



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Communication and registration systems

### Course

Field of study

Aerospace Engineering

Area of study (specialization)

Engineering and technical sciences

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2 / 3

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

Tutorials

Projects/seminars

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

EngD Wojciech Prokopowicz

Responsible for the course/lecturer:

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Faculty of Environmental Engineering and Energy

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### Prerequisites

Knowledge: In the field of computer science, communication systems, flight parameters registration and remote sensing systems, space communications systems.

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. Has the ability to self-study using modern teaching tools, such as remote lectures, websites and databases, didactic programs, e-books. 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 competencies: Student understands the need to learn throughout life; can inspire and organize the learning process of other people. 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 event of difficulties in solving the problem.

### Course objective

To acquaint students with the technical capabilities of communication equipment, communication systems including space, remote sensing systems, registration of flight parameters and applicable regulations in the field of work through technical means of communication.

### Course-related learning outcomes

#### Knowledge

Student has extensive knowledge, necessary for understanding of profile subjects and specialist knowledge about construction, methods of construction, manufacturing, exploitation, air traffic management, security systems, impact on the economy, society and environment of the aviation and cosmonautics for selected specialties: Aeronautical Engineering.

Student has detailed knowledge related to selected issues in the field of construction of manned and unmanned aircraft, in the field of on-board equipment, control systems, communication and registration systems, life support systems, automation of particular systems.

Student has ordered, supplemented with theoretical issues knowledge in the field of on-board equipment: as well as on-board and ground-based electronic communication systems, remote sensing systems, observation systems, satellite navigation systems.

#### 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

Understands the need for lifelong learning; can inspire and organize the learning process of other people.

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 event of difficulties in solving the problem.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:



Written test. Correct performance of all the assumed laboratory exercises with the presentation of relevant reports.

### Programme content

Basic issues related to the communication and information systems. Documents regulating radio communication in the Polish airspace. Introduction to the theory of radio waves and radio communication. Radio transmitters and receivers. Terminal and commutation devices. Basic concepts regarding air and space communications. Radio navigation systems and aids. Technical characteristics of digital and analogue aviation type radios. Rules and methods of organizing communication. Regulations for conducting radio correspondence. Security and protection of communications. Using technical means of communication. Morse alphabet. Practical communication and the use of aeronautical phraseology using radio sets during exercise

### Teaching methods

Lecture—Showing/Telling, Laboratory

### Bibliography

Basic

FDS 9.0 - user manual, ATM aircraft registration systems

J.Jaźwiński, Niezawodność eksploatacyjna i bezpieczeństwo lotów, WKiŁ 1989

S. Szczeciński, W. Balicki, R. Chachurski, P. Głowacki i inni, Lotnicze zespoły napędowe, WAT Warszawa 2016

Pallet E.H.J., "Aircraft Instruments and Integrated Systems", Longman Scientific and Technical Series, 1992

P. Fortescue, G. Swinerd, J. Stark, Spacecraft Systems Engineering, 3th Edition, Wiley, 2003

J. Jaap Wijker, Spacecraft Structures, Springer; 2008 edition (February 13, 2008)

Additional



### Breakdown of average student's workload

	Hours	ECTS
Total workload	47	1,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	15	1,0

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