



Wrocław University  
of Science and Technology

# PROSPECTUS

2023/2024

[admission.pwr.edu.pl](https://admission.pwr.edu.pl)  
**#WroclawTECH**



Wrocław  
University  
of Science  
and Technology

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# WELCOME

to your custom Prospectus of Wrocław University of Science and Technology. It contains information relevant to your interests in future education.

By viewing the individual course pages you will find specific information on courses available in English as a medium of instruction and admission details you will need, such as: the programme's duration, the deadline for application and the start date. You can also find sections on job prospects and courses you will attend during your studies. We hope you find it both useful and interesting.

### Contact details

Wrocław University of Science and Technology  
International Relations Office  
Division of Foreign Students Admission and Support  
[www.pwr.edu.pl](http://www.pwr.edu.pl)  
[www.admission.pwr.edu.pl](http://www.admission.pwr.edu.pl)  
e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)  
telephone: +48 71 320 37 11  
+48 71 320 31 70  
+48 71 320 37 19  
+48 71 320 44 39

We look forward to seeing you at Wrocław University of Science and Technology!

Your Admission Officers



## DESCRIPTION

Undergraduate studies in the field of management (Organisational Management) allow for a broad understanding of the principles of the functioning of business organisations. They provide specialist knowledge necessary to operate in many areas of the economy. Graduates will develop their theoretical and practical knowledge in the field of management sciences and related sciences, concerning issues, principles and problems related to the functioning of the organisation, both at the national and international level. They will be ready to take on key project management roles in both commercial and administrative organisations. They will be able to communicate and negotiate effectively, interpret and use data, and work creatively in teams.



## JOB PROSPECTS

The knowledge and skills obtained give the graduates the possibility of getting a job as a management / organisation specialist. The management degree (OM) develops competences useful as a middle-level manager in public and private organisations in many sectors (industry, healthcare, education, services, commerce, central and local authority institutions, etc.). It provides a way to develop your own small enterprises or to continue your education at the Master's level.



## ENTRY INFORMATION

Requirements: secondary school certificate, received after the completion of a recognised secondary school (total 12 years of education), being the equivalent of Polish Matriculation certificate.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » Deadline for application
- » Tuition fee
- » Application fee

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » English: Equivalent of minimum TOEFL IBT– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## ABOUT STUDIES

- » **Duration:** 6 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:** Anna Skowrońska-Szmer, PhD



## CONTENT

- » **forms of teaching:** Lectures, laboratories, tutorials, projects, research

### SEMESTER 1

- » Civil and Commercial Law
- » Essentials of Management
- » Information Technology
- » Mathematics
- » Microeconomics
- » Psychology

### SEMESTER 2

- » Descriptive Statistics
- » Essentials of Finance
- » Macroeconomics
- » Organisational Science
- » Sociology
- » Work Environment Physics
- » Computer Science Module
- » Social Competences Module
- » Sports

### SEMESTER 3

- » Mathematical Economics
- » Financial Accounting in the Organisational Decision Making Process
- » Marketing in the Information Society
- » Organisational Behaviour
- » Computer Science Module
- » Economic Science Module
- » Foreign Language I

### SEMESTER 4

- » Contemporary Organisational Methods and Techniques
- » Corporate Finance
- » Logistics
- » Marketing Management
- » Operations Management
- » Legal Science Module
- » Computer Science Module
- » Foreign Language II

### SEMESTER 5

- » Diploma Seminar
- » Financial Management
- » Leading Projects in Modern Organisations
- » Marketing Research
- » Methods and Tools of Data Analysis
- » Modern Human Resource Management
- » Total Quality Management
- » Computer Science Module

### SEMESTER 6

- » Bachelor's Thesis
- » Business Process Management
- » Financial Analysis Supported by Computers
- » Information Systems in Management
- » Introduction to Risk Management
- » Sport Activity
- » Management Training



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





DESCRIPTION

This programme prepares the graduates for creative engineering work in machine design, machine operation and manufacturing processes. The student will be familiar with fundamental methods, techniques, tools and materials used for solving engineering tasks in the field of Mechanical Engineering. The student acquires a directional specialty by studying mechanics, machines theory, principles of machine design, thermodynamics, computer-aided engineering techniques and manufacturing technologies. The programme gives reliable grounds to take a job in any segment of industry and services where designing, producing or maintaining machines and equipment is essential for a business.



ABOUT STUDIES

- » **Duration:** 7 semesters
- » **Mode of study:** Full time
- » **Faculty of:** Mechanical Engineering
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:** Przemysław Susz, PhD



JOB PROSPECTS

The graduate of the Faculty of Mechanical Engineering is a versatile educated engineer, equipped with basic and advanced knowledge as well as industrial practice.



ENTRY INFORMATION

Requirements: secondary school certificate, received after the completion of a recognised secondary school (total 12 years of education), being the equivalent of Polish Matriculation certificate. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



CONTENT

SEMESTER 1

- » Metrology Principles
- » Theory of Machines
- » Engineering Graphics: Descriptive Geometry
- » Elementary Linear Algebra
- » Mathematical Analysis I
- » Chemistry
- » Physics
- » Information Technologies
- » Introduction to Philosophy

SEMESTER 2

- » Ergonomy and Safety
- » Engineering Graphics: Engineering Drawing
- » Engineering Materials Technology
- » Thermodynamics
- » Materials Science I
- » Mechanics I
- » Ecology
- » Electrical Engineering
- » Mathematical Analysis II
- » Electronics
- » Sport

SEMESTER 3

- » Programming in MATLAB
- » Statistics for Engineers
- » Engineering Graphics 3D
- » Fluid Mechanics
- » Ordinary Differential Equations
- » Mechanics II
- » Materials Science II
- » Strength of Materials I
- » Electrical Engineering
- » Chipless Processes – Casting
- » Polymers I

SEMESTER 4

- » Essentials of Management
- » Intellectual Property Law
- » Fundamentals of Machine Design I
- » Theory of Mechanisms and Manipulators
- » Metrology
- » Chipless Processes - Plastic Forming
- » Chipless Processes - Welding Metallurgy
- » Strength of Materials II
- » Foreign Language – English C1.1 or other at any level
- » Sport

SEMESTER 5

- » Fundamentals of Machine Design II
- » Manufacturing Processes - Machining
- » Hydraulic, Hydrotronic and Pneumatic Systems
- » Drive Systems
- » Finite Elements Method
- » Vehicle Engineering
- » Tribology
- » Fundamentals of Automatic Control
- » Foreign Language - English C1.2 or other at any level

SEMESTER 6

- » Offroad Vehicles Engineering
- » Hydraulic Drive Systems
- » Internal Combustion Engines
- » Carrying Structures
- » Production System Organisation
- » Manufacturing Systems CNC
- » Introduction to Diploma Dissertation
- » Professional Training

SEMESTER 7

- » Polymers in Engineering
- » Vehicles Loading Modelling
- » Engineering in Medicine
- » Fundamentals of Exploitation and Repair
- » Management in Production
- » Thesis, Seminar
- » Thesis: Final Engineering Project



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## DESCRIPTION

The Electronic and Computer Engineering (EAC) programme meets the needs and demands of the modern labour market for modern electronics. This field of study combines the knowledge of traditional electronics, information technology, industrial automation and robotics – all elements of the contemporary and future Internet of Everything devices.



## ENTRY INFORMATION

Requirements: secondary school certificate, received after the completion of a recognised secondary school (12 years of education in total), being the equivalent of Polish Matriculation certificate.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS.  
List of accepted language certificates can be checked online.



## ABOUT STUDIES

- » **Duration:** 7 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:**  
Grzegorz Budzyń, PhD, DSc



## CONTENT

### SEMESTER 1

- » Mathematical Analysis
- » Mathematical Algebra
- » Introduction to Programming
- » Metrology
- » Philosophy

### SEMESTER 2

- » Mathematics Analysis 2
- » Mathematics for Electronics
- » Object Oriented Programming
- » Electronic
- » Physics
- » Foreign Language

### SEMESTER 3

- » Physics for Electronics
- » Scientific & Engineering Programming
- » Electronic Components & Sensors
- » Electronic Technology
- » Systems Theory
- » Foreign Language
- » Sports

### SEMESTER 4

- » Programming Systems & Environments
- » Introduction to Microcontrollers
- » Electronic Circuits
- » Introduction to Automation and Robotics
- » Fundamentals of Telecommunication

### SEMESTER 5

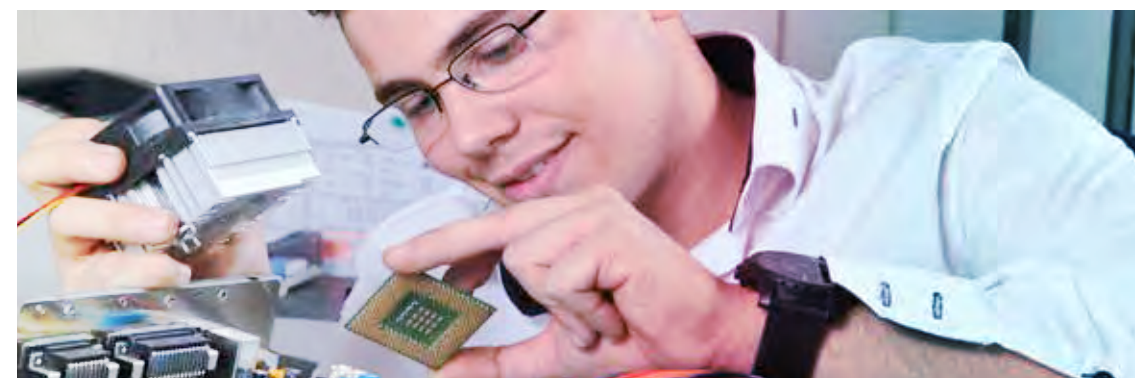
- » Computer Networks
- » Microcontrollers Elective courses 1 (choice of 3 out of 5):  
Advanced Topics in Robotics, Digital Signal Processing, Artificial Intelligence & Computer Vision, Optoelectronics, Wireless Systems

### SEMESTER 6

- » Team & Preengineering Project
- » Electroacoustic Elective courses 2 (choice of 3 out of 5):  
Control Systems Engineering, Embedded Systems, Real Time Operating Systems, Lasers, Fibres & Applications, Communication Systems & Networks

### SEMESTER 7

- » Internship Final Project
- » Diploma Seminar
- » Elective courses (choice of 2 out of 9):  
Electrotechnics, Medical Electronics, Electronics for Renewable Sources, Virtualization and Cloud Computing, Machine learning, Selected Topics in Artificial Intelligence, Ultrasonic Technology, Speech Communication, Introduction to Radar Technology
- » Author Law Business



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phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The programme emphasises practical aspects of Computer Engineering and can be adapted to the student's interest. The final effect of studies is obtaining first-level competencies – knowledge, skills and qualifications – in accordance with "The Teaching Standards" in the field of Computer Science. The students acquire the basic knowledge of mathematics and physics, general computer science areas, such as: operating systems, algorithms and data structures, languages and programming techniques, computer architecture, project management, as well as ethical and legal aspects of computer science. The graduates will be able to: implement and deploy effective, reliable and safe information systems that meet users' requirements; comprehend, evaluate and deploy different solutions used in the scope of computer systems; maintain, install, administrate and deploy tools and problem-oriented information systems, develop system documentation.



## ABOUT STUDIES

- » **Duration:** 7 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:**  
Arkadiusz Liber, PhD, Prof. at WUST



## JOB PROSPECTS

Employment in companies that build, deploy and maintain IT tools and systems, particularly career in project teams, especially programming teams, in organisations and companies using software tools and methods, as well as continuing studies at the Master's level.



## ENTRY INFORMATION

Requirements: secondary school certificate, received after the completion of a recognised secondary school (total 12 years of education), being the equivalent of Polish Matriculation certificate. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The student is required to complete 2475 hours of courses (equivalent to 210 ECTS). The programme consists of lectures and practical activities: laboratories, tutorials, seminars and projects. Students must receive credits for all subjects and additionally from applied training. The programme of the training must be consulted with the programme coordinator. In addition, students should write a degree thesis under the direction of a faculty member.

### SEMESTER 1

- » Mathematical Analysis I
- » Algebra and Analytic Geometry
- » Logic for IT Specialists
- » Structural and Object-oriented Programming
- » Computer System Organisation

### SEMESTER 2

- » General Physics I
- » Mathematical Analysis II
- » Discrete Mathematics
- » Operating Systems
- » Data Structures and Algorithms
- » Computer Architecture
- » General Physics II

### SEMESTER 3

- » Theory of Probabilistic and Statistics
- » Programming Paradigms
- » Effective Programming Techniques
- » Computer Networks
- » Basics of Entrepreneurship
- » Foreign Language
- » Sports I

### SEMESTER 4

- » Basics of Software Engineering
- » Databases
- » Script Languages
- » Systems Analysis and Decision Support
- » Foreign Language
- » Sports II

#### Modules of optional courses:

- » M1. Administration of Computer Systems
- » Linux Server Administration
- » Managing IT Infrastructure
- » Routing and Switching in Computer Networks

### SEMESTER 5

- » Software Engineering
- » Introduction to IoT
- » Cybersecurity
- » Presentation Techniques

#### Modules of optional courses:

- » M2. Web Technologies

- » Web Systems Programming
- » Developing Web Applications with .NET
- » M3. Database Design
- » Database System Engineering
- » Database Programming
- » Database Design
- » M4. Mobile Applications
- » Mobile Applications for IOS
- » Mobile Applications for Android

### SEMESTER 6

- » Artificial Intelligence and Knowledge Engineering
- » Data Warehouses
- » Practical Training

#### Modules of optional courses:

- » M5. Project Management Basics
- » Introduction to IT Project Management
- » Support for IT Project Management
- » M6. Distributed Systems
- » Distributed Computer Systems

- » Cloud Programming
- » M7. Programming Tools and Technologies
- » Game Programming
- » Advanced Web Technologies
- » M8. Multimedia

- » Computer Graphics
- » Programming Multimedia Applications
- » Digital Media Processing Technologies

### SEMESTER 7

- » IT Social and Professional Problems
- » Team Project Modules of elective courses

#### Modules of optional courses:

- » M9. Current Trends in Computer Science
- » Data Science
- » Neural Networks
- » Metaheuristics in Problems Solving
- » Human-Computer Interaction
- » M10. Humanistic Subject 1 or 2



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phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



DESCRIPTION

There is a growing demand for biomedical engineers with interdisciplinary knowledge of medicine, computer science, and medical devices. Such a background is indispensable to meet the demands of the rapidly changing healthcare system, which strives to accommodate the needs of patients and healthcare personnel.

This specialty is addressed to inquisitive students interested in biomedical applications of artificial intelligence, big data, mobile and wearable devices, augmented and virtual reality. We encourage students to carry out their research projects or join one of several students' science clubs.

Medical Informatics (MI) focuses on technologies, impacting patient-doctor relationship by effectively collecting, securing and understanding health data, thereby supporting medical diagnosis and treatment. The courses in this study program are oriented towards these practical aspects of MI.



JOB PROSPECTS

Graduates can work for:

- IT companies
- Hospitals and healthcare units
- medical device companies
- R&D companies



ENTRY INFORMATION

Requirements: secondary school certificate, received after the completion of a recognised secondary school (total 12 years of education), being the equivalent of Polish Matriculation certificate. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » Deadline for application
- » Tuition fee
- » Application fee

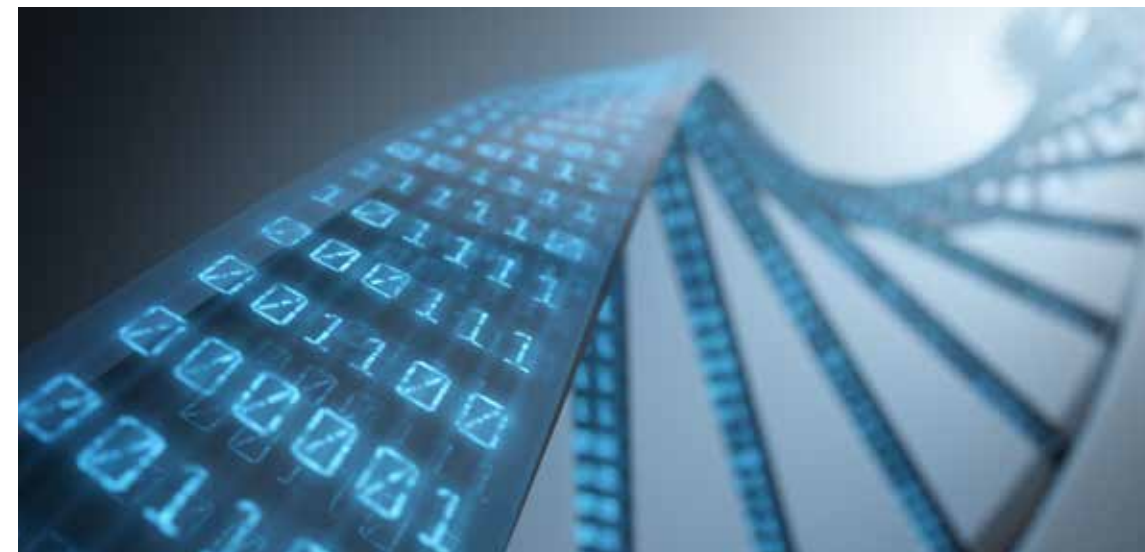
See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » English: Equivalent of minimum TOEFL IBT– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



ABOUT STUDIES

- » Duration: 7 semesters
- » Mode of study: Full time
- » Language of instruction: English
- » Start date: October 2023
- » Programme coordinators: Prof. Mirosław Łątka, Department of Biomedical Engineering



CONTENT

OBLIGATORY COURSES

IT COURSES

- » Databases
- » Introduction to Object-Oriented Programming
- » Introduction to Programming
- » Mobile Application Development
- » Modelling of Biological Systems
- » Network Technologies
- » Numerical Methods
- » Programming in Python
- » Software Engineering

GENERAL COURSES

- » Academic Writing
- » Algebra and Analytic Geometry
- » Anatomy for Biomedical Engineers
- » Introduction to Biomedical Optics and Biophotonics
- » Biochemistry
- » Biophysics
- » Mathematical Analysis
- » Medical Imaging Techniques
- » Legal and Ethical Aspects in Biomedical Engineering

- » Physics
- » Principles of Chemistry
- » Principles of Organic Chemistry
- » Propaedeutics of Medical Sciences
- » Statistics and Probability Theory

ENGINEERING COURSES

- » Conversion and Analysis of Non-electrical Signals
- » Digital Signal Processing
- » Electromedical Instrumentation
- » Introduction to Medical Electronics
- » Measurement systems
- » Microcontrollers

OPTIONAL COURSES

- » Advanced Imaging Techniques
- » Artificial Intelligence
- » Complex Systems
- » Computer Graphics
- » Computer Science in Medicine
- » Elements of Nonlinear Dynamics
- » Introduction to Bioinformatics
- » Statistical Methods in Bioengineering
- » Time Series Analysis



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39




 WROCLAW UNIVERSITY  
 OF ENVIRONMENTAL  
 AND LIFE SCIENCES


## DESCRIPTION

Bioeconomy is a current, interdisciplinary trend in the European Union, related to a sustainable circular economy in the area of biomass production and management, food production, environmental engineering and the biorefinery industry. It is the sustainable use of renewable biological resources to create goods and services. Bioeconomy is a perfect degree for the modern world, full of young people who are aware and want to influence the environment in order to live in a sustainable city, produce less waste, drink low carbon footprint craft beer from a local brewery, drive a car run on biohydrogen or raise a toast with a bioplastic cup. In response to the growing needs of society, the Wrocław University of Environmental and Life Sciences, together with the Wrocław University of Science and Technology, have opened a new double diploma degree programme in English – Bioeconomy.



## ABOUT STUDIES

- » **Duration:** 7 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023



## JOB PROSPECTS

A BIOECONOMY graduate is prepared for the current demand on the labor market. During the studies, the student has gained the necessary knowledge to establish and run companies and start-ups, and to work in the bio-industry sector, biorefineries, in analytical, research and diagnostic laboratories, research and development centers, non-governmental organizations dealing with bioeconomy, and in enterprises involved in the production, storage, transport and distribution of bioproducts. The graduate knows the techniques of graphic and computer design and uses GIS tools used in bioeconomy. They have the ability to select materials and devices suitable for technologies employed in bioeconomy.



## ENTRY INFORMATION

Requirements: secondary school certificate, received after the completion of a recognised secondary school (total 12 years of education), being the equivalent of Polish Matriculation.

- » **Deadline for application:**  
<https://rekrutacja.upwr.edu.pl/en/deadlines/deadlines-for-programs-in-english/deadlines-for-bsc-in-bioeconomy>
- » **English:**  
Required level: B2
- » **Tuition fee:**  
**PLN 6,000 per semester**  
[https://apply.upwr.edu.pl/en\\_GB/contents/content/25-eligibility-exemption-tuition-fees](https://apply.upwr.edu.pl/en_GB/contents/content/25-eligibility-exemption-tuition-fees)
- » **Application fee:**  
PLN 85 one-time or 20 euro



## CONTENT

Forms of teaching: lectures, laboratories, tutorials, projects, seminars, research.

## SEMESTER 1

- » Economics
- » Mathematics and statistics
- » Programming principles
- » Chemistry
- » Information Technologies
- » Man and environment
- » Bioeconomy principles
- » Semestral project 1

## SEMESTER 2

- » Sport
- » Biorenewable systems
- » Fundamentals of engineering drawing
- » GIS in bioeconomy
- » Semestral project 2

## SEMESTER 3

- » Bioorganic chemistry
- » Water and sewage technology
- » Circular economy
- » Sport
- » Semestral project 3

## SEMESTER 4

- » Biomass conversion
- » Microbiology
- » Process engineering
- » Semestral project 4

## SEMESTER 5

- » Artificial intelligence
- » Biomaterials
- » Biotransformation principles
- » Semestral project 5

## SEMESTER 6

- » » Design thinking
- » » Bioreactors technology
- » » Industrial practice
- » » Semestral project 6

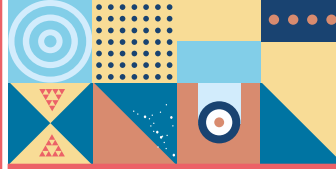
## SEMESTER 6

- » Biorefineries design
- » Commercialization
- » Academic entrepreneurship
- » Supply chain
- » BSc Thesis



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
 phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





DESCRIPTION

The study programme takes into account in a balanced way the practical and theoretical aspects of the architectural profession with an emphasis on the problem of creativity and design independence of graduates. The leading courses in the students' education are design, which is complemented by field studies related to modern construction systems, as well as theoretical (theory of architecture and urban planning, heritage protection, elements of philosophy, aesthetics) and computer-based (various types of modelling: BiM, 3D) ones. All offered courses and design studies are based on the "Research by design" model, and their wide choice allows students to pursue individual creative interests. Students have the opportunity to work with active architects, with specialists in various fields, and they can also participate in scientific programmes, international exchanges, workshops and study trips. After completion of the Master's programme in Architecture and Urban Planning students are awarded the Master's Degree in Architecture. Graduates are equipped with knowledge and skills that enable them to enrol themselves on doctoral and specialised postgraduate programmes.



JOB PROSPECTS

In the Architecture and Urban Planning Master's programme, we train specialists who are able to think critically and independently, who are ready to implement innovative architectural solutions and who are professionally flexible with a wide range of possibilities to choose their professional path. Learning outcomes provide preparation of graduates to work in: architectural and town planning offices, public administration units related to architecture and urban planning. Due to the broad, interdisciplinary profile of the education, graduates can also undertake research-related work and continue their studies at the Doctoral School. Moreover, graduates have skills related to IT techniques, which are necessary both in the work of a designer and a manager planning the investment process. They are able to work in a team, they are aware of the social role of the architectural profession and the humanistic aspects of engineering activity.



ENTRY INFORMATION

Requirements: Architect Engineer. Portfolio. Minimum 210 ECTS. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024



CONTENT

SEMESTER 1

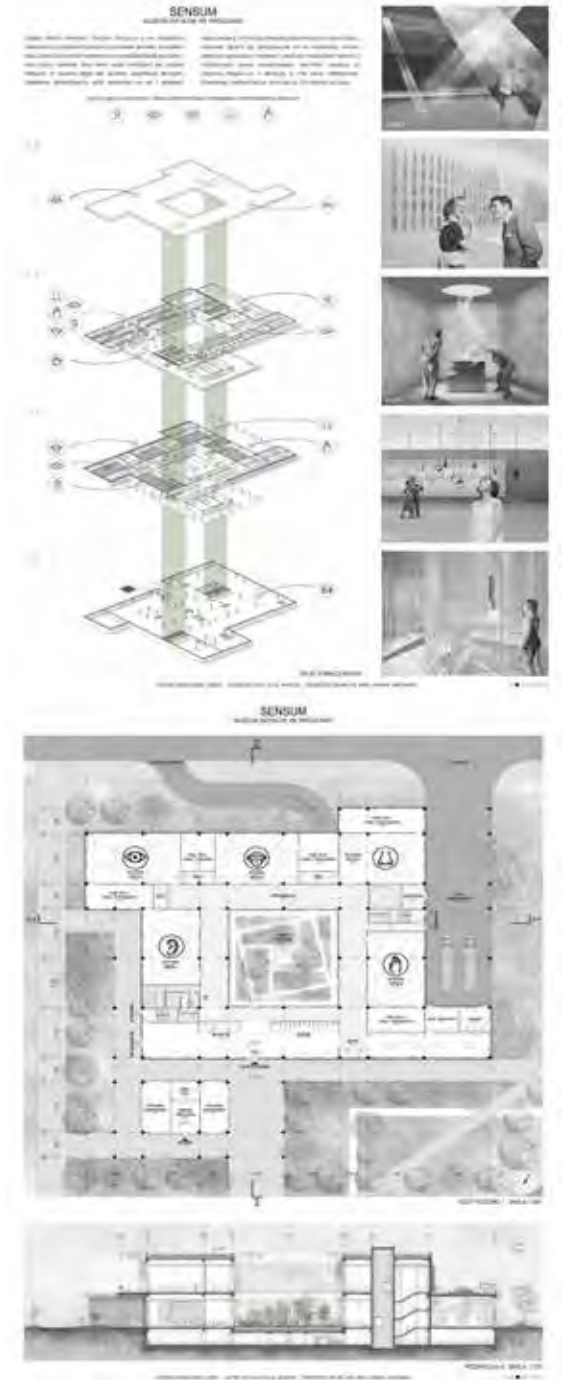
- » Architectural Design (elective)
- » Urban Design (elective)
- » Conservation and Special Design (elective)
- » Protection of Cultural Heritage (elective)
- » Theory and History of Architecture
- » Theory and History of Urban Planning (20c.–21c.)
- » Structures in Contemporary Architecture
- » Computer Aided Design BIM
- » Foreign Languages (elective)
- » An Introduction to Mathematical Modelling

SEMESTER 2

- » Architectural Design (elective, including Studios)
- » Design Workshop – Integration of Design Processes
- » Ecology (elective)
- » Physics (acoustics)
- » Humanities (elective)
- » Sociology and environmental psychology (elective)
- » Foreign Languages (elective)
- » Methodology of Scientific Work
- » Structures in Contemporary Architecture
- » Modern Technologies
- » Ergonomics
- » Professional Ethics and Law

SEMESTER 3

- » Diploma thesis
- » Design workshops 2x (elective)
- » Architecture and Urban Planning – Repertory
- » Spatial Planning



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39

THE AUTHOR: JULIA JANISZYN: MASTER DIPLOMA 2020/21, „SENSUM – THE MUSEUM OF SENSES IN WROCLAW”





## DESCRIPTION

Planning is an interand multidisciplinary field of knowledge and practice which allows professionals to deal with the spatial dimension of human activities. Courses and modules provide education in systems thinking and complexity (systems theory, environmental science), prepare the students for leadership (management) and focus on policy making (urban planning, regional policy, EU spatial policy and marketing places) as well as on planning law and plan preparation (techniques of plan preparation) to prepare students for the complicated processes and procedures in planning practice. Courses in models in spatial policy and spatial economics seek to equip the students with methodological tools for spatial analysis and scenario development.

Wrocław University of Science and Technology is the only university in Poland which offers the courses in modelling and computer simulation of spatial development. The programme consists of 3 semesters and, apart from the compulsory courses, provides a variety of elective courses - from regional planning to advanced tools in spatial modelling and participatory planning. In addition, at least two elective subject streams are opened each semester. The trends are conducted in the form of lectures and design studios, and concern such topics as: climate change, digital technologies, urban renewal, etc. The students are offered to enjoy at least one studio project each semester. A Master's thesis (which can include also a professional project, plan or strategy) exploring a planning research topic must be produced as a final part of the programme (20 ECTS). The thesis has to be presented, in both written and oral form, to a committee of academics for examination.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
Wawrzyniec Zipser, PhD  
wawrzyniec.zipser@pwr.edu.pl



## JOB PROSPECTS

The graduates in spatial planning can plan their career in both public and private sectors. They are prepared to work at the municipalities, in the planning units as well as in regional authorities' offices and at the national level administration (i.e. Ministry of Infrastructure, Ministry of Regional Development). They can also develop their career in public agencies (e.g. linked to the environmental issues, water management, transportation, tourism, etc.). The graduates are prepared to lead teams working on statutory plans (local plans, urban development plans) as well as on optional planning studies and plans. They can also work in the private real estate agencies, investment banks, as analytics and in other companies having interest in spatial dimension of the economy. The graduates are prepared to begin their doctoral studies in planning.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree. Minimum 210 ECTS.

### Important note for entry criteria:

Master's programme in planning is open to students with a non-planning background. This means that the programme is suitable, among others, for those who completed their first degree in: environmental studies, geography, transport studies, landscape architecture, architecture. Background in public administration, economy, sociology or mathematics, physics, IT and computer studies is also welcome. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### SEMESTER 1

- » Planning Theory
- » Systems Theory
- » Shaping and Protecting the Environment
- » Transformations of Contemporary Cities
- » From Governing to Governance
- » Operational Spatial Planning
- » Models in Spatial Management
- » Legislative Technique in Planning 1
- » Elements of Higher Mathematics
- » Supporting the Decision-making Process 1
- » Elective Project Studio 2x45
- » Foreign Language

### SEMESTER 2

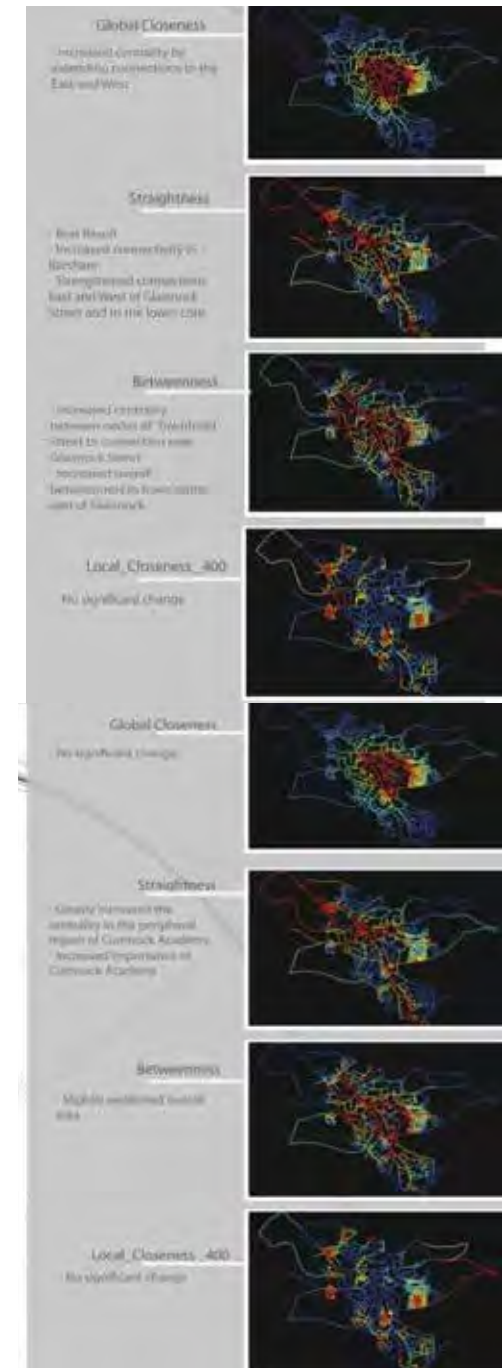
- » Planning for City Development
- » Law in Spatial Planning
- » Territorial Marketing
- » Project Management
- » Spatial Development Management
- » Spatial Planning Organisation
- » Knowledge of Architecture
- » Legislative Technique in Planning 2
- » Supporting the Decision-making Process 2
- » Elective Project Studio 2x45h
- » Foreign Language

### SEMESTER 3

- » Regional Policy
- » Spatial Policy of the EU
- » Master's Thesis
- » Elective Project Studio 2x45h

### SAMPLE ELECTIVE COURSES:

- » Planning Based on GIS Spatial Analysis;
- » Operationalisation of Regional Analysis;
- » Revitalisation of Urban Areas;
- » Multi-level Governance;
- » Pro-climate Planning;
- » Transportation Analysis and Forecasting;
- » Participatory Budgeting;
- » The Microclimate of the Estate;
- » Operational planning of urban structures



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

The students gain theoretical knowledge and practical skills connected with structure design, construction materials and technologies as well as static and dynamic analysis of reinforced concrete, prestressed concrete, metal, wooden, ground and complex constructions. They learn how to use advanced computational models and modern IT solutions in civil engineering. In addition to participating in lectures, presentations, labs, seminars and projects the students may also take part in the student scientific groups and international exchanges. A number of courses can be selected by the students depending on their interests and professional plans. At the end of the MSc study students write master's thesis on a subject related to designing of engineering structures. The MSc diploma offers an opportunity to continue education at PhD studies.



## JOB PROSPECTS

The graduates are prepared for:

- » solving complex design, organisation or technological problems,
- » authorisation to independent design and construction in civil engineering,
- » developing and implementing research programmes,
- » carrying out jobs in international enterprises,
- » participation in marketing and promotion of construction products,
- » continuing education, participation in research in the fields directly related to construction and construction production,
- » continuous education, improving qualifications and extending knowledge,
- » team work and large team management.

The graduates are prepared to work in design offices and construction enterprises, scientific institutions and R&D centres, institutions involved in building infrastructure management or dealing with counselling or dissemination of construction-related knowledge.



## CONTENT

The main study of Civil Engineering consists of obligatory and elective courses, covered as lectures, projects and seminars. In addition, some elective units are offered covering also language courses.

## SEMESTER 1

- » Advanced Computer Aided Engineering
- » Concrete Structures - Objects
- » Metal Structures - Objects
- » Selected Topics in Structural Mechanics
- » Theory of Elasticity and Plasticity
- » Physics of Modern Materials
- » Selected Topics in Mathematics
- » Selected Topics in Geoengineering – Foundation
- » Hydraulics in Civil Engineering
- » Ethics in Engineering/Ethics in Business
- » Foreign Language 1
- » BIM in Civil Engineering

## SEMESTER 2

- » Dynamics
- » Underground Structures – Urban Infrastructure
- » Railways
- » Roads, Streets and Airports
- » Bridges
- » Construction Techniques and Processes
- » Apartment Building
- » Computational Mechanics
- » Foreign Language 2

## SEMESTER 3

- » Master's Thesis Seminar
- » Master's Thesis
- » Construction Project Management
- 2 elective courses (one from each group)

## ELECTIVE COURSES 1

- » Artificial Intelligence in Civil Engineering
- » Modern Testing Methods for Non-destructive Inspection of Building Structures
- » Advanced Building Physics
- » Hydrology for Building Engineers
- » Effective Properties of Composites – Introduction to Micro-mechanics

## ELECTIVE COURSES 2

- » Pre-stressed Concrete Structures
- » Timber Structures
- » Conservation and Strengthening of Monumental Heritage Structures
- » Methods of Applied Statistics (Geostatistics)
- » Sustainable Building



## ENTRY INFORMATION

Requirements: Bachelor's or Master's Degree in Civil Engineering, Environmental Engineering, Architecture, Hydrotechnical Engineering obtained either in Poland or abroad.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



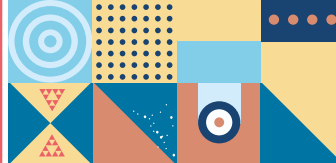
## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023 or February 2024
- » **Programme coordinator:** Prof. Jan Bień, PhD, DSc



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The programme of studies directly reflects the current needs of the labour market in the field of Chemical and Process Engineering, providing employment opportunities. It is designed to provide the graduates with the following learning outcomes: knowledge on developments and new developments in the field of chemical engineering, ability to use new advances in the field of chemical engineering, basic understanding of the processes of governance, knowledge of the functions, principles and management instruments, including quality management and identification of the main problems of management, knowledge of the design of process devices and systems, integration and process intensification, performing a complete process design, the use of computer technology, including tools for exploring and simulating the dynamics of various processes. Advanced Chemical Engineering and Nanotechnology combines classical chemical engineering with bioprocess engineering, nanoengineering, chemical technology and environmental engineering. The graduation document certifies the degree in engineering chemistry with the notification of a deepened specialisation in Advanced Chemical Engineering and Nanotechnology. Study for applicants without engineering degree lasts 2 years, otherwise 1.5 years only.



## ABOUT STUDIES

- » **Duration:** 3 or 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**  
October 2023 (4 semesters programme, for applicants without engineering degree)  
February 2024 (3 semesters programme, for applicants possessing engineering degree)
- » **Programme coordinator:**  
Prof. Anna Trusek, PhD, DSc



## JOB PROSPECTS

The graduate has extended knowledge of mathematics, natural sciences and technical skills: professional solving of problems in the field of chemical engineering, conduct advanced research experiments, propose and optimise new solutions and independently analyse problems related to chemical and process engineering. The graduates are prepared for creative work in the design and operation of processes in the chemical industry. The graduate is prepared to run their own business.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Chemistry or related domains.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
  - » **Tuition fee**
  - » **Application fee**
- See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT-87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The main study of Advanced Chemical Engineering and Nanotechnology consists of at least 23 units, covered as lectures, labs and seminars. In addition, some optional units are offered covering also language courses.

### SEMESTER 0

- » Chemical Informatics
- » Environmental Protection
- » Introduction to Materials Science and Engineering
- » Technical Safety
- » Technical Drawing
- » Recycling of Materials
- » Biotechnology with Introduction to Industrial Microbiology
- » Fundamentals of Chemical Technology
- » Measurements in Chemical Equipment
- » Introduction to Chemical Engineering
- » Optional course

### SEMESTER 1

- » Trends in Chemical Engineering Development
- » Nanoengineering - Fundamentals and Applications
- » Chemical Processes Equipment and Methods
- » Statistical Analysis of Experimental Data

### SEMESTER 2

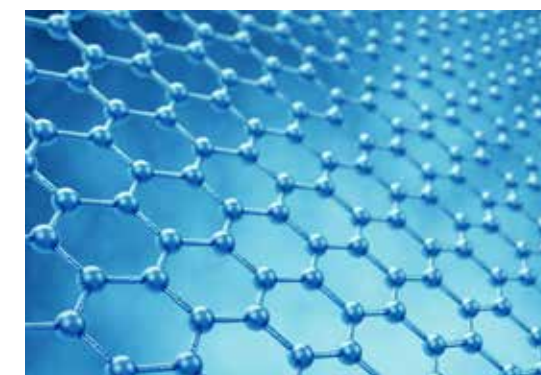
- » Chemical Processes Project Designed and Management
- » Heterogeneous Processes in Chemical, Food and Pharmaceutical Industry
- » Graduate Laboratory I

### SEMESTER 3

- » Foreign Language I
- » Foreign Language II
- » Project Management
- » Business Management
- » Optional course
- » Graduate Laboratory II
- » Graduate Seminar and Master Thesis

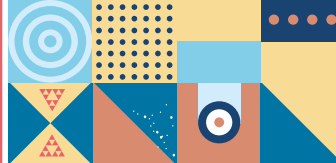
### OPTIONAL COURSES

- » Statistical Thermodynamics in Molecular Modeling
- » Materials Used in Chemical Unit Operation
- » Microwaves and Other Advanced Thermal Technologies in Chemical Engineering
- » New Concepts and Solutions in Chemical Engineering



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

Advanced nano- and bio-materials MONABIPHOT is a Master's course which offers an original qualification in the highly innovative domain of nanomaterials and molecular photonics for materials science and biology. Skills will be acquired at the strongly interdisciplinary level needed to master emerging technologies and to develop original concepts and applications, aiming at novel technological breakthroughs in this domain. We offer courses concerning synthesis and characterisation of new materials on the molecular and nanoscale with the special impact on biology. The introduction of the course's subjects helps the students to acquire competences as future experts in material science, with a special impact on nanomaterials. The language of the Advanced Nano- and Bio-materials MONABIPHOT Master's is English. Applicants must have a Bachelor's degree in Chemistry, Physics or Materials Science or related subjects, with a good background in mathematics and chemistry. The graduates could continue the career in research in nano- and/or bio-materials, as Ph.D. students or R&D associates in industrial laboratories in the rapidly emerging nanotechnology industry.

The programme is aimed at students already awarded or expecting a BSc (or a higher degree) or equivalent before the starting date of the term (September 2022 for the current applications).



## JOB PROSPECTS

The graduate has extended knowledge of chemistry, materials science, natural sciences and technical skills: conducting advanced research experiments with nanomaterials with the emphasis on biology, proposing and optimising new solutions and independently analysing problems related to materials science. The graduates are prepared for creative work in the design and operation of new materials and ready to run their own businesses.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Chemistry or related domains.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The main study of Advanced Nano- and Bio-materials MONABIPHOT consists of at least 23 units, covered as lectures, labs and seminars. In addition, some optional units are offered covering also language courses.

### SEMESTER 0

- » Chemical Informatics
- » Environmental Protection
- » Introduction to Materials Science and Engineering
- » Technical Safety
- » Technical Drawing
- » Recycling of Materials
- » Biotechnology with Introduction to Industrial Microbiology
- » Fundamentals of Chemical Technology
- » Measurements in Chemical Equipment
- » Introduction to Chemical Engineering
- » Optional course

### SEMESTER 1

- » Liquid Crystals for Photonics
- » Modern Polymers
- » Modern Spectroscopy
- » Bioorganic Chemistry
- » Fluorescence Spectroscopy and Bioimaging
- » Biophotonics
- » Mathematical Methods in Planning and Analysis of Experiment
- » Managerial course
- » Foreign Language I
- » Foreign Language II

### SEMESTER 2

- » Laser and Microscopic Techniques in Materials Analysis
- » Nanoscale Physics
- » Advanced Functional Materials
- » Nanomaterials
- » Organic Electronics
- » Advanced Diffraction Methods
- » Optional course
- » Graduate Laboratory I

### SEMESTER 3

- » Advanced Functional Materials
- » Optional course
- » Graduate Laboratory II
- » Graduation Seminar and Thesis Preparation

### OPTIONAL COURSES

- » Biomaterials
- » Non-linear Optics for Chemists

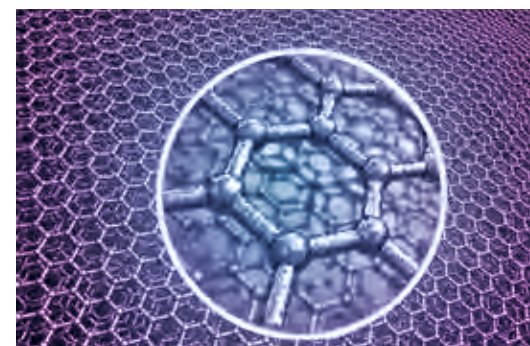


## ABOUT STUDIES

- » **Duration:** 3 or 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**  
October 2023 (4-semester programme, for applicants without engineering degree)  
February 2024 (3-semester programme, for applicants possessing engineering degree)
- » **Programme coordinator:**  
Katarzyna Matczyszyn, Prof. at WUST



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

Bioinformatics constitutes an interdisciplinary research area, covering applications of computer science, chemistry and biochemistry to solve biological problems, usually on the molecular level. Typical activities include analysis of information contained in literature, genetic and structural databases, prediction of protein structure, drug and biocatalyst or biosensor design. The curriculum introduces programming skills necessary for automation of database searches and analysis of numerical and bioinformatics data, including analysis of new genome sequencing (NGS) results. The study programme includes advanced computer programming as well as specialised molecular biology techniques which are highly valued on present job market.



## JOB PROSPECTS

The combination of computational skills and basic knowledge of biotechnology aims to prepare the graduates for work in research and development, manufacturing chemical software or databases, developing modern bioinformatics diagnostic services in medical laboratories, conducting quality control in environment protection, pharmaceutical or food industry laboratories. Our graduates typically continue level III (PhD) education in renowned academic institutions or are employed by national and international companies.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Chemistry or related domains (3-semester programme). Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The curriculum is composed of at least 25 units, covered as lectures, labs or seminars.

### SEMESTER 0

- » Chemical Informatics
- » Environmental Protection
- » Introduction to Materials Science and Engineering
- » Technical Safety
- » Technical Drawing
- » Recycling of Materials
- » Biotechnology with Introduction to Industrial Microbiology
- » Fundamentals of Chemical Technology
- » Measurements in Chemical Equipment
- » Introduction to Chemical Engineering
- » Optional course

### SEMESTER 1

- » Bioinformatics
- » Molecular Dynamics
- » Networks and Workstations with UNIX System
- » Applied Informatics
- » Bioprocess Project
- » Theoretical Chemistry
- » Foreign Language I
- » Foreign Language II

### SEMESTER 2

- » Molecular Modelling
- » Bionanotechnology
- » Rational Drug Design
- » Advanced Programming and Numerical Methods
- » Methodology of Experimental Research
- » Instrumental Drug Analysis
- » Retrieval of Scientific and Technical Information
- » Managerial course
- » Graduate Laboratory I

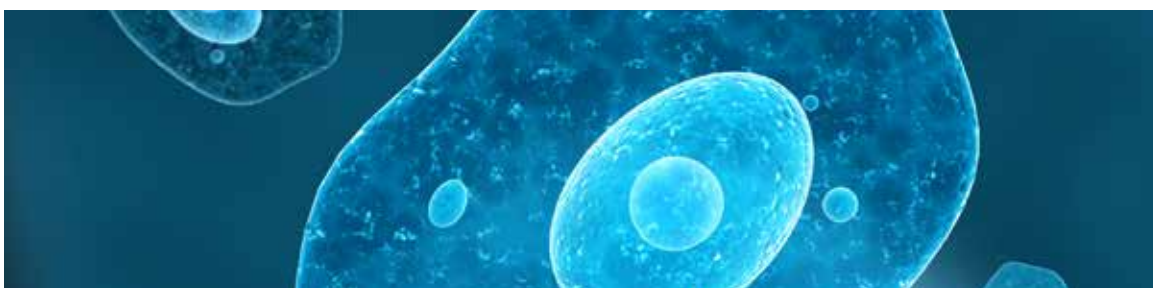
### SEMESTER 3

- » Computational Genomics
- » Molecular Engineering in Genomic Analyses
- » Mathematical Methods in Design and Analysis of Experiment
- » Managerial course
- » Economics and Organisation of Industrial Biotechnology
- » Graduate Laboratory II
- » Graduation Seminar and Thesis Preparation



## ABOUT STUDIES

- » **Duration:** 3 or 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**  
October 2023 (4-semester programme, for applicants without engineering degree)  
February 2024 (3-semester programme, for applicants possessing engineering degree)
- » **Programme coordinators:**  
Prof. Tadeusz Andruniów, PhD, DSc  
Paweł Kędzierski, PhD  
Edyta Dyguda-Kazimierowicz, PhD  
Prof. W. Andrzej Sokalski



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phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

Medicinal chemistry is a scientific discipline at the intersection of chemistry and computational science, connected with designing, synthesizing and developing new pharmaceuticals. At the beginning, medicinal chemistry was involved in screening of natural sources like plants or animals for bioactive compounds. Now, natural products serve as the lead structures in the synthesis and development of new chemical entities dedicated for therapeutic use. Medicinal chemistry includes preparation and analysis of existing and new potential drugs, evaluation of their biological properties, analysis of structure-activity relationships. It is a highly interdisciplinary field widely using advanced, synthetic, spectroscopic and computational methods. Thus, medicinal chemists cooperate with theoretical chemists, synthetic chemists, medical doctors, microbiologists and pharmacologists. The graduation document certifies the degree in chemistry with the notification of a deepened specialisation in Medicinal Chemistry. The study for applicants without engineering degree lasts 2 years, otherwise 1.5 years only.



## JOB PROSPECTS

The students are educated in the field of chemistry, mainly synthesis, structure analysis including spectroscopic methods, molecular modelling and they have training in medicinal chemistry. Some students, depending on their Master's thesis topic, may accomplish part of their research and/or graduate laboratory at Medical University, under supervision of medical doctors or in the Institute of Immunology and Experimental Therapy in Wrocław. Master's Degree programmes provide many skills and abilities demanded in scientific laboratories as well as in modern chemical and pharmaceutical industry.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Chemistry or related domains. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The main study of Medicinal Chemistry consists of at least 22 units, covered as lectures, labs and seminars. In addition, some optional units are offered covering also language courses.

### SEMESTER 0

- » Chemical Informatics
- » Environmental Protection
- » Introduction to Materials Science and Engineering
- » Technical Safety
- » Technical Drawing
- » Recycling of Materials
- » Biotechnology with Introduction to Industrial Microbiology
- » Fundamentals of Chemical Technology
- » Measurements in Chemical Equipment
- » Introduction to Chemical Engineering
- » Optional course

### SEMESTER 1

- » Theoretical Chemistry
- » Spectroscopy
- » Structure and Crystallography of Solids
- » Analytical Methods in Drug Design and Technology
- » Physical Organic Chemistry
- » Introductory Statistics

### OPTIONAL COURSE

- » Foreign Language I
- » Foreign Language II

### SEMESTER 2

- » Instrumental Drug Analysis
- » Molecular Modelling
- » Retrieval of Scientific and Technical Information
- » Medicinal Natural Products
- » Synthetic Organic Drugs
- » Managerial course
- » Rational Drug Design
- » Graduate Laboratory I

### SEMESTER 3

- » Multistep Organic Synthesis
- » Inorganic Drugs
- » Polymers in Medicine
- » Production Control and Quality Management
- » Managerial course
- » Mathematical Methods in Design and Analysis of Experiment
- » Graduate Laboratory II
- » Graduation Seminar and Thesis Preparation

### ELECTIVE COURSES

- » Combinatorial Chemistry
- » Selected Reactions in Organic Chemistry



## ABOUT STUDIES

- » **Duration:** 3 or 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**  
October 2023 (4-semester programme, for applicants without engineering degree)  
February 2024 (3-semester programme, for applicants possessing engineering degree)
- » **Programme coordinator:**  
Prof. Artur Mucha, PhD, DSc



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

Fine chemicals (FCs) are formulations containing one or more complex chemical substances as active ingredients – serving both an immense range of a purity specification, and ability to deliver a particular effect. FCs are thus identified according to their custom-designed properties and performance formulations. FCs manufacturers produce a wide range of chemical substances, which are typically of a high added-value and produced in relatively low amounts, mainly by batch processes in multipurpose plants. Specifically, there are the following FCs product categories:

- » pharmaceutical products (chemical and biological processes),
- » plant health products and biocides,
- » specialty polymers,
- » specialised surfactants and dispersed systems,
- » dyes and pigments,
- » polymer additives,
- » nutraceuticals, cosmeceuticals and food additives,
- » nanomaterials,
- » catalysts for green chemistry and their applications in technological processes,
- » organic intermediates and custom-designed products.

Study for applicants without engineering degree lasts 2 years, otherwise 1.5 years only.



## ABOUT STUDIES

- » **Duration:** 3 or 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**  
1<sup>st</sup> October 2022 (4-semester programme, for applicants without engineering degree)  
1<sup>st</sup> February 2023 (3-semester programme, for applicants possessing engineering degree)
- » **Programme coordinator:**  
Prof. Kazimiera A. Wilk, PhD



## JOB PROSPECTS

Independent positions, e.g., R&D employee in chemical industry, specialist in chemical development, quality control specialist in industries such as chemical and pharmaceutical, biotechnology and cosmetic processing, processing and manufacturing of specialised polymers, processing of food products, agrochemicals, specialist in research institutions and public administration associated with a low-volume production. Independent activity in Small and Medium Business in the field of fine chemicals.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Chemistry or related domains.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:

[admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The main study of Technology of Fine Chemicals consists of at least 23 units, covered as lectures, labs and seminars. In addition, some optional units are offered covering also language courses.

### SEMESTER 0

- » Chemical Informatics
- » Environmental Protection
- » Introduction to Materials Science and Engineering
- » Technical Safety
- » Technical Drawing
- » Recycling of Materials
- » Biotechnology with Introduction to Industrial Microbiology
- » Fundamentals of Chemical Technology
- » Measurements in Chemical Equipment
- » Introduction to Chemical Engineering
- » Optional course

### SEMESTER 1

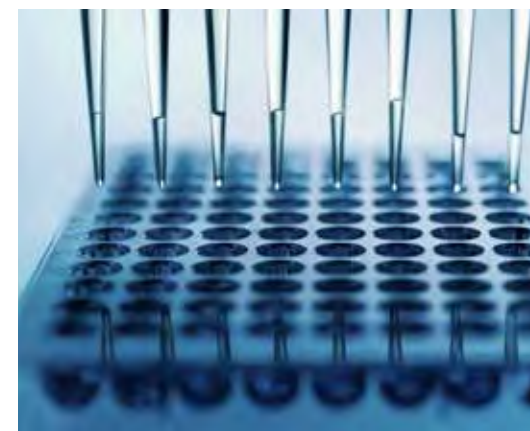
- » Environmental Protection in Chemical Technology
- » Process Modelling in Chemical Technology
- » Chemical Reaction Engineering
- » Fundamentals of Biotechnology
- » Specialty Surfactants and Dispersed Systems
- » Surface Phenomena and Applied Catalysis
- » Experimental Design and Data Analysis
- » Foreign Language I
- » Foreign Language II

### SEMESTER 2

- » Polymer Additives
- » Design and Feasibility Study of Technological Process
- » Data Mining in Chemical Technology
- » Pharmaceuticals and Biopharmaceuticals
- » Sustainable Energy and Fuels
- » Analytical Methods in Fine Chemicals and Technology
- » Specialty Polymers – Physicochemistry and Technology
- » Graduate Laboratory I

### SEMESTER 3

- » Sensors and Biosensors in Fine Chemicals Manufacturing
- » Production Control and Quality Management
- » Agrochemicals and Plant Health Products
- » Process Project
- » Graduate Laboratory II
- » Graduate Seminar and Thesis Preparation



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

Urban mining (UM) is recovering valuable raw materials from used products (e.g., vehicles, electronic equipment), installations, buildings, and various manufactured infrastructures. It is a method of recycling secondary raw materials which sees valuable deposits wherever people have left a trace of their activity. Mines for urban mining are all human creations that are no longer used. Although urban mining appeared in scientific terminology as early as the 1980s, the phenomenon it describes is today one of the more rapidly spreading global trends.

Urban mining constitutes an interdisciplinary research area, covering different methods to extract valuable substances from anthropogenic wastes.

The graduate has knowledge and skills in the field of engineering and technical sciences, i.e., to:

- » identify and assess raw material potentials from the anthropogenic waste stream from the current streams as well as from old deposits;
- » assess the basic parameters of the use of these potentials in terms of quality and quantity, taking into account the zero-waste and low-emission strategy;
- » plan detailed processing tests, taking into account physical, chemical, and biological processes necessary in terms of social demand for these raw materials, using good practices of the circular economy;



## ABOUT STUDIES

- » **Duration:** 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:** Department of Chemistry (W3) - dr hab. inż. Agnieszka Saeid
- » » Department of Geodesy and Geoinformatics (W6) - dr hab. inż. Justyna Górniak-Zimroz



## JOB PROSPECTS

The study program includes a set of learning outcomes and the related substantive content of education, enabling graduates to compete in the labor market effectively. After completing the field of study, students are prepared to continue their studies at the Doctoral School and conduct their research. A graduate of UM has the skills to work in:

- » research institutions;
- » state and local government administration responsible for waste management;
- » enterprises;
- » design offices;
- » consulting companies;
- » municipal waste management plants.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Chemistry or related domains.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:

[admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

Master Studies in Urban Mining in English are a 4-semester program. The curriculum is composed at least of 24 units, covered as lectures, labs, projects, cases studies or seminars.

### SEMESTER 1

- » Urban mining-utility of waste
- » Basics of processing methods
- » Biological factors in industry – fundamentals
- » Statistical methods in waste management
- » Humanities and management course
- » Block I (elective course: GIS Fundamentals, Technical drawing)
- » Block II (elective course: Fundamentals of process engineering, Technological Design Process)
- » Formal, legal and economic aspects of anthropogenic deposits exploitation
- » Foreign language II

### SEMESTER 2

- » Methods of waste streams identification and assessing the raw material potential
- » Identification and assessment of environmental aspects
- » Circularity assessment tools

- » Techniques and methods of exploitation anthropogenic deposits ESG reporting
- » » Process engineering
- » Analysis of circular economy in processing processes
- » Foreign Language I

### SEMESTER 3

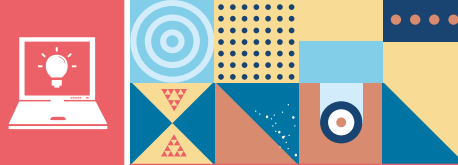
- » Physical and physicochemical methods of waste processing
- » Chemical and biological methods of waste processing
- » Instrumental methods in biomonitoring and analysis of products
- » Occupational Health and Safety in waste management

### SEMESTER 4

- » Project Feasibility Study
- » Graduate seminar
- » Graduate laboratory



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



DESCRIPTION

The final effect of studies at the Master's level is obtaining knowledge, skills and qualifications in according to "Teaching Standards" in the field of Computer Science. Students receive extended knowledge in specialisation. Graduates will be able to: use various methods and techniques, formulate and solve specific problems related to computer science, become teamwork leaders. Additionally, they will have obtained fluent and creative knowledge application in the area of the specialisation, which means mathematical models designing, problem formulating and solving, problem-oriented information systems analysis and testing.



ABOUT STUDIES

- » **Duration:** 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:** Arkadiusz Liber, PhD, Prof. at WUST



JOB PROSPECTS

Employment in IT companies and organisations which apply informatics tools and systems at the specialists and manager positions.



ENTRY INFORMATION

Requirements: Bachelor's Degree, preferably in Computer Science or in a related field. Applicants with a Bachelor's Degree outside of Computer Science must demonstrate significant proficiency in computer science. Any area of requirements can be satisfied through courses completed at the bachelor level or by relevant experience.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
 Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



CONTENT

Forms of teaching: lectures, laboratories, tutorials, projects, seminars, research.

SEMESTER 1

- » Physics of Contemporary Computer Science
- » Foreign Language A1 or A2
- » Methods of planning and analyzing experiments
- » Advanced Databases
- » Mobile and Multimedia Systems
- » Information System Modelling and Analysis
- » Foundations of Knowledge Engineering

SEMESTER 2

- » Fundamentals of Business and Intellectual Property
- » Foreign Language B2+
- » Software System Development
- » Project Management
- » Advanced Computer Networks
- » Analysis of Web-based Systems



SEMESTER 3

- » MSc Thesis I
- » Ethics of New Technologies
- » Recent Advances in Computer Science
- » Advanced Topics in Artificial Intelligence
- » Data Warehouses
- » User Experience
- » Video Game Design

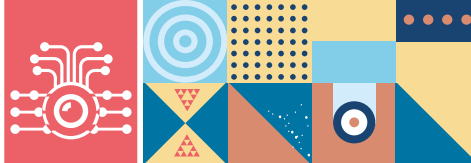
SEMESTER 4

- » Research Methodology
- » Diploma Seminar
- » MSc Thesis II
- » Parallel and Distributed Computing



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





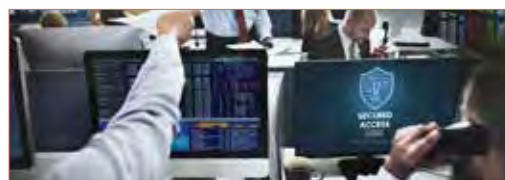
## DESCRIPTION

The programme is focused on computer security and cryptography, including both advanced knowledge and practical skills. The target is to cover the current advanced topics, but at the same time to develop a creative approach for solving future problems and to acquire the ability to design new pragmatic technologies in the area of computer security, privacy and cryptography. Apart from core technological topics of computer security, procedural and legal issues as well as security management are covered.



## JOB PROSPECTS

The programme aims to prepare security and cryptography professionals who design advanced hardware and software tools, implement, audit, and run computer security systems. In particular, apart from working for the security industry, they may be responsible protecting data and IT resources of private enterprises and public institutions, in accordance with emerging legal obligations. Audit and certification bodies may offer additional job opportunities.



## ENTRY INFORMATION

Requirements: Bachelor's Degree: undergraduate degree in one of the following fields: Computer Science, Electronics, Mathematics, Telecommunication, Teleinformatics, Cybersecurity. Each application is assessed individually on its merits, however a strong background in computer science is necessary. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### SEMESTER 1

- » High Level Security - Vulnerabilities and Attacks
- » Compliance and Operational Security
- » Algorithmic Number Theory
- » Cryptography
- » Supplementary Course 1
- » Supplementary Course 2
- » Legal Issues in Computer Security (Social Lecture 1)

### SEMESTER 2

- » Embedded Security Systems
- » Security and Privacy by Design
- » Communication and Security Infrastructure
- » Software Engineering Lab in Cybersecurity
- » Ethics of New Technologies (Social Lecture 2)
- » Quantum Physics and Computations
- » Supplementary Course 3
- » Supplementary Course 4
- » Foreign Language Course 1 (B2+ level)

### SEMESTER 3

- » Master Thesis
- » Master Seminar
- » Supplementary Course 5
- » Foreign Language Course 2 (A1 or A2 level)

### SUPPLEMENTARY COURSES, IN PARTICULAR:

- » Blockchain and Cryptocurrencies
- » Malicious Cryptography and Advanced Defences
- » Elliptic Curves for Developers
- » Identification and Biometric Systems
- » Introduction to Electronics for Security Engineers
- » Digital Signal Processing
- » Distributed Computing
- » Data Mining
- » Secure Cloud Computing
- » Machine Learning and Security
- » Privacy Enhancing Technologies



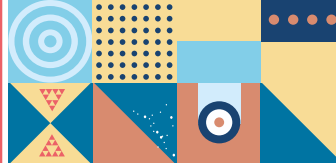
## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Prof. Mirosław Kutylowski [miroslaw.kutylowski@pwr.edu.pl](mailto:miroslaw.kutylowski@pwr.edu.pl)



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The ACS studies' programme is focused on delivering multidisciplinary knowledge and developing theoretical and practical skills in modern areas of computer science (Machine Learning, Neural Networks, optimisation, etc.), information technology and computer systems. We believe that students gain the most when they are involved in research (working on projects) individually and as a team while the lecturer is ready to advise and guide. Therefore, more than 65% of the course's programme is focused on active forms of learning like group projects, seminars, classes (tutorials) and laboratory training. ACS (formerly known as AIC - Advanced Informatics and Control) shapes many successful PhD candidates and researchers. Historically speaking, we have had 25 double diploma students and 11 PhDs with the cooperation of foreign universities.



## JOB PROSPECTS

The graduates will gain deep knowledge in computer science (Machine Learning, algorithms, optimisation) and software engineering. They will be prepared to solve real-life IT and computer science problems, conduct proper research and learn how to gain information from the literature and other available sources. The alumnus will be prepared for a role of a team leader and have extensive teamwork skills (critical thinking, collaboration, communication etc.). They will have experience in both organising and participating in workshops/conferences. They will acquire the experience necessary for a professional career at research units, universities, colleges, and industry. In addition, they will develop English communication skills that are well above industry standards.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in Informatics, Computer Science, Computer Engineering, Information Technology, Telematics, Computer Systems, Robotics, Control, Control Engineering, Systems, Electronics, Telecommunications. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
Wojciech Kmiecik, PhD



## CONTENT

### SEMESTER 1

- » Research Skills and Methodologies
- » Optimisation Methods: Theory and Applications
- » IT Applications: Electronic Media in Business and Commerce
- » Information Systems Modelling
- » Computer Project Management
- » Discrete Mathematics
- » Social Communications
- » Foreign Language/Polish Language I
- » Physics

### SEMESTER 2

- » Machine Learning
- » Neural Networks
- » Research Project
- » Secure Systems and Networks
- » Modelling and Optimisation of Computer Networks
- » Information and Storage Management
- » ACS Diploma Seminar 1
- » Foreign Language/Polish Language II

### SEMESTER 3

- » Research Project 2
- » Natural Language Processing
- » Introduction to Computer Vision in Quality Control
- » Entrepreneurship
- » ACS Diploma Seminar 2
- » Final Project (MSc Thesis)



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
 phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

The programme is focused on delivering knowledge and developing skills needed for a successful career in Computer Science and Engineering, particularly in designing and maintaining complex service-oriented information systems. It develops abilities to solve non-routine problems and to formulate opinions based on incomplete information. The programme covers professional topics as well as R&D teamwork. Special attention is given to the ability to work in multinational industrial teams. The curriculum covers software development and analysis, networking, web services, human interfaces, and security of complex information systems.



## JOB PROSPECTS

The graduates will have knowledge and skills needed for a career in computer and software organisations, research units, industry, government administration, and education. They will be particularly well prepared to work on the implementation and maintenance of new-generation web services. They will have the experience necessary for a professional career and undertake level III (Ph.D.) education. In addition, they will possess well above standard skills in communication in multinational teams.



## CONTENT

The programme includes traditional lectures and hands-on study forms (mainly laboratories and design projects). In the 3<sup>rd</sup> semester, the student is also required to complete a final individual project and write a thesis on its basis. The diploma examination, the passing of which is required to obtain the Master's title, covers topics of the completed courses and the thesis presentation. The courses delivered in each semester are as follows:

### SEMESTER 1

- » Research Skills and Methodologies
- » Optimisation Methods: Theory and Applications
- » IT Applications in Business and Commerce
- » Information Systems Modelling
- » Computer Project Management
- » Discrete Mathematics
- » Social Communications
- » Foreign Language/Polish Language I
- » Physics

### SEMESTER 3

- » Application Programming: Data Mining and Data Warehousing
- » Application Programming: Mobile Computing
- » IE Seminar
- » Final Project
- » Entrepreneurship



## ENTRY INFORMATION

Requirements: Bachelor's Degree in Computer Science, Computer Engineering, Information Technology, Informatics, Teleinformatics, Telecommunication or related. The degree must be obtained in an engineering programme of studies of at least 3.5 years duration (equivalent to 210 ECTS).

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:

[admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

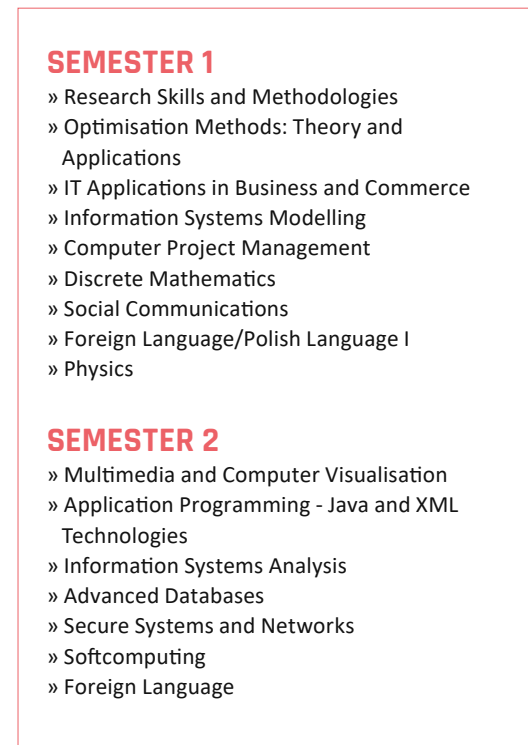
See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
Prof. Czesław Smutnicki



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

The students can spend full duration of the studies at Wrocław University of Science and Technology (WUST) or benefit from the Double-Degree option. The joint double degree programme is run together with Ryerson University (RU) in Toronto, Canada (possibility of exchange for Polish and Canadian citizens only) and Brandenburg University of Technology (BTU) in Cottbus, Germany, University of Palermo (UNIPA), Italy, RWTH Aachen University, Aachen (Germany). The goal of the programme is to improve the quality of graduate-level education and training in the field of control engineering. It is focused on new and challenging issues of power system automation and control. The programme offered by the Faculty of Electrical Engineering is split up into four semesters, including a Master's Thesis semester and a 4-week industrial placement. The best students willing to study in Toronto should spend their first year at RU and second year at WUST. Alternatively, the students can study their first year at BTU in Cottbus or at UNIPA in Palermo and then continue their second year at WUST.



## JOB PROSPECTS

The programme is devoted to the candidates interested in work related to electric power system control, reliability, transmission and distribution of electrical energy, protection and decision-making in power systems, energy market issues, etc.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in Electrical Engineering or related field.  
Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application for full programme at WUST:**  
[www.admission.pwr.edu.pl](http://www.admission.pwr.edu.pl)
- » **Deadline for application for double degree programme:**
  - » Toronto: <https://weny.pwr.edu.pl/en/candidates/msc-programme-in-english/msc-programme-in-english-and-double-masters-degree--toronto-canada--cpe>
  - » Aachen: <https://weny.pwr.edu.pl/en/candidates/msc-programme-in-english/msc-programme-in-english-and-double-masters-degree--aachen-germany--cpe>
  - » Cottbus: <https://weny.pwr.edu.pl/en/candidates/msc-programme-in-english/msc-programme-in-english-and-double-masters-degree--cottbus-germany--cpe>

- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6,5 (7,0 at RU) points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### COURSES AT WUST:

#### SEMESTER 1

- » Numerical and Optimisation Methods
- » Power Quality Assessment
- » Power Systems Faults
- » Fault Calculations
- » Dynamics and Control of AC and DC Drives
- » Circuits and Systems
- » Advanced Technology in Electrical Power Generation
- » Foreign Language – A1 or A2
- » Foreign Language – B2+ or C1+

#### SEMESTER 2

- » Digital Control Techniques
- » Simulation and Analysis of Power System Transients
- » Digital Signal Processing for Protection and Control
- » Power System Protection
- » Fibre Optics Communications and Sensors
- » Renewable Energy Sources
- » Electric Power System Operation and Control
- » Diploma Placement 4 Weeks
- » Elective Course from Management Block

#### SEMESTER 3

- » Advanced High Voltage Technology
- » Artificial Intelligence Techniques
- » Power System Automation and Security
- » Electrical Power Systems Management
- » Electromagnetic Compatibility
- » Measurement Methods and Techniques
- » Diploma Project
- » Elective Courses from Law Block

#### SEMESTER 4

- » Diploma Seminar
- » Master's Thesis
- » Elective course from Social Sciences and Ethics Block

» Elective Course from A Block and B Block  
**COURSES AT UNIPA:**  
<https://wroclaw.tech/UNIPA-courses>

**COURSES AT RWTH:**  
<https://wroclaw.tech/RWTH-courses>

**COURSES AT RU:**  
<https://wroclaw.tech/RU-courses>

**COURSES AT BTU:**  
<https://wroclaw.tech/BT-courses>



## ABOUT STUDIES

- » **Duration:** 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**
  - » October 2023 at WUST or BTU (Double Degree Programme),
  - » September 2023 at RU (Double Degree Programme)
  - » September 2023 at UNIPA (Double Degree Programme)
- » **Programme coordinator:**  
Robert Lis PhD, DSc Assc. Prof.



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

The students of the programme can spend full duration of the studies at Wrocław University of Science and Technology (WUST) or benefit from the Double-Degree option. The DD option is a proposal for a limited number of the best applicants. After having spent one year in Wrocław, the students are sent for the remaining year to the Otto-von-Guericke Universität Magdeburg (OvGU), Germany. They can choose the double degree option with University of Palermo (UNIPA), Italy. After having spent one year at the partner university, the students spend the remaining year at the home University (Poland). Following the successful completion of the dual-degree requirements at both universities the students will obtain two Master's of Science (M.Sc.) degrees, one from the WUST and one from the University of Magdeburg (OvGU) or one from the WUST and one from Palermo University (UNIPA). The programme is focused on the modern issues related to renewable energy sources and their integration in power system.



## JOB PROSPECTS

The programme is devoted to the candidates interested in work related to renewable energy systems, reliability, transmission and distribution of electrical energy, protection and decision-making in power systems, energy market issues, etc.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in Electrical Engineering or related field.  
Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application for full programme at WUST:**  
[www.admission.pwr.edu.pl](http://www.admission.pwr.edu.pl)
- » **Deadline for application for double degree programme:**
  - » Magdeburg: <https://weny.pwr.edu.pl/en/candidates/msc-programme-in-english/msc-programme-in-english-and-double-masters-degree--magdeburg-germany--res>
  - » Palermo: <https://weny.pwr.edu.pl/en/candidates/msc-programme-in-english/msc-programme-in-english-and-double-masters-degree--palermo-italy-res-cpe>

- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

**courses at WUST:**

**SEMESTER 1**

- » Numerical and Optimisation Methods
- » Power Quality Assessment
- » Power Systems Faults
- » Fault Calculations
- » Dynamics and Control of AC and DC Drives
- » Circuits and Systems
- » Advanced Technology in Electrical Power Generation
- » Foreign Language – A1 or A2
- » Foreign Language – B2+ or C1+

**SEMESTER 2**

- » Power Electronics
- » Simulation and Analysis of Power System Transients
- » Protection and Control of Distributed Energy Sources 1
- » Renewable Energy Sources
- » Water Power Plants 1
- » Integration of Distributed Resources in Power Systems
- » Electromechanical Systems in Renewable Energy
- » Modelling of Electrical Machines
- » Diploma Placement 4 Weeks
- » Elective Course from Management Block
- » Energy Storage Systems

**SEMESTER 3**

- » Photovoltaic Cells
- » Protection and Control of Distributed Energy Sources 2
- » Water Power Plants 2
- » Industrial Ecology - Selected Problems
- » Artificial Intelligence Techniques
- » Legal Regulations and Investments in Power Systems with Distributed Energy Sources
- » Electromagnetic Compatibility
- » Measurement Methods and Techniques
- » Diploma Project
- » Elective Courses from Law Block

**SEMESTER 4**

- » Diploma Seminar
- » Master's Thesis
- » Elective Course from Social Sciences and Ethics Block
- » Elective Course from A Block and B Block

**courses at OvGU:**

**SEMESTER 3**

- » Power Electronics
- » Power Network Planning and Operation
- » Digital Info Processing
- » Electromagnetic Field Theory
- » Power System Economics and Special Topics
- » Project

**SEMESTER 4**

- » Master's Thesis

**courses at UNIPA:**

<https://wroclaw.tech/UNIPA-courses>

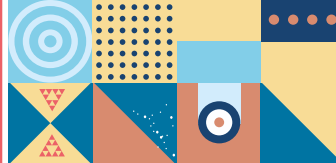


## ABOUT STUDIES

- » **Duration:** 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**
  - » October 2023 at WUST or OvGU (Double Degree Programmes)
  - » September 2023 at UNIPA (Double Degree Programme)
- » **Programme coordinator:**  
Robert Lis PhD, DSc Assc. Prof.



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



DESCRIPTION

Graduate's profile: A graduate will possess abilities to use in-depth knowledge of problems within the domain of basic sciences, main-field-of-study and specialisation subjects. The graduate will be able to manage and supervise teams, deal with high-risk situations and decisions, and use competently the knowledge of law and economics. The graduate will be prepared to design technological processes, carry out research work and work creatively.



ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023 and February 2024
- » **Programme coordinator:**  
Gabriela Paszkowska, PhD  
gabriela.paszkowska@pwr.edu.pl



CONTENT

Knowledge will be provided in the form of lectures, tutorials, laboratories, computer labs, project works and seminars.

SEMESTER 1

- » Theory and Practice in Geomechanics
- » Computer-Aided Geological Modelling & Geostatistics
- » Project Management, Appraisal and Risk Evaluation
- » Engineering Geophysics
- » Integrated Analysis of Deformations in Geomechanical Engineering
- » Occupational Health and Safety
- » Excavation Design in Open Pit Mining

SEMESTER 2

- » Machinery Systems
- » Tunnel and Underground Excavation Design
- » Computer-Aided Mine Design
- » Ventilation and Mine Fires
- » Issues in Nuclear Physics
- » AutoCAD
- » Foreign Languages
- » Free Elective

SEMESTER 3

- » Mineral Processing Systems
- » Environmental Management
- » Digital Mine
- » Operations Research
- » Free Elective
- » Diploma Seminar, Master's Thesis



JOB PROSPECTS

The Mining Engineering graduate will be prepared to work for enterprises, engineering supervision bodies, state administration, design offices and research units, where in-depth specialised knowledge of mining engineering and geology is demanded.



ENTRY INFORMATION

Requirements: Bachelor's Degree – Bachelor of Science or Bachelor of Engineering (any incl. Geology Engineering, Mining Engineering, Mechanical Engineering, Energy-related Engineering studies etc.).

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS.  
List of accepted language certificates can be checked online.



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39

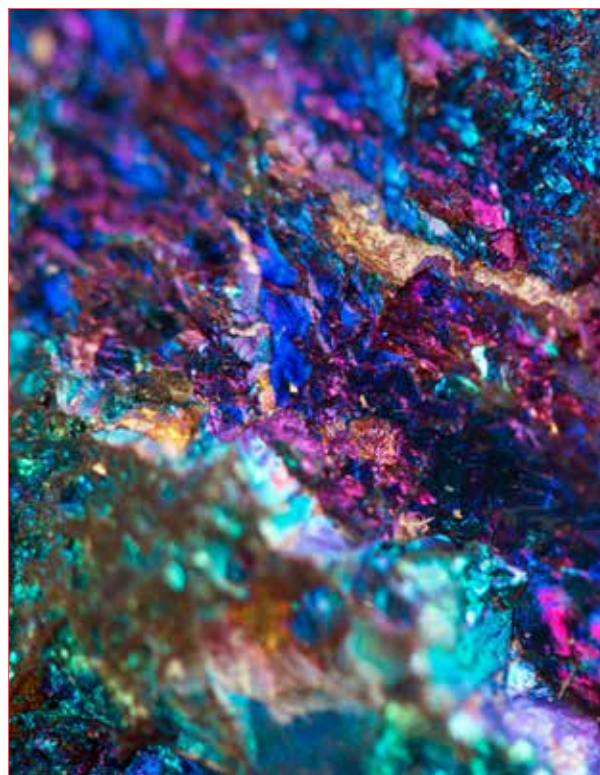




## DESCRIPTION

This is a joint MSc programme of WUST and University of Miskolc (Hungary) formatted as a structured student mobility. WUST students study two semesters in Wrocław (the first and the third semesters) while the second semester is offered by University of Miskolc. Students apply for an Erasmus Plus grant for the mobility period. In the third semester, the students write and defend their Master's thesis at WUST.

Graduate profile: An alumnus becomes a specialist in two fields: geotechnical and environmental engineering, which is a very unique profile. Besides that, a graduate will be able to apply in-depth knowledge of basic sciences. The graduate will be able to manage and supervise teams, deal with high-risk situations and decisions. The graduate will be prepared to design technological processes, carry out research work, and work creatively.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
Gabriela Paszkowska, PhD  
gabriela.paszowska@pwr.edu.pl



## JOB PROSPECTS

The graduate will be prepared to work for enterprises, engineering supervision bodies, state administration, design offices and research units, where in-depth specialised knowledge of mining, geology and geotechnical engineering is demanded.



## ENTRY INFORMATION

Requirements: Bachelor's Degree – Bachelor of Science or Bachelor of Engineering (any incl. Geology Engineering, Mining Engineering, Mechanical Engineering, Energy Related Engineering Studies, etc.).

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

Knowledge will be provided in the form of lectures, tutorials, laboratories, computer labs, project works and seminars.

### SEMESTER 1

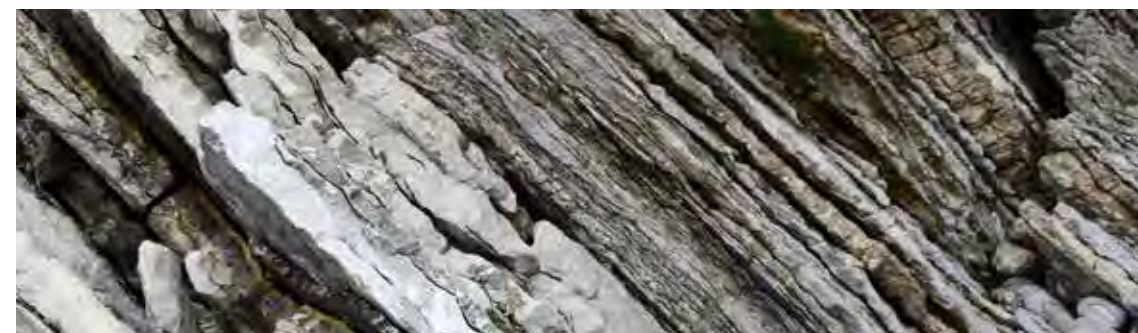
- » Theory and Practice in Geomechanics
- » Computer-Aided Geological Modelling & Geostatistics
- » Project Management, Appraisal and Risk Evaluation
- » Engineering Geophysics
- » Integrated Analysis of Deformations in Geomechanical Engineering
- » Occupational Health and Safety
- » Environmental Chemistry

### SEMESTER 2

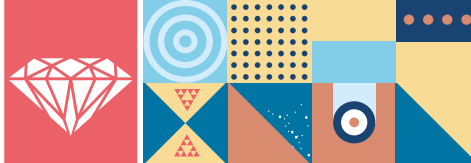
- » Methods of Environmental Assessment
- » Waste Incineration and Air Quality Protection
- » Water and Wastewater Treatment
- » Environmental Geotechnics
- » Chemical Technologies in Environmental Protection
- » Environmental Risk Assessment and Remediation
- » Soil Chemistry
- » Numerical Methods and Optimisation
- » Quality Management
- » Basics of Waste Management
- » Environmental Geology
- » Foreign Languages

### SEMESTER 3

- » Mineral Processing Systems
- » Excavation Design in Open Pit Mining
- » Digital Mine
- » Free Elective
- » Foreign Languages
- » Diploma Seminar, Master's Thesis



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
 phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

Geomatics for Mineral Resource Management focuses on the process of resource modelling and mine management. Students will be taught in a variety of subjects related to the field mining and mineral resources. This includes financial, environmental, political as well as the legal aspects of national and international mining projects. In addition to the standard courses taught by staff from partner universities and industry experts, massive open online courses (MOOC's) are offered for the students. The MOOC's consist of a series of web-videos, which cover the content of an individual course. The educational content focuses on the following pillars: (1) Sensing technologies for mine data gathering, (2) Spatial (big) data management and visualisation and (3) Spatial (big) data analysis and modelling. The aim of the programme is to enable students to integrate these three pillars into innovative Geomonitoring concepts. Students, who decide on the specialisation Geomatics for Mineral Resource Management, are, on default, set to study 2 semesters at Wrocław University of Science and Technology (1<sup>st</sup> and 4<sup>th</sup> semesters) and 2 semesters at TU Bergakademie Freiberg in Germany or two semesters at Montanuniversität Leoben in Austria (2<sup>nd</sup> and 3<sup>rd</sup> semesters) and are going to graduate with a double MSc diploma.



## JOB PROSPECTS

Thus graduate of this master program will be prepared to work in an international and multicultural environment in mining and exploration companies, technical supervision authorities, public administration offices, research and development institutions, everywhere where advanced and state of the art Interdisciplinary knowledge of mining and geology, computer aided design, geomatics are required.



## ENTRY INFORMATION

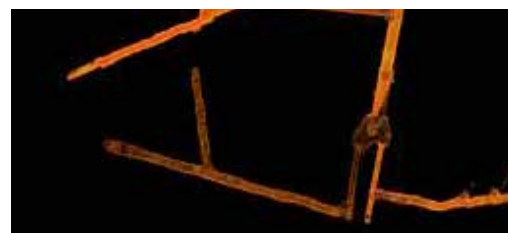
Requirements: the programme is meant for holders of a Bachelor's Degree in Mining and Geology as well as a Bachelor's Degree in Geodesy and Cartography or related engineering disciplines.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

Knowledge will be provided in the form of lectures, tutorials, laboratories, computer labs, project works and seminars.

### SEMESTER 1 (WUST)

- » Principles and Application of InSAR and GIS in Mining
- » Computer Aided Geological Modelling & Geostatistics
- » Project Management, Appraisal and Risk Evaluation
- » Engineering Geophysics
- » Integrated Analysis of Deformations in Geomechanical Engineering
- » Occupational Health and Safety
- » Foreign language
- » Elective course

### SEMESTER 2 (TUBAF)

- » Applied Remote Sensing in Geosciences
- » Underground Mine Surveying
- » Geomonitoring
- » Operations Management
- » Geomodelling – Geostatistics for Natural Resource Modelling
- » Foreign language

### SEMESTER 2 (MUL)

- » Spatial Planning
- » Risk Management in Mines
- » Deposit Modelling and associated Software
- » Underground Mining
- » Mining Subsidence Engineering
- » Geotechnical Monitoring and Instrumentation
- » CAD-Constructions in Tunneling
- » Mine Surveying Project Study
- » Regulation of Mining Damages and Ensuring Land Use
- » Automatic Surface Inspection

### SEMESTER 3 (TUBAF)

- » Special Topics Geokinematics
- » Applied Spatial Data Analysis and Modelling - Case Study
- » Geomatics for Mineral Resource and Reserve Management
- » Reclamation

- » Human Resources Management & Organizational Behaviour
- » Elective courses

### SEMESTER 3 (MUL)

- » Rock Mechanics – Open Pit, Slopes, Dams
- » Lab in Rock Mechanics
- » Applied Geodesy
- » Selected Aspects of Engineering Surveying in Mining and Tunneling
- » Mine Mapping
- » Internship
- » Elective courses

### SEMESTER 4 (WUST)

- » Master's Thesis
- » Diploma Seminar



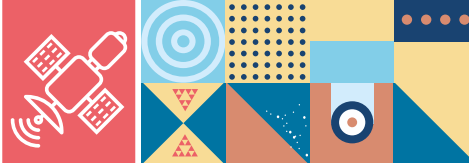
## ABOUT STUDIES

- » **Duration:** 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**

Jan Blachowski PhD, DSc, Prof. (at WUST)  
 Jörg Benndorf PhD, DSc, Prof. (at TUBAF)  
 Alexander Tscharf PhD (at MUL)



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
 phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



**DESCRIPTION**

Geomatics is an interdisciplinary scientific and technical discipline that combines aspects of surveying and sensor technology with data processing, geoinformatics and geomodelling. It deals with the acquisition, analysis, interpretation, dissemination and practical application of geoinformation. Geomatics analyses and synthesises information about spatial processes and phenomena and their changes. Geodata is used to create precise computer models that help us to better understand spatial processes and shape future activities. Geodata is an element of almost every intelligent IT system. Stimulating the demand for geoinformation may affect the innovativeness of the economy and allow the entrepreneurs and science to play a significant, more noticeable role of on the global market.

The universality of geoinformation and the prospect of a further increase in its use (processing and analysing large collections of geodata) generate a demand for specialists in the field of development and management of geoinformatics knowledge. Education in the field of Geodesy and Cartography with a specialisation in Geomatics at the Faculty of Geoenineering, Mining and Geology of Wrocław University of Science and Technology meets this demand.



**JOB PROSPECTS**

The Geomatics graduate will be prepared to work for enterprises, engineering supervision bodies, state administration, design offices and research units, where in-depth specialised knowledge of modern geodetic and remote sensing techniques of spatial data acquiring, as well as further advanced analyses in Geographic Information Systems and visualisations are required.



**ENTRY INFORMATION**

Requirements: the programme is meant for holders of a first-degree diploma in engineering studies, especially in the field of geodesy and cartography. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:

**admission@pwr.edu.pl**

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: **admission.pwr.edu.pl**

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



**CONTENT**

**SEMESTER 1**

- » Physics - the structure of matter
- » Advanced Numerical Calculation Methods
- » Advanced Geospatial Analysis
- » Geostatistics
- » Special Measurements
- » Selected Topics in GNSS
- » GIS Programming
- » Foreign Language I

**SEMESTER 2**

- » Selected Topics in Geospatial Modelling
- » Financial Analysis
- » Physical Geodesy
- » Digital Cartographic Models
- » GIS Programming II
- » Remote Sensing and Processing of Digital Images
- » Hydrology II
- » Selected Topics in Displacement Monitoring
- » Foreign Language
- » Elective course
- » Humanistic-managerial course
- » Graduate Seminar

**SEMESTER 3**

- » Geoinformation Project Management
- » Selected Topics in Information Technologies
- » Distributed Spatial Databases
- » Management of Company Development
- » Graduate Seminar
- » Elective course
- » Master's thesis



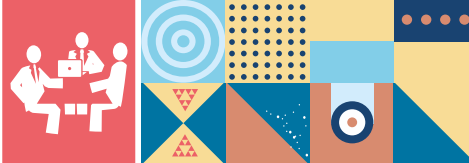
**ABOUT STUDIES**

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
Jan Blachowski Ph., DSc, Prof.

**?** Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39







## DESCRIPTION

Environmental Quality Management – is a versatile field of study created for students eager to extend environmental protection general knowledge to higher level of proficiency. It offers their graduates possession of the comprehensive knowledge developed simultaneously with practical skills, focusing on the environmental protection issues with the engineering – related taste. Graduates are able to solve environmental engineering problems associated with sustainable development, circular economy, renewable energy resources, the pollution of environment and climate changes. Engineering skills possessed in planning, designing and conducting research projects allows our alumni to exploit their knowledge as highly skilled professionals solving problems related to water supply and sewer systems, wastewater processing, air protection, solid waste management and even materials science. We focus on biodegradable materials as a substituents for petroleum based plastics, smart renewable energy sector and other emerging technologies and processes being a huge step forward to existently utilised ones.



## JOB PROSPECTS

The graduates will be qualified for working in research and development institutes, enterprises and governmental units related to environment protection issues. Knowledge and skills allows to take advantage to work in design offices and enterprises which are involved in: water supply, wastewater treatment, waste management, contaminated land remediation, broad spectrum of renewable energy technologies, air pollution control and abatement.



## ENTRY INFORMATION

Bachelor's Degree in either of the following: Environmental Protection, Environmental Engineering, Chemistry, Earth Sciences. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

Forms of teaching: lectures, laboratories, seminars, classes, computer classes, projects.

### SEMESTER 1

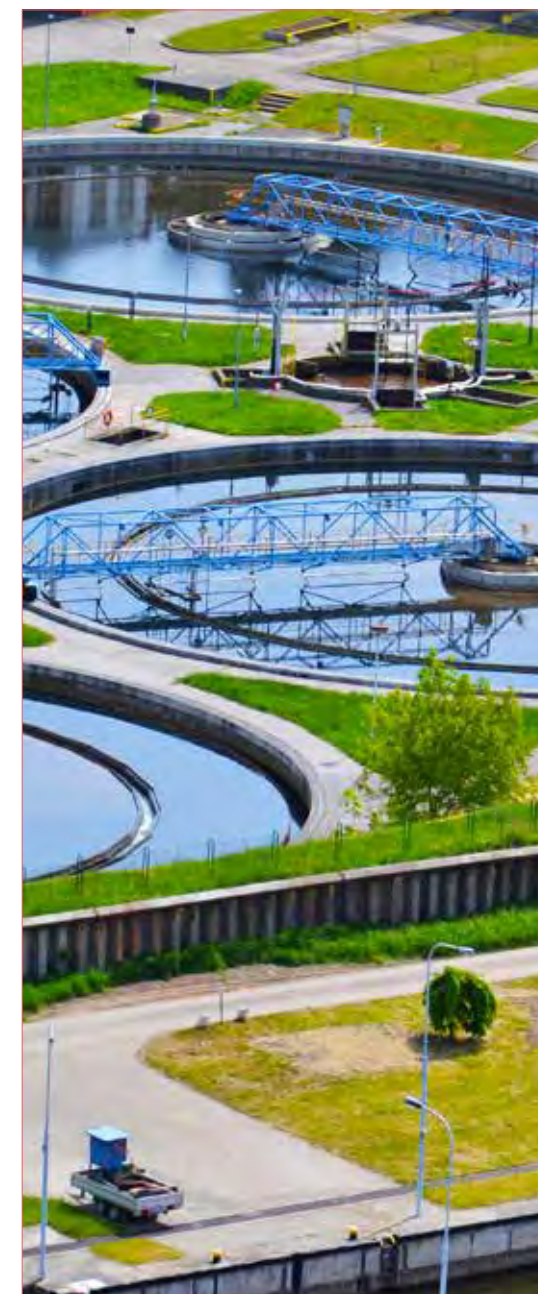
- » Environmental Chemistry
- » Engineering Application of Mathematical Statistics
- » AutoCAD
- » Water Treatment Technology
- » Raw Materials Management
- » Sanitary Biology
- » Water Quality Management
- » Water Supply Systems
- » Automation in Environmental Engineering
- » Polish Language A1 or English Language C1+
- » Elective Subject
- » Ethics of New and Emerging Technologies
- » Strategic Management

### SEMESTER 2

- » Environmental Management
- » Membrane Separation Processes in Environmental Protection
- » Environmental Toxicology
- » Waste Gases Purification
- » Solid Waste Management
- » Waste Water Treatment Technology
- » Biodegradable Materials
- » Sewage Systems
- » Environmental Health Hazards
- » Polish Language or Another Language
- » Spatial Planning
- » Reliability of Engineering Systems

### SEMESTER 3

- » Organisation of Construction Works
- » Building Regulation
- » Renewable Energy Systems
- » Elective Subject
- » Diploma Seminar
- » Diploma Project



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:**  
Martyna Grzegorzek, PhD Eng



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

Businesses today collect an incredible amount of data, from market transactions, customer service interactions, social media reviews, search engine entries, to demographics, and many more. Businesses also experience a rapid and continuous development of technologies and organisational behaviour that require high skills in ICT and data analytics. The Master of Business Intelligence (BI) programme is designed to provide students with cutting edge managerial knowledge and a strong foundation in both analytics – including computational statistics and machine learning – and core business areas, building a solid platform for a successful career. The BI curriculum focuses on how to analyse data in order to identify and predict patterns and on how to visualise and present results to support managerial decisions and lead to innovative thinking in today's organisations.

The Master of Business Intelligence programme is tailored for current Bachelor of Engineering students and recent graduates who plan to pursue a career in business analytics and management information systems, as well as computer programmers, mathematicians, physicists and engineers seeking career advancement or change. We not only welcome students from different backgrounds and cultures, but also see them as critical for developing innovative ideas. Set up and run by a team of top-ranking scientists, award-winning early stage researchers and successful professionals, the BI curriculum answers the market demand for tech-savvy graduates who can apply advanced computational tools to solve business challenges.



## JOB PROSPECTS

The demand for business analytics is high. Graduates who complete the Business Intelligence programme will acquire computational skills and management expertise that the business world is actively seeking. Our programme prepares students for data-driven decision support that is crucial for today's business activities across a broad range of industries, including ICT, financial, energy and healthcare. The BI curriculum provides the skills to fill positions not only as business intelligence analysts, but also data analysts and consultants, revenue optimisation analysts, risk managers, market analysts and many more. Given that the students will have the opportunity to conduct research with affiliated faculty and senior staff, the programme also prepares for academic careers, offering a unique set of competences and invaluable experience related to decision support for energy markets and renewable generation, e-business logistics and trade, and healthcare systems.



## ENTRY INFORMATION

Requirements: Bachelor of Engineering Degree. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

The program is build up from three blocks:

- » Data description and analysis, where students learn how to visualize, and explore datasets using econometric tools, data mining and artificial intelligence
- » Simulation techniques, where students learn how to simulate paths of business processes
- » Management, where students learn how to use modern management techniques, such as product management or design thinking

The lectures are accompanied by laboratories and workshops (no traditional classes!).

Students apply BI methods using advanced programing environments such as Python, R and Matlab.



## ACQUIRED SKILLS AND COMPETENCES

Students will learn how to:

- » Use data analytics to stimulate business growth with quantitative and qualitative skills.
- » Stay on top of the latest methods and approaches in computational statistics and machine learning.
- » Use visualization software to identify trends, explore hypotheses, challenge assumptions, and create a more detailed, data-driven understanding of business activities.
- » Simulate realistic future paths of all kinds of business processes.
- » Leverage the power of data to make informed business decisions and thrive in a rapidly changing environment
- » Conduct top-tier research and report the results to managers, peers and the public.
- » Reach the right customers with the right products and communications.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Katarzyna Maciejowska, PhD
- » **Contact person:** Yash Chawla, PhD



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

People are the most important resource of every organisation. Machines and technology can be purchased or copied, but without knowledgeable and skilled people they would be of little value. Contemporary competition is competition between teams of people, and HRM is a modern technology of such teams. This soft technology allows us to multiply the intellectual capital of individuals into organisation's HRM-capital.

The HRM specialisation allows you to acquire knowledge and develop practical skills in the field of modern methods and techniques of strategic and operational human resource management in various types of organisations, as well as in smaller teams created within the organisation. It also allows the development of knowledge and skills in the field of leadership and team-building. Everything is embedded in the contemporary theory of management, economy and finance. Students also have the opportunity to acquire the ability to use IT tools supporting management processes in the field of human resource management.

Attention will be focused on understanding the business and skilful use of adequate techniques and management tools. Students will also learn the skills to research economic and financial phenomena and processes in a dynamically changing environment. As part of the HRM specialisation, students have the opportunity to acquire practical skills in the use of IT tools and appropriate analysis of the data available for them in order to support processes in the field of human resource management.



## ABOUT STUDIES

- » **Duration:** 4 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** October 2023
- » **Programme coordinator:** Prof. Agnieszka Bieńkowska
- » **Contact person:** Kamila Ludwikowska, PhD



## JOB PROSPECTS

By completing the 2<sup>nd</sup> degree of HRM specialisation, the graduate will be prepared in terms of the knowledge and competences to work as a leader of various types of teams, in various organisations (from international corporations to startups), as well as a human resource specialist. The main goal of this educational path is to prepare graduates and engineers of various specialties (IT, mechanics, electronics and telecommunications, chemistry, construction and other technical fields) to work and lead teams in companies of these specialties. Graduates of this specialisation will have the knowledge and experience acquired during workshops and practical classes on the functioning of groups and their dynamics. In addition, they will be able to use human resource management tools to achieve optimal results of their teams: in terms of both business and project goals, high efficiency and group effectiveness, but also the optimal level of group members' wellbeing.



## ENTRY INFORMATION

Requirements: Bachelor's Degree or Bachelor of Engineering Degree. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

Forms of teaching: lectures, laboratories, tutorials, projects, seminars, research.

### 1<sup>ST</sup> GROUP OF COURSES:

modern concepts of human resource management in the field of selection, assessment and remuneration of personnel using the competency approach; management of the development and potential of employees, as well as their motivation and engagement; modern trends in the human resource area (strategic and international HRM, evidence-based approach, diversity management, and employer branding).

### 2<sup>ND</sup> GROUP OF COURSES:

a set of socio-managerial competences that are essential in working with and managing people, including: communication, public speaking and work on one's own image, working in a group and understanding group dynamics, social intelligence and the ability to predict and evaluate the behaviour of other people, leadership competences, including motivating, coordinating the work of a group and strategic thinking.

### 3<sup>RD</sup> GROUP OF COURSES:

general study courses that systematise and develop knowledge in the field of modern management methods and concepts, as well as economy and finance.



## IMPORTANT!

While studying the HRM specialisation, students have the opportunity to work both individually and in a team. The practical forms of classes (i.e. projects, laboratories or workshops) cover over 50% of ECTS credits. Methods such as case study and problem-based learning are used.

Students have the opportunity to build specific tools supporting HR processes. Individual or group research projects are carried out to solve specific problems in the field of HRM.

The development of managerial and personal competences is based on the "learning by doing" approach, in practice it assumes the workshop nature of classes. Students develop specific skills, working in small groups on problems and projects, take part in simulations of situations and group processes.

Lectures are conducted in innovative interactive mode, some are conducted remotely.

At the end of the studies, students are obliged to prepare an MSc dissertation and pass a final (diploma) exam.



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



DESCRIPTION

A graduate has the knowledge and skills in designing, testing and operation of power plants using nonconventional energy sources in a wide spectrum of degree of conversion and energy storage methods.



JOB PROSPECTS

The graduate will be prepared to work in energy industry. In particular, our graduate will have a good base to:

- » work on designing of equipment using renewable energy
- » work on creating new solutions in renewable energy power
- » supervise the work of renewable and hybrid energy systems
- » assess the effectiveness of the use of renewable energy sources, depending on the location of the investments
- » determine and assess the local and global energy strategy



CONTENT

SEMESTER 1

- » Applied Mathematics
- » Physics - Selected Issues
- » Numerical Methods
- » Selected Problems of Thermal-Flow Processes
- » Physics of Renewable Energy
- » Fuel Cells and Hydrogen Production
- » Geothermal Power Engineering
- » Biomass in Energy Production
- » Wind Power Plants
- » Foreign Language min. B2+

SEMESTER 2

- » Mathematical Modelling of Energy Generation Installation
- » New Generation Energy Technologies
- » Heat Pumps
- » Solar Energy Conversion Systems
- » Water Power Engineering
- » Biofuels and Alternative Fuels
- » Management Course (elective)
- » Foreign Language (next language, any level)

SEMESTER 3

- » Energy Systems
- » Thernuclear Power Generation
- » Humanities Course (elective)
- » Master Seminar
- » Master Thesis



ENTRY INFORMATION

Requirements: Bachelor's Degree in a related field.  
 Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:  
**admission@pwr.edu.pl**

- » **Deadline for application**
  - » **Tuition fee**
  - » **Application fee**
- See: **admission.pwr.edu.pl**

» **English:**  
 Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

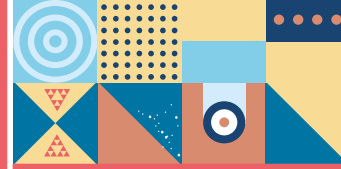


ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
 Dorota Nowak-Woźny, PhD, DSc, Ass. Prof.



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
 phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

A graduate has the detailed knowledge of devices and installations dedicated for cooling down to  $-150^{\circ}\text{C}$  and, in the case of cryogenics, for temperature lowering below 120 K and down to fractions of Kelvin. They have the skills in the design, implementation and operation of both refrigerating and cryocooling systems. Additionally, a graduate can creatively apply modern design methods and is well prepared for undertaking PhD studies.



## JOB PROSPECTS

The graduates of the Refrigeration and Cryogenic programme will be prepared to work in all industrial branches that apply refrigeration and cryogenic technologies. In particular, our graduates will have a good base to:

- » design modern refrigeration and cryogenic units and installations,
- » create new solutions and methods of temperature lowering,
- » supervise the work in food cold stores, refrigeration and air conditioning installations, air rectification and technical gas production plants, natural gas liquefaction plants and other refrigeration and cryogenic systems.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in Power or Mechanical Engineering or any related field. Each application is assessed individually on its merits. If In doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### SEMESTER 1

- » Applied Mathematics
- » Physics - selected issues
- » Numerical methods
- » Selected problems of thermal-flow processes
- » Vapour-compression Refrigeration Systems
- » Thermodynamic Fundamentals of Refrigeration, Cryogenics and Low Temperature Physics
- » Refrigerants, Coolants and Cold Chain
- » Cryogenics
- » Foreign Language min. B2+

### SEMESTER 2

- » Mathematical modeling of energy generation installations
- » New generation energy technologies
- » Gas and Cryogenic Technologies
- » Cryogenic Systems and Applied Superconductivity
- » Numerical Techniques Related to Heat Transfer
- » Cooling Systems
- » Sorption Refrigeration
- » Management Course (elective)
- » Foreign Language (next language, any level)

### SEMESTER 3

- » Energy systems
- » Air conditioning systems
- » Humanities Course (elective)
- » Master Seminar
- » Master Thesis



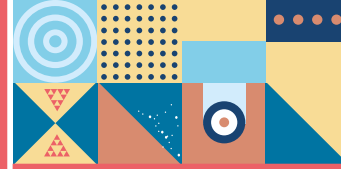
## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Stefan Reszewski, PhD



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

A graduate has the knowledge and skills the numerical methods for a wide range of energy/power applications. The knowledge will be very useful for performing the complex thermal – flow simulations using commercial and uncommercial software, utilize artificial intelligence as well as the conventional approach to the energy/power solving problem.



## JOB PROSPECTS

After graduation, the student will be prepared to solve problems in practically every field related to thermal and flow processes.

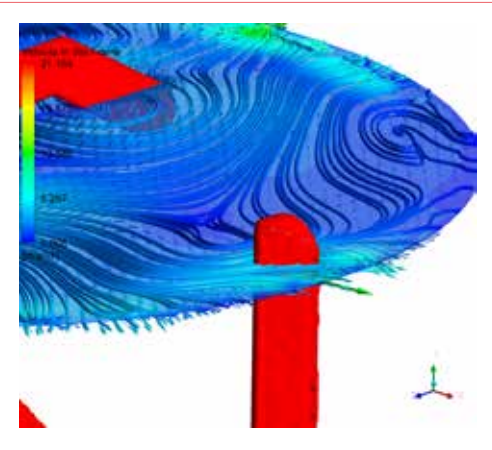
After completing the specialisation, you will be able to:

- » program in a high-level structured language,
- » perform mechanical and thermal – flow simulations using i.e. ANSYS software,
- » carry out numerical analyses using uncommercial tools such as OpenFOAM software,
- » use artificial intelligence to control the operation of energy devices,
- » analyse investments not only in technical terms, but also in economic terms.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Sławomir Pietrowicz, PhD, DSc, Ass. Prof.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in a related field. Each application is assessed individually on its merits.

If in doubt, please contact an Admission Officer, e-mail:

[admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



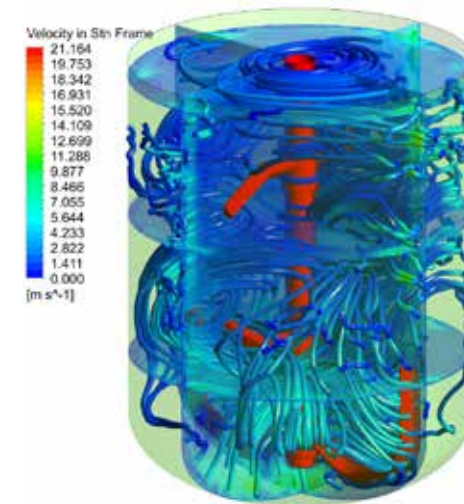
## CONTENT

### SEMESTER 1

- » Applied Mathematics
- » Physics - Selected Issues
- » Numerical Methods
- » Selected Problems of Thermal-Flow Processes
- » Fundamentals of Programming
- » Modelling of HVAC Systems
- » Modelling of Combustion Processes
- » Mechatronics and Control Systems
- » Foreign Language min. B2+

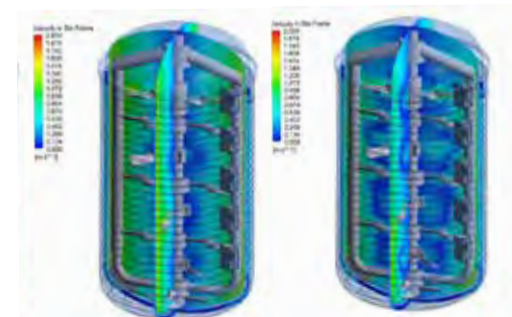
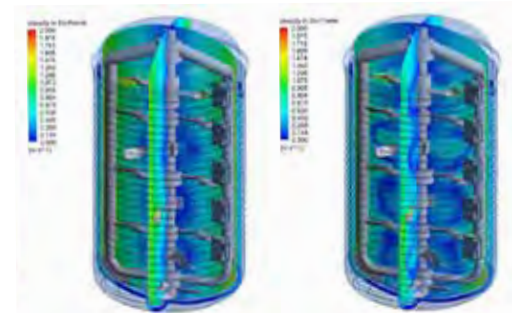
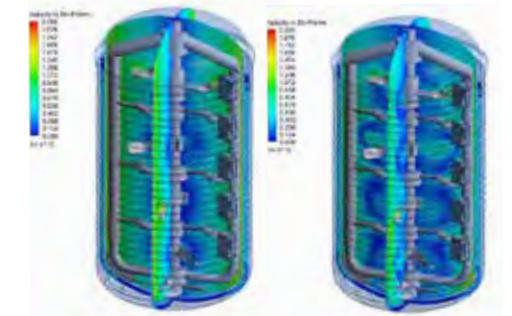
### SEMESTER 2

- » Mathematical Modelling of Energy Generation Installation
- » New Generation Energy Technologies
- » Thermoeconomic Analysis of Energy Processes
- » Advanced Numerical Modelling Using OpenFOAM
- » Finite Element Analysis
- » Artificial Intelligence
- » Management Course (elective)
- » Foreign Language (next language, any level)



### SEMESTER 3

- » Energy Systems
- » Integrated Production Systems
- » Humanities Course (elective)
- » Master Seminar
- » Master Thesis



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

At the end of the Master's programme the students will have a sound base of general scientific knowledge in the field of Automotive Engineering. The curriculum encompasses contemporary issues related to automotive industry including innovative design, materials science, quality, safety and ecology. The students will be sufficiently equipped and motivated for a life-long qualification in the field of Automotive Engineering. They will be prepared to implement their knowledge and to cooperate within an organisation. In making decisions and performing their tasks, they will be guided by social, economical and ecological principles.



## JOB PROSPECTS

The graduates will have the professional knowledge in the range of automotive engineering with particular concern in the latest trends in vehicle and engine construction as well as the standards of ecology and operation. The unique programme is designed to foster the development of the professional skills and to enable the graduates to work in the international and interdisciplinary teams in the field of automotive engineering.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Sławomir Susz, PhD



## ENTRY INFORMATION

Requirements: Bachelor's Degree. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### SEMESTER 1

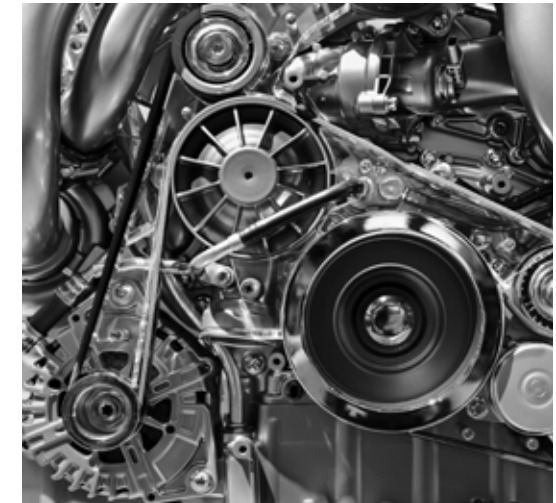
- » Applied Mathematics - Operational Methods in Automotive Engineering
- » Testing of Vehicle Elements and Assemblies
- » Energy Efficiency Design of Power-train and Body
- » Modelling of Multi-Body systems
- » Machinery Design Process
- » Analytical Mechanics
- » Surface Engineering
- » Design of Engineering Materials
- » Machine and Device Control Systems
- » Strength of Materials
- » English Language B2+ or C1+

### SEMESTER 2

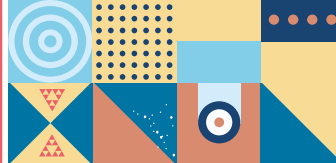
- » Project CAD /FEM for Metals
- » Project CAD /FEM on Flows
- » Developing Engine Technology
- » Alternative Drive Systems
- » Electronics in Cars
- » Chemistry and Green Fuels
- » Management for Engineers
- » Non-Destructive Evaluation in Contemporary Manufacturing Systems
- » Foreign Language – other than English A1 or A2
- » Master's Thesis I

### SEMESTER 3

- » The Basis of Negotiations
- » Automotive Expertises
- » Safety of Vehicles
- » Ecology of Road Transportation
- » Communication for Engineers
- » Diploma Seminar
- » Master's Thesis II



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39



## DESCRIPTION

The goal of these studies is to provide the students with knowledge and skills necessary to manage a production company. The curriculum encompasses issues related to company management, planning, organisation and control of manufacturing processes. The students learn about the latest methods of production management and IT techniques essential for the use of computer systems in company management. The knowledge and skills from many various disciplines such as: production organisation, quality management, logistics, computer science, economics, basics of law, mechanics and construction of machines, means that their education is universal and useful in production engineering and services in all sectors of the economy.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in: Control Engineering and Robotics, Mechanical Engineering and Machine Building, Transport, Management and Manufacturing Engineering or related.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February
- » **Programme coordinator:**  
Sławomir Susz, PhD



## CONTENT

### SEMESTER 1

- » Social Product Development
- » New Trends in Production E
- » Project Management
- » Flexible Manufacturing Automation
- » Simulation of Manufacturing Processes
- » Reverse Engineering
- » Modelling of Enterprise Processes
- » Factory Layout Planning
- » Integrated Normative Management
- » Selected Methods of Advanced Data Analysis E
- » Physicochemistry
- » Strategic Management
- » Foreign Languages I

### SEMESTER 2

- » Research Methodology
- » Optimisation Methods in Production
- » Quality Management in Production E
- » Lean Manufacturing Tools and Methods
- » Product Lifecycle Management E
- » Innovative Manufacturing Technologies
- » Systems Reliability Engineering and Management
- » Advanced Methods of Production Organisation
- » Socjology of Organisation and Leadership
- » Foreign Languages II
- » MSC DIPLOMA THESIS I

### SEMESTER 3

- » Knowledge Management
- » Design of Experiments
- » Robotisation and Digitisation in Manufacturing
- » Financial Analysis
- » Inventive Engineering
- » Innovative Manufacturing Technologies
- » Industry 4.0 (Digitalisation and Robotisation in Industrial Processes)
- » Human Resource Management
- » Diploma Seminar
- » MSC DIPLOMA THESIS II



## JOB PROSPECTS

The graduate of the programme has:

- extended knowledge about the management of production enterprises, including innovative companies of a global nature, knows the latest production technologies and development trends of modern production enterprises, knows the methods and techniques of production organisation as well as methods and tools for optimising production systems,
- the ability to design new production systems and improving existing companies, is able to effectively manage production resources as well as plan and control the implementation of production orders using advanced IT tools,
- the competence to undertake tasks in enterprises typical for such functions as: production manager, product manager, process manager, production engineer, process analyst, process development manager.



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The graduate has in-depth knowledge of these areas of physics, computer science and mathematics which are useful for modelling and solving problems related to the analysis of large information resources. The graduate knows the most important directions of research in the field of analytics of large data sets (Big Data Analytics), complex systems theory and statistical physics and has skills to:

- (1) use IT tools and technologies to process large amounts of data,
- (2) use methods of physics of complex systems to study and model the analysed information resources,
- (3) find or design an adequate model of the observed dynamic phenomenon and verify it on the basis of empirical data. The graduate will be prepared to work in a dynamically developing market sector related to the statistical analysis of large data sets, aiming to uncover, among others, hidden patterns, market trends, customer preferences, etc.



## ENTRY INFORMATION

Requirements: Bachelor's Degree in one of the following fields: Computer Science, Electronics, Mathematics, Telecommunication, Teleinformatics.

Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » Deadline for application
- » Tuition fee
- » Application fee

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### OBLIGATORY COURSES (SEMESTER 1)

- » Advanced Topics in Algebra
- » Programming and Classification
- » Stream Programming
- » Elements of Probability Theory
- » Elements of Differential Equations
- » Statistical Physics for Complex Systems

### OBLIGATORY COURSES (SEMESTER 2)

- » BDA Algorithms
- » Complex Systems

- » Databases and Information Management
- » Diploma Seminar 1
- » Elements of Nonlinear Dynamics
- » Practical Statistics for Data Science
- » Machine Learning – Introduction or Monographic Lecture 1

### OBLIGATORY COURSES (SEMESTER 3)

- » Diploma Seminar 2
- » Machine Learning – Applications or Stochastic Processes or Time Series Analysis or Quantum Optics



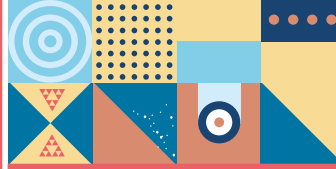
## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:**  
Prof. Antoni C. Mituś



? Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





**DESCRIPTION**

This course will give the students multidisciplinary knowledge of electronics, optoelectronics, microwaves and telecommunications. It will enable them to obtain theoretical and practical knowledge in designing applied electronic systems based on analogue and digital techniques, lasers, fibres and microwave electronics as well as gain expertise in microprocessors, programmable logic applications and signal processing. Additionally, the students will gain laboratory experience and become familiar with work practices of research laboratories.



**ABOUT STUDIES**

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Jerzy Witkowski, PhD,



**JOB PROSPECTS**

The graduate will acquire the experience necessary for a professional career in industry, research units and universities, and will be prepared for 3<sup>rd</sup> level studies (PhD). They will gain substantial international experience working together with highest class scientists in the environment of prestigious laboratories. They will possess well above standard skills in English communication.



**ENTRY INFORMATION**

Requirements: Bachelor's Degree in Electrical, Electronic, Computer Engineering or related disciplines.  
 Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
  - » **Tuition fee**
  - » **Application fee**
- See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
 Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



**CONTENT**

**SEMESTER 1**

- » Optical Fibres and Optocommunications
- » Microcontrollers Programming
- » Computer Network and Systems
- » Numerical Algorithms
- » Numerical Methods in Differential Equations
- » Social Communication
- » Foreign Language

**SEMESTER 2**

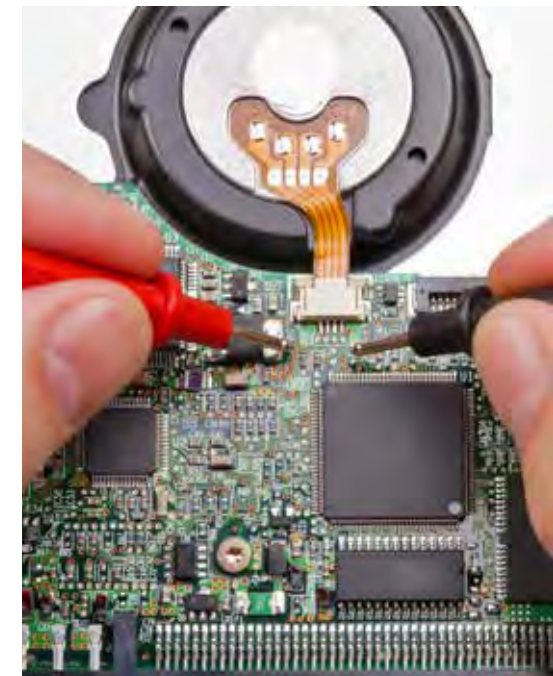
- » DSP Architectures
- » Hardware Programming
- » Lasers and Applications
- » Analogue Peripherals of Digital Systems
- » Machine Learning Methods
- » RF Circuits Design
- » Specialisation Seminar

**SEMESTER 3**

- » Master's Thesis
- » Diploma Seminar
- » New Approaches to Electronics and Telecommunications
- » Entrepreneurship
- » Elective Course

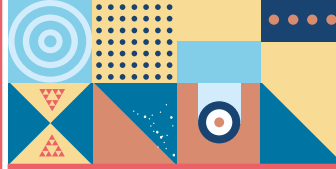
**ELECTIVE COURSES:**

- » Real Time Operating Systems
- » Optics and Non-linear Optics
- » IoT Modules
- » Electrotechnics
- » Advanced Objective Programming



? **Questions?** Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
 phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The Embedded Robotics programme combines the fields of robot control and design with digital electronics and embedded circuits. The goal is to provide the scientific skills and the practical ability to analyse, develop and deploy systems for the broad field of robotics: low and high-level control systems, perception, in particular robot vision, intelligence, motion and task planning, communication, and human-robot interaction. The courses are meant to provide an in-depth understanding of theory and the principles, methods, and processes, allowing the graduates to achieve the competences required in their future job responsibilities. Typical activities include solving problems in the analysis, design, development, integrating, deployment, debugging, and maintenance of robotic and/or embedded systems.



## JOB PROSPECTS

The graduates of Embedded Robotics are prepared for creative engineering activities in the field of industrial and service robotics, embedded electronics, and also for research and scientific work including the PhD degree studies. Specifically, the graduates can pursue an industry, research and development, business or administration career as:

- » design engineer and/or programmer of embedded systems and circuits,
- » implementation/deployment specialist of industrial robotic systems, robotics systems specialist, integrator, project manager,
- » control systems engineer, embedded control devices and systems specialist, building and home automation systems design engineer,
- » expert/consultant for robotic systems deployment, including intelligent and social robots.



## ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engineering Degree in Electrical Engineering or related field. Minimum 210 ECTS. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:

[admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:**  
Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:**  
February 2024
- » **Programme coordinator:**  
Elżbieta Roszkowska, PhD, DSc



## CONTENT

## SEMESTER 1

- » Control Theory
- » Embedded Systems
- » Artificial Intelligence and Machine Learning
- » Applied Logic
- » Physics
- » Foreign language A1
- » Foreign language B2
- » Artificial neural networks
- » Intell. systems' virtualization and process automatization

## SEMESTER 2

- » Control Theory for Embedded Systems
- » Robotic Programming Environments
- » Event-based Control
- » Mobile Robotics 1
- » Sensors and Actuators
- » Modelling and Identification
- » Theory and Methods of Optimisation
- » Intermediate Project
- » Specialisation Seminar

## SEMESTER 3

- » Advanced Robot Control
- » Social Robots
- » Task and Motion Planning
- » Master's Thesis Project
- » Diploma Seminar
- » Entrepreneurship
- » Social Communication



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The programme, offered by the Faculty of Pure and Applied Mathematics and run in cooperation with the Hugo Steinhaus Center, is based on educational standards of the European Consortium for Mathematics in Industry (ECMI) as confirmed by the status of ECMI Teaching Centre obtained by Wrocław University of Science and Technology in 2014.

The curriculum is oriented towards real-life applications and industrial problems in educational style and contents. The goal of the studies is the real world applied mathematics education of specialists who are well prepared not only for work in the international financial institutions or enterprises, but also for any situation in which the creative thinking is needed. The graduates have no problems with finding good jobs in the finance and insurance or industrial sectors in Poland and abroad. The MSc diploma offers an opportunity to continue education at PhD studies.

The programme offers four main specialties:

- » Financial and Actuarial Mathematics
- » Mathematics for Industry and Commerce
- » Data Engineering
- » Modelling, Simulation and Optimisation



## ENTRY INFORMATION

Requirements: Bachelor's or Master's Degree in Applied Mathematics, Control Engineering and Robotics, Economics, Electronics, Electronics and Telecommunications, Computational Physics, Technical Physics, Physics, Computer Science, Computer Science and Econometrics, Industrial Computer Science, Applied Computer Science, Data Engineering, Quantum Engineering, Systems Engineering, Mathematics, Mathematics and Statistics, Mathematics in Technology, Computational Mathematics, Teleinformatics, Telecommunications and related domains obtained either in Poland or abroad. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Deadline for application**
- » **Tuition fee**
- » **Application fee**

See: [admission.pwr.edu.pl](http://admission.pwr.edu.pl)

- » **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.



## CONTENT

### SEMESTER 1

- » Economathematics
- » Partial Differential Equations with Applications in Physics and Industry
- » Life Insurance Models
- » Social Elective Subject
- » Foreign Language
- » Elective Course
- » Elective Course

### SEMESTER 2

- » Optimisation Theory
- » Agent-based Modelling of Complex Systems
- » Social Elective Subject
- » Foreign Language
- » Elective Course
- » Elective Course
- » Elective Course

### SEMESTER 3

- » Diploma Thesis
- » Diploma Seminar
- » Elective Course

### ELECTIVE COURSES

- » Financial Risk Management
- » Computational Finance
- » Insurance Models for Industry
- » Reserves in Life and Non-life Insurance
- » Risk Management in Insurance
- » Numerical Methods in Differential Equations
- » Introduction to Applied Fluid Dynamics
- » Perturbation Methods
- » Applied Functional Analysis
- » Non-linear Methods
- » Introduction to Inverse Problems
- » Free Boundary Problems
- » Diffusion Processes on Complex Networks
- » Analysis of Unstructured Data
- » Statistical Packages
- » Computer Simulations of Stochastic Processes
- » Estimation Theory
- » Mathematical Image Processing
- » Queues and Communication Networks
- » Advanced Topics in Dynamic Games
- » Operations Research
- » Optimal Control
- » Introduction to Big Data Analytics
- » Data Mining
- » Machine Learning
- » Introduction to Compressed Sensing



## JOB PROSPECTS

The graduates will have obtained knowledge in mathematics and economics/finance; experience in pricing financial and actuarial contracts, modelling, simulation and optimisation, computational methods and data science. They will be prepared for solving problems in the financial/actuarial and industrial sectors and gaining information from the literature and other sources. They will possess organisational skills and experience necessary for a professional career in research units, industry and at universities and colleges.



## ABOUT STUDIES

- » **Duration:** 3 semesters
- » **Mode of study:** Full time
- » **Language of instruction:** English
- » **Start date:** February 2024
- » **Programme coordinator:** Janusz Szwabiński, PhD, DSc



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl), phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The Department of Polish Language for Foreigners offers courses in Polish language and Polish culture on different levels – A1, A2, B1, B2, C1 and C2. They are intended for candidates who wish to prepare for future studies at all academies in Poland as well as for those who want to learn Polish intensely. They include 20 lessons of Polish language per week (5 times a week, 4 lessons a day).

The first term contains 300 hours of Polish language, and so does the second term. The students also learn supplementary subjects preparing them for their further studies. The supplementary subjects can be selected according to the students' needs out of the following: mathematics, physics, biology, chemistry, computer sciences, geography, knowledge of Polish culture and history. The students start learning the specialisation courses on the advanced level in the winter term and on the elementary level – in the summer term. The specialisation subjects are taught in Polish.

The courses, thanks to the fact that they are carried out on different levels, guarantee a communicative dexterity in both official and unofficial situations. At the same time, the courses prepare the candidates for studying on different faculties. The students improve basic linguistic competences: listening comprehension, reading comprehension, speaking and writing different kinds of text. Additionally, some lectures and classes on Polish history and culture are carried out in Polish and English.

The course finishes with a written and oral examination in Polish language and with examinations in all chosen subjects. The Department of Polish Language for Foreigners provides also additional activities, such as: tourist tours to the most interesting regions of Poland, visiting some historical places in Wrocław and participating in different cultural events. Taking part in the course, the students learn about important traditions and customs of the Poles.



## ENTRY INFORMATION

The university admission procedure based on secondary education certificate or degree certificate. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Mode of study:**  
Full time, 600 or 900 hours
- » **Duration; start date:**  
1 academic year (2 semesters)  
- October 2023  
1.5 academic year (3 semesters) -  
- February 2024
- » **Tuition fee\*:**  
[admission.pwr.edu.pl](http://admission.pwr.edu.pl)
- » **Deadline for application:**  
[admission.pwr.edu.pl](http://admission.pwr.edu.pl)
- » **Language of instruction:**  
Polish
- » **Application fee:**  
EU/EFTA students: 150 EUR  
Non-EU/EFTA students: 150 EUR
- » **Contact:**  
International Relations Office  
Division of Foreign Students Admission  
and Support  
e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

\* **Fee also includes:**  
Textbooks, trips to the ZOO, water knowledge centre „Hydropolis”, the Four Domes Pavilion, tours around Wrocław and hiking trips and much more.



## CONTENT

The curriculum of learning Polish as a foreign language on the elementary level A includes individual-connected topics primarily (personal data, education, general look, family relations, leisure time activities, health, etc.). Subsequent subjects include: one's surroundings (both immediate: living place, students' hostel, etc., and more distant: city and its institutions), everyday routines, plants, animals, the weather and climate.

### THE GRAMMATICAL MATERIAL INCLUDES:

- » declination of nouns, adjectives, pronouns and numerals;
  - » verb inflexion, transitive and intransitive verbs, voices and moods of verbs, impersonal forms of verbs, modals and verbs connected with movement;
  - » comparison of adjectives and adverbs;
  - » classifying words into different parts of speech;
  - » syntax of a single and compound sentence, double negation, punctuation.
- The curriculum includes also typical communicative situations.



### COURSES:

- » Polish history has been presented from the oldest to the contemporary times. The course has been divided into parts determined by dates of great significance to the society and the state.
- » The purpose of the geography course is to present the social and economic situation of the world with a special emphasis on Poland.
- » The most important chemistry problems are the following: atoms, solutions, electrolytes, hydrolysis, matter, reactions of oxidation and reduction, electrochemical processes and organic chemistry.
- » Selected areas of biology cover, among others, the skeletal system, muscular system, cardiovascular system, lymphatic system, digestive system, nervous system and reproductive system.
- » Participants of mathematics classes will have an opportunity to get to know the language and terminology used in mathematics. They will also have a chance to make up for the secondary school knowledge they miss (e.g. digits, geometric figures, fractions, mathematical actions, functions, sequences, etc.).
- » The purpose of the physics course is giving participants an opportunity to understand the phenomena of the surrounding world and nature, the structures of physics and its connections with other natural sciences (kinematics, dynamics, thermodynamics, electrostatics, optics, contemporary physics, electric current).



Questions? Please contact the Admission Officers e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl),  
phone: +48 71 320 37 11, +48 71 320 31 70, +48 71 320 37 19, +48 71 320 44 39





## DESCRIPTION

The Department of Foreign Languages at Wrocław University of Science and Technology offers preparatory courses to foreigners who want to study BSc and MSc courses in English at Wrocław University of Science and Technology. The course includes 600 hours of English (20 hours of English per week 5 times x 4 hours a day). The students can also learn supplementary subjects preparing them for their further studies as well as Polish language and culture.

To start the course of English students should be at intermediate level B1 as set forth in Common European Framework for Language, Teaching and Assessment. The aim of the course is to help the students improve their language skills and reach B2 level (B2 level ACERT Exam) and to introduce English for academic purposes in order to enable them to follow the university courses in English.

The preparatory English course lasts for the whole academic year (from October to June) and is divided into two semesters. In the first semester the students learn general English with professional language elements. The second semester covers a balance of language skills (speaking, listening, reading, writing), grammar and vocabulary with a special focus on academic language.

The course builds the skills required for understanding lectures, tutorials, research papers and written assignments in English. At the end of the course students take examinations in English, physics and mathematics. The English examination is at B2 level and consists of two parts, a written test and an interview. The participants will be provided with coursebooks and other teaching materials to be used at the preparatory English course all free of charge. The final examination tests listening and reading skills, speaking, knowledge of grammar and vocabulary.

The exam registration fee is included in the price of the course. Throughout the academic year the students will be provided with an opportunity to go on 1-2 day trips to discover the most beautiful places in the region.

The students will also be able to take part in talks and lectures about history of Wrocław and Poland, cultural events, technical English and more.



## ENTRY INFORMATION

The university admission procedure based on secondary education certificate or degree certificate. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

- » **Mode of study:**  
Full time, 600 hours
- » **Duration; start date:**  
1 academic year (2 semesters)  
- October 2023  
or 1 semester - February 2024
- » **Deadline for application:**  
[admission.pwr.edu.pl](http://admission.pwr.edu.pl)
- » **Tuition fee\*:**  
[admission.pwr.edu.pl](http://admission.pwr.edu.pl)
- » **Application fee:**  
150 EUR
- » **Contact:**  
International Relations Office  
Division of Foreign Students Admission and Support  
e-mail: [admission@pwr.edu.pl](mailto:admission@pwr.edu.pl)

**\* Fee also includes:**  
Textbooks, trips to the ZOO, water knowledge centre „Hydropolis” and the Four Domes Pavilion, tours around Wrocław, hiking trips and much more.



## CONTENT

### ENGLISH COURSE SYLLABUS 1<sup>ST</sup> TERM

#### SPEAKING

- » communicating in social situations
- » communicating in professional and intercultural environment
- » telephoning: making enquiries, making arrangements, complaining
- » focusing on functions: agreeing and disagreeing, giving opinions, interrupting and dealing with interruptions, asking for clarification
- » discussing a wide range of personal and study/work-related topics: culture and cross-cultural relations, university and business-related environment, training and development, describing innovative products and services, business travel, buying and selling
- » focusing on pronunciation: word and sentence stress, sound linking

#### LISTENING

- » understanding real life situations
- » following instructions
- » listening for general meaning, details, pronunciation, stress and intonation reading
- » understanding written instructions
- » understanding story sequence
- » understanding authentic writing

#### WRITING

- » organising writing
- » using a range of styles
- » writing formal and informal letters and emails
- » writing CVs and letters of application

#### GRAMMAR

- » revision of tenses
- » conditionals
- » question forms
- » comparatives
- » dependent prepositions
- » relative clauses
- » indirect speech

#### VOCABULARY

- » building a personal lexicon based on topical vocabulary
- » business vocabulary
- » formal and informal vocabulary

### ENGLISH COURSE SYLLABUS 2<sup>ND</sup> TERM

#### ACADEMIC SPEAKING

- » communicating in seminars and tutorials
- » delivering an oral presentation
- » focusing on functions: expressing and justifying opinions, explaining, suggesting, speculating, analysing, summarising, narrating
- » recognising a range of styles
- » speaking without hesitating

#### ACADEMIC LISTENING

- » understanding lectures and tutorials
- » following presentations
- » note taking

#### ACADEMIC READING

- » understanding specialist and non-specialist academic writing
- » identifying text types
- » scanning and skimming

#### ACADEMIC WRITING

- » organising writing
- » expressing fact and opinion
- » describing and comparing graphs and tables
- » describing processes
- » writing a report
- » writing a summary
- » writing an argumentative essay
- » using quotations
- » paraphrasing
- » recognising levels of formality

#### GRAMMAR FOR ACADEMIC PURPOSES

- » understanding choice of tense
- » impersonal style and passive constructions
- » modal verbs
- » forming complex noun phrases
- » changing emphasis in a sentence
- » expressing causality and purpose

#### VOCABULARY FOR ACADEMIC PURPOSES

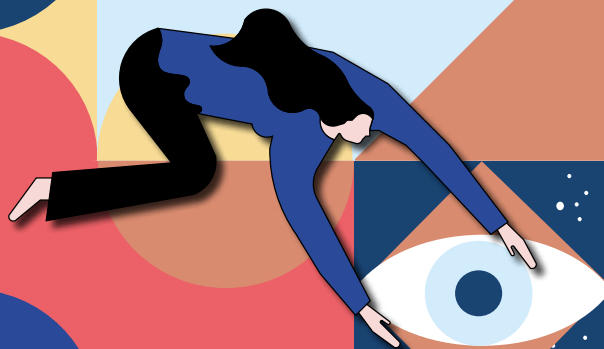
- » language for classifying
- » word formation
- » confusable words
- » technical and semi-technical vocabulary
- » researching specialist vocabulary

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Wrocław University of Science and Technology  
International Relations Office  
Division of Foreign Students Admission and Support

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