



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Engineering Drawing and CAD

### Course

Field of study

Sustainable Building Engineering

Area of study (specialization)

technical sciences

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

English

Requirements

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

Tutorials

Projects/seminars

30

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

dr inż. Hasan AL-RIFAIE

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Civil and Environmental Engineering

ul. Piotrowo 5, 60-965 Poznań

Responsible for the course/lecturer:

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Civil and Environmental Engineering

ul. Piotrowo 5, 60-965 Poznań

### Prerequisites

1 Knowledge: Fundamentals of geometry and descriptive geometry.

2 Skills: Ability to gain information from recommended sources.

3 Social competencies: Understanding the necessity of constant actualisation and complementation of knowledge. Readiness to undertake co-operation within a team.

### Course objective

Obtaining the ability to execute architectural and building drawings as well as the ability to read information from archival drawings.



### Course-related learning outcomes

#### Knowledge

have advanced knowledge of the principles of descriptive geometry and technical drawing, recording and reading architectural drawings, construction maps and geodesic maps, as well as the methods of preparing the maps both traditionally and using the BIM technology (Building Information Modelling) - [W01\_KSB\_W02]

#### Skills

are equipped with various skills necessary for performing design tasks in the form of particular works in the field of sustainable building engineering, including such skills as: traditional techniques (freehand drawing), specialized software dedicated for design (CAD and BIM technology) - [U01\_KSB\_U27]

#### Social competences

take responsibility for the accuracy and reliability of working results and their interpretation - [K01\_KSB\_K02]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

- Evaluation of lectures Not applicable
- Exercise evaluation Not applicable
- Evaluation of projects

As part of the projects, the student performs construction and building drawings of a detached house (horizontal and vertical projection). Drawings are evaluated in the context of:

- correctness of using the standard principles of technical drawing,
- proper selection and use of the CAD environment tool (including layers, blocks, etc.),
- proper presentation of structural and architectural elements,
- readability, consistency and aesthetics.

The credit is obtained from a minimum of 50% of the maximum number of points. Evaluation criteria: 100% -91% -5.0; 90% -81% -4.5; 80% -71% -4.0; 70% -61% -3.5; 60% -51% -3.0; less than 50% -2.0

- Laboratory assessment

Completing the laboratory is based on the evaluation of independent work in the AutoCad / QCad environment. The student has the task of making a few simple drawings. The knowledge and ability to apply the tools presented during the course is assessed.

The credit is obtained from a minimum of 50% of the maximum number of points. Evaluation criteria: 100% -91% -5.0; 90% -81% -4.5; 80% -71% -4.0; 70% -61% -3.5; 60% -51% -3.0; less than 50% -2.0



## Programme content

### Laboratory:

Lab.1. Computer Aided Drafting

Lab.2. Cad Software

Lab.3. Learning AutoCad (2D)

Lab.4. Engineering Drawing Exercises

Lab.5. Drawing instruments and materials.

Lab.6. Drawing papers and sheet sizes.

Lab.7. Lettering.

Lab.8. Line work - line type, thickness

Lab.9. Dimensioning.

Lab.10. Drawing scales.

Lab.11. Graphical symbols of building materials.

Lab.12. Definition of basic structural components of building.

Lab.13. Graphical symbols used in architectural and construction drawings

Lab.14. Drawing types included in building design documents

Lab.15. Final Exam

### Project:

Week 1: Demonstration of the Project Idea and required drawings

Week 2-13: Engineering Drawings are drawn by the student with consistent supervision of the teacher

Week 14: Final Consultations

Week 15: Project Submission and Assessment



## Teaching methods

Laboratory: Multimedia presentation, illustrated with examples given on a board, and performance of tasks given by the teacher

Project: An independent project idea will be given to the student to accomplish through the semester, with the possibility to consult the teacher in any step of the project.

## Bibliography

### Basic

1. ISO 6707-1:2004 Building and civil engineering -- Vocabulary -- Part 1: General terms
2. EN ISO 5457:1999 Technical product documentation ? Sizes and layout of drawing sheets
3. EN ISO 128-23:1999 Technical drawings ? General principles of presentation ? Part 23: Lines on construction drawings
4. EN ISO 3098-0:1997 Technical product documentation -- Lettering -- Part 0: General requirements
5. PN-B01030:2000 Rysunek budowlany. Oznaczenia graficzne materiałów budowlanych
6. PN-B-01025:2004 Rysunek budowlany. Oznaczenia graficzne na rysunkach architektoniczno-budowlanych
7. ISO 7518:1983 Technical drawings -- Construction drawings -- Simplified representation of demolition and rebuilding
8. PN-B-01029:2000 Rysunek budowlany. Zasady wymiarowania na rysunkach architektoniczno-budowlanych
9. ISO 129:2018 Technical product documentation (TPD) ? Presentation of dimensions and tolerances ? Part 1: General principles
10. Rysunek techniczny budowlany - E. Miśniakiewicz, W. Skowroński, Warszawa, Arkady 2007
11. Rysunek techniczny w budownictwie - J. Bieniasz, B. Januszewski, M. Piekarski, Oficyna Wydawnicza Politechniki Rzeszowskiej, Rzeszów 2009
12. PN-B-01040:1994 Rysunek konstrukcyjny budowlany. Zasady ogólne
13. PN-B-01042:1999 Rysunek konstrukcyjny budowlany. Konstrukcje drewniane.
14. EN ISO 3766:2003 Construction drawings -- Simplified representation of concrete reinforcement
15. ISO 4066:1994 Construction drawings -- Bar scheduling
16. EN ISO 5261:1995 Technical drawings -- Simplified representation of bars and profile sections



17. PN-ISO 2552:1997 Rysunek techniczny. Połączenia spawane, zgrzewane i lutowane. Umowne przedstawianie na rysunkach.
18. PN-B-01027:2002 Rysunek budowlany. Oznaczenia graficzne stosowane w projektach zagospodarowania działki i terenu
19. PN-B-01029:2000 Rysunek budowlany. Zasady wymiarowania na rysunkach architektoniczno-budowlanych
20. Rysunek techniczny budowlany. E. Miśniakiweicz, W. Skowroński, Arkady, Warszawa 2007
21. Rysunek techniczny w budownictwie. J. Bieniasz, B. Januszewski, M. Piekarski, Oficyna Wydawnicza Politechniki Rzeszowskiej, Rzeszów 2009

Additional

1. EN ISO 5455:1979 Technical drawings -- Scales
2. PN-ISO 128-30:2006 Rysunek techniczny. Zasady ogólne przedstawiania. Część 30: Wymagania podstawowe dotyczące rzutów
3. EN ISO 5456-1,2,3:2002 Technical drawings ? Projection methods
4. PN-ISO 128-30:2006 Rysunek techniczny. Zasady ogólne przedstawiania. Część 30: Wymagania podstawowe dotyczące rzutów

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	75	3,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	25	1,0

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