



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Computer-aided design [S1ETI2>KWP]

Course

Field of study

Education in Technology and Informatics

Year/Semester

2/4

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

30

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

3,00

Coordinators

prof. dr hab. inż. Piotr Krawiec
piotr.krawiec@put.poznan.pl

Lecturers

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 1

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:

Passing a lecture consisting of 5 equally scored theoretical questions. Laboratory: assessment based on the completed mechanical transmission design. Assessment rules: a grade given on the basis of the obtained scores; linear grading scale; C grade for earning at least 50% of all points.

Programme content

The subject program covers the issues of modeling assemblies and drives of Rapid technologies machines in product development, Rapid Inspection in application to rapid technologies, methodology for designing three-dimensional models using virtual prototyping technology.

Course topics

Parametric modeling of solids,

Modeling of gears (cylindrical, bevel, worm),

Modeling of cable transmissions (with V-belts or toothed belts or with a chain),

Modeling of shafts, bearings (rolling, sliding),

Modeling of bolted, pin, keyed, splined, welded and welded connections, as well as springs, cams and frames,

Strength analysis of machine elements and assemblies using FEM,

Simulations of dynamic and kinematic features of mechanisms.

Teaching methods

Lecture: multimedia presentations. Laboratory: multimedia presentation illustrated with sample tasks

Bibliography

Basic:

1. Krawiec Piotr Projektowanie napędów i elementów maszyn z CAD. Wydawnictwo Politechniki Poznańskiej, 2007.

2. Kiciak P., Podstawy modelowania krzywych i powierzchni: zastosowania w grafice komputerowej, Warszawa, WNT 2000.

3. Bis J., Markiewicz R., Komputerowe wspomaganie projektowania CAD podstawy PWN Warszawa 2009.

Additional:

1. Krawiec Piotr Grafika komputerowa dla mechaników (wyd. VI rozszerzone i zmienione), wyd. Politechniki Poznańskiej, 2020.

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	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00