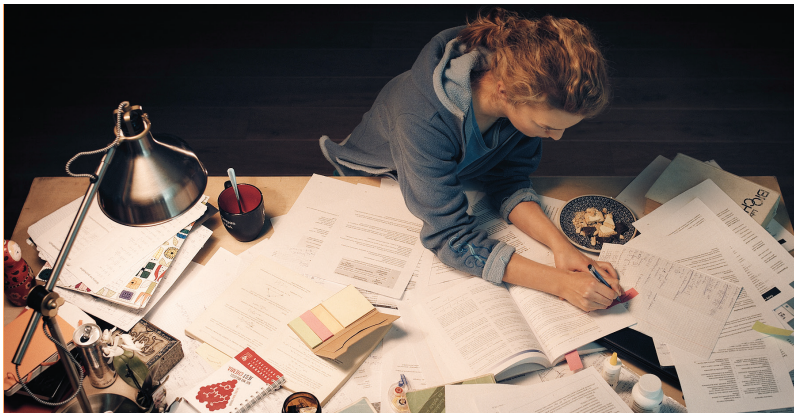
Wrocław
University
of Science
and Technology



WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY PROSPECTUS

2016 2017

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Wrocław University of Science and Technology

WELCOME

to your custom ***Prospectus*** for 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 medium and admission details you will need, such as: the programme's duration, the deadline for application and 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 to Wrocław's University of Science and Technology - Admission Office
e-mail: 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

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

Your Admission Officers

COMPUTER SCIENCE

FIELD OF STUDY COMPUTER SCIENCE | COMPUTER SCIENCE | FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

BACHELOR PROGRAMME

DESCRIPTION

The programme emphasizes practical aspects of Computer Engineering and can be adapted to the student's interest. The final effect of studies is obtaining of first level competences - knowledge, skills and qualifications in accordance with "Teaching Standards" in the field of Computer Science. They obtain the basic knowledge of mathematics and physics, general computer science areas, such as: operating systems, algorithms and data structures, languages and programming techniques, digital and analog technique, computers architecture, project management as well as ethical and legal aspects of computer science. Students who finished study will be able to: implement and deploy effective, reliable, safe and meeting users requirements informatics systems; comprehend, evaluate and deploy different solutions used in scope of computer systems; maintain, install, administrate and deploy tools and problem oriented informatics systems, develop system documentation.

JOB PROSPECTS

Employment in informatics companies that build, deploy and maintain informatics tools and systems, particularly employment in project teams, especially programming teams, in organizations and companies using informatics tools and systems and continuing studies at the second level – Master studies.

ABOUT STUDIES

- **Duration:** 7 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** 3rd October 2016
- **Programme coordinator:**
  Jan Kwiatkowski, Ph.D.
  jan.kwiatkowski@pwr.edu.pl

ENTRY INFORMATION

Required: secondary school certificate, received after the completion of a recognized 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 the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 15th of July 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT– 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **1500 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

The student is required to complete 2415 hours of courses (equivalent to 210 ECTS). The programme consists of lecture and practical activities. Students must receive credits for all subjects and additionally from practical training. The programme of the training must be consulted with the programme coordinator. Students should write a degree thesis under the direction of a faculty member. The programme consists of lectures and practical activities (laboratories, tutorials, seminars and projects).

SEMESTER 1

- General Physics
- Elementary Linear Algebra
- Mathematical Analysis I
- Introduction to Computer Systems
- Introduction to Programming
- Foreign language (Polish language course)

SEMESTER 2

- General Physics - laboratory
- Mathematical Analysis II
- Electronics and Metrology – basic principles
- Data Structures and Algorithms
- Computer Architecture and Organization
- Foreign language (Polish language course)
- Humanistic elective subject, for example "Computer Ethics"

SEMESTER 3

- Theory of Information and Signals
- Electronics and Metrology – laboratory
- Logics and Discrete Mathematics
- Theory of Probabilistic and Statistics
- Databases
- Object-Oriented Programming
- Sport

SEMESTER 4

- Systems analysis and decision support methods in Computer Science
- Computer Networks and Communications
- Operating Systems
- Introduction to Software Engineering
- Multimedia Embedded Systems

Optional courses/select one of them

- Database Design
- Client-Server Architecture

SEMESTER 5

- Introduction to Management Science
- Data Warehouses
- Computer Control Systems
- Software System Development

Optional courses/select one of them

- Introduction to Computer Graphics
- Multimedia Information Systems

Optional courses/select one of them

- Java and Internet programming
- Programming of Web-based systems

Optional courses/select one of them

- Software Project Management
- Software Project Management Techniques

SEMESTER 6

- Introduction to Parallel and Distributed Systems
- Computer Security
- Introduction to Artificial Intelligence
- Preparatory Seminar
- Team Project

Optional courses/select one of them

- Security in Computer Network
- System Administration

SEMESTER 7

- Internet Technologies
- Diploma Seminar
- Diploma Thesis
- Humanistic elective subject , for example Social and Law Aspects of Computer Science

Optional courses/select one of them

- Programming Languages and Paradigms
- User Interface Development
- Program Translation Techniques
- Numerical Methods

Optional courses/select one of them

- E -Business Concept and Technologies
- Theory of Computation

Questions? Please contact Admission Office
e-mail: 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

WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

ORGANIZATIONAL MANAGEMENT

DESCRIPTION

The undergraduate study in management prepares for the future work as management/organization specialist, middle-level manager, and for developing own small enterprise as well as for the post-graduate studies. Graduate will get theoretical and practical knowledge in the scope of management and allied sciences, concerning issue, rules and problems of organization functioning – enterprises, public institutions and governance structures. He or she will be prepared to undertake basic functions of project management in commercial or administrative organizations. Also, he/she will get the ability to communicate efficiently, to negotiate and the teamwork skills.

JOB PROSPECTS

Employment in informatics companies that build, deploy and maintain informatics tools and systems, particularly employment in project teams, especially programming teams, in organizations and companies using informatics tools and systems and continuing studies at the second level – Master studies.

ABOUT STUDIES

- **Duration:** 6 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** 3rd October 2016
- **Programme coordinator:**
  Mariusz Mazurkiewicz, Ph.D.
  mariusz.mazurkiewicz@pwr.edu.pl

ENTRY INFORMATION

Required: secondary school certificate, received after the completion of a recognized 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 the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 15th of July 2016
  EU/EFTA students see: www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT– 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: 1500 EUR per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

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
- Organizational science
- Sociology
- Work environment physics

SEMESTER 3

- Economical mathematics
- Financial accounting in the organizational decision making process
- Financial accounting in the organizational decision making process
- Marketing in the information society
- Organizational behaviour

SEMESTER 4

- Contemporary organizational methods and techniques
- Corporate finance
- Logistics
- Marketing management
- Operations management

SEMESTER 5

- Diploma seminar
- Financial management
- Leading project in modern organizations
- Marketing research
- Methods and tools of data analysis
- Modern human resorce management
- Total quality management

SEMESTER 6

- Bachelor thesis
- Business Process Management
- Financial analysis supported by computer
- Information Systems in Management
- Introduction to risk management
- Management training

Questions? Please contact Admission Office
e-mail: 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

INFORMATION AND COMMUNICATION MANAGEMENT

DESCRIPTION

The international programme offered by the Department of Computer Science and Management in the field of study – Management and Marketing. This is a joint programme with the Technical University of Liberec (TUL) in the Czech Republic and University of Applied Sciences in Zittau/Görlitz (UAS) in Germany. The programme starts with a two-month preparatory course in Liberec. Semesters 1 and 2 will be based in Liberec, semesters 3 and 4 in Wrocław and Jelenia Góra, semesters 5 and 6 in Zittau/Görlitz. The programme focuses on enterprise management, in particular on information processing, tools and methods for information system designing, information collecting and exchange. After 6 semesters graduates receive bachelor certificate confirmed by all universities involved.

JOB PROSPECTS

» manager assistant of different management levels,
» analyst of enterprise business processes,
» designer of business processes in range of marketing, production, human resources, finance,
» administrator of computer management applications,
» analyst of management information and decision support systems.

ABOUT STUDIES

» **Duration**: 6 semesters
» **Mode of study**: Full time
» **Language of instruction:** English
» **Start date:** 1st August 2016
» **Programme coordinator:**
Mariusz Mazurkiewicz, Ph.D.
mariusz.mazurkiewicz@pwr.edu.pl

ENTRY INFORMATION

Required: secondary school certificate, received after the completion of a recognized 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 the Admission Officer.

» **Deadline for application:**
Non EU/EFTA students: 31st May 2016
EU/EFTA students see:
www.rekrutacja.pwr.edu.pl/en2/
» **Application deadlines & calendar**
» **English:** Equivalent of minimum TOEFL IBT - 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
» **Tuition fee**:
Non EU/EFTA students **1500 EUR** per semester
EU/EFTA students no tuition fee
» **Application fee:**
Non EU/EFTA students **200 EUR**
EU/EFTA students: **can be checked online**

CONTENT

Forms of teaching: lectures, laboratories, seminars, classes, computers classes.

SEMESTER 1 at TUL – winter semester

» Mathematical Foundations I
» National Language and Cultural Paradigms
» Macroeconomics I
» Hardware and computer architecture
» Operating systems
» Programming Paradigms I
» Introduction to Psychology
» Business Administration

SEMESTER 2 at TUL – summer semester

» Mathematical Foundations II
» Microeconomics
» National Language and Cultural Paradigms
» Scientific Work
» Programming Paradigms II
» Financial Accounting
» Information Marketing
» Psychology of Communication
» Argumentation and Rhetoric

SEMESTER 3 at WUST

» branch in Jelenia Góra winter semester
» National Language and Cultural Paradigms
» Intellectual property protection
» Information Management
» Software Engineering I
» Costs, controlling
» European Law
» Distributed Data Process
» Databases I
» Organizational Science
» Sport activities

SEMESTER 4 at WUST

» branch in Jelenia Góra summer semester
» National Language and Cultural Paradigms
» Contemporary Corporate Communication in
» Enterprises
» Negotiations
» Algorithms and Complexity
» Software Engineering II
» Business Modelling
» Project Management I
» Sport activities

SEMESTER 5 at UAS - winter semester

» National Language and Cultural Paradigms
» Multimedia
» Introduction to Data Mining
» Data Protection and Data Security
» Project Management II
» Elective subject – (Web Scientific Publishing)
» Elective subject – (Computer Network)
» Semester 6 at UAS - summer semester
» National Language and Cultural Paradigms
» Internship
» Internship Supervision
» Bachelor Seminar
» Bachelor Thesis

Questions? Please contact Admission Office
e-mail: 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

MECHANICS AND MACHINE BUILDING

DESCRIPTION

Modernity of the education is based on technical sciences, informatics and management methods applied to industrial activity. International cooperation with partner universities and companies widens ability of our students in adaptation to new European conditions. Required knowledge at an admission should cover elements of higher mathematic, physics, chemistry, mechanics, electricity and electronics..

JOB PROSPECTS

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

ABOUT STUDIES

- **Duration:** 7 semesters
- **Mode of study:** Full time
- **Faculty of:** Mechanical Engineering
- **Language of instruction:** English
- **Start date:** 3rd October 2016
- **Programme coordinator:**
  Mieczysław Szata, Ph.D., D.Sc., Prof. WUST
  mieczyslaw.szata@pwr.edu.pl

ENTRY INFORMATION

Required: secondary school certificate, received after the completion of a recognized 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 the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 15th of July 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **1500 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Engineering Graphics: Descriptive Geometry
- Elementary Linear Algebra
- Mathematical Analysis
- Materials Chemistry
- Physics
- Engineering Materials Technology
- Information Technologies
- Essential of Management
- Introduction to Philosophy

SEMESTER 2

- Engineering Graphics: Engineering Drawing
- Theory of Machines
- Statistics for Engineers
- Ordinary Differential Equations
- Electrical Engineering
- Mechanics I
- Materials Science I
- Thermodynamics
- Ecology and Environment
- Sport

SEMESTER 3

- Fluid Mechanics
- Materials Science II
- Electronics
- Engineering Graphics 3D
- Mechanics II
- Intellectual Property Law
- Strength of Materials I
- Ergonomy and Safety
- Programming in MATLA B
- Chipless Processes - Casting

SEMESTER 4

- Fundamentals of Machine Design I
- Theory of Mechanisms and Manipulators
- Metrology
- Chipless Processes -Plastic Forming
- Chipless Processes -Welding Metallurgy
- Polymers I
- Strength of Materials II
- Foreign Language - B level

SEMESTER 5

- Vehicle Engineering
- Trybology
- Hydraulic, Hydrotronic and Pneumatic Systems
- Finite Elements Method
- Fundamentals of Machine Design II
- Drive Systems
- Fundamentals of Automatic Control
- Manufacturing Processes - Machining
- Foreign Language - B level

SEMESTER 6

- Offroad Vehicles Engineering
- Hydraulic Drive Systems
- Internal Combustion Engines
- Polymers in Engineering
- Carrying Structures
- Production System Organisation
- Manufacturing Systems CNC
- Thesis, Proseminar
- Professional Training

SEMESTER 7

- Vehicles Loading Modelling
- Engineering in Medicine
- Fundamentals of Exploitation and Repair
- Management in production
- Thesis, Seminar
- Thesis: Final Engineering project

Questions? Please contact Admission Office
e-mail: 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

ELECTRONIC AND COMPUTER ENGINEERING

DESCRIPTION

The program of study of the Electronic and Computer Engineering (ECE) contains all important needs and demands of the modern labor market for modern electronics. This direction combines the knowledge of traditional electronics and information technology, industrial automation and robotics.

JOB PROSPECTS

The profile of companies that will benefit from the competence of graduates of the direction are mainly manufacturing and service companies. The demand for professionals possessing the skills of integration of electronic equipment and analogue and digital systems (including microprocessor) in the wider industrial automation is already high and is expected only to grow in the future. These skills include, among others, PLC programming, PAC, SCADA systems and robotic systems, commissioning of control systems, local and remote maintenance, remote supervision of working systems for production control. Also the ability to design broadly defined control systems, telemetry systems and the measurement will be received very positively on the labor market. Currently there is seen a significant increasing the number of companies that operate in the field of Internet of Things and integrate these products into a single system (e.g. Intelligent houses). This sphere of activity at every stage from design through manufacturing to service requires a combination of engineering knowledge in the field of electronics with news from the field of computer science.

ABOUT STUDIES

- **Duration:** 7 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** 3rd October 2016
- **Programme coordinator:**
  Grzegorz Budzyń, Ph.D., D.Sc.
  grzegorz.budzyn@pwr.edu.pl

ENTRY INFORMATION

Required: secondary school certificate, received after the completion of a recognized 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 the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 15th of July 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **1500 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Math Analysis 1
- Algebra
- Programming Fundamentals
- Metrology 1
- Foreign Language
- Philosophy, Ethics

SEMESTER 2

- Math Analysis 2
- Math for Electronics
- Object Oriented Programming
- Electronic Fundamentals
- Physics
- Sport

SEMESTER 3

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

SEMESTER 4

- Programming Systems & Environments 2
- Introduction to Microcontrollers
- Electronic Circuits
- Introduction to Automation and Robotics
- Fundamentals of Telecommunication

SEMESTER 5

- Computer Networks
- Digital Signal Processing

Optional courses 1 (choice of 3 of 5):

- Advanced Topics in Robotics
- Microcontrollers
- Artificial Intelligence & Computer Vision
- Optoelectronics
- Wireless Systems

SEMESTER 6

- Team & Preengineering Project
- Electroacoustic

Optional courses 2 (choice of 3 of 5):

- Control Systems Engineering
- Embedded Systems
- Real Time Operating Systems
- Lasers, Fibers & Applications
- Communication Systems & Networks

SEMESTER 7

- Internship
- Final Project
- Diploma Seminar

Optional courses 3 (choice of 2 of 15)

Questions? Please contact Admission Office
e-mail: 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

ARCHITECTURE

DESCRIPTION

Graduate programmes end in a degree examination comprising an oral examination and presentation of the degree project. 20 ECTS credits are awarded to students who successfully prepared for the degree examination and wrote their master thesis. The scope of subjects in the oral examination covers four basic areas of the curriculum: theory of architecture, theory of urban planning, technology and the history of architecture and urban planning. The degree project consists in a conceptual architectural design with elements of construction design or an urban planning design. After completion of the graduate program in Architecture and Urban Planning students are awarded the master degree in architecture. Graduates of the graduate program are equipped with knowledge and skills which enables them to enroll in the doctoral and specialized postgraduate programmes.

JOB PROSPECTS

Graduates of the graduate programs will be able to start their professional career in areas of architecture and urban design and to cooperate with specialists in technical areas of technology. The program in Architecture and Urban Planning equips students with managerial skills and proficiency in foreign languages. Upon completion of the graduate programs students may seek work in: architectural and urban design studios, local and national administration, research institutions, research and development centers and consulting agencies.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Joanna Jabłońska, Ph.D.
  joanna.jablonska@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor or Engineer Degree. Minimum 210 ECTS. Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- An Introduction to Mathematical Modelling 1
- Architectural Design 1 (Commercial)
- Elective Design Study
- Foreign Languages
- Structures in Contemporary Architecture 1
- History of Culture and Art
- Conservational Design 1 (Conservation of Architecture)
- Transformation of Urban Structures

SEMESTER 2

- An Introduction to Mathematical Modelling 2
- Social Science – the Science of Management
- Physics of Buildings – Acoustics and Aerodynamics
- Architectural Design 2 (Workplaces)
- Ecological Architecture
- Elective Design Study
- Conservational Design 2 (Revaluation of Urban Complexes)
- Structures in Contemporary Architecture 2
- History, Preservation and Revitalization of Greenery
- MSc Seminar
- Theory of Architecture and Urban Planning
- Humanities

SEMESTER 3

- Elective Design Study
- New Building Technologies
- Spatial Planning
- Design Thesis
- Sports

Questions? Please contact Admission Office
e-mail: 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

SPATIAL MANAGEMENT

FIELD OF STUDY SPATIAL MANAGEMENT | SPATIAL MANAGEMENT | FACULTY OF ARCHITECTURE
MASTER PROGRAMME

DESCRIPTION

Planning is an inter- and 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) as well as prepare students for leadership (management). Specialized courses provided planning specific knowledge and focus on policy making (urban planning, regional policy, EU spatial policy and marketing places) as well as planning law and plan preparation (techniques of plan preparation) to ready students for the complicated processes and procedures in planning practice. Courses in models in spatial policy and spatial economics seek to equip 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 compulsory courses provides the variety of optional courses - from tourism to advanced tools in spatial modelling and participatory planning. Also no less than one international module is being open in the course of the programme. The modules are run in the forms of lectures, studios and seminars. Students are offered to enjoy at least one studio project each semester. A Master 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 program (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 2017
- **Programme coordinator:**
  Izabela Mironowicz, Ph.D.
  izabela.mironowicz@pwr.edu.pl

JOB PROSPECTS

Graduates in spatial planning can plan their career both in public and private sector. 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 (i.e. linked to the environmental issues, water management, transportation, tourism, etc.). Graduates are prepared to lead the teams working on statutory plans (local plans, urban development plans) as well as on the optional planning studies and plans. They can also work in the private real estate agencies, investment banks and other companies having interest in spatial dimension of the economy. Graduates are prepared to begin their doctoral studies in planning.

ENTRY INFORMATION

Required: Bachelor or Engineer Degree. Minimum 210 ECTS . See: Important note for Entry Criteria

Important note for Entry Criteria:

Master programme in planning is open to students with a non-planning background as long as they have completed 60% of all compulsory courses of an undergraduate planning degree. This means that programme is especially suitable for those who completed their first degree in: environmental studies, geography, transport studies, landscape architecture, architecture. Also background in public administration, economy, sociology or mathematics, physics and IT and computer studies is welcome.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

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  Non EU/EFTA students: 30th November 2016
  EU/EFTA students: check on www.pwr.edu.pl
- **English:** Equivalent of minimum TOEFL IBT - 87points or 6.5 points IELTS . List of accepted language certificates can be checked online: www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:** Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

(L=lecture; Lab=computer lab; PS=project/design studio; C=classes; S=seminar)

SEMESTER 1

- Urban Planning 1 (L:30h)
- Rural Planning (L:15h)
- Law in Spatial Planning (L:15h)
- Introduction to Architecture (L:30h)
- Systems Theory (L:30h)
- Environmental Studies and Planning (L;15h. PS:45h)
- Legislative Technique in Planning (L:30h)
- Models and Simulations in Planning (L:30h; Lab:30h)
- Optional courses (30h)
- Optional Atelier (L:15h; PS:45h)
- Foreign language A1/A2 (C:45h)
- Foreign language B2+ (C:15h)

SEMESTER 2

- Urban Planning 2 (L:30h; PS:60h)
- Planning Theory (L:30h)
- Legislative Technique in Planning (C:30h)
- Planning Systems (L:30h)
- Regional Planning (L:15h, PS:45h)
- Territorial Marketing (L:15h)
- Master Thesis Seminar (S:15h)
- Management sciences (to select): Organisation and Management Theory or Legal Environment of the Enterprise (L:30h)
- Optional courses (30h)
- Optional Atelier (L:15h; PS:45h)

SEMESTER 3

- Regional Policy (L:30h)
- Territorial Policy of the EU (L:30h)
- Optional courses (30h)
- Optional Atelier (L:15h; PS:45h)
- Master Thesis Atelier (PS:60h)

OPTIONAL COURSES:

Aesthetics, Tourism and tourism planning, Introduction to the Regional Development, Advanced 2D and 3D tools in Planning, Territorial Approach in the EU Policies.

OPTIONAL ATELIERS:

Advanced Methods for the Spatial Decision-Making Processes, Lower Silesia - Regional development, GIS-based Territorial Analysis, Development Strategies, Participative Planning, Planning for Local Communities, Art in Public Spaces, Transportation Analysis and Forecasting Techniques, Sustainable Urban and Metropolitan Development, Design of the Public Spaces.

Questions? Please contact Admission Office
e-mail: 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

CIVIL ENGINEERING

FIELD OF ELECTRONIC AND COMPUTER ENGINEERING | ELECTRONIC AND COMPUTER ENGINEERING | FACULTY OF ELECTRONICS

MASTER PROGRAMME

DESCRIPTION

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, auditoriums, labs, seminars and projects students may also take part in student scientific groups and international exchanges. A number of courses can be selected by students depending on their interests and professional plans. At the end of the whole MS c study students write master thesis on a subject related to designing of engineering structures. The MS c diploma offers an opportunity to continue education at Ph.D. studies.

JOB PROSPECTS

Graduates are prepared for:

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

Graduates are prepared to work in design offices and construction enterprises, scientific institutions and R&D centers,

Institutions involved in building infrastructure management or dealing with counseling or dissemination of construction related knowledge.

CONTENT

The main study of Civil Engineering consists of 20 units, 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 for engineers/Ethics in business
» Foreign language 1

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 thesis tutorial
» Master 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

ABOUT STUDIES

» **Duration:** 3 semesters
» **Mode of study:** Full time
» **Language of instruction:** English
» **Start date:** 3rd October 2016 or February 2017
» **Programme coordinator:**
Prof. Jan Bień, Ph.D., D.Sc.
jan.bien@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor or Master 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 the Admission Officer.

» **Deadline for application:**
Non EU/EFTA students: 15th July 2016 (October intake), 30th November 2016 (February intake)
EU/EFTA students see:
www.rekrutacja.pwr.edu.pl/en2/
» **Application deadlines & calendar**
» **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
» **Tuition fee:**
Non EU/EFTA students: **2000 EUR** per semester
EU/EFTA students: no tuition fee
» **Application fee:**
Non EU/EFTA students: **200 EUR**
EU/EFTA students: **can be checked online**

Questions? Please contact Admission Office
e-mail: 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

BIOINFORMATICS

FIELD OF STUDY BIOTECHNOLOGY | BIOINFORMATICS | FACULTY OF CHEMISTRY
MASTER PROGRAMME

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 genetic and structural databases, prediction of protein structure, drug and biocatalyst or biosensor design. The combination of computational skills and basic knowledge of biotechnology aims to prepare graduates for work in research, medical laboratories, quality control or environment protection laboratories in pharmaceutical or food industry or for manufacturing chemical software or databases.

JOB PROSPECTS

Research, medical laboratories, quality control or environment protection laboratories in pharmaceutical or food industry and manufacturers of chemical software or databases.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  prof. Andrzej Soklaski, Ph.D., D.Sc.
  andrzej.sokalski@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Engineering Degree in chemistry or related domains.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

The curriculum is composed at least of 21 units, covered as lectures, labs or seminars.

SEMESTER 1

- Theoretical chemistry
- Molecular dynamics
- Bioinformatics
- Networks and workstations with UNIX system
- Applied informatics
- Philosophy of science and technology
- Mathematical methods in design and analysis of experiment
- Foreign language

SEMESTER 2

- Instrumental drug analysis
- Molecular modeling
- Bionanotechnology
- Introduction to multimedia in biotechnology
- Rational drug design
- Methodology of experimental research
- Advanced programming and numerical methods
- Retrieval of scientific information
- Principles of business
- Graduate laboratory I

SEMESTER 3

- Bioprocess project
- Economics and organization of industrial
- biotechnology
- Terrestrial ecology
- Intellectual property rights and ethical questions in biotechnology
- Graduate laboratory II
- Graduation seminar and thesis preparation
- Sports

Questions? Please contact Admission Office
e-mail: 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

MEDICINAL CHEMISTRY

FIELD OF STUDY CHEMISTRY | MEDICINAL CHEMISTRY | FACULTY OF CHEMISTRY
MASTER PROGRAMME

DESCRIPTION

Medicinal chemistry is a scientific discipline at the intersection of chemistry and computational science involved with designing, synthesizing and developing new pharmaceutical drugs. At the beginning medicinal chemistry was involved in the screening of natural sources like plants or animals. Now the natural compounds serves as the leading compounds in the synthesis and development of new chemical entities suitable for therapeutic use. Medicinal chemistry includes the synthesis and analysis of existing drugs, evaluation of their biological properties, analysis of structure-activity relationships as well as design and synthesis of new drugs or search for their natural sources. It is a highly interdisciplinary discipline widely using advanced, synthetic, spectroscopic and computational methods. Thus medicinal chemists cooperate with theoretical chemists, synthetic chemists, medical doctors, microbiologists, pharmacologists. The graduation document certifies the degree in chemistry with the notification of a deepened specialization in Medicinal Chemistry. Study for applicants without engineering degree study 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 modeling and they have training in medicinal chemistry. Some students, depending on their master thesis topic, may accomplish part of their research and/or graduate laboratory at Medical University in Wrocław under supervision of medical doctors or in the Institute of Immunology and Experimental Therapy in Wrocław. Graduate level programs provide many of the skills needed in scientific laboratories as well as in modern chemical and pharmaceutical industry.

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 1

- Theoretical chemistry
- Spectroscopy
- Crystallography
- Analytical methods in drug design and technology
- Physical organic chemistry
- Introductory statistics
- Foreign language

SEMESTER 2

- Instrumental drug analysis
- Molecular modeling
- Retrieval of scientific & technical information
- Medicinal natural products
- Synthetic organic drugs
- Principles of business
- Rational drug design
- Graduate laboratory I

SEMESTER 3

- Multistep organic synthesis
- Inorganic drugs
- Polymers in medicine
- Quality management systems
- Philosophy of science and technology
- Mathematical methods in design and analysis of experiment
- Graduate laboratory II
- Graduate seminar & thesis preparation
- Sports

OPTIONAL COURSES

- Combinatorial chemistry
- Principles of physiological chemistry
- Selected reactions in organic chemistry
- Self-organization in chemistry

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:**
  February 2017 (3 semesters programme,
  for applicants possessing engineering degree)
- **Programme coordinator:**
  prof. Roman Gancarz, Ph.D., D.Sc.
  roman.gancarz@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor or Bachelor Engineering Degree in chemistry or related domains.

Each application is assessed individually on its merits.

If In doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

Questions? Please contact Admission Office
e-mail: 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

APPLIED CHEMICAL ENGINEERING

FIELD OF STUDY CHEMICAL AND PROCESS ENGINEERING | APPLIED CHEMICAL ENGINEERING | FACULTY OF CHEMISTRY
MASTER PROGRAMME

DESCRIPTION

Program of studies directly reflects current needs of the labor market in the field of Chemical and Process Engineering providing employment opportunities. It is designed to provide 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. Applied Chemical Engineering 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 specialization in Applied Chemical Engineering. Study for applicants without engineering degree study lasts 2 years, otherwise 1.5 years only.

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 optimize new solutions and independently analyze problems related to chemical and process engineering. Graduates are prepared for creative work in the design and operation of processes in the chemical industry. Graduate is prepared to run the own business.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:**
  3rd October 2016
  February 2017
  (3 semesters programme for applicants possessing engineering degree)
- **Programme coordinator:**
  prof. Anna Trusek-Hołownia, Ph.D.
  anna.trusek-holownia@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor or Bachelor Engineering Degree in chemistry or related domains.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 15th of July and 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

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

SEMESTER 1

- Advanced engineering graphics
- Software for simulation and design of chemical systems
- Renewable energy sources
- Transport phenomena in chemical processes
- Process equipment
- Mathematical and statistical methods in chemical engineering
- Chemical nanoengineering
- Modern methods of liquid separation
- Foreign language

SEMESTER 2

- Industrial waste management
- Computer simulations in designing materials for chemical processes
- CFD -computer modeling of processes
- Process modeling in chemical engineering
- Multiphase systems in chemical processes
- Biotechnology process engineering
- Principless of business
- Graduate laboratory I
- Foreign language

SEMESTER 3

- Economics of production processes
- Management of quality in chemical enterprisePhilosophy of science and technology
- Graduate laboratory II
- Graduate seminar & master thesis
- Sports

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 Admission Office
e-mail: 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

TECHNOLOGY OF FINE CHEMICALS

FIELD OF STUDY CHEMICAL TECHNOLOGY | TECHNOLOGY OF FINE CHEMICALS | FACULTY OF CHEMISTRY |
MASTER PROGRAMME

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 following FCs product categories:

- pharmaceutical products (chemical and biological processes),
- plant health products and biocides,
- specialty polymers,
- specialized surfactants and dispersed systems,
- dyes and pigments,
- polymer additives,
- neutraceuticals, 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.

JOB PROSPECTS

Independent positions, e.g., employee of the Research and Development in chemical industry, specialist in the chemical development, the quality control specialist in industries such as chemical and pharmaceutical , biotechnology and cosmetic processing, processing and manufacturing of specialized 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.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:**
  February 2017 (3 semesters programme, for applicants possessing engineering degree)
- **Programme coordinator:**
  prof.Kazimiera A. Wilk, Ph.D.;
  kazmiera.wilk@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor or Bachelor Engineering Degree in chemistry or related domains.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

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

SEMESTER 1

- Environmental protection in chemical technology
- Process modeling in chemical technology
- Chemical reaction engineering
- Fundamentals of biotechnology
- Disperse systems – physicochemistry and technology
- Surface phenomena and applied catalysis
- Philosophy of science and technology
- Mathematical methods in design and analysis of experiment
- Foreign language

SEMESTER 2

- Polymer additives
- Data mining in chemical technology
- Pharmaceuticals and biopharmaceuticals
- Agrochemicals and plant health products
- Analytical methods in fine chemicals
- Specialty polymers – physicochemistry and technology
- Principles of business
- Graduate laboratory I

SEMESTER 3

- Green chemistry
- Production control and quality management
- Sustainable development
- Process project
- Design and feasibility study of technological process
- Graduate laboratory II
- Graduate seminar & master thesis
- Sports

Questions? Please contact Admission Office
e-mail: 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

EMBEDDED ROBOTICS

FIELD OF STUDY CONTROL ENGINEERING AND ROBOTICS | EMBEDDED ROBOTICS | FACULTY OF ELECTRONICS |
MASTER PROGRAMME

DESCRIPTION

Robots are increasingly entering our life. The Robotics is a branch of science integrating many cutting-edge technologies: electronic circuits, computer science and engineering, mechanical science and mechatronics, cybernetics and biocybernetics, artificial intelligence, sensor technology, vision processing, natural language communication, modern psychology, brain model studies, and others. Modern electronic design more and more leads to the construction of embedded devices, which are complete microprocessor and computer systems integrated with the host devices. Such embedded systems can be found in: automobiles, avionic and naval systems, telecommunication systems, medical life-support systems, automated cash and banking systems, but also in household appliances and consumer electronics devices. And especially, the construction of all advanced robotic systems involves embedded electronics.

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 third level studies (Ph.D.). The specialized knowledge of the graduates includes control engineering methods, embedded design and analysis, robot motion and task planning methods, robot controllers, drive systems, human-robot interfaces.

The instructors of this program have a significant research and publications record in robot control theory, as well as an extensive experience building prototype mobile, intelligent, and social robots.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Prof. Krzysztof Tchoń
  krzysztof.tchon@pwr.edu.pl

JOB PROSPECTS

The Embedded Robotics program aims at delivering the knowledge and developing the skills necessary for a successful career in Robotics and/or Embedded Systems, in industry, research and development, expert consulting, and alike activities. The graduates gain an understanding of the principles, methods, and processes of embedded electronics engineering and robotics, allowing them to creatively use this knowledge at work. Typical activities include solving problems in the field of analysis, design, development, integrating, deployment, debugging, and maintenance of embedded and robotic systems.

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

Required: Bachelor or Engineer Degree in Electrical Engineering or related field. Minimum 210 ECTS.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Control Theory
- Modeling and Identification
- Optimization Theory and Advanced Computing Methods
- Mathematical Methods of Automation and Robotics
- Social Communication
- Applied Logic
- Physics
- Foreign Languages

SEMESTER 2

- Introduction to Embedded Systems 1
- Sensors and Actuators 1
- Robotic Programming Environments
- Control Theory for Embedded Systems
- Mobile Robotics
- Event-based control
- Artificial Intelligence and Machine Learning
- Intermediate Project
- Specialization Seminar

SEMESTER 3

- Introduction to Embedded Systems 2
- Sensors and Actuators 2
- Task and Motion Planning
- Social Robots
- Embedded Robotics Applications
- Diploma Seminar
- Final Project

Questions? Please contact Admission Office
e-mail: 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

ADVANCED APPLIED ELECTRONICS

FIELD OF STUDY ELECTRONICS | ADVANCED APPLIED ELECTRONICS | FACULTY OF ELECTRONICS
MASTER PROGRAMME

DESCRIPTION

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

JOB PROSPECTS

The graduate will acquire the experience necessary for a professional career in industry, research units and universities, and will be prepared for 3rd level studies(Ph.D).

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Jerzy Witkowski, Ph.D.
  jerzy.witkowski@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in Electrical, Electronic, Computer Engineering or related disciplines.

Each applications is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Foreign Language
- Mathematics
- ««Numerical Methods
- Optimization Methods
- Advanced Industrial Electronics
- Advanced Microcontrollers
- Optical Fibres and Optocommunications
- Social Communication

SEMESTER 2

- Specialization Seminar
- Noise Reduction in Electronic Systems
- Mathematical Statistics
- Programable Logic Design
- Digital Signal Processing
- Optimal and Adaptive Filtering Technique
- Computer Network and Systems
- Lasers and Applications
- RF Circuits Design

SEMESTER 3

- Master Thesis
- Diploma Seminar
- New approaches to Electronics and Telecommunications
- Microwave Applications
- Optional course

OPTIONAL COURSES:

- Real Time Operating Systems
- Optoelectronics and Photonics
- Optics And Nonlinear Optics
- Antenna Technique
- Colorimetry and Photometry
- Applies Wireless Electronics
- Wireless Data Communication Systems
- Terahertz Technique and Technology

Questions? Please contact Admission Office
e-mail: 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

MODERN TELECOMMUNICATIONS

FIELD OF STUDY TELECOMMUNICATIONS | MODERN TELECOMMUNICATIONS | FACULTY OF ELECTRONICS |
MASTER PROGRAMME

DESCRIPTION

The course will be offered following an agreement between the University of Nottingham and Wroclaw University of Science and Technology. It is anticipated that the student will spend one part of the study with WUST and another part with UoN. The student will get two MSc Diplomas: one from WUST and one from UoN subject to completing the required number of ECTS points from each institution and successfully completing the final project which will be jointly supervised by the academics from both participating institutions. This course will give students knowledge of optical networks, their components, radio and satellite communications. The course specialization program contains active training in the form of classes, laboratory training and project work.

ENTRY INFORMATION

Required: Bachelor Degree in Electronic Engineering, Teleinformatics, Telecommunications or related disciplines.

Each application will be assessed individually on its merits.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: 2000 EUR per semester (for Wrocław University of Science and Technology Poland)
- EU/EFTA students: no tuition fee (for WUST PL)
  Non EU/EFTA students: **8 042 GBP** (the amount includes the dissertation fee – **1 376 GBP**) per semester (for University of Nottingham UK)
- EU/EFTA students: **2 762 GBP**(the amount includes the dissertation fee – **436 GBP**) per semester (for UoN UK)
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

JOB PROSPECTS

The graduate will have gained knowledge and skills needed for a career in telecommunications industry, research units and in government administration. The graduates will not only be well prepared to work on the design and maintenance of new generation of telecommunication networks but also for undertaking PhD studies at world-leading telecom research institutions.

The structure of action under "Studies at WUST conducted together with UoN"
WUST students who pass the first semester of the MSC degree studies with an average of 4 (Polish grading system) will be eligible to continue their courses of studies at the University of Nottingham (see the table below)

YEAR	University	Details
Year 1, Semester 1 February – June	Wroclaw	Modules taught at WUST credited at UoN in September
Year 1, Semester 2 September-Febbruary	Nottingham	Modules taught at University of Nottingham
Year 2, Semester 1 March-June	Wroclaw	Jointly supervised dissertation

Upon returning to WUST, those students who obtain 30 ECTS/60 UoN Credits will continue their studies in the third semester. Students will be required to pass the third semester at WUST in order to qualify for the WUST award under the Programme.

Students will present their dissertation in English with an abstract in Polish. Final exam and dissertation will be the basis for granting the title magistra inżyniera(Master of Science) for the dual degree programme. Concurrently students will be considered for the title of MSc Modern Telecommunications at UoN in accordance with rules and regulations governing both UoN and WUST .

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Elżbieta Bereś-Pawlik, Ph.D., D.Sc., Prof. WUST
  elzbieta.pawlik@pwr.edu.pl,
  tel. +48 71 320 21 19
  Trevor Benson, Ph.D., D.Sc., Prof.UN
  trevor.benson@nottingham.ac.uk,
  tel. +44 (0)115 95 15 589

CONTENT

SEMESTER 1

- Advanced Network Techniques
- Optical Network Elements
- HF Techniques in Telecommunications
- Numerical Methods
- Social Communication
- Optics
- Mathematics Statistics
- Foreign languages

SEMESTER 2

- Optical Networks
- Photonic Communication Components
- Multimedia Systems
- Satellite Communication
- Mobile Networks
- Mobile Applications
- Compression of Information
- Orthogonal filtering of stochastic signals
- Embedded Systems
- Specialization Seminar

SEMESTER 3

- Security in Teleinformatics Systems
- Optical Networks
- Digital receivers
- UWB and THz Techniques
- Final MSc Project
- MSc Seminar

Questions? Please contact Admission Office
e-mail: 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

INTERNET ENGINEERING

FIELD OF STUDY COMPUTER SCIENCE | NTERNET ENGINEERING | FACULTY OF ELECTRONICS

MASTER PROGRAMME

DESCRIPTION

The programme is focused on delivering knowledge and developing skills needed for 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 topics in 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 career in computer and software organisations, research units, industry, in government administration and in 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 professional career and to undertake level III (PhD) education. They will possess well above standard skills in communication in multinational teams.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Dariusz Caban, Ph.D.
  dariusz.caban@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in Computer Science, Computer Engineering, Information Technology, Informatics, Teleinformatics, Telecommunication or related. When applying for 3 semesters programme the degree must be obtained in an engineering programme of studies of at least 3.5 years duration (equivalent to 210 ECTS). In case of 4 semesters programme, the required degree must be obtained in studies of at least 3 years duration, equivalent to 180 ECTS.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

The programme includes traditional lectures and hands-on study forms (mainly laboratories and design projects). In the 3rd semester, student is also required to complete the individual final project and write a thesis on its basis. The diploma examination, required to obtain the M.Sc. title, covers topics of the completed courses and a presentation of the thesis.

The courses delivered in each semester are as follows:

SEMESTER 0 (only in 4 semesters programme)

- Computer architecture and networking
- Digital circuits design
- Operating systems - advanced techniques
- Software engineering
- Foreign/Polish language

SEMESTER 1

- Signal, Systems and Control
- Computer Project Management
- IT Applications: Electronic Media in Business and Commerce
- Information Systems Modeling
- Discrete Mathematics
- Research Skills and Methodologies-1
- Social Communications
- English/Polish Language
- Physics

SEMESTER 2

- Multimedia and computer visualization
- Application programming - Java and XML technologies
- Information systems analysis
- Advanced databases
- Secure systems and networks
- Softcomputing
- Foreign language

SEMESTER 3

- Application programming: Data mining and data warehousing
- Application programming: Mobile Computing
- Seminar
- Final project
- Enterpreneurship

Questions? Please contact Admission Office
e-mail: 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

ADVANCED INFORMATICS AND CONTROL

DESCRIPTION

This course specialization has specific – it is Polish- English course specialization governed by Professor Kasprzak from Wrocław University of Science and Technology (WUST), Poland and Professor Keith J. Burnham form Coventry University (CU), the UK. It is anticipated that students will spend a part of study with WUST and another part of study in CU. There are also possibilities to get two MSc Diplomas- from WUST and from CU, after completing 90 ECTS and preparing proper Final Projects. The course specialization program contains more than 50% of active forms like classes (tutorials), laboratory training, and preparing assigned projects.

JOB PROSPECTS

The graduate will have gained knowledge in computer science, computer engineering, and experiences in designing practical applications, especially for computer industrial and control systems. They will be prepared for solving problems in informatics, control sciences, and technology (especially designing computer systems for industry using classical and intelligent solutions) and gaining information from the literature and other sources. They will be able to play the role of the leader of a team and to organize and to run research debates. They will have acquired the experience necessary for professional career at research units, industry and at universities and colleges. The will have gained substantial international experience and have been acquainted with the circumstances and the environment of prestigious laboratories. They will possess well above standard skills in English communication.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Leszek Koszałka, Ph.D. |
  leszek.koszalka@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in Informatics, Computer Science, Computer Engineering, Information Technology, Teleinformatics, Computer Systems, Robotics, Control, Control Engineering, Systems, Electronics, Telecommunications.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Research Skills and Methodologies-1
- Discrete Mathematics
- Signal, Systems and Control
- IT Applications in Business and Commerce
- Information Systems Modeling
- Computer Project Management
- Social Communications
- English/Polish Language
- Physics

SEMESTER 2

- Research Skills and Methodologies-2
- Optimization Methods: Theory and Applications
- Introduction to Computer Vision in Quality Control
- Methods of Computational Intelligence and Decision Making
- Modelling and Optimization of Computer Networks
- Elective: Information Storage and Management, Games Designing and Programming-1
- AIC – Diploma Seminar -1
- Foreign Language

SEMESTER 3

- Research Skills and Methodologies-3
- Elective: Adaptive Control, Industrial Systems, Games Designing and Programming -2
- Master Thesis Project
- AIC - Diploma Serminar-2
- Business

Questions? Please contact Admission Office
e-mail: 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

COMPUTER ENGINEERING

FIELD OF STUDY COMPUTER SCIENCE | COMPUTER ENGINEERING |
FACULTY OF COMPUTER SCIENCE AND MANAGEMENT |
MASTER PROGRAMME

DESCRIPTION

The final effect of studies at the Master level is obtaining knowledge, skills and qualifications in accordance with "Teaching Standards" in the field of Computer Science. Students receive extended knowledge in the area of specialization. Students who finished study will be able to: use various methods and techniques for problems interpreting, formulate and solve specific problems related to computer science, become team work leaders. Additionally they will have obtained fluent and creative knowledge application in the area of specialization, which means mathematical models designing, problems formulating and solving, problem oriented informatics systems analysis and testing.

JOB PROSPECTS

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

ABOUT STUDIES

- **Duration:** 4 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** 3rd October 2016
- **Programme coordinator:**
  Jan Kwiatkowski, Ph.D.
  jan.kwiatkowski@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree, preferably in computer science or in a related area. Applicants with a bachelor 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 suitable experience.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 15th of July 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

Within this program students must complete 1200 hours of courses equivalent to 120 credits (ECTS) and have to write a degree thesis under the supervision of a faculty member. The programme consists of lectures and practical activities (laboratories, tutorials, seminars and projects).

SEMESTER 1

- Advanced Databases
- Advanced Topics in Artificial Intelligence
- Information System Modelling and Analysis
- System Modelling and Analysis
- Foreign language

SEMESTER 2

- Parallel and Distributed Computing
- Software System Development
- Modelling and Analysis of Web-based systems
- Mobile and Multimedia Systems
- Foundations of Knowledge Engineering

SEMESTER 3

- Physics of Contemporary Computer Science
- Sport
- »»Ethics of new technologies
- »»Fundamentals of Business and Intellectual Property
- MSc Thesis I

Optional courses/select one of them

- Parallel Computer Architecture
- Advanced Computer Network

Optional courses/select one of them

- Advanced Computer Graphics
- Digital Image Processing
- Multimedia Information Systems
- User Interface Development

Optional courses/select one of them

- Data Warehouses
- Expert Systems

SEMESTER 4

- Research Methodology
- Business modeling and analysis
- Monographic Subject
- Diploma Seminar
- MSc. Thesis II

Questions? Please contact Admission Office
e-mail: 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

COMPUTER SECURITY

FIELD OF STUDY COMPUTER SCIENCE | COMPUTER SECURITY |
FACULTY OF FUNDAMENTAL PROBLEMS OF TECHNOLOGY |
MASTER PROGRAMME

DESCRIPTION

The programme is focused on computer security, including both advanced knowledge as well as practical skills. The target is covering the current topics (such as from the scope of CompTIA Security+ certificates), but at the same time to develop creative approach for solving future problems, ability to design new pragmatic technologies in the area of computer security, privacy and cryptography. Apart from core technological topics of computer security, procedural, legal, and legal issues as well as security management are concerned.

JOB PROSPECTS

The programme aims to prepare security professionals which design, implement, audit, and run security systems. In particular, they may be responsible for protection of data and IT resources of private enterprises as well as public institutions in accordance to emerging legal obligations.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Prof. Mirosław Kutyłowski
  miroslaw.kutylowski@pwr.edu.pl

ENTRY INFORMATION

Bachelor Degree: undergraduate 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 the Admission Officer.

- **Deadline for application:**
  Non EU/EFTA students: 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS . List of accepted language certificates can be checked online
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

OBLIGATORY COURSES:

- Cryptography
- System Security
- Security with Embedded Systems
- Compliance and Operational Security

SUPPLEMENTARY COURSES, IN PARTICULAR:

- Electronics for Security Engineers
- Physics for Security Engineers
- Randomized Algorithms
- Humane-Machine Interaction
- Identification Systems
- High Performance Computing
- Applied Stochastics with Applications for Security and Privacy
- Data Mining
- Cloud Computing and P2P
- Distributed Algorithms
- Ad Hoc Systems
- Databases
- VLSI
- Digital Signal Processing
- Telecommunication Systems
- Group Programming Project

Questions? Please contact Admission Office
e-mail: 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

CONTROL IN ELECTRICAL POWER ENGINEERING

FIELD OF STUDY ELECTRICAL ENGINEERING | CONTROL IN ELECTRICAL POWER ENGINEERING | FACULTY OF ELECTRICAL ENGINEERING
MASTER PROGRAMME

DESCRIPTION

The students can spend full duration of the studies in 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. The goal of the program 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 Master Thesis semester and 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 BUT in Cottbus 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.

ABOUT STUDIES

- **Duration:** 4 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:**
  3rd October 2016 at WUST or BTU (Double Degree Programme),
- 1st September 2016 at RU (Double Degree Programme)
- **Programme coordinator:**
  Tomasz Sikorski, Ph.D.
  tomasz.sikorski@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in electrical engineering or related field.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  15th April 2016- for students who want to take part in Double Degree Programme at WUST/RU
- 1st June 2016- for students who want to take part in Double Degree Programme at WUST/BTU
- 1st term -21st July and 2nd term - 14th September 2016 – for students who want to take full four semesters at WUST
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online: www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA/Ryerson University students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

Courses at WUST:

Semester 1

- Numerical and Optimization Methods
- Power Quality Assessment
- Power Systems Faults
- Digital Control Techniques
- Fault Calculations
- Dynamics and Control of AC and DC Drives
- Advanced Technology in Electrical Power Generation
- Foreign language – A1 or A2
- Foreign language – B2+ or C1+
- Sporting classes

SEMESTER 2

- Circuits and Systems
- Simulation and Analysis of Power System Transients
- Digital Signal Processing for Protection and Control
- Power System Protection
- Fiber 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
- Advanced Measurement in Electrical Power Engineering
- 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 RU:

Semester 1 and 2

- While at Ryerson University, Canada (Double-Degree Programme), the students have to take the following compulsory courses:
- Applied optimization technologies
- Power system stability and control
- Electric motor drives
- Selected topics in electrical engineering
- Additionally minimum two other selected course
- from the list of Power/Control Engineering Courses offered at RU.

Courses at BTU:

SEMESTER 1 AND 2

- While at BTU, students are required to take courses
- offered within the programme's modules. Selected
- courses concern:
- Common Modules
- Control Engineering
- Advanced Signal Processing Methods
- Selected Problems of Circuit Theory
- Optimization Methods
- Power System Economics 1
- Power System Economics 2
- Essential Business Skills
- Decentralized Energy Management
- International Management
- Basic Modules
- Introduction in Electrical Power Systems
- Electrical Distribution Systems 1
- Electrical Distribution Systems 2
- Grid Calculation with Decentralised Generation
- Renewable Generation and Storage of Electrical Energy
- Basics in Power Electronics
- Power Plant Technology 1
- Power Plant Technology 2
- Boiler and Heat Exchange Constructions
- Design, Commissioning,Maintenance of Plants for Energy
- Electrical Engineering in Power Plants 1
- Electrical Engineering in Power Plants 2
- Renewable Resources Management
- Soil Protection and Ecotoxicology
- Renewable Raw Materials

Questions? Please contact Admission Office
e-mail: 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

WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

RENEWABLE ENERGY SYSTEMS

FIELD OF STUDY ELECTRICAL ENGINEERING | RENEWABLE ENERGY SYSTEMS | FACULTY OF ELECTRICAL ENGINEERING
MASTER PROGRAMME

DESCRIPTION

The students of the programme can spend full duration of the studies in 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 or they can choose the double degree option with Irkutsk State Technical University in Russia. After having spent one year at partner University, the students spend the remaining year at home University (Poland). Following the successful completion of the degree requirements at both Universities the students will obtain two Master of Science degrees from the WUST and from the University of Magdeburg OvGU or from the WUST and ISTU. 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.

ABOUT STUDIES

- **Duration:** 4 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:**
  3rd October 2016 at WUST or OvGU/1.09.2016 at ISTU (Double Degree Programmes)
- **Programme coordinator:**
  Tomasz Sikorski, Ph.D.
  tomasz.sikorski@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in electrical engineering or related field.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  15th April 2016 - for students who want to take part in Double Degree Programme at WUST/ISTU

  1st June 2016 - for students who want to take part in Double Degree Programme at WUST/OvGU

  1st term -21st July and 2nd term - 14th September 2016 – for students who want to take full four semesters at WUST
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online: www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

Courses at WUST:

Semester 1

- Numerical and Optimization Methods
- Power Quality Assessment
- Power Systems Faults
- Fault Calculations
- Dynamics and Control of AC and DC Drives
- Power Electronics
- Advanced Technology in Electrical Power Generation
- Foreign language – A1 or A2
- Foreign language – B2+ or C1+
- Sporting classes

Semester 2

- Circuits and Systems
- Simulation and Analysis of Power System Transients
- Protection and Control of Distributed Energy Sources
- Renewable Energy Sources
- Water Power Plants
- Integration of Distributed Resources in Power Systems
- Electromechanical Systems in Renewable Energy
- Analog and Digital Measurement Systems
- 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
- Advanced Measurement in Electrical Power Engineering
- 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
- Modern concepts of EMC and EMC measurements
- Power Electronic Components and Systems
- Power system economics and special topics
- Research project
- Soft skills

SEMESTER 4

- Diploma seminar
- Master's Thesis

Courses at ISTU:

SEMESTER 1

- Numerical and Optimization Methods
- Power Quality Assessment
- Power System Faults
- Dynamics and Control of AC and DC Drives
- Power Electronics
- Advanced Technology in Electrical Power Generation
- Foreign language - A1 or A2
- Foreign language B2+

SEMESTER 2

- Selected Problems of Circuit Theory
- Protection and Control of Distributed Energy Sources
- Water Power Plants
- Renewable Energy Sources
- Integration of Distributed Resources in Power Systems
- Electromechanical Systems in Renewable Energy
- Analog and Digital Measurement Systems
- Simulation and Analysis of Power System Transients
- Diploma placement 4 weeks
- Renewable Raw Materials

Questions? Please contact Admission Office
e-mail: 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

MINING AND POWER ENGINEERING

FIELD OF STUDY MINING AND GEOLOGY | MINING AND POWER ENGINEERING | FACULTY OF GEOENGINEERING, MINING AND GEOLOGY
MASTER PROGRAMME

DESCRIPTION

The graduate will possess knowledge of design and operation of mining and power generation complexes. They will be prepared to perform the engineering tasks like feasibility studies concerning estimation of mineral energy resources and their applicability to power generation; computer aided modelling of deposits, design of the mine and a power station; optimization of their joint activity, and operation on the energy markets; technical design; construction supervision of mines and power plants; the power generation complex commissioning and maintenance.

JOB PROSPECTS

The Mining and Power Engineering studies graduates will find employment in lignite and coal mines, in particular infra-structurally joined up with thermal power plants, in power generation and distribution companies, related design offices, service providers and modern industry.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Prof. Leszek Jurdziak, Ph.D., D.Sc.
  leszek.jurdziak@pwr.edu.pl

ENTRY INFORMATION

Bachelor Degree – Bachelor of Science or Bachelor of Engineering (any incl. geology engineering, mining engineering, mechanical engineering, power engineering, energy related engineering studies etc.).

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:**
  30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

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

Semester 1

- CAD /CATIA
- Quantum physics
- Electrical machines and devices
- Heat transfer
- Combustion and fuels
- Construction techniques and processes
- Geomechanics
- Geology of energy resource deposits
- Statistics in Engineering and Geology
- Basic concepts of financial management
- Satellite positioning and applications

Semester 2

- Power energy machines and devices
- Fuel processing
- Surface and underground mining technology
- Mining machinery systems
- Methods of computer assisted mine design I
- Economics in mining and power industry
- Maintenance management systems and failure analysis
- Mathematical simulation of power engineering processes
- Practical training

SEMESTER 3

- Energy power processes automation
- Energy process engineering
- Integrated analysis of deformations of rock mass and structures
- Environmental management
- Methods of computer assisted mine design II
- Market Risk of Mining and Energy Company
- Diploma seminar, Master thesis

Questions? Please contact Admission Office
e-mail: 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

ENVIRONMENTAL QUALITY MANAGEMENT

FIELD OF STUDY ENVIRONMENTAL ENGINEERING | ENVIRONMENTAL QUALITY MANAGEMENT | FACULTY OF ENVIRONMENTAL ENGINEERING
MASTER PROGRAMME

DESCRIPTION

The graduate will have obtained knowledge in environmental engineering and experience in technology of the protection of the environment. They will be prepared for solving problems in sustainable development and technology and gaining information from the literature and other sources.

JOB PROSPECTS

The graduate will be able to play the role of the leader of the team and to organize and run research debates. They will have acquired the experience necessary for professional career at research units, industry and at universities and colleges. They will have gained substantial international experience and have been acquainted with the circumstances and the environment of prestigious laboratories

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Prof. Wojciech Adamski, Ph.D., D.Sc.
  wojciech.adamski@pwr.edu.pl

ENTRY INFORMATION

Bachelor 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 the Admission Officer.

- **Deadline for application:**
  30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

Forms of teaching: lectures, laboratories, seminars, classes, computers classes..

Semester 1

- Environmental Chemistry
- Engineering Application of Mathematical Statistics
- AutoCAD
- Water Treatment Technology
- Raw Materials
- Sanitary Biology
- Water Quality Management
- Water Supply Systems
- Automation in environmental engineering
- Polish Language A1 or English Language C1+
- Physical training
- Ethics of new and emerging technologies
- Strategic menagement

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

- Organization of construcion works
- Building regulation
- Renewable energy systems
- Reliability of Engineering Systems
- Elective subject
- Diploma seminar
- Diploma Project

Questions? Please contact Admission Office
e-mail: 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

BUSINESS INFORMATION SYSTEMS

FIELD OF STUDY MANAGEMENT | BUSINESS INFORMATION SYSTEMS | FACULTY OF COMPUTER SCIENCE AND MANAGEMENT
MASTER PROGRAMME

DESCRIPTION

The specialization programme contains courses gathered into three subject groups: management, formal methods in decision making and application of computer science in management. The management courses refer to macroeconomic phenomena, ideas and management methods, legal basis for business activities as well as sociological, psychological and ethical aspects of management. Courses offered within the formal methods group concern methods useful in decision making such as advanced methods of business data analysis, data mining, discrete optimization, network flows, decision games etc. The courses in the group of computer science application in management - integrated information systems, identification and analysis of management problems, requirements analysis - are related to tools and methodologies applied in business information systems. It is provided that students attend organized classes and also work individually. At the end of the study students are obliged to prepare MS c dissertation and to pass final (diploma) exam. Knowledge and skills obtained during the study give the graduates the possibility to find job in the management area (including software project management), as managers, analysts, advisors and consultants in business or in non-profit (public) organizations. Knowledge and skills obtained provide also a good basis for successful running an own business activity. Knowledge gained is also sufficient to apply for the third degree study (PhD, doctoral study) in the area of formal methods and computer science application in management.

ABOUT STUDIES

- **Duration:** 4 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** 3rd October 2016
- **Programme coordinator:**
  prof. Jacek Mercik, Ph.D., D.Sc.
  jacek.mercik@pwr.edu.pl

JOB PROSPECTS

Knowledge and skills obtained give a graduate the possibilities to get a job as:

- an analyst of management information systems (MIS),
- an analyst of decision making processes,
- an analyst of enterprise business processes,
- a consultant in the area of management computerization,
- a business information systems requirements engineer,
- a management information systems implementation officer,
- a management information systems maintenance officer,
- a manager/director of an information technology departments/sections.
- in public and private organizations (industry, healthcare, education, services, commerce, central and local authority institutions etc.).

ENTRY INFORMATION

Required: Bachelor Degree or Engineer degree.
Each application is assessed individually on its merits.
If in doubt, please contact the Admission Officer.

- **Deadline for application:** 15th of July 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

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

SEMESTER 1

- Business Statistics
- Civil Law
- Information Systems Analysis
- Internet Information Services and Systems
- Logistics
- Macroeconomics
- Management Accounting
- Operations Research
- Process Management

SEMESTER 2

- Business Data Analysis
- Discrete Optimization and Network Flows
- Econometrics
- Contemporary Management
- Management Information Systems
- Management Information Systems Modeling
- Seminar I

SEMESTER 3

- Business Process Modeling
- Commercial Law
- Data Mining
- Games and Decisions in Management
- MS c Thesis I
- Object Busines Modeling
- Organizational Psychology
- Seminar II

SEMESTER 4

- e-Economy
- Foreign Language
- Polish Language
- Management Ethics
- MS c Thesis II
- Strategic Management

Questions? Please contact Admission Office
e-mail: 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

REFRIGERATION AND CRYOGENICS

FIELD OF STUDY MECHANICAL ENGINEERING AND MACHINE BUILDING | REFRIGERATION AND CRYOGENICS | FACULTY OF MECHANICAL AND POWER ENGINEERING | MASTER PROGRAMME

DESCRIPTION

A graduate has the detailed knowledge of devices and installations dedicated for cooling down to -150°C and, in the case of cryogenics, for temperature lowering below 120 K and down to fractions of Kelvin. He or she has the skills in the designing, implementing and operation of both refrigerating and cryocooling systems. Additionally, a graduate can apply creatively 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.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Stefan Reszewski, Ph.D.
  stefan.reszewski@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in power or mechanical engineering and in any related field.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:** 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Mechanics Analytical
- Modern Engineering Materials (CAMD /CAMS)
- Mechatronics and Control System
- Compressor Refrigeration Systems
- Refrigerants and Coolants
- Heat Pumps
- Air-Condition Systems
- Thermodynamics Fundamentals of Refrigeration Cryogenics and Low Temperature Physics
- Cryogenics
- Cryogenic Materials and Fluids
- Foreign Language B2+

SEMESTER 2

- Modelling and Optimisation
- Cooling Systems and Refrigeration Plants
- Absorption Refrigeration
- Gas and Cryogenic Technologies
- Applied Superconductivity
- Cryogenic Systems
- Introduction to Numerical Flow Phenomena Analysis
- Integrated Production Systems
- Foreign Language (next language, any level)
- Humanities Course (eligible)
- Master Individual Student Project

SEMESTER 3

- Failure Analysis of Machine and Device
- Master Seminar
- Master Thesis
- Management Course (eligible)
- Marketing and Management
- Sporting Classes

Questions? Please contact Admission Office
e-mail: 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

AUTOMOTIVE ENGINEERING

FIELD OF STUDY MECHANICAL ENGINEERING AND MACHINE BUILDING | AUTOMOTIVE ENGINEERING | FACULTY OF MECHANICAL ENGINEERING
MASTER PROGRAMME

DESCRIPTION

At the end of the Master program the students will have a sound base of general scientific knowledge in the fieldof Automotive Engineering.

- The students will be familiar with the scientific methodology and reporting.
- They will be able to function in an inter-national and multi-disciplinary context.
- The students will be prepared to implement their knowledge and to cooperate within an organization.
- The students will be sufficiently equipped and motivated for a life-long qualification in the field of Automotive Engineering.

In making decisions and performing their tasks, they will be guided by social, economical and ecological principles.

JOB PROSPECTS

They will have acquired insight in the technological principles and will have a thorough knowledge of morespecialized subjects and will be well aware of energy and environmental issues.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Anna Janicka, Ph.D.
  anna.janicka@pwr.edu.pl

  Zbigniew Sroka, Ph.D.
  zbigniew.sroka@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree.

Each application is assessed individually on its merits. If in doubt, please contact the Admission Officer.

- **Deadline for application:** 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1 - 26 contact hours

- 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+

SEMESTER 2 - 26 contact hours

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

SEMESTER 3 - 20 contact hours

- Automotive Expertises
- Safety of Vehicles
- Ecology of Road Transportation
- Communication for Engineers
- Diploma Seminar
- Master Thesis

Questions? Please contact Admission Office
e-mail: 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

RENEWABLE SOURCES OF ENERGY

FIELD OF STUDY POWER ENGINEERING | RENEWABLE SOURCES OF ENERGY | FACULTY OF MECHANICAL AND POWER ENGINEERING
MASTER PROGRAMME

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

After graduation from the specialty a student 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
- on creating new solutions in renewable energy power
- in supervising the work of renewable and hybrid energy systems
- to assess the effectiveness of the use of renewable energy sources, depending on the location of the
- investments
- to determine and assess the local and global energy strategy

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Dorota Nowak-Woźny, Ph.D.
  dorota.nowak-wozny@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in the related field..
Each application is assessed individually on its merits. If in doubt, please contact the Admission Officer.

- **Deadline for application:** 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Quantum Physics
- Numerical Methods
- Probability Theory
- Physics of the Renewable Energy
- Fuel Cell and Technology of Hydrogen Production
- Water Power Engineering
- Power Production Systems and Technology for Biomass
- Foreign Language B2+

SEMESTER 2

- Mathematical Modeling of Energy Generation Installation
- Refrigeration Heating
- New Generation Energy Technologies
- Photothermal Energy Conversion Systems
- Wind Power Plants
- Geothermal Power Engineering
- Thermonuclear Power Generation
- Master Individual Student Project
- Foreign Language (next language, any level)
- Humanities Course (eligible)

SEMESTER 3

- Marketing and Management
- Management Course (eligible)
- Energy Systems
- Master Seminar
- Master Thesis
- Sporting Classes

Questions? Please contact Admission Office
e-mail: 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

PRODUCTION MANAGEMENT

FIELD OF STUDY MANAGEMENT AND MANUFACTURING ENGINEERING | PRODUCTION MANAGEMENT | FACULTY OF MECHANICAL ENGINEERING
MASTER PROGRAMME

DESCRIPTION

At the end of the Master program the students will have a sound base of general scientific knowledge in the fieldof Automotive Engineering.

- The students will be familiar with the scientific methodology and reporting.
- They will be able to function in an inter-national and multi-disciplinary context.
- The students will be prepared to implement their knowledge and to cooperate within an organization.
- The students will be sufficiently equipped and motivated for a life-long qualification in the field of Automotive Engineering.

In making decisions and performing their tasks, they will be guided by social, economical and ecological principles.

JOB PROSPECTS

They will have acquired insight in the technological principles and will have a thorough knowledge of morespecialized subjects and will be well aware of energy and environmental issues.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Anna Janicka, Ph.D.
  anna.janicka@pwr.edu.pl

  Zbigniew Sroka, Ph.D.
  zbigniew.sroka@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree.

Each application is assessed individually on its merits. If in doubt, please contact the Admission Officer.

- **Deadline for application:** 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

SEMESTER 1

- Methods for Formation of the Selected Product Features
- Operational Research
- Operation Maintenance of Manufacturing Machines and Devices
- The Methods and Techniques of Experiment
- Technology Planning CAM
- Human Resources Management
- Modeling of Production Processes
- Factory Layout Planning and Optimisation
- Strategic Management
- Foreign Languages B2+

SEMESTER 2

- Flexible Manufacturing Automation
- Recycling of Materials
- Mapping of Business Processes
- Reverse Engineering
- Product Lifecycle Management
- Innovative Mechanical Technologies
- Simulation of Production Processes
- Integrated Management Systems
- Foreign Languages A1 / A2
- Documenting and audit of quality management systems – selectable course

SEMESTER 3

- Innovative Entrepreneurship
- Planning of Production Projects
- Case Study Safety of Machines and Equipment
- Knowledge Management
- Diploma Seminar
- MSc Diploma Thesis
- Subject of Humanistic

Questions? Please contact Admission Office
e-mail: 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

ELECTRONICS, PHOTONICS, MICROSYSTEMS

DESCRIPTION

The graduate will possess multidisciplinary knowledge in electronics (including microelectronics), photonics and microsystems. They will be prepared for solving technical and technological problems in those fields. They will have gained experience in technology and retrieving information from the literature and other sources. Wide spectrum of novel technologies - from nanotechnology and photonics, through micro engineering to microelectronic and information techniques - are discussed in details during lectures given by experienced teachers. Well-equipped laboratories will help to the students to understand new knowledge and possess new skills in the field of high-tech.principles.

JOB PROSPECTS

The Graduate will be able to play the role of the leader of the international team and to organize and run research debates in the fields of electronics, photonics and microsystems. They will have acquired the experience necessary for professional career at research units, industry and at universities.

ABOUT STUDIES

- **Duration:** 3 semesters
- **Mode of study:** Full time
- **Language of instruction:** English
- **Start date:** February 2017
- **Programme coordinator:**
  Rafał Walczak, Ph.D.
  rafal.walczak@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor Degree in Electronics and Telecommunication.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:** 30th November 2016
  EU/EFTA students see:
  www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online:
  www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

CONTENT

The education is based on: lectures, tutorials, laboratories and seminars.

SEMESTER 1

- Vacuum and Plasma Techniques
- Optical Fibers
- MEOMS
- Nanotechnology
- Solid State Electronics
- Optimization Methods
- Numerical Methods
- Statistics for EPM
- Differential Equations

SEMESTER 2

- Autonomous Power Supplying Systems
- Ceramic Microsystems
- Analytical Microsystems
- Microsystem Modelling
- Photovoltaics
- Design and Construction of Optoelectronic Circuits
- Operating Systems
- Optical-Fiber Networks
- Advanced Optoelectronics
- Packaging of Electronics, Photonics, Microsystems
- Sensors and Actuators

SEMESTER 3

- M.Sc. Thesis
- Diploma Seminar
- Diagnostics and Reliability
- Packaging of Electronics
- Photonics
- Microsystems

Questions? Please contact Admission Office
e-mail: 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

APPLIED MATHEMATICS

FIELD OF STUDY APPLIED MATHEMATICS | FACULTY OF PURE AND APPLIED MATHEMATICS
MASTER PROGRAMME

DESCRIPTION

The programme (offered by the Faculty of Pure and Applied Mathematics in cooperation with the Hugo Steinhaus Center) is based on educational standards of the European Consortium for Mathematics in Industry (ECMI) that is confirmed by the status of ECMI Teaching Center Wroclaw University of Science and Technology obtained 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 main specialties are financial and actuarial mathematics, mathematics for industry and commerce, modelling, simulation, optimization, as well as computational mathematics. The graduates have no problems with finding good jobs in the finance and insurance or industrial sectors in Poland and abroad. The MS diploma offers an opportunity to continue education at Ph.D. studies.

JOB PROSPECTS

The graduates will have obtained knowledge in mathematics and economics/finance; experience in pricing financial and actuarial contracts, modelling, simulations and optimization, and computational methods. They will be prepared for solving problems in the financial/actuarial and industrial sector and gaining information from the literature and other sources. They will possess organizational skills and experience necessary for professional career at 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 2017
- **Programme coordinator:**
  Agnieszka.Jurlewicz, Ph.D., D.Sc., Prof. WUST
  agnieszka.jurlewicz@pwr.edu.pl

  Marcin Magdziarz, Ph.D., D.Sc., Prof. WUST
  marcin.magdziarz@pwr.edu.pl

ENTRY INFORMATION

Required: Bachelor or Master degree in mathematics, economics/finance, management, computer science, physics, chemistry, biotechnology, civil engineering, electronic engineering, electrical engineering, teleinformatics, telecommunications, geology engineering, mining engineering, mechanical engineering, power engineering, energy related engineering, environmental engineering, and related domains obtained either in Poland or abroad.

Each application is assessed individually on its merits.

If in doubt, please contact the Admission Officer.

- **Deadline for application:** 30th November 2016
  EU/EFTA students see: www.rekrutacja.pwr.edu.pl/en2/
- **Application deadlines & calendar**
- **English:** Equivalent of minimum TOEFL IBT – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online: www.rekrutacja.pwr.edu.pl/en2/
- **Tuition fee:**
  Non EU/EFTA students: **2000 EUR** per semester
  EU/EFTA students: no tuition fee
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**

Questions? Please contact Admission Office
e-mail: 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

CONTENT

The education is based on: lectures, tutorials, laboratories and seminars.

SEMESTER 1

- Econamathematics
- Partial differential equations with applications in industry
- Statistical packages
- Life Insurance Models
- Applied Functional analysis
- Social elective subject
- Sport activities
- Foreign language

SEMESTER 2

- Seminar – mathematical modelling in industry
- Introduction to applied fluid dynamics
- Insurance models for industry
- Selected Aspects of Perturbation Methods
- Numerical methods in differential equations
- Computer simulations of stochastic processes
- Humanistic elective subject
- Foreign language

SEMESTER 3

- Diploma Thesis
- Diploma Seminar
- Elective Courses
- Introduction to Mathematical Image Processing
- Estimation theory
- Nonlinear Optimization
- Nonlinear Methods
- Game Theory and Applications

PREPARATORY POLISH LANGUAGE COURSE

DESCRIPTION

The Department of Polish Language for Foreigners carries out courses of Polish language and Polish culture on different levels of advance – A1, A2, B1, B2, C1 and C2. They are intended for candidates for studying at all academies in Poland and also for those who want to learn Polish intensely. The courses of Polish language last for the whole academic year (from October to June). 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 take part in learning supplementary subjects according to their further studies (mathematics, physics, biology, computer sciences, geography, knowledge of Polish culture and history – dependent on the students' needs). The students start learning the specialization courses on the advanced level in the winter term and on the elementary level – in the summer term. The specialization subjects are taught in Polish. The courses, thanks to the fact that they are carried out on different levels of advance, 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 (tourist tours to the most interesting regions of Poland, visiting some historical places in Wrocław) and participating in different cultural events. Within the limits of the course, the students learn about important traditions and customs of the Polish nation.

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 the Admission Officer.

- **Mode of study:** Full time, 600 hours
- **Duration; start date:**
  1 academic year (2 semesters) - 3rd October 2016 or 6 months; February 2017
- **Tuition fee:**
  2 000 EUR - 1 year course;
  2000 EUR – 1 semester
- **Deadline for application:**
  15th July or 30th November 2016
- **Language of instruction:** Polish
- **Application fee:**
  Non EU/EFTA students: **200 EUR**
  EU/EFTA students: **can be checked online**
- **Contact:**
  Admission Office admission@pwr.edu.pl
  www.rekrutacja.pwr.edu.pl/en2/

CONTENT

The curriculum of learning Polish as a foreign language on the elementary level A includes subjects connected mostly with a person (personal data, education, general look, family relations, leisure time activities, health etc.). Subsequent themes contain: the surrounding of the man (both immediate: living place, students' hostel etc. and more distant: city and its institutions), every day routines, plants, animals, weather and climate.

THE GRAMMATICAL MATERIAL INCLUDES:

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

The curriculum includes typical communicative situations, as well

THE GRAMMATICAL MATERIAL INCLUDES:

- declination of the nouns, adjectives, pronouns and numerals;

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 Admission Office
e-mail: 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

PREPARATORY ENGLISH LANGUAGE COURSE

DESCRIPTION

The Department of Foreign Languages at Wrocław University of Technology offers preparatory courses to foreigners who want to study BSc and MS c courses in English at Wrocław University of Technology. The course includes 600 hours of English (20 hours of English per week- 5 times x 4 lessons a day), 120 hours of Polish (4 lessons a week) as well as 90 hours of mathematics and 60 hours of physics. 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 students improve their language skills and reach B2 level (68-74 Cambridge ESOL Bulats test) and to introduce English for academic purposes in order to enable them to follow the university courses in English. The preparatory course of English lasts for the whole academic year (from October to June) and is divided into two semesters. In the first semester 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. 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 is Cambridge ESOL Bulats online test. It tests listening and reading skills, speaking, knowledge of grammar and vocabulary. The exam registration fee is included in the price of the course.

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 the Admission Officer.

- **Mode of study:** Full time, 600 hours
- **Duration; start date:**
  1 academic year (2 semesters) - 3rd October 2016
  or or 1 semester - February 2017
- **Deadline for application:**
  30th July or 30th November 2016
- **Tuition fee:**
  3300 EUR per year;
  2300 EUR per 6 months
- **Application fee:**
  20 EUR EU students;
  200 EUR non-EU students
- **Contact:**
  Admission Officer - Ms Anna-Maria Rogalska
  anna.rogalska@pwr.edu.pl

CONTENT

ENGLISH COURSE SYLLABUS 1ST 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 CV s 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

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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

Questions? Please contact Admission Office
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