Nazwa w jęz. angielskim: Strength of materials

Dane dotyczące zajęć:
Information on course:

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

Język wykładowy:

angielski

Language:

English

Strona WWW:
Course homepage:

Skrócony opis:

Short description:

The subject covers the basic issues of the strength of materials on the basis of simple structural elements. The features and properties of materials that determine the component's response to an external load are discussed. Stresses and deformations of bars are determined in simple load cases as well as in complex stress cases. Fundamentals of the state of stress and deformation will be given, as well as methods of assessing the strength of the material and its safe operation.

Opis:

Description:

Lecture:

1. internal forces in the rods,
2. concept of stress and strain,
3. mechanical properties of materials,
4. stress-strain diagram,
5. tension and compression of rods and rod systems,
6. torsion of circular bars,
7. beam bending, bending stress and deflection
8. shear of rods,
9. basic theory of stress and strain,
10. failure criteria,
11. combined stress in rods,
12. thermal stress,
13. pressure vessels,
14. buckling of columns,

Classes:

1. stress and deformation in bars for simple load cases: axially loaded members, torsion of shafts, bending of
2. beams, shear. Statically
3. determinate and indeterminate systems, beam deflection.

Labs:

1. Tensile test
2. Spring constant
3. Charpy test,
4. Tensometry,
5. Buckling test,
6. Bending test,
7. Torsion test

Number of hours of classes with direct participation of academic teachers or other persons teaching courses and students
Lecture: 30h
Exercises: 30h
Laboratory: 15h
Number of ECTS credits: 6

Literatura:

Bibliography:

1. R. Hibbeler, Mechanics of Materials, Prentice-Hall, 2017
2. J.L. Meriam, L.G. Kraige, Mechanics of Materials, Wiley, 2011
1. F. P. Beer, E. Russell Johnston Jr., J. T. DeWolf, D. F. Mazurek, Mechanics of Materials, McGrawHill Education; 2014

Efekty uczenia się:

Learning outcomes:

K1A_W06,
K1A_W10,
K1A_U18

Metody i kryteria oceniania:

Assessment methods and assessment criteria:

Lecture:
Written credit in the form of a test with open-ended or multiple-choice questions
Pass criterion: minimum 50% of correct answers
Exercises:
Written credit in the form of solving open-ended problem tasks
Passing criterion: minimum 50% of the obtained points

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 i niestacjonarne stopień studiów – dowolny kierunek studiów – dowolny, semestr dowolny elective courses full-time and part-time studies degree - any field of study - any semester - any	2023/2024	