Nazwa w języku polskim:
Nazwa w jęz. angielskim: ***Mechanics***

Dane dotyczące zajęć:
Information on course:

Jednostka oferująca: Wydział Inżynierii Środowiska I Energetyki // prof. dr hab. inż. Grzegorz Nowak
Course offered by: Faculty of Energy and Environmental Engineering // prof. dr hab. inż. Grzegorz Nowak

Język wykładowy:
Angielski
Language:
English
Strona WWW: **Course homepage:**
Skrócony opis:
Short description:
The course covers topics related to the fundamental concepts of engineering mechanics. It covers problems in the statics of a material point and a rigid body, as well as selected elements of the description of the geometric characteristics of cross-sections. Students will become familiar with the fundamental laws of mechanics and will acquire the skills to solve simple technical problems. The practical examples of the application of the laws of mechanics and the use of mathematical tools discussed in the course demonstrate the practical relevance of the knowledge gained.
Opis:
Description:
The course covers the following topics: Lectures: • Fundamental laws and principles of statics • Vectors – decomposition of a force vector into components; Position vector • Force vector along an axis, • Equilibrium of a material point; • Force in space; • Moment of force; Couple Moment; • Rigid body; • Constraint reactions in planar systems; • Conditions of equilibrium for a rigid body; • Plane trusses; • Internal forces and bending moments in beams; • Geometric centre of a figure, centre of gravity and centre of mass; • Static moments and moments of inertia; Project: • Determination of resultant forces; • Equilibrium of a planar convergent system of forces; • Equilibrium of a planar arbitrary system of forces; • Determination of values and plotting of diagrams of internal compressive and shear forces and bending moments; • Analysis of forces in a truss; • Determination of the geometric centre of a figure; • Determination of static moments and moments of inertia, Number of contact hours involving academic staff or other lecturers and students: Lecture: 15 hours;

Project: 30 hours;
Total number of hours: 45
Number of ECTS credits: 3

Literatura:

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Bibliography:

- T. Niezgodziński: Mechanika ogólna, WN PWN, 2019
- J. Nizioł, Metodyka rozwiązywania zadań z mechaniki, WNT, 2019
- J. Misiak Mechanika techniczna, WNT 2019
- D. Halliday, R. Resnick, J. Walker: Podstawy fizyki, tom 2, PWN, 2016
- R. C. Hibbeler: Engineering Mechanics – Statics, Pearson, 2016

Efekty uczenia się:

Learning outcomes:

The student knows and understands mechanical concepts such as force, moment, equilibrium, centre of mass, static moment and moment of inertia K1A_W02 (lecture test)
The student knows and understands the structure and behaviour of truss, beam and bar structures under external loads K1A_W06 (lecture test)
The student knows and understands the relationships between external and internal forces and moments for simple structural elements K1A_W01 (lecture test)
The student is able to carry out an analysis of forces and moments for simple loading cases in mechanical systems K1A_U01 (project test)
The student is able to determine the basic geometric characteristics of objects used in mechanics, such as the geometric centre, moment of inertia and moment of inertia of a plane figure K1A_U01 (project test)
The student is able to independently plan and carry out their own learning whilst independently solving assigned mechanical problems K1A_U08 (project test)

Metody i kryteria oceniania:

Assessment methods and assessment criteria:

Lecture:
Written assessment in the form of a test comprising open-ended questions:
Pass mark: a minimum of 60% correct answers:
Project:
Written assessment in the form of solving open-ended problem-solving tasks:
Pass mark: a minimum of 60% of the total marks
The final mark comprises 70% of the mark for the project work and 30% of the mark for the lecture, provided that both components have
been successfully completed.
The syllabus is valid from the 2024/2025 academic year, and its content is not subject to change during the semester

Przynależność do grup przedmiotów w cyklach:
Element of course groups in various terms:

Opis grupy przedmiotów Course group description	Cykl pocz. First term	Cykl kon. Last term
przedmioty obieralne studia stacjonarne stopień studiów – dowolny kierunek studiów – dowolny, semestr dowolny elective courses full-time degree - any	2024/25	

field of study - any semester - any		