.
3. Social conditions of landscape development.
4. Natural and anthropogenic conditions for landscape development.
5. Visual quality of the landscape.
6. Forming architectural objects in the landscape
7. Sustainable landscape development.
8. Basics of energy-efficient design. Polish and EU law in the aspect of energy-saving construction and renewable energy use. Basic concepts.
9. Basic principles of passive architecture. Principles of pro-ecological approach in designing energy-efficient architecture (with particular emphasis on: orientation, form, environment, glazed surfaces, thermal insulation). The role of greenery.
10. Renewable energy - solar energy - potential for use, types of systems and possibilities of their application.
11. Renewable energy - water - potential of use, types of systems and possibilities of their application. Rainwater management and water recycling.
12. Renewable energy - geothermal energy - potential of use, types of systems and possibilities of their application.
13. Renewable energy - wind energy - potential of use, types of systems and possibilities of their application.
Installations supporting energy-saving buildings using biomass.
14. Materials used in sustainable buildings. Selection of structural and finishing materials used in energy-efficient architecture.

Teaching methods

1. Lectures with multimedia presentation
2. eLearning Moodle

Bibliography

Basic

1. Alexander C. Nature of order. Center for Environmental Structure. Berkeley. 2002-2004.

2. Alexander C., Ishikawa S., Silverstein M. A Pattern Language. Oxford University Press. 1977.
3. Bogdanowski J., Łuczyska-Bruzda M., Novak Z. Architektura Krajobrazu. Warszawa, Kraków. 1981.
4. Böhm A. Architektura krajobrazu, jej początki i rozwój. Skrypt dla studentów wyższych szkół technicznych. Kraków. 1994.
5. Böhm A. Planowanie przestrzenne dla architektów krajobrazu. O czynniku kompozycji. Kraków. 2006.
6. Bonenberg W. Przemysł w mieście. Ekologiczna metoda modernizacji zakładów przemysłowych zlokalizowanych na obszarach intensywnie zurbanizowanych. Gliwice. 1985.
7. Brentano F. Psychologia z empirycznego punktu widzenia. PWN. Warszawa. 1999.
8. Baranowski A., Projektowanie zrównoważone w architekturze, Wyd. Pol.Gdańska,Gdańsk. 1998.
9. Feist W., Podręcznik podstawy budownictwa pasywnego, Wyd. Polskiego Instytutu Budownictwa Pasywnego, Gdańsk. 2012.
10. Guzowski M., Towards zero-energy architecture. New solar design., Laurence King Publ., London. 2010.
11. Herzog T., Solar Energy In Architecture and Urban Planning, Prestel,Munich-New York.1996.
12. Myga-Piątek U., Cultural landscapes. Evolutionary and typological aspects. University of Silesia, Katowice. 2012.
13. Zimny J., Odnawialne źródła energii w budownictwie niskoenergetycznym, Polska Geotermalna Asocjacja, Warszawa-Kraków. 2010.

Additional

1. Gołaszewska M. Zarys estetyki. Warszawa 1986.
2. Heidegger M. Bycie i czas. Tłum. B. Baran. Warszawa. 1994.
3. Husserl E. Badania logiczne. PWN. Warszawa. 2006.
4. Kierkegaard S. Okruchy filozoficzne. PWN. Warszawa. 1988.
5. Woźniak C. Martina Heideggera myślenie sztuki. Kraków. 1997.
6. Strzałecki A. Wybrane zagadnienia psychologii twórczości. Warszawa, 1969
7. Szczepański J. Socjologia. Rozwój problematyki i metod. Warszawa. 1961.
8. Tatarkiewicz W. Historia estetyki Arkady. Warszawa. 1985-1991.
9. Tatarkiewicz W. Droga przez estetykę. Arkady. Warszawa. 1972
10. Majerska-Pałubicka B., Rozwiązania energooszczędne w architektonicznym projektowaniu obiektów handlowych, Pol. Śląska, Gliwice, 2001.
11. Naciążek B., Piotrowski R., Jak zbudować dom energooszczędny i skorzystać z dopłaty, Wyd. Przewodnik Budowlany, 2013.
12. Wnuk R., Instalacje w domu pasywnym i energooszczędnym, Wyd. Przewodnik Budowlany, 2007.
13. Wines J., Zielona architektura,Wyd.Taschen,Kőln,2008.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2
Classes requiring direct contact with the teacher	15	0.5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	35	1.5

[1] delete or add other activities as appropriate