



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Advanced methods of computer aided design [S2MiBP1E>ZMKWP]

Course

Field of study	Year/Semester
Mechanical and Automotive Engineering	1/2
Area of study (specialization)	Profile of study
Product Engineering	general academic
Level of study	Course offered in
second-cycle	english
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

3,00

Coordinators

dr inż. Piotr Posadzy
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Lecturers

Prerequisites

KNOWLEDGE: Basics of computer graphics. Knowledge of physics, general mechanics, strength of materials, mechanical vibrations. Fundamentals of fluid mechanics and thermodynamics
SKILLS: The ability to use various sources of information, including manuals and technical documentation. Ability to model 3D parts and assemblies in CAD systems (e.g. Solid Works, Inventor, Catia) 2
SKILLS: The ability to use various sources of information, including manuals and technical documentation. **SOCIAL COMPETENCES:** The student is able to work in a group, assuming different roles. The student demonstrates independence in solving problems, acquiring and improving his knowledge and skills.

Course objective

The ability to model and perform numerical calculations of advanced problems of mechanics of continuous media, fluids and thermal.

Course-related learning outcomes

The ability to model and perform numerical calculations of advanced problems of mechanics of continuous media, fluids and thermal.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written credit for the lecture (test). Ongoing assessment of the state of knowledge in the laboratory.

Programme content

Numerical calculations using: contact elements, composite materials. Modeling of pinned connections in FEM calculations. Problems of dynamics in the calculation of mechanical structures. Material and geometric nonlinearity. Thermal calculations and modeling of laminar and turbulent flows. Interdisciplinary issues, i.e. aeroelastic, aeroacoustics. Methods of data transfer between FEM grids.

Teaching methods

Lecture with multimedia presentation

Laboratory - work on a computer in the Femap / Nastran, Solid Works environment

Bibliography

Basic

O.C. Zienkiewicz: Metoda Elementów Skończonych. WNT Warszawa 1977

J. Kruszewski, E. Wittbrodt, Z. Walczyk: Drgania układów mechanicznych w ujęciu komputerowym, T II, zagadnienia wybrane, Seria Wspomaganie Komputerowe CAD/CAM, WNT-Warszawa, 1996

M. Kleiber: Komputerowe Metody Mechaniki Ciał Stałych, PWN 1995, ISBN 83-01-11740-0

Additional

Didactic materials of the Department of Virtual Engineering (Institute of Applied Mechanics)

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