



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Principles of Radar Systems [S1MiKC1>PSR]

Course

Field of study

Microelectronics and digital communications

Year/Semester

3/6

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

15

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge related to radio wave propagation, antenna systems, as well as digital signal processing.

Course objective

The aim of the course is to introduce students to the fundamentals of radar technology, signal processing methods, and radar measurement and imaging techniques.

Course-related learning outcomes

Knowledge:

- The student knows the principles of radar operation, their parameters, and signal processing methods.
- The student understands the functioning of radar and radionavigation systems, as well as modern radar technologies

Skills:

The student is able to perform measurements related to radar systems using appropriate tools and technologies.

Social competences:

- The student collaborates effectively in a team while working on radar system-related projects.
- The student responsibly presents the results of the project work, considering both technical and practical aspects

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

- The lecture is concluded based on an colloquium at the last classes, where a student must obtain 51% of the total possible points.
- The project is concluded based on the presentation and reports, where a student must obtain 51% of the total possible points.

The assessment will primarily be based on understanding the issues discussed in the subject. This includes, but is not limited to: writing down key formulas, parameters, explaining concepts, solving computational problems and performing a problem analysis for the presented issue.

The grades are defined within the following thresholds:

51-60% dst, 61-70% dst+, 71-80% db, 81-91% db+, 92+% bdb

Programme content

The course covers the fundamentals of radar technology, including the principles of radar operation and radar system parameters. The methods of radar signal processing, measurement techniques, and imaging, including Synthetic Aperture Radar (SAR), will be discussed

Course topics

Lecture topics (every lecture is 2 h):

1. Fundamentals of radar technology
2. Radar signal processing
3. Radar measurement and imaging systems
4. Radar and navigation systems
5. Radar technologies in defense
6. Modern radar technologies

The topics of project-based classes are related to the lecture content. Specific project topics are prepared each year.

Teaching methods

Delivery methods: lecture, including experiments, group discussion, case study. The project involves group work based on the PBL (Problem-Based Learning) philosophy, which includes workshop methods, teamwork, and presentation of results.

Bibliography

Basic:

1. M. Skolnik, "Introduction to radar systems", Mc Graw Hill, 2008.

Additional:

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Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00