COURSE DESCRIPTION CARD - SYLLABUS

Course name
Computer Aided Design with Elements of BIM_3

Course

Field of study
ARCHITECTURE
Area of study (specialization)

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

Year/Semester
II/4
Profile of study
general academic
Course offered in
polish/english
Requirements
compulsory

Number of hours

Lecture
15
Laboratory classes
30
Other (e.g. online)
0
Tutorials
0
Projects/seminars
0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
dr inż. arch. Borys Siewczyński

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Faculty of Architecture

ul. Jacka Rychlewskiego 2 61-131 Poznań

Responsible for the course/lecturer:
mgr inż. arch. Jan Szot

mgr inż. arch. Edyta Sobieraj

inż. arch. Radosław Ptaszyński

Prerequisites

- the student has basic knowledge of the principles of safe use of computer equipment,

- the student has basic knowledge of graphic programs

-the student is able to obtain information from literature, databases and other, properly selected sources, is able to integrate information, interpret it, as well as draw conclusions and formulate conclusions for opinions,

- the student is able to use computer equipment

-the student correctly identifies and resolves dilemmas related to the practice of the profession

Course objective

1. The aim of the course is to provide the basics of current knowledge: theoretical and practical

the field of computer-aided design.

2. As part of the course, the basics of computer knowledge are presented design support in the context of an architectural workshop. Performed during the course there are specific design and graphic tasks to assimilate the knowledge characteristic of discussed topics related to the modern, IT workshop. Introductory classes to the use of individual design applications are included in the implementation

Course-related learning outcomes

Knowledge

Student knows and understands:

A.U6. integrate information obtained from various sources, formulate their interpretation and critical analysis;

A.U7. communicate using various techniques and tools in a professional environment appropriate for architectural and urban design;

A.U8. prepare architectural and construction documentation in appropriate scales in relation to the conceptual architectural design;

B.W6. investment economics and organization methods as well as the course of the design and investment process; basic principles of design and implementation quality management in the construction process;

B.W7. ways of communicating the idea of architectural, urban and planning projects and their development;

B.W8. the role and application of graphics, drawing and painting as well as information technologies in the process of architectural and urban design;

B.W9. principles of occupational health and safety.

Skills

Student can:

A.S1. independent thinking to solve simple design problems;

B.U3. use properly selected computer simulations, analyzes and information technologies, supporting architectural and urban design;

B.U4. develop solutions for individual building systems and elements in terms of technology, construction and materials;

B.U6. properly apply standards and legal regulations in the field of architectural and urban design.

Social competences

Student is capable of:

B.S1. formulating opinions on the achievements of architecture and town planning, their determinants and other aspects of the architect's activity, as well as providing information and opinions;

B.S2. reliable self-assessment, formulating constructive criticism regarding architectural and urban planning activities.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

- Lectures:

Forming grade:

- grade from colloquium in the form of a written test to evaluate knowledge.

Lecture:

Formative assessment:

periodic control of learning progress, active participation in classes

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus); 70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Summative assessment:

a final test or (if an exam is included in the curriculum) a written exam

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus); 70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

- Laboratories:

Forming grade:

Grades from subsequent works made during classes

Adopted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0

Forming grade:

- the average of grades obtained during the semester according to the given weights

Adopted grading scale: 3,0; 3,5; 4,0; 4,5; 5,0

Laboratory classes:

Formative assessment:

partial reviews, covering individual project tasks, checking the progress of the student's work, presented in the group forum, discussion

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus); 70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Summative assessment:

final review, including the last project task, which is a summary of the knowledge and skills acquired during the implementation of previous projects, presentation at the group forum or at a collective review in the presence of other tutors

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus); 70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Programme content

As part of the course, the basics of knowledge about computer-aided design in the context of an architectural workshop are presented. During the course, examples of practical use of modern computer instruments are discussed. Theoretical foundations of computer-aided design are also presented. Issues related to a wide range of computer software and hardware applications are discussed. The engineering and architectural practice is discussed in relation to the presented IT issues. Elements of a modern workshop are introduced, such as raster and vector graphics, as well as theoretical and practical basics of drafting and parametric software. Issues related to the use of IT instruments in spatial planning are also presented. Particular emphasis is placed on indicating the role played by the visual presentation of design works in the context of design and utility graphics, visualization. Attention is also drawn to the important role played by information technology in the field of coordination and exchange of design data. Individual issues are discussed on the examples of specific design applications. The discussed issues are of a nature that is the basis for students' own, creative searches, in direct connection with the

laboratory exercises in the subject. The aim of the course is to provide the basics of current knowledge: theoretical and practical in the field of computer-aided design.

Teaching methods

1. Illustrated review lecture - multimedia presentation.

2. Performing experiments using software that illustrates typical design problems after prior instruction; project method: project - practical; case studies / discussion / problem solving.

3. eKursy (system supporting the didactic process and distance learning)

Bibliography

Basic

1. Kasznia D., Magiera J., Wierzowiecki P., BIM w praktyce. Standardy, wdrożenie, case study, Wydawnictwo Naukowe PWN SA, Warszawa, 2017

2. Gawrysiak P.; Cyfrowa Rewolucja. Rozwój cywilizacji informatycznej, Wydawnictwo Naukowe PWN S.A., Warszawa 2008.

3. Tomana A.: BIM. Innowacyjna technologia w budownictwie, Krakow 2015.

4. E-script for the course

Additional

1. Austin T., Doust R.; Projektowanie dla nowych mediów, Wydawnictwo Naukowe PWN, Warszawa 2008

2. Brito A.; Blender 3D: Architecture, Buildings, and Scenery: Create photorealistic 3D architectural visualizations of buildings, interiors, and environmental scenery, Packt Publishing 2008

3. Szot J., Application of live-link solutions in the architect's practice and the Bauhaus heritage, Architectus, 2020, 4(64).

4. Linbergh Van,: Intellectual Property and Open Source. A Practical Guide to Protecting Code, O'Reilly 2008

5. Masłowski K., Darmowe oprogramowanie w codziennym życiu, Helion, Gliwice 2009

6. Milgram'a P. i Kishino A. F. ;Taxonomy of mixed reality visual displays, IEICE Transactions on Information Systems, Vol E77-D, No.12, December 1994

7. Pasek J., Modelowanie wnętrz w 3D z wykorzystaniem bezpłatnych narzędzi, Helion, Gliwice 2011

8. Pikoń A.:AutoCAD 2017 PL. Pierwsze kroki. Helion, Gliwice, 2016

9. Pikoń A.:AutoCAD 2014 PL. Helion, Gliwice, 2015

10. Siewczyński B., Analiza rzeczywistości rozszerzonej w aspekcie wirtualnego uzupełnienia przestrzeni miejskiej, w: Zeszyty Naukowe Politechniki Poznańskiej,, seria: Architektura i Urbanistyka, nr 26, 2012, Wydawnictwo Politechniki Poznańskiej s. 81-90

11. Siewczyński B., The urban context in digital, variable space, w: Architecture, context, resposibility, red. Bonenberg A.

12. Siewczyński B., Zabytki architektoniczne ostrowa lednickiego w rekonstrukcji komputerowej, Biblioteka Studiów Lednickich Tom X, Lednica-Poznań 2004

13. Stallman R.M., Free Software, free Society, Free Software Foundation, Boston 2002

14. Toffler A., Szok przyszłości, Zysk i S-ka, Warszawa 1998

15. Zimek R.: ABC CorelDRAW X7 PL, Helion, Gliwice, 2016

16. Zimek R., Oberlan Ł., ABC grafiki komputerowej. Wydanie II, HELION, Gliwice, 2005

17. Polski Związek Pracodawców Budownictwa, BIM Standard PL, Warszawa, 2020

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,0
Classes requiring direct contact with the teacher	45	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	10	0,5

[1] delete or add other activities as appropriate