POZNAN UNIVERSITY OF TECHNOLOGY

M.Sc. Programmes

Smart Aerospace and Autonomous Systems (SAAS)

Field of study: Automatic Control and Robotics

The Institute of Automatic Control and Robotics of the Faculty of Control, Robotics and Electrical Engineering, double degree diploma, in Automation and Robotics with specialization of Smart Aerospace and Autonomous Systems (SAAS).

The last decade has seen a significant increase in research in Smart Aerospace and Autonomous Systems. Now, the field is sufficiently mature to engage in a procedure of education. From an educational point of view, in the SAAS program we are interested in developing, modeling, simulating and testing guidance, navigation, control and decision systems for autonomous operation of unmanned aerial vehicle systems, unmanned ground vehicle and autonomous and robot systems. Issues of special interest include the determination of levels of autonomy and integration of control, online decision systems, mission planning, trajectory generation and tracking and limited communication.

The objective of the Master SAAS is to give interdisciplinary degree programme providing students with strong foundation in smart and autonomous systems aerospace and terrestrial robotics thorough hands-on experience, projects, assignments and a Master's thesis. One of the main aims of the proposed program study is to merge all institution efforts under one umbrella which is autonomous systems control. The curriculum's common core represents electrical, aeronautics, mechanical, control, computer science and engineering. At the end of their curriculum, students will be able to develop and implement reliable, economically safe, feasible and environmentally responsible smart aerospace and autonomous systems, and then to advance the technology to make such autonomous systems possible.

Learning outcomes – students, after passing their master degree, will have the following skills:

- Scientific and technical knowledge of autonomy engineering and the skills to use this knowledge efficiently;
- Capacity to develop and design innovative autonomous systems;
- Capacity to work both independently and in multidisciplinary teams, to communicate through written and oral presentations, in an international context;
- Capacity to transfer high techniques methodology from university to industry;
- Capacity to manage an engineering team;
- Ability to understand different European cultures and languages.

Course summary:

Semester 1

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- Networks and Programming Systems
- Fundamentals of Autonomous Systems
- Non Linear Systems
- Adaptive Control
- Basics of Smart Systems
- Sensor Integration
- Management (Social Sciences)
- A Short Course in Occupational Safety
- Local Language / Foreign Language
- Interpersonal Communication (Humanities)

Semester 2

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- Sensor Fusion
- Advanced Artificial Perception
- Flight Modeling and Simulation
- Aerial Robots
- Mission Coordination
- Embedded Software
- AI and Aerospace Systems
- Flight Planning
- Flight Control
- Languagee

Semester 3

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- Project 1–2
- Elective Courses / Individual Project
- Master's Thesis

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- Elective Course 1: Design of Multi-Agent Systems / Control of Underactuated Systems
- Elective Course 2: Design of Control Systems / Vision Based Control
- Flight Communications
- Diploma Seminar
- Master's Thesis

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M.Sc. Programmes

Smart Aerospace and Autonomous Systems (SAAS)

Field of study: Automatic Control and Robotics

University	Poznan University of Technology Poznan, POLAND
Degree to be obtained	Master of Science
Programme website	https://www.put.poznan.pl/en
Contact	International Relations Office Piotrowo 5, room 101 61-138 Poznań, Poland
Phone	+48 61 665 3544
Fax	+48 61 665 3956
E-mail	study@put.poznan.pl
Language of instruction	English
ECTS points	90
Duration	1.5 years (3 semesters)
Programme begins	end of February
Programme ends	end of June
Deadline for application	3 months before the course starts – end of November
Education requirements	English language – level B2 (Common European Framework), Bachelor of Science degree (or equivalent) in engineering or applied sciences, obtained with good marks, with qualification in aeronautics, electrical engineering, computer science engineering, systems engineering, mechanical engineering and mechatronics. Full list of the required documents is available at: https://www.put.poznan.pl/en
Mode of instruction	Lectures, classes, laboratory classes, projects, internships

It is required to attend the second semester of study at Université d'Évry Val-d'Essonne being the founding members of Paris-Saclay University.

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Potential jobs in the following sectors:

- Aviation and space
- Automotive industry
- Manufacturing
- Vehicles and autonomous systems
- Management and control systems of manned and unmanned aerial vehicles
- Intelligent security and surveillance systems
- Environmental monitoring
- Design of embedded systems
- Scientific and research institutions