



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Computer aided design

### Course

Field of study

Year/Semester

Education in Technology and Informatics

2/4

Area of study (specialization)

Profile of study

-

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

30

0

Tutorials

Projects/seminars

0

0

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Piotr Krawiec, prof. PP

Responsible for the course/lecturer:

dr inż. Jarosław Adamiec

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### Prerequisites

The student starting this subject should be familiar with the principles of classical and computerized construction. Use the 3D CAD system efficiently. He should also be able to obtain information from specified sources and be ready to cooperate as part of a team.

### Course objective

Understanding the essential elements and machine configurations using engineering calculation procedures. Acquisition of skills in selection of geometrical and material features as well as analysis of analyzed external units and machine elements.

### Course-related learning outcomes

Knowledge

1. Has basic knowledge about standardized rules of structure recording.
2. Has solid knowledge of the basics of 2D and 3D modeling.



### Skills

1. Is able to design typical mechanical gearboxes with suggested programs in the field of computer-aided configuration
2. Has the ability to self-study from the available tools of teaching tools.
3. Is able to use popular 3D modeling packages at a level enabling creation of drawing documentation in accordance with applicable drawing standards

### Social competences

1. Understands the needs and knows the possibilities of continuous training
2. Has the concept and understanding of aspects of mechanical engineering and its impact on the environment, and responsibility for decisions
3. Is to obtain information in a professional manner, include principles of professional ethics and respect for cultural diversity
4. Has general cooperation and readiness to comply with the principles of cooperation in teams and taking actions for common tasks

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Credit based on the design of the mechanical transmission.

### Programme content

Parametric modeling of solids, modeling of gears (cylindrical, tapered, worm), tension gears (with clinical or toothed belts or chain), shafts, bearings (rolling, sliding), screw, bolt, spline, spline, welded, welded joints, and also springs, cams and frames. Analysis of component durability and machine configuration with FEM indicator.

### Teaching methods

Lecture: multimedia presentation, illustrated with examples given with the projector's recommendation. Laboratory exercises: multimedia presentation illustrated with examples given on the board and performing tasks given by the teacher - practical exercises

### Bibliography

Basic

1. Krawiec Piotr (red.), Grafika komputerowa dla mechaników (wyd. VI rozszerzone i zmienione), wyd. Politechniki Poznańskiej, 2020.
2. Kiciak P., Podstawy modelowania krzywych i powierzchni: zastosowania w grafice komputerowej, Warszawa, WNT 2000.



Additional

1. Krawiec Piotr (red.), Grafika komputerowa (wyd. V rozszerzone) wyd. Politechniki Poznańskiej, 2011.
2. Dudziak Marian, Krawiec Piotr, Wspomaganie projektowania i zapisu konstrukcji, Wydawnictwo PWSZ w Kaliszu, 2012.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	90	3,0
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) <sup>1</sup>	45	1,5

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