



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Airframe endurance

### Course

Field of study

Aerospace Engineering

Area of study (specialization)

Aeronautical Engineering

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1 / 1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

Tutorials

Projects/seminars

15

Other (e.g. online)

### Number of credit points

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

### Prerequisites

Student has basic knowledge on material endurance, airframe desing and estimating airframe loading.

Student has the ability to self-study using modern teaching tools, such as remote lectures, websites and databases, didactic programs, e-books. Student can obtain information from literature, the Internet, databases and other sources. Can integrate the information obtained and interpret conclusions and create and justify opinions.

Student understands the need to learn throughout life; he can inspire and organize the learning process of other people. Student is ready to critically evaluate the knowledge and content received, recognize the importance of knowledge in solving cognitive and practical problems and consult experts in the case of difficulties in solving the problem

### Course objective

Course covers the theoretical pricipals of airframe andurance for classical and shell-like airframes including fatigue endurance.



## Course-related learning outcomes

### Knowledge

Student has extensive knowledge on airframe endurance, shell structure endurance, structure stability. Student has extensive knowledge in the field of strength of materials, including the theory of elasticity and plasticity, performance hypotheses, methods for calculating beams, membranes, shafts, joints and other structural elements, as well as methods for testing the strength of materials and the state of strain and stress in constructions

### Skills

Student is able to communicate using various techniques in a professional environment and other environments using a formal record of construction, technical drawing, concepts and definition of the scope of the studied field of study. Student has the ability to self-study using modern teaching tools, such as remote lectures, websites and databases, didactic programs, e-books. Student can obtain information from literature, the Internet, databases and other sources. Can integrate the information obtained and interpret conclusions and create and justify opinions

### Social competences

Student understands the need to learn throughout life; he can inspire and organize the learning process of other people. Student is ready to critically evaluate the knowledge and content received, recognize the importance of knowledge in solving cognitive and practical problems and consult experts in the case of difficulties in solving the problem

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture assesment test, Project assignment test

## Programme content

- Reminder: airframe loading
- Reminder: basic materials endurance
- Frame endurance
- Shell structure endurance
- fatigue endurance
- heat fatigue endurance
- numerical methods for stress calculatios

## Teaching methods

Lecture and project assesement

## Bibliography



Basic

MEGSON, T. H. G. (1999). Aircraft Structures for Engineering Students (3rd ed.)

JENKINSON, L. R. (2003). Aircraft Design Projects for Engineering Students

ROKSAM, J. Airplane design

Additional

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	53	2,1
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	38	1,5

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