TABLE OF CONTENTS

BACHELOR'S DEGREE PROGRAMMES ORGANISATIONAL MANAGEMENT ................................................................................................ 4 MECHANICAL ENGINEERING .......................................................................................................... 6 ELECTRONIC AND COMPUTER ENGINEERING ............................................................................. 8 APPLIED COMPUTER SCIENCE ...................................................................................................... 10 MEDICAL INFORMATICS................................................................................................................ 12

DOUBLE DIPLOMA BACHELOR AND MASTER DEGREE PROGRAMME BIOECONOMY................................................................................................................................. 14

MASTER'S DEGREE PROGRAMMES CIVIL ENGINEERING ....................................................................................................................... 18 ADVANCED CHEMICAL ENGINEERING AND NANOTECHNOLOGY............................................ 20 ADVANCED NANO-AND BIO-MATERIALS MONABIPHOT.......................................................... 22 BIOINFORMATICS........................................................................................................................... 24 MEDICINAL CHEMISTRY ................................................................................................................ 26 TECHNOLOGY OF FINE CHEMICALS ............................................................................................. 28 COMPUTER ENGINEERING............................................................................................................ 30 ADVANCED COMPUTER SCIENCE ................................................................................................ 32 INTERNET ENGINEERING............................................................................................................... 34 CONTROL IN ELECTRICAL POWER ENGINEERING....................................................................... 38 RENEWABLE ENERGY SYSTEMS .................................................................................................... 40 MINING ENGINEERING .................................................................................................................. 42 GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING ............................................................ 44 GEOMATICS FOR MINERAL RESOURCE MANAGEMENT............................................................ 46 GEOMATICS .................................................................................................................................... 48 ENVIRONMENTAL QUALITY MANAGEMENT............................................................................... 50 BUSINESS INTELLIGENCE .............................................................................................................. 52 HUMAN RESOURCE MANAGEMENT ............................................................................................ 54 RENEWABLE SOURCES OF ENERGY.............................................................................................. 56 REFRIGERATION AND CRYOGENICS ............................................................................................. 58 COMPUTER AIDED MECHANICAL AND POWER ENGINEERING................................................ 60 AUTOMOTIVE ENGINEERING........................................................................................................ 62 PRODUCTION MANAGEMENT ...................................................................................................... 64 BIG DATA ANALYTICS..................................................................................................................... 66 ADVANCED APPLIED ELECTRONICS ............................................................................................. 68 EMBEDDED ROBOTICS................................................................................................................... 70 APPLIED MATHEMATICS................................................................................................................ 72 PREPARATORY POLISH LANGUAGE COURSE............................................................................... 76 PREPARATORY ENGLISH LANGUAGE COURSE ............................................................................ 78

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

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

Contact details Wroclaw University of Science and Technology International Relations Office Division of Foreign Students Admission and Support www.pwr.edu.pl www.admission.pwr.edu.pl e mail: admission@pwr.edu.pl telephone: +48 71 320 37 11 +48 71 320 31 70 +48 71 320 37 19 +48 71 320 44 39

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

Your Admission Officers

ORGANISATIONAL MANAGEMENT

DESCRIPTION

JOB PROSPECTS

Undergraduate studies in the field of The knowledge and skills obtained give the graduates the management (Organisational Manage-possibility of getting a job as a management / organisation ment) allow for a broad understanding of specialist. The management degree (OM) develops compe­the principles of the functioning of busi-tences useful as a middle-level manager in public and pri­ness organisations. They provide special-vate organisations in many sectors (industry, healthcare, ist knowledge necessary to operate in education, services, commerce, central and local authority many areas of the economy. Graduates institutions, etc.). It provides a way to develop your own will develop their theoretical and practi-small enterprises or to continue your education at the Mas-

cal knowledge in the field of management ter's level. sciences and related sciences, concerning issues, principles and problems related to the functioning of the organisation, both

ENTRY INFORMATION

at the national and international level. They will be ready to take on key project Requirements: secondary school certificate, received management roles in both commercial after the completion of a recognised secondary school and administrative organisations. They (total 12 years of education), being the equivalent of Pol-will be able to communicate and negoti­ish Matriculation certificate.

ate effectively, interpret and use data, and Each application is assessed individually on its merits.

work creatively in teams.

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

admission@pwr.edu.pl

» Duration: 6 semesters » Mode of study: Full time » Language of instruction: English » Start date: October 2023 » English:

» Programme coordinator: Equivalent of minimum TOEFL IBT– 87 points Anna Skowronska-Szmer, PhD or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF MANAGEMENT FIELD OF STUDY: | MANAGEMENT | ORGANISATIONALMANAGEMENT |BACHELOR'S DEGREE PROGRAMME

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

SEMESTER 1 SEMESTER 4

» Contemporary Organisational Methods and » Civil and Commercial Law Techniques » Essentials of Management » Corporate Finance » Information Technology » Logistics » Mathematics » Marketing Management » Microeconomics » Operations Management » Psychology

» Legal Science Module SEMESTER 2 » Computer Science Module » Descriptive Statistics » Foreign Language II » Essentials of Finance

SEMESTER 5

» Macroeconomics » Diploma Seminar » Organisational Science » Financial Management » Sociology » Leading Projects in Modern Organisations » Work Environment Physics » Marketing Research » Computer Science Module » Methods and Tools of Data Analysis » Social Competences Module » Modern Human Resource Management » Sports

» Total Quality Management SEMESTER 3 » Computer Science Module » Mathematical Economics

SEMESTER 6

» Financial Accounting in the Organisational » Bachelor's Thesis Decision Making Process » Business Process Management » Marketing in the Information Society » Financial Analysis Supported by Computers » Organisational Behaviour » Information Systems in Management » Computer Science Module » Introduction to Risk Management » Economic Science Module » Sport Activity » Foreign Language I » Management Training

FACULTY OF MECHANICAL ENGINEERING FIELD OF STUDY: | MECHANICAL ENGINEERING | MECHANICALENGINEERING | BACHELOR'S DEGREE PROGRAMME

MECHANICAL ENGINEERING

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

ABOUT STUDIES

» Duration: 7 semesters

» Mode of study: Full time

» Faculty of: Mechanical Engineering

» Language of instruction: English

» Start date: October 2023

» Programme coordinator:

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

ENTRY INFORMATION

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

» English: Equivalent of minimum TOEFL IBT

SEMESTER 1

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

SEMESTER 2

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

SEMESTER 3

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

SEMESTER 4

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

SEMESTER 5

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

SEMESTER 6

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

SEMESTER 7

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

ELECTRONIC AND COMPUTER ENGINEERING

DESCRIPTION

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

ENTRY INFORMATION

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

JOB PROSPECTS

The profile of companies that will benefit from the competence of the graduates is mainly production and service. The demand for specialists with the skills to integrate electronic equipment within analogue and digital systems (including microprocessors) in broadly understood industrial automation is already high and is expected to increase in the future. These skills in­clude PLC programming, PAC, SCADA systems and ro­botic systems, commissioning of control systems, local and remote maintenance, remote supervision of oper­ating systems for production control. Additionally, the ability to design the widely defined control systems, telemetric systems and measurements will be very positively received on the labour market. Currently, there is a significant increase in the number of com­panies operating in the field of IoT and the integration of these products into one system (e.g. smart homes). This sphere of activity requires combining engineering knowledge in the field of electronics and information in the field of computer science at every stage – from design, through production, to service.

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

ABOUT STUDIES

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

Grzegorz Budzyn, PhD, DSc

FACULTY OF ELECTRONICS, MICROSYSTEMS AND PHOTONICS FIELD OF STUDY: | ELECTRONIC AND COMPUTER ENGINEERING || ELECTRONIC AND COMPUTER ENGINEERING |

BACHELOR'S DEGREE PROGRAMME

SEMESTER 1

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

SEMESTER 2

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

SEMESTER 3

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

SEMESTER 4

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

SEMESTER 5

» Computer Networks

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

SEMESTER 6

» Team & Preengineering Project

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

SEMESTER 7

» Internship Final Project » Diploma Seminar » Elective courses (choise of 2 out of 9):

Electrotechnics, Medical Electronics, Electronics for Renewable Sources, Virtualization and Cloud Computing, Machnine learning, Selected Topics in Artificial Intelligence, Ultrasonic Technology, Speech Communication, Introduction to Radar Technology

» Author Law Business

APPLIED COMPUTER SCIENCE

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY FIELD OF STUDY: | APPLIED COMPUTER SCIENCE |BACHELOR'S DEGREE PROGRAMME

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

» Web Systems Programming

SEMESTER 1

» Developing Web Applications with .NET

» Mathematical Analysis I » M3. Database Design

» Algebra and Analytic Geometry

» Logic for IT Specialists » Database System Engineering » Structural and Object-oriented Programming » Database Programming » Computer System Organisation » Database Design » General Physics I

» M4. Mobile Applications

SEMESTER 2

» Mobile Applications for IOS » Mathematical Analysis II » Mobile Applications for Android » Discrete Mathematics

» Operating Systems SEMESTER 6 » Data Structures and Algorithms » Artificial Intelligence and Knowledge Engineering » Computer Architecture » Data Warehouses » General Physics II » Practical Training

SEMESTER 3 Modules of optional courses:

» Theory of Probabilistic and Statistics » M5. Project Management Basics » Programming Paradigms » Introduction to IT Project Management

» Effective Programming Techniques » Support for IT Project Management

» Computer Networks » Basics of Entrepreneurship » M6. Distributed Systems » Foreign Language » Distributed Computer Systems » Sports I » Cloud Programming SEMESTER 4 » M7. Programming Tools and Technologies

» Basics of Software Engineering » Game Programming » Databases » Advanced Web Technologies

» Script Languages » M8. Multimedia

» Systems Analysis and Decision Support » Foreign Language » Computer Graphics

» Sports II » Programming Multimedia Applications Modules of optional courses: » Digital Media Processing Technologies » M1. Administration of Computer Systems

SEMESTER 7

» Linux Server Administration » IT Social and Professional Problems » Managing IT Infrastructure » Team Project Modules of elective courses » Routing and Switching in Computer Networks Modules of optional courses:

SEMESTER 5

» Software Engineering » M9. Current Trends in Computer Science

» Introduction to IoT » Data Science » Cybersecurity » Neural Networks » Presentation Techniques

» Metaheuristics in Problems Solving Modules of optional courses: » Human-Computer Interaction » M2. Web Technologies » M10. Humanistic Subject 1 or 2

DESCRIPTION

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

ABOUT STUDIES

» Duration: 7 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: October 2023

» Programme coordinator:

Arkadiusz Liber, PhD, Prof. at WUST

JOB PROSPECTS

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

ENTRY INFORMATION

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

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

MEDICAL INFORMATICS

FACULTY OF FUNDAMENTAL PROBLEMS OF TECHNOLOGY FIELD OF STUDY: | MEDICAL INFORMATICS | MEDICAL INFORMATICS |BACHELOR'S DEGREE PROGRAMME

There is a growing demand for biomedical engineers with interdisciplinary knowledge of medicine, computer science, and medical devices. Such a background is indis­pensable to meet the demands of the rapidly changing healthcare system, which strives to accommodate the needs of patients and healthcare personnel. This specialty is addressed to inquisitive students inter­ested in biomedical applications of artificial intelligence, big data, mobile and wearable devices, augmented and virtual reality. We encourage students to carry out their research projects or join one of several students’ science clubs. Medical Informatics (MI) focuses on technologies, impact­ing patient-doctor relationship by effectively collecting, securing and understanding health data, thereby sup­porting medical diagnosis and treatment. The courses in this study program are oriented towards these practical aspects of MI.

ABOUT STUDIES

» Duration: 7 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: October 2023

» Programme coordinators:

Prof. Miroslaw Latka,

Department of Biomedical Engineering

JOB PROSPECTS

ENTRY INFORMATION

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

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

CONTENT

OBLIGATORY COURSES

IT COURSES

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

GENERAL COURSES

» Academic Writing

» Algebra and Analytic Geometry

» Anatomy for Biomedical Engineers

» Introduction to Biomedical Optics and Biophotonics

» Biochemistry

» Biophysics

» Mathematical Analysis

» Medical Imaging Techniques

» Legal and Ethical Aspects in Biomedical Engineering » Physics » Principles of Chemistry » Principles of Organic Chemistry » Propaedeutics of Medical Sciences » Statistics and Probability Theory

ENGINEERING COURSES

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

OPTIONAL COURSES

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

BIOECONOMY

DESCRIPTION

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

ABOUT STUDIES

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

JOB PROSPECTS

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

ENTRY INFORMATION

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

» Deadline for application:

https://rekrutacja.upwr.edu.pl/en/deadlines/dead­lines-for-programs-in-english/deadlines-for-bsc-in­bioeconomy

» English:

Required level: B2

» Tuition fee:

PLN 6,000 per semester

https://apply.upwr.edu.pl/en\_GB/contents/

content/25-eligibility-exemption-tuition-fees

» Application fee:

PLN 85 one-time or 20 euro

FENVIRONMENTAL ENGINEERING AND GEODESY (UPWR)/

FACULTY OF ENVIRONMETNTAL ENGINEERING (WUST)

FIELD OF STUDY: |BIOECONOMY |

DOUBLE DIPLOMA BACHELOR AND MASTER DEGREE PROGRAMME

CONTENT

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

SEMESTER 1 SEMESTER 4

»Economics »Biomass conversion »Mathematics and statistics »Microbiology »Programming principles »Process engineering »Chemistry »Semestral project 4 »Information Technologies »Man and environment

SEMESTER 5

»Bioeconomy principles »Artificial intelligence »Semestral project 1

»Biomaterials

»Biotransfomation principles SEMESTER 2 »Semestral project 5 »Sport »Biorenewable systems

SEMESTER 6

»Fundamentals of engineering »» Design thinking drawing »» Bioreactors technology »GIS in bioeconomy »» Industrial practice »Semestral project 2 »» Semestral project 6

SEMESTER 3 SEMESTER 6

»Bioorganic chemistry »Biorefineries design »Water and sewage technology »Comercialization »Circular economy »Academic entrepreneurship »Sport »Supply chain »Semestral project 3 »BSc Thesis

Questions? Please contact the Admission Officers 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

16 17

CIVIL ENGINEERING

DESCRIPTION

JOB PROSPECTS

The students gain theoretical knowl-The graduates are prepared for: edge and practical skills connected with » solving complex design, organisation or structure design, construction materi-technological problems,

als and technologies as well as static » authorisation to independent design and and dynamic analysis of reinforced

construction in civil engineering, concrete, prestressed concrete, metal,

» developing and implementing research programmes, wooden, ground and complex construc­

» carrying out jobs in international enterprises, tions. They learn how to use advanced

» participation in marketing and promotion of computational models and modern IT

construction products, solutions in civil engineering. In addi­» continuing education, participation in research tion to participating in lectures, presen­in the fields directly related to construction and tations, labs, seminars and projects the construction production, students may also take part in the stu­» continuous education, improving qualifications and dent scientific groups and international extending knowledge, exchanges. A number of courses can be » team work and large team management.

selected by the students depending on their interests and professional plans. At The graduates are prepared to work in design offices and the end of the MSc study students write construction enterprises, scientific institutions and master's thesis on a subject related to R&D centres, institutions involved in building infrastruc­designing of engineering structures. The ture management or dealing with counselling or dissemi-MSc diploma offers an opportunity to nation of construction-related knowledge.

continue education at PhD studies.

ENTRY INFORMATION

Requirements: Bachelor's or Master's Degree in Civil Engineering, Environmental Engineering, Architecture, Hydrotechnical Engineering obtained either in Poland or abroad. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail:

ABOUT STUDIES

admission@pwr.edu.pl

» Duration: 3 semesters » Mode of study: Full time » Language of instruction: English » Start date:

October 2023 or February 2024

» Programme coordinator: » English: Equivalent of minimum TOEFL IBT Prof. Jan Bien, PhD, DSc – 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF CIVIL ENGINEERING FIELD OF STUDY: | CIVIL ENGINEERING | CIVIL ENGINEERING |MASTER'S DEGREE PROGRAMME

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

SEMESTER 1

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

SEMESTER 2

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

SEMESTER 3

» Master's Thesis Seminar » Master's Thesis » Construction Project Management

- 2 elective courses (one from each group)

ELECTIVE COURSES 1

» Artificial Intelligence in Civil Engineering » Modern Testing Methods for Non-destructive

Inspection of Building Structures » Advanced Building Physics » Hydrology for Building Engineers » Effective Properties of Composites

– Introduction to Micro-mechanics

ELECTIVE COURSES 2

» Pre-stressed Concrete Structures » Timber Structures » Conservation and Strengthening of Monumental

Heritage Structures » Methods of Applied Statistics (Geostatistics) » Sustainable Building

ADVANCED CHEMICAL ENGINEERING AND NANOTECHNOLOGY

FACULTY OF CHEMISTRY FIELD OF STUDY: | CHEMICAL AND PROCESS ENGINEERING || ADVANCED CHEMICAL ENGINEERING AND NANOTECHNOLOGY |

MASTER'S DEGREE PROGRAMME

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

SEMESTER 0

» Chemical Informatics » Environmental Protection » Introduction to Materials Science and

Engineering » Technical Safety » Technical Drawing » Recycling of Materials » Biotechnology with Introduction to Industrial

Microbiology » Fundamentals of Chemical Technology » Measurements in Chemical Equipment » Introduction to Chemical Engineering » Optional course

SEMESTER 1

» Trends in Chemical Engineering Development » Nanoengineering - Fundamentals and

Applications » Chemical Processes Equipment and Methods » Statistical Analysis of Experimental Data

SEMESTER 2

» Chemical Processes Project Designed and Management

» Heterogeneous Processes in Chemical, Food and Pharmaceutical Industry

» Graduate Laboratory I

SEMESTER 3

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

OPTIONAL COURSES

» Statistical Thermodynamics in Molecular Modeling

» Materials Used in Chemical Unit Operation

» Microwaves and Other Advanced Thermal Technologies in Chemical Engineering

» New Concepts and Solutions in Chemical Engineering

DESCRIPTION

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

ABOUT STUDIES

» Duration: 3 semesters » Mode of study: Full time » Language of instruction: English » Start date:

February 2024

» Programme coordinator:

Prof. Anna Trusek, PhD, DSc

JOB PROSPECTS

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

ENTRY INFORMATION

Requirements: Bachelor's or Bachelor of Engi- neering Degree in Chemistry or related domains. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: admis­

sion@pwr.edu.pl

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

FACULTY OF CHEMISTRY FIELD OF STUDY: | CHEMISTRY AND ENGINEERING OF MATERIALS | | ADVANCED NANO AND BIO MATERIALS MONABIPHOT |

MASTER'S DEGREE PROGRAMME

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

ADVANCED NANO-AND BIO-MATERIALS MONABIPHOT

JOB PROSPECTS

Advanced nano-and bio-materials MONABIPHOT is a The graduate has extended knowledge

Master's course which offers an original qualification of chemistry, materials science, natural

in the highly innovative domain of nanomaterials and sciences and technical skills: conducting

molecular photonics for materials science and biology. advanced research experiments with

Skills will be acquired at the strongly interdisciplinary nanomaterials with the emphasis on

level needed to master emerging technologies and to biology, proposing and optimising new

develop original concepts and applications, aiming at solutions and independently analysing

novel technological breakthroughs in this domain. We problems related to materials science.

offer courses concerning synthesis and characterisa-The graduates are prepared for creative

tion of new materials on the molecular and nanoscale work in the design and operation of new

with the special impact on biology. The introduction materials and ready to run their own

of the course's subjects helps the students to acquire businesses.

competences as future experts in material science, with a special impact on nanomaterials. The language of the Advanced Nano- and Bio-materials MONA­BIPHOT Master's is English. Applicants must have a Bachelor’s degree in Chemistry, Physics or Materials Science or related subjects, with a good background in mathematics and chemistry. The graduates could con­tinue the career in research in nano- and/or bio-mate­rials, as Ph.D. students or R&D associates in industrial

ENTRY INFORMATION

laboratories in the rapidly emerging nanotechnology industry.

Requirements: Bachelor's or Bachelor of The programme is aimed at students already awarded or

Engi- neering Degree in Chemistry or re-expecting a BSc (or a higher degree) or equivalent before

lated domains. the starting date of the term (September 2022 for the cur-

Each application is assessed individually rent applications).

on its merits. If in doubt, please contact an Admission Officer, e-mail: admission@

pwr.edu.pl

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English » English: Equivalent of minimum TOEFL IBT

» Start date:

– 87 points or 6.5 points IELTS. List of

February 2024 accepted language certificates can be

» Programme coordinator:

checked online.

Katarzyna Matczyszyn, Prof. at WUST

SEMESTER 0

» Chemical Informatics

» Environmental Protection

» Introduction to Materials Science and Engineering

» Technical Safety

» Technical Drawing

» Recycling of Materials

» Biotechnology with Introduction to Industrial Microbiology

» Fundamentals of Chemical Technology

» Measurements in Chemical Equipment

» Introduction to Chemical Engineering

» Optional course

SEMESTER 1

» Liquid Crystals for Photonics

» Modern Polymers

» Modern Spectroscopy

» Bioorganic Chemistry

» Fluorescence Spectroscopy and Bioimaging

» Biophotonics

» Mathematical Methods in Planning and Analysis of Experiment

» Managerial course

» Foreign Language I

» Foreign Language II

SEMESTER 2

» Laser and Microscopic Techniques in Materials

Analysis » Nanoscale Physics » Advanced Functional Materials » Nanomaterials » Organic Electronics » Advanced Diffraction Methods » Optional course » Graduate Laboratory I

SEMESTER 3

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

OPTIONAL COURSES

» Biomaterials » Non-linear Optics for Chemists

BIOINFORMATICS

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

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date:

February 2024

» Programme coordinators:

Prof. Tadeusz Andruniów, PhD, DSc Pawel Kedzierski, PhD Edyta Dyguda-Kazimierowicz, PhD Prof. W. Andrzej Sokalski

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

ENTRY INFORMATION

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

» English:

Equivalent of minimum TOEFL IBT

FACULTY OF CHEMISTRY FIELD OF STUDY: | BIOTECHNOLOGY | BIOINFORMATICS |MASTER'S DEGREE PROGRAMME

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

SEMESTER 0

» Chemical Informatics

» Environmental Protection

» Introduction to Materials Science and Engineering

» Technical Safety

» Technical Drawing

» Recycling of Materials

» Biotechnology with Introduction to Industrial Microbiology

» Fundamentals of Chemical Technology

» Measurements in Chemical Equipment

» Introduction to Chemical Engineering

» Optional course

SEMESTER 1

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

SEMESTER 2

» Molecular Modelling

» Bionanotechnology

» Rational Drug Design

» Advanced Programming and Numerical Methods

» Methodology of Experimental Research

» Instrumental Drug Analysis

» Retrieval of Scientific and Technical Information

» Managerial course

» Graduate Laboratory I

SEMESTER 3

» Computational Genomics

» Molecular Engineering in Genomic Analyses

» Mathematical Methods in Design and Analysis of Experiment

» Managerial course

» Economics and Organisation of Industrial Biotechnology

» Graduate Laboratory II

» Graduation Seminar and Thesis Preparation

MEDICINAL CHEMISTRY

FACULTY OF CHEMISTRY FIELD OF STUDY: | CHEMISTRY | MEDICINAL CHEMISTRY |MASTER'S DEGREE PROGRAMME

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.

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

ABOUT STUDIES

» Duration: 3 semesters » Mode of study: Full time » Language of instruction: English » Start date:

February 2024

» Programme coordinator:

Prof. Artur Mucha, PhD, DSc

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

ENTRY INFORMATION

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

admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

SEMESTER 0

» Chemical Informatics » Environmental Protection » Introduction to Materials Science and

Engineering » Technical Safety » Technical Drawing » Recycling of Materials » Biotechnology with Introduction to Industrial

Microbiology » Fundamentals of Chemical Technology » Measurements in Chemical Equipment » Introduction to Chemical Engineering » Optional course

SEMESTER 1

» Theoretical Chemistry » Spectroscopy » Structure and Crystallography of Solids » Analytical Methods in Drug Design and

Technology » Physical Organic Chemistry » Introductory Statistics

OPTIONAL COURSE

» Foreign Language I » Foreign Language II

SEMESTER 2

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

SEMESTER 3

» Multistep Organic Synthesis

» Inorganic Drugs

» Polymers in Medicine

» Production Control and Quality Management

» Managerial course

» Mathematical Methods in Design and Analysis of Experiment

» Graduate Laboratory II

» Graduation Seminar and Thesis Preparation

ELECTIVE COURSES

» Combinatorial Chemistry » Selected Reactions in Organic Chemistry

FACULTY OF CHEMISTRY FIELD OF STUDY: | CHEMICAL TECHNOLOGY | TECHNOLOGYOF FINE CHEMICALS | MASTER'S DEGREE PROGRAMME

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

TECHNOLOGY OF FINE CHEMICALS

Fine chemicals (FCs) are formulations containing one or

Independent positions, e.g., R&D em-more complex chemical substances as active ingredients

ployee in chemical industry, special­– serving both an immense range of a purity specifica­

ist in chemical development, quality tion, and ability to deliver a particular effect. FCs are thus

control specialist in industries such identified according to their custom-designed proper-

as chemical and pharmaceutical, bio-ties and performance formulations. FCs manufacturers

technology and cosmetic processing, produce a wide range of chemical substances, which are

processing and manufacturing of spe­typically of a high added-value and produced in rela­

cialised polymers, processing of food tively low amounts, mainly by batch processes in multi-

products, agrochemicals, specialist purpose plants. Specifically, there are the following FCs

in research institutions and public product categories:

administration associated with a low­» pharmaceutical products (chemical and biological volume production. Independent ac-

processes), tivity in Small and Medium Business » plant health products and biocides, in the field of fine chemicals. » specialty polymers, » specialised 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,

ENTRY INFORMATION

» organic intermediates and custom-designed products.

Requirements: Bachelor's or Bachelor Study for applicants without engineering degree lasts 2 of Engi- neering Degree in Chemistry or years, otherwise 1.5 years only.

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

admission@pwr.edu.pl

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English » English:

» Start date:

Equivalent of minimum TOEFL IBT February 2024 – 87 points or 6.5 points IELTS. List

» Programme coordinator: of accepted language certificates Prof. Kazimiera A. Wilk, PhD

can be checked online.

SEMESTER 0

» Chemical Informatics

» Environmental Protection

» Introduction to Materials Science and Engineering

» Technical Safety

» Technical Drawing

» Recycling of Materials

» Biotechnology with Introduction to Industrial Microbiology

» Fundamentals of Chemical Technology

» Measurements in Chemical Equipment

» Introduction to Chemical Engineering

» Optional course

SEMESTER 1

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

SEMESTER 2

» Polymer Additives » Design and Feasibility Study of Technological

Process

» Data Mining in Chemical Technology

» Pharmaceuticals and Biopharmaceuticals

» Sustainable Energy and Fuels

» Analytical Methods in Fine Chemicals

» Specialty Polymers – Physicochemistry and Technology

» Graduate Laboratory I

SEMESTER 3

» Sensors and Biosensors in Fine Chemicals Manufacturing

» Production Control and Quality Management

» Agrochemicals and Plant Health Products

» Process Project

» Graduate Laboratory II

» Graduate Seminar and Thesis Preparation

COMPUTER ENGINEERING

DESCRIPTION

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

ABOUT STUDIES

» Duration: 4 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: October 2023

» Programme coordinator:

Arkadiusz Liber, PhD, Prof. at WUST

JOB PROSPECTS

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

ENTRY INFORMATION

Requirements: Bachelor's Degree, preferably in Computer Science or in a related field. Ap­plicants with a Bachelor's Degree outside of Computer Science must demonstrate significant proficiency in computer science. Any area of requirements can be satisfied through courses completed at the bachelor level or by relevant experience. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY FIELD OF STUDY:| APPLIED COMPUTER SCIENCE |COMPUTER ENGINEERING |

MASTER'S DEGREE PROGRAMME

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

SEMESTER 1

» Physics of Contemporary Computer Science » Foreign Language A1 or A2 » Methods of planning and analyzing

experiments » Advanced Databases » Mobile and Multimedia Systems » Information System Modelling and Analysis » Foundations of Knowledge Engineering

SEMESTER 2

» Fundamentals of Business and Intellectual

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

SEMESTER 3

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

SEMESTER 4

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

ADVANCED COMPUTER SCIENCE

DESCRIPTION

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

JOB PROSPECTS

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

ENTRY INFORMATION

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

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: February 2024

» Programme coordinator:

Wojciech Kmiecik, PhD

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY FIELD OF STUDY: | COMPUTER ENGINEERING |ADVANCED COMPUTER SCIENCE |

MASTER'S DEGREE PROGRAMME

SEMESTER 1

» Research Skills and Methodologies

» Optimisation Methods: Theory and Applications

» IT Applications: Electronic Media

» in Business and Commerce

» Information Systems Modelling

» Computer Project Management

» Discrete Mathematics

» Social Communications

» Foreign Language/Polish Language I

» Physics

SEMESTER 2

» Machine Learning

» Neural Networks

» Research Project

» Secure Systems and Networks

» Modelling and Optimisation of Computer Networks

» Information and Storage Management

» ACS Diploma Seminar 1

» Foreign Language/Polish Language II

SEMESTER 3

» Research Project 2

» Natural Language Processing

» Introduction to Computer Vision in Quality Control

» Entrepreneurship

» ACS Diploma Seminar 2

» Final Project (MSc Thesis)

INTERNET ENGINEERING

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

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

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

ENTRY INFORMATION

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

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

admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY FIELD OF STUDY: | COMPUTER ENGINEERING |INTERNET ENGINEERING |

MASTER'S DEGREE PROGRAMME

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

SEMESTER 1

» Research Skills and Methodologies » Optimisation Methods: Theory and

Applications » IT Applications in Business and Commerce » Information Systems Modelling » Computer Project Management » Discrete Mathematics » Social Communications » Foreign Language/Polish Language I » Physics

SEMESTER 2

» Multimedia and Computer Visualisation » 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 » IE Seminar » Final Project » Entrepreneurship

CONTROL IN ELECTRICAL POWER

ENGINEERING

The students can spend full duration of the stud­ies at Wroclaw 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, Univer-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.

sity of Palermo (UNIPA), Italy, RWTH Aachen Uni­versity, Aachen (Germany). The goal of the pro-

ENTRY INFORMATION

gramme is to improve the quality of graduate-level

education and training in the field of control en­gineering. It is focused on new and challenging is­sues of power system automation and control. The programme offered by the Faculty of Electrical En­gineering is split up into four semesters, including a Master's Thesis semester and a 4-week industrial placement. The best students willing to study in To­ronto should spend their first year at RU and sec­ond year at WUST. Alternatively, the students can study their first year at BTU in Cottbus or at UNIPA in Palermo and then continue their second year at WUST.

ABOUT STUDIES

» Duration: 4 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date:

Requirements: Bachelor's Degree in Electrical

Engineering or related field.

Each application is assessed individually on its

merits. If in doubt, please contact an Admission

Officer, e-mail: admission@pwr.edu.pl » Deadline for application for full programme at WUST: www.admission.pwr.edu.pl » Deadline for application for double degree programme: » Toronto: https://weny.pwr.edu.pl/en/ candidates/msc-programme-in-english/ msc-programme-in-english-and-double­masters-degree--toronto-canada--cpe

» Aachen: https://weny.pwr.edu.pl/en/ candidates/msc-programme-in-english/ msc-programme-in-english-and-double­masters-degree--aachen-germany--cpe

» Cottbus: https://weny.pwr.edu.pl/en/ candidates/msc-programme-in-english/ msc-programme-in-english-and-double­masters-degree--cottbus-germany--cpe

» October 2023 at WUST or BTU (Double Degree Programme),

» September 2023 at RU (Double Degree Programme)

» September 2023 at UNIPA (Double Degree Programme)

» English: Equivalent of minimum TOEFL IBT » Programme coordinator: – 87 points or 6,5 (7,0 at RU) points IELTS. Robert Lis PhD, DSc Assc. Prof. List of accepted language certificates can

be checked online.

FACULTY OF ELECTRICAL ENGINEERING FIELD OF STUDY: | ELECTRICAL ENGINEERING | | CONTROL IN ELECTRICAL POWER ENGINEERING |

MASTER'S DEGREE PROGRAMME

COURSES AT WUST:

SEMESTER 1

» Numerical and Optimisation Methods

» Power Quality Assessment

» Power Systems Faults

» Fault Calculations

» Dynamics and Control of AC and DC Drives

» Circuits and Systems

» Advanced Technology in Electrical Power Generation

» Foreign Language – A1 or A2

» Foreign Language – B2+ or C1+

SEMESTER 2

» Digital Control Techniques

» Simulation and Analysis of Power System Transients

» Digital Signal Processing for Protection and Control

» Power System Protection

» Fibre Optics Communications and Sensors

» Renewable Energy Sources

» Electric Power System Operation and Control

» Diploma Placement 4 Weeks

» Elective Course from Management Block

SEMESTER 3

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

SEMESTER 4

» Diploma Seminar

» Master’s Thesis

» Elective course from Social Sciences and Ethics Block

» Elective Course from A Block and B Block

COURSES AT UNIPA:

https://wroclaw.tech/UNIPA-courses

COURSES AT RWTH:

https://wroclaw.tech/RWTH-courses

COURSES AT RU:

https://wroclaw.tech/RU-courses

COURSES AT BTU:

https://wroclaw.tech/BT-courses

RENEWABLE ENERGY SYSTEMS

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

ABOUT STUDIES

» Duration: 4 semesters » Mode of study: Full time » Language of instruction: English » Start date:

» October 2023 at WUST or OvGU (Double Degree Programmes)

» September 2023 at UNIPA (Double Degree Programme)

» Programme coordinator:

Robert Lis PhD, DSc Assc. Prof.

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

ENTRY INFORMATION

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

» Deadline for application for full programme at WUST:

www.admission.pwr.edu.pl

» Deadline for application for double degree programme:

» Magdeburg: https://weny.pwr.edu. pl/en/candidates/msc-programme­in-english/msc-programme-in­english-and-double-masters-degree-­magdeburg-germany--res

» Palermo: https://weny.pwr.edu.pl/en/ candidates/msc-programme-in-english/ msc-programme-in-english-and­double-masters-degree--palermo-italy­res-cpe

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF ELECTRICAL ENGINEERING FIELD OF STUDY: | ELECTRICAL ENGINEERING |

RENEWABLE ENERGY SYSTEMS |

MASTER'S DEGREE PROGRAMME

courses at WUST:

SEMESTER 1

» Numerical and Optimisation Methods

» Power Quality Assessment

» Power Systems Faults

» Fault Calculations

» Dynamics and Control of AC and DC Drives

» Circuits and Systems

» Advanced Technology in Electrical Power Generation

» Foreign Language – A1 or A2

» Foreign Language – B2+ or C1+

SEMESTER 2

» Power Electronics

» Simulation and Analysis of Power System Transients

» Protection and Control of Distributed Energy Sources 1

» Renewable Energy Sources

» Water Power Plants 1

» Integration of Distributed Resources in Power Systems

» Electromechanical Systems in Renewable Energy

» Modelling of Electrical Machines

» Diploma Placement 4 Weeks

» Elective Course from Management Block

» Energy Storage Systems

SEMESTER 3

» Photovoltaic Cells

» Protection and Control of Distributed Energy Sources 2

» Water Power Plants 2

» Industrial Ecology - Selected Problems

» Artificial Intelligence Techniques

» Legal Regulations and Investments in Power Systems with Distributed Energy Sources

» Electromagnetic Compatibility

» Measurement Methods and Techniques

» Diploma Project

» Elective Courses from Law Block

SEMESTER 4

» Diploma Seminar

» Master’s Thesis

» Elective Course from Social Sciences and Ethics Block

» Elective Course from A Block and B Block

courses at OvGU:

SEMESTER 3

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

SEMESTER 4

» Master’s Thesis

courses at UNIPA:

https://wroclaw.tech/UNIPA-courses

MINING ENGINEERING

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY FIELD OF STUDY: | MINING AND GEOLOGY | MINING ENGINEERING |MASTER'S DEGREE PROGRAMME

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

and seminars.

SEMESTER 1

» Theory and Practice in Geomechanics

» Computer-Aided Geological Modelling & Geostatistics

» Project Management, Appraisal and Risk Evaluation

» Engineering Geophysics

» Integrated Analysis of Deformations in Geomechanical Engineering

» Occupational Health and Safety

» Excavation Design in Open Pit Mining

DESCRIPTION

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

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: October 2023 and February 2024

» Programme coordinator:

Gabriela Paszkowska, PhD

gabriela.paszkowska@pwr.edu.pl

JOB PROSPECTS

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

ENTRY INFORMATION

Requirements: Bachelor's Degree – Bachelor

of Science or Bachelor of Engineering (any incl.

Geology Engineering, Mining Engineering, Me­

chanical Engineering, Energy-related Engineer­

ing studies etc.).

Each application is assessed individually on its

merits. If in doubt, please contact an Admis­

sion Officer, e-mail: admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

SEMESTER 2

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

SEMESTER 3

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

GEOTECHNICAL AND ENVIRONMENTAL

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY FIELD OF STUDY: | MINING AND GEOLOGY || GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING |

MASTER'S DEGREE PROGRAMME

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

ENGINEERING

DESCRIPTION

This is a joint MSc programme of WUST and University of Miskolc (Hungary) formatted as a structured student mobil­ity. WUST students study two semesters in Wroclaw (the first and the third semesters) while the second semester is offered by University of Miskolc. Students apply for an Eras­mus Plus grant for the mobility period. In the third semes­ter, the students write and defend their Master's thesis at WUST. Graduate profile: An alumnus becomes a specialist in two fields: geotechnical and environmental engineering, which is a very unique profile. Besides that, a graduate will be able to apply in-depth knowledge of basic sciences. The gradu­ate will be able to manage and supervise teams, deal with high-risk situations and decisions. The graduate will be pre­pared to design technological processes, carry out research work, and work creatively.

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: February 2024

» Programme coordinator:

Gabriela Paszkowska, PhD

gabriela.paszkowska@pwr.edu.pl

JOB PROSPECTS

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

ENTRY INFORMATION

Requirements: Bachelor's Degree – Bachelor of Science or Bachelor of Engineering (any incl. Geology Engineering, Mining Engineering, Me­chanical Engineering, Energy Related Engineer­ing Studies, etc.). Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT seminars.

SEMESTER 1

» Theory and Practice in Geomechanics » Computer-Aided Geological Modelling & Geostatistics » Project Management, Appraisal and Risk

Evaluation » Engineering Geophysics » Integrated Analysis of Deformations

in Geomechanical Engineering » Occupational Health and Safety » Environmental Chemistry

SEMESTER 2

» Methods of Environmental Assessment » Waste Incineration and Air Quality Protection » Water and Wastewater Treatment » Environmental Geotechnics » Chemical Technologies in Environmental

Protection » Environmental Risk Assessment and Remediation » Soil Chemistry » Numerical Methods and Optimisation » Quality Management » Basics of Waste Management » Environmental Geology » Foreign Languages

SEMESTER 3

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

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY FIELD OF STUDY: | MINING AND GEOLOGY || GEOMATICS FOR MINERAL RESOURCE MANAGEMENT |

MASTER'S DEGREE PROGRAMME

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

GEOMATICS FOR MINERAL RESOURCE

MANAGEMENT

Geomatics for Mineral Resource Management focuses on the process of resource modelling and mine man­agement. Students will be taught in a variety of sub­jects related to the field mining and mineral resources. This includes financial, environmental, political as well as the legal aspects of national and international min­ing projects. In addition to the standard courses taught by staff from partner universities and industry experts, massive open online courses (MOOC’s) are offered for the students. The MOOC’s consist of a series of web-videos, which cover the content of an individual course. The educational content focuses on the following pil­lars: (1) Sensing technologies for mine data gathering,

(2)

Spatial (big) data management and visualisation and

(3)

Spatial (big) data analysis and modelling. The aim of the programme is to enable students to integrate these three pillars into innovative Geomonitoring concepts. Students, who decide on the specialisation Geomatics for Mineral Resource Management, are, on default, set to study 2 semesters at Wroclaw University of Science and Technology (1st and 4th semesters) and 2 semes­ters at TU Bergakademie Freiberg in Germany or two semesters at Montanuniversität Leoben in Austria (2nd and 3rd semesters) and are going to graduate with a

double MSc diploma.

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

ABOUT STUDIES

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

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

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

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

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

SEMESTER 1 (WUST)

» Principles and Application of InSAR and GIS in Mining » Computer Aided Geological Modelling & Geostatistics » Project Management, Appraisal and Risk

Evaluation » Engineering Geophysics » Integrated Analysis of Deformations

in Geomechanical Engineering » Occupational Health and Safety » Foreign language » Elective course

SEMESTER 2 (TUBAF)

» Applied Remote Sensing in Geosciences » Underground Mine Surveying » Geomonitoring » Operations Management » Geomodelling – Geostatistics for Natural

Resource Modelling » Foreign language

SEMESTER 2 (MUL)

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

and Ensuring Land Use » Automatic Surface Inspection

SEMESTER 3 (TUBAF)

» Special Topics Geokinematics » Applied Spatial Data Analysis and Modelling -

Case Study » Geomatics for Mineral Resource and » Reserve Management » Reclamation

» Human Resources Management & Organizational Behaviour » Elective courses

SEMESTER 3 (MUL)

» Rock Mechanics – Open Pit, Slopes, Dams » Lab in Rock Mechanics » Applied Geodesy » Selected Aspects of Engineering Surveying

in Mining and Tunneling » Mine Mapping » Internship » Elective courses

SEMESTER 4 (WUST)

» Master's Thesis » Diploma Seminar

GEOMATICS

Geomatics is an interdisciplinary scientific and technical discipline that combines aspects of sur­veying and sensor technology with data process­ing, geoinformatics and geomodelling. It deals with the acquisition, analysis, interpretation, dissemination and practical application of geoin­formation. Geomatics analyses and synthesises information about spatial processes and phenom­ena and their changes. Geodata is used to create precise computer models that help us to better understand spatial processes and shape future activities. Geodata is an element of almost every intelligent IT system. Stimulating the demand for geoinformation may affect the innovativeness of the economy and allow the entrepreneurs and sci­ence to play a significant, more noticeable role of on the global market. The universality of geoinformation and the pros­pect of a further increase in its use (processing and analysing large collections of geodata) gen­erate a demand for specialists in the field of de­velopment and management of geoinformatics knowledge. Education in the field of Geodesy and Cartography with a specialisation in Geomatics at the Faculty of Geoengineering, Mining and Geol­ogy of Wroclaw University of Science and Tech­nology meets this demand.

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

ENTRY INFORMATION

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

admission@pwr.edu.pl

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English » English:

» Start date: February 2024

Equivalent of minimum TOEFL IBT » Programme coordinator: – 87 points or 6.5 points IELTS. List of Jan Blachowski Ph., DSc, Prof. accepted language certificates can be checked online.

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY FIELD OF STUDY: | GEODESY AND CARTOGRAPHY | GEOMATICS |MASTER'S DEGREE PROGRAMME

SEMESTER 1

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

SEMESTER 2

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

SEMESTER 3

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

ENVIRONMENTAL QUALITY

MANAGEMENT

Environmental Quality Management – is a ver­satile field of study created for students eager to extend environmental protection general knowledge to higher level of proficiency. It of­fers their graduates possession of the compre­hensive knowledge developed simultaneously with practical skills, focusing on the environ­mental protection issues with the engineering

– related taste. Graduates are able to solve en­vironmental engineering problems associated with sustainable development, circular econo­my, renewable energy resources, the pollution of environment and climate changes. Engineer­

ing skills possessed in planning, designing and conducting research projects allows our alumni to exploit their knowledge as highly skilled pro­fessionals solving problems related to water supply and sewer systems, wastewater process­ing, air protection, solid waste management and even materials science. We focus on biodegrad­able materials as a substituents for petroleum based plastics, smart renewable energy sector and other emerging technologies and processes

ENTRY INFORMATION

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

ones.

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

» Duration: 3 semesters » Mode of study: Full time

» Language of instruction: English » Start date: October 2023 » Programme coordinator:

Martyna Grzegorzek, PhD Eng

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF ENVIRONMENTAL ENGINEERING FIELD OF STUDY: | ENVIRONMENTAL ENGINEERING || ENVIRONMENTAL QUALITY MANAGEMENT |

MASTER'S DEGREE PROGRAMME

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

SEMESTER 1

» Environmental Chemistry

» Engineering Application of Mathematical Statistics

» AutoCAD

» Water Treatment Technology

» Raw Materials Management

» Sanitary Biology

» Water Quality Management

» Water Supply Systems

» Automation in Environmental Engineering

» Polish Language A1 or English Language C1+

» Elective Subject

» Ethics of New and Emerging Technologies

» Strategic Management

SEMESTER 2

» Environmental Management

» Membrane Separation Processes in Environmental Protection

» Environmental Toxicology

» Waste Gases Purification

» Solid Waste Management

» Waste Water Treatment Technology

» Biodegradable Materials

» Sewage Systems

» Environmental Health Hazards

» Polish Language or Another Language

» Spatial Planning

» Reliability of Engineering Systems

SEMESTER 3

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

BUSINESS INTELLIGENCE

Businesses today collect an incredible amount of data, from market transactions, customer service interactions, social media reviews, search engine entries, to demo­graphics, and many more. Businesses also experience a rapid and continuous development of technologies and organisational behaviour that require high skills in ICT and data analytics. The Master of Business Intelligence (BI) programme is designed to provide students with cut­ting edge managerial knowledge and a strong foundation in both analytics – including computational statistics and machine learning – and core business areas, building a solid platform for a successful career. The BI curriculum focuses on how to analyse data in order to identify and predict patterns and on how to visualise and present re­sults to support managerial decisions and lead to innova­tive thinking in today’s organisations. The Master of Business Intelligence programme is tai­lored for current Bachelor of Engineering students and recent graduates who plan to pursue a career in business analytics and management information systems, as well as computer programmers, mathematicians, physicists and engineers seeking career advancement or change. We not only welcome students from different back­grounds and cultures, but also see them as critical for developing innovative ideas. Set up and run by a team of top-ranking scientists, award-winning early stage re­searchers and successful professionals, the BI curriculum answers the market demand for tech-savvy graduates who can apply advanced computational tools to solve business challenges.

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: February 2024

» Programme coordinator:

Katarzyna Maciejowska, PhD

» Contact person: Yash Chawla, PhD

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

ENTRY INFORMATION

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

admission@pwr.edu.pl

» English: Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF MANAGEMENT FIELD OF STUDY: | BUSINESS ENGINEERING | BUSINESS INTELLIGENCE |MASTER'S DEGREE PROGRAMME

The program is build up from three blocks:

» Data description and analysis, where students learn how to visualize, and explore datasets using econometric tools, data mining and artificial intelligence

» Simulation techniques, where students learn how to simulate paths of business processes

» Management, where students learn how to use modern management techniques, such as product management or design thinking

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

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

ACQUIRED SKILLS AND COMPETENCES

Students will learn how to:

» Use data analytics to stimulate business growth with quantitative and qualitative skills.

» Stay on top of the latest methods and approaches in computational statistics and machine learning.

» Use visualization software to identify trends, explore hypotheses, challenge assumptions, and create a more detailed, data-driven understanding of business activities.

» Simulate realistic future paths of all kinds of business processes.

» Leverage the power of data to make informed business decisions and thrive in a rapidly changing environment

» Conduct top-tier research and report the results to managers, peers and the public.

» Reach the right customers with the right products and communications.

HUMAN RESOURCE MANAGEMENT

People are the most important resource of every organi­sation. Machines and technology can be purchased or copied, but without knowledgeable and skilled people they would be of little value. Contemporary competition is competition between teams of people, and HRM is a modern technology of such teams. This soft technology allows us to multiply the intellectual capital of individuals into organisation’s HRM-capital. The HRM specialisation allows you to acquire knowledge and develop practical skills in the field of modern meth­ods and techniques of strategic and operational human resource management in various types of organisations, as well as in smaller teams created within the organisa­tion. It also allows the development of knowledge and skills in the field of leadership and team-building. Eve­rything is embedded in the contemporary theory of management, economy and finance. Students also have the opportunity to acquire the ability to use IT tools sup­porting management processes in the field of human re­source management. Attention will be focused on understanding the busi­ness and skilful use of adequate techniques and man­agement tools. Students will also learn the skills to research economic and financial phenomena and pro­cesses in a dynamically changing environment. As part of the HRM specialisation, students have the opportu­nity to acquire practical skills in the use of IT tools and appropriate analysis of the data available for them in order to support processes in the field of human re­source management.

ABOUT STUDIES

» Duration: 4 semesters » Mode of study: Full time » Language of instruction:

English

» Start date: October 2023 » Programme coordinator:

Prof. Agnieszka Bienkowska

» Contact person:

Kamila Ludwikowska, PhD

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

ENTRY INFORMATION

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

admission@pwr.edu.pl

» English: Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF MANAGEMENT FIELD OF STUDY: | MANAGEMENT | HUMAN RESOURCE MANAGEMENT |MASTER'S DEGREE PROGRAMME

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

IMPORTANT!

1ST GROUP OF COURSES:

modern concepts of human resource manage­

ment in the field of selection, assessment and While studying the HRM specialisation, students remuneration of personnel using the competency have the opportunity to work both individually approach; management of the development and and in a team. The practical forms of classes (i.e. potential of employees, as well as their motivation projects, laboratories or workshops) cover over

and engagement; modern trends in the human 50% of ECTS credits. Methods such as case study resource area (strategic and international HRM, and problem-based learning are used. evidence-based approach, diversity management, Students have the opportunity to build specific and employer branding). tools supporting HR processes. Individual or group

research projects are carried out to solve specific

problems in the field of HRM.

2ND GROUP OF COURSES:

The development of managerial and personal a set of socio-managerial competences that are competences is based on the “learning by doing” essential in working with and managing people, approach, in practice it assumes the workshop including: communication, public speaking and nature of classes. Students develop specific skills, work on one's own image, working in a group and working in small groups on problems and projects, understanding group dynamics, social intelligence take part in simulations of situations and group and the ability to predict and evaluate the behav­processes.

iour of other people, leadership competences, including motivating, coordinating the work of a Lectures are conducted in innovative interactive group and strategic thinking.

mode, some are conducted remotely.

At the end of the studies, students are obliged to

3RD GROUP OF COURSES:

prepare an MSc dissertation and pass a final (di-general study courses that systematise and de­ploma) exam.

velop knowledge in the field of modern manage­ment methods and concepts, as well as economy and finance.

RENEWABLE SOURCES OF ENERGY

FACULTY OF MECHANICAL AND POWER ENGINEERING FIELD OF STUDY: | POWER ENGINEERING | RENEWABLE SOURCESOF ENERGY | MASTER'S DEGREE PROGRAMME

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.

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

Dorota Nowak-Wozny, PhD, DSc, Ass. Prof.

The graduate will be prepared to work in

energy industry. In particular, our gradu­

ate will have a good base to:

» work on designing of equipment using renewable energy

» work on creating new solutions in renewable energy power

» supervise the work of renewable and hybrid energy systems

» assess the effectiveness of the use of renewable energy sources, depending on the location of the investments

» determine and assess the local and global energy strategy

ENTRY INFORMATION

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

admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

SEMESTER 1

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

SEMESTER 2

» Mathematical Modelling of Energy Generation Installation

» New Generation Energy Technologies

» Heat Pumps

» Solar Energy Conversion Systems

» Water Power Engineering

» Biofuels and Alternative Fuels

» Management Course (elective)

» Foreign Language (next language, any level)

SEMESTER 3

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

REFRIGERATION AND CRYOGENICS

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. They have the skills in the design, implementation and operation of both refrigerating and cryocooling systems. Additionally, a graduate can creatively apply modern design methods and is well prepared for undertaking PhD studies.

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

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

» design modern refrigeration and cryogenic units and installations, » create new solutions and methods of temperature lowering,

» supervise the work in food cold stores, refrigeration and air conditioning installations, air rectification and technical gas production plants, natural gas liquefaction plants and other refrigeration and cryogenic systems.

ENTRY INFORMATION

Requirements: Bachelor's Degree in Power or Mechanical Engineering or any related field. Each application is assessed individu­ally on its merits. If In doubt, please contact an Admission Officer, e-mail:

admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF MECHANICAL AND POWER ENGINEERING FIELD OF STUDY:| POWER ENGINEERING || REFRIGERATION AND CRYOGENICS |

MASTER'S DEGREE PROGRAMME

SEMESTER 1

» Applied Mathematics » Physics - selected issues » Numerical methods » Selected problems of thermal-flow processes » Vapour-compression Refrigeration Systems » Thermodynamic Fundamentals of

Refrigeration, Cryogenics and Low

Temperature Physics » Refrigerants, Coolants and Cold Chain » Cryogenics » Foreign Language min. B2+

SEMESTER 2

» Mathematical modeling of energy generation

installations » New generation energy technologies » Gas and Cryogenic Technologies » Cryogenic Systems and Applied

Superconductivity » Numerical Techniques Related to Heat Transfer » Cooling Systems » Sorption Refrigeration » Management Course (elective) » Foreign Language (next language, any level)

SEMESTER 3

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

COMPUTER AIDED MECHANICAL AND POWER ENGINEERING

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

JOB PROSPECTS

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

After completing the specialisation, you will be able to:

» program in a high-level structured language,

» perform mechanical and thermal – flow simulations using i.e. ANSYS software,

» carry out numerical analyses using uncommercial tools such as OpenFOAM software,

» use artificial intelligence to control the operation of energy devices,

» analyse investments not only in technical terms, but also in economic terms.

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

Slawomir Pietrowicz, PhD, DSc, Ass. Prof.

ENTRY INFORMATION

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

admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

FACULTY OF MECHANICAL AND POWER ENGINEERING FIELD OF STUDY: | POWER ENGINEERING || COMPUTER AIDED MECHANICAL AND POWER ENGINEERING |

MASTER'S DEGREE PROGRAMME

SEMESTER 1

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

SEMESTER 2

» Mathematical Modelling of Energy Generation Installation

» New Generation Energy Technologies

» Thermoeconomic Analysis of Energy Processes

» Advanced Numerical Modelling Using OpenFOAM

» Finite Element Analysis

» Artificial Intelligence

» Management Course (elective)

» Foreign Language (next language, any level)

SEMESTER 3

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

AUTOMOTIVE ENGINEERING

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

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

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: February 2024

» Programme coordinator:

Slawomir Susz, PhD

ENTRY INFORMATION

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

» English:

Equivalent of minimum TOEFL IBT

FACULTY OF MECHANICAL ENGINEERING |FIELD OF STUDY: MECHANICAL ENGINEERING AND MACHINE BUILDING | AUTOMOTIVE ENGINEERING |

MASTER'S DEGREE PROGRAMME

SEMESTER 1

» Applied Mathematics - Operational Methods in Automotive Engineering

» Testing of Vehicle Elements and Assemblies

» Energy Efficiency Design of Power-train and Body

» Modelling of Multi-Body systems

» Machinery Design Process

» Analytical Mechanics

» Surface Engineering

» Design of Engineering Materials

» Machine and Device Control Systems

» Strength of Materials

» English Language B2+ or C1+

SEMESTER 2

» Project CAD /FEM for Metals

» Project CAD /FEM on Flows

» Developing Engine Technology

» Alternative Drive Systems

» Electronics in Cars

» Chemistry and Green Fuels

» Management for Engineers

» Non-Destructive Evaluation in Contemporary Manufacturing Systems

» Foreign Language – other than English A1 or A2

» Master's Thesis I

SEMESTER 3

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

PRODUCTION MANAGEMENT

ENTRY INFORMATION

FACULTY OF MECHANICAL ENGINEERING FIELD OF STUDY: | MANAGEMENT AND MANUFACTURING ENGINEERING |PRODUCTION MANAGEMENT |

MASTER'S DEGREE PROGRAMME

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

JOB PROSPECTS

The graduate of the programme has:

•

extended knowledge about the management of production enterprises, including innovative com­panies of a global nature, knows the latest produc­tion technologies and development trends of mod­ern production enterprises, knows the methods and techniques of production organisation as well as methods and tools for optimising production sys­tems,

•

the ability to design new production systems and improving existing companies, is able to effectively manage production resources as well as plan and control the implementation of production orders us­ing advanced IT tools,

•

the competence to undertake tasks in enterprises typical for such functions as: production manager, product manager, process manager, production en­gineer, process analyst, process development man­ager.

Requirements: Bachelor's Degree in: Control Engineering and Robotics, Mechanical En­gineering and Machine Building, Transport, Management and Manufacturing Engineering or related. Each application is assessed individually on its merits. If in doubt, please contact an Admis­sion Officer, e-mail: admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

ABOUT STUDIES

» Duration: 3 semesters » Mode of study: Full time » Language of instruction: English » Start date: February » Programme coordinator:

Slawomir Susz, PhD

SEMESTER 1

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

SEMESTER 2

» Research Methodology

» Optimisation Methods in Production

» Quality Management in Production E

» Lean Manufacturing Tools and Methods

» Product Lifecycle Management E

» Innovative Manufacturing Ttechnologies

» Systems Reliability Engineering and Management

» Advanced Methods of Production Organisation

» Socjology of Organisation and Leadership

» Foreign Languages II

» MSC DIPLOMA THESIS I

SEMESTER 3

» Knowledge Management » Design of Experiments » Robotisation and Digitisation in Manufacturing » Financial Analysis » Inventive Engineering » Innovative Manufacturing Technologies » Industry 4.0 (Digitalisation and Robotisation in

Industrial Processes) » Human Resorce Management » Diploma Seminar » MSC DIPLOMA THESIS II

FACULTY OF FUNDAMENTAL PROBLEMS OF TECHNOLOGY

FIELD OF STUDY: | BIG DATA ANALYTICS | BIG DATA ANALYTICS |

BIG DATA ANALYTICS

MASTER'S DEGREE PROGRAMME

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

(1)

use IT tools and technologies to process large amounts of data,

(2)

use methods of physics of complex systems to study and model the analysed information re­sources,

(3)

find or design an adequate model of the obse­rved dynamic phenomenon and verify it on the ba­sis of empirical data. The graduate will be prepared to work in a dynamically developing market sector related to the statistical analysis of large data sets, aiming to uncover, among others, hidden patterns, market trends, customer preferences, etc.

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: February 2024

» Programme coordinator:

Prof. Antoni C. Mitus

ENTRY INFORMATION

Requirements: Bachelor's Degree in one of the following fields: Computer Science, Electron­ics, Mathematics, Telecommunication, Telein­formatics. Each application is assessed individually on its merits. If in doubt, please contact an Admission Officer, e-mail: admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

OBLIGATORY COURSES (SEMESTER 1)

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

Systems

OBLIGATORY COURSES (SEMESTER 2)

» BDA Algorithms » Complex Systems » Databases and Information

Management » Diploma Seminar 1 » Elements of Nonlinear Dynamics » Practical Statistics for Data Science » Machine Learning – Introduction

or Monographic Lecture 1

OBLIGATORY COURSES (SEMESTER 3)

» Diploma Seminar 2 » Machine Learning – Applications » Numerical Methods in Physics

or Stochastic Processes or Time Series Analysis or Quantum Optics

ADVANCED APPLIED ELECTRONICS

DESCRIPTION

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

ABOUT STUDIES

» Duration: 3 semesters

» Mode of study: Full time

» Language of instruction: English

» Start date: February 2024

» Programme coordinator:

Jerzy Witkowski, PhD,

JOB PROSPECTS

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

ENTRY INFORMATION

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

» English:

Equivalent of minimum TOEFL IBT

FACULTY OF ELECTRONICS, MICROSYSTEMS AND PHOTONICS FIELD OF STUDY: | ELECTRONICS | ADVANCED APPLIED ELECTRONICS |MASTER'S DEGREE PROGRAMME

SEMESTER 1

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

SEMESTER 2

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

SEMESTER 3

» Master's Thesis

» Diploma Seminar

» New Approaches to Electronics and Telecommunications

» Entrepreneurship

» Elective Course

ELECTIVE COURSES:

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

EMBEDDED ROBOTICS

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

JOB PROSPECTS

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

» design engineer and/or programmer of embedded systems and circuits,

» implementation/deployment specialist of industrial robotic systems, robotics systems specialist, integrator, project manager,

» control systems engineer, embedded control devices and systems specialist, building and home automation systems design engineer,

» expert/consultant for robotic systems deployment, including intelligent and social robots.

ENTRY INFORMATION

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

admission@pwr.edu.pl

» English:

Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

ABOUT STUDIES

» Duration: 3 semesters » Mode of study: Full time » Language of instruction: English » Start date:

February 2024

» Programme coordinator:

Elzbieta Roszkowska, PhD, DSc

FACULTY OF ELECTRONICS, MICROSYSTEMS AND PHOTONICS FIELD OF STUDY: | CONTROL ENGINEERING AND ROBOTICS |EMBEDDED ROBOTICS |

MASTER'S DEGREE PROGRAMME

SEMESTER 1

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

automatization

SEMESTER 2

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

SEMESTER 3

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

FACULTY OF PURE AND APPLIED MATHEMATICS FIELD OF STUDY:| APPLIED MATHEMATICS |

MASTER'S DEGREE PROGRAMME

APPLIED MATHEMATICS

The programme, offered by the Faculty of Pure and Applied Mathematics and run in cooperation with the Hugo Steinhaus Center, is based on educational stand­ards of the European Consortium for Mathematics in Industry (ECMI) as confirmed by the status of ECMI Teaching Centre obtained by Wroclaw University of Sci­ence and Technology in 2014. The curriculum is oriented towards real-life applica­tions and industrial problems in educational style and contents. The goal of the studies is the real world ap­plied mathematics education of specialists who are well prepared not only for work in the international financial institutions or enterprises, but also for any situation in which the creative thinking is needed. The graduates have no problems with finding good jobs in the finance and insurance or industrial sectors in Poland and abroad. The MSc diploma offers an opportunity to continue education at PhD studies.

The programme offers four main specialties: » Financial and Actuarial Mathematics » Mathematics for Industry and Commerce » Data Engineering » Modelling, Simulation and Optimisation

JOB PROSPECTS

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

ENTRY INFORMATION

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

» English: Equivalent of minimum TOEFL IBT

– 87 points or 6.5 points IELTS. List of accepted language certificates can be checked online.

ABOUT STUDIES

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

Janusz Szwabinski, PhD, DSc

SEMESTER 1

» Economathematics » Partial Differential Equations with Applications

in Physics and Industry » Life Insurance Models » Social Elective Subject » Foreign Language » Elective Course » Elective Course

SEMESTER 2

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

SEMESTER 3

» Diploma Thesis » Diploma Seminar » Elective Course

ELECTIVE COURSES

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

74 75

PREPARATORY POLISH LANGUAGE COURSE

ENTRY INFORMATION

The Department of Polish Language for Foreign­ers offers courses in Polish language and Polish culture on different levels – A1, A2, B1, B2, C1 and C2. They are intended for candidates who wish to prepare for future studies at all academies in Poland as well as for those who want to learn Polish intensely. They in­clude 20 lessons of Polish language per week (5 times a week, 4 lessons a day). The first term contains 300 hours of Polish language, and so does the second term. The students also learn supplementary subjects preparing them for their further studies. The supplementary subjects can be selected according to the students' needs out of the following: mathematics, physics, biology, chemistry, computer sciences, geography, knowledge of Polish culture and history. The students start learning the specialisation courses on the advanced level in the winter term and on the elementary level – in the sum­mer term. The specialisation subjects are taught in Polish. The courses, thanks to the fact that they are carried out on different levels, guarantee a communicative dexterity in both official and unofficial situations. At the same time, the courses prepare the candidates for studying on different faculties. The students improve basic linguistic competences: listening comprehen­sion, reading comprehension, speaking and writing different kinds of text. Additionally, some lectures and classes on Polish history and culture are carried out in Polish and English. The course finishes with a written and oral exami­nation in Polish language and with examinations in all chosen subjects. The Department of Polish Language for Foreigners provides also additional activities, such as: tourist tours to the most interesting regions of Po­land, visiting some historical places in Wroclaw and participating in different cultural events. Taking part in the course, the students learn about important tra­ditions and customs of the Poles.

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

» Mode of study:

Full time, 600 or 900 hours

» Duration; start date:

1 academic year (2 semesters) - October 2023

1.5 academic year (3 semesters) ­- February 2024

» Tuition fee\*:

admission.pwr.edu.pl

» Deadline for application:

admission.pwr.edu.pl

» Language of instruction:

Polish

» Application fee:

EU/EFTA students: 150 EUR Non-EU/EFTA students: 150 EUR

» Contact:

International Relations Office Division of Foreign Students Admission and Support e-mail: admission@pwr.edu.pl

\* Fee also includes:

Textbooks, trips to the ZOO, water knowledge centre „Hydropolis”, the Four Domes Pavilion, tours around Wroclaw and hiking trips and much more.

PREPARATORY POLISH LANGUAGE COURSE

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

THE GRAMMATICAL MATERIAL INCLUDES:

» declination of nouns, adjectives, pronouns and numerals;

» verb inflexion, transitive and intransitive verbs, voices and moods of verbs, impersonal forms of verbs, modals and verbs connected with movement;

» comparison of adjectives and adverbs; » classifying words into different parts of speech; » syntax of a single and compound sentence,

double negation, punctuation. The curriculum includes also typical communicative situations.

COURSES:

» Polish history has been presented from the oldest to the contemporary times. The course has been divided into parts determined by dates of great significance to the society and the state.

» The purpose of the geography course is to present the social and economic situation of the world with a special emphasis on Poland.

» The most important chemistry problems are the following: atoms, solutions, electrolytes, hydrolysis, matter, reactions of oxidation and reduction, electrochemical processes and organic chemistry.

» Selected areas of biology cover, among others, the skeletal system, muscular system, cardiovascular system, lymphatic system, digestive system, nervous system and reproductive system.

» Participants of mathematics classes will have an opportunity to get to know the language and terminology used in mathematics. They will also have a chance to make up for the secondary school knowledge they miss (e.g. digits, geometric figures, fractions, mathematical actions, functions, sequences, etc.).

» The purpose of the physics course is giving participants an opportunity to understand the phenomena of the surrounding world and nature, the structures of physics and its connections with other natural sciences (kinematics, dynamics, thermodynamics, electrostatics, optics, contemporary physics, electric current).

PREPARATORY ENGLISH LANGUAGE COURSE

The Department of Foreign Languages at Wroclaw Uni­versity of Science and Technology offers preparatory courses to foreigners who want to study BSc and MSc courses in English at Wroclaw University of Science and Technology. The course includes 600 hours of English (20 hours of English per week 5 times x 4 hours a day). The students can also learn suplementary subjects pre­paring them for their further studies as well as Polish language and culture. To start the course of English students should be at in­termediate level B1 as set forth in Common European Framework for Language, Teaching and Assessment. The aim of the course is to help the students improve their language skills and reach B2 level (B2 level ACERT Exam) and to introduce English for academic purposes in order to enable them to follow the university courses in English. The preparatory English course lasts for the whole academic year (from October to June) and is divided into two semesters. In the first semester the students learn general English with professional language el­ements. The second semester covers a balance of language skills (speaking, listening, reading, writing), grammar and vocabulary with a special focus on aca­demic language. The course builds the skills required for understand­ing lectures, tutorials, research papers and written assignments in English. At the end of the course stu­dents take examinations in English, physics and math­ematics. The English examination is at B2 level and consists of two parts, a written test and an interview. The participants will be provided with coursebooks and other teaching materials to be used at the pre­paratory English course all free of charge. The final examination The final examination tests listening and reading skills, speaking, knowledge of grammar and vocabulary. The exam registration fee is included in the price of the course. Throughout the academic year the students will be provided with an opportunity to go on 1-2 day trips to discover the most beautiful places in the region. The students will also be able to take part in talks and lectures about history of Wroclaw and Poland, cultural events, technical English and more.

The university admission procedure based on secondary education certificate or degree cer­tificate.Each applicationisassessedindividually on its merits. If in doubt, please contact an Ad­mission Officer, e-mail: admission@pwr.edu.pl

» Mode of study:

Full time, 600 hours

» Duration; start date:

1 academic year (2 semesters)

- October 2023

or 1 semester - February 2024

» Deadline for application:

admission.pwr.edu.pl

» Tuition fee\*:

admission.pwr.edu.pl

» Application fee:

150 EUR

» Contact:

International Relations Office

Division of Foreign Students Admission

and Support

e-mail: admission@pwr.edu.pl

\* Fee also includes:

Textbooks, trips to the ZOO, water knowledge centre „Hydropolis” and the Four Domes Pavilion, tours around Wroclaw, hiking trips and much more.

PREPARATORY ENGLISH LANGUAGE COURSE

ENGLISH COURSE SYLLABUS 1ST TERM

SPEAKING

» communicating in social situations

» communicating in professional and intercultural environment

» telephoning: making enquiries, making arrange- ments, complaining

» focusing on functions: agreeing and disagreeing, giving opinions, interrupting and dealing with interruptions, asking for clarification

» discussing a wide range of personal and study/work­-related topics: culture and cross-cultural relations, university and business-related environment, training and development, describing innovative products and services, business travel, buying and selling

» focusing on pronunciation: word and sentence stress, sound linking

LISTENING

» understanding real life situations

» following instructions

» listening for general meaning, details, pronunciation, stress and intonation reading

» understanding written instructions

» understanding story sequence

» understanding authentic writing

WRITING

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

GRAMMAR

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

VOCABULARY

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

ENGLISH COURSE SYLLABUS 2ND TERM

ACADEMIC SPEAKING

» communicating in seminars and tutorials » delivering an oral presentation » focusing on functions: expressing and justifying

opinions, explaining, suggesting, speculating,

analysing, summarising, narrating » recognising a range of styles » speaking without hesitating

ACADEMIC LISTENING

» understanding lectures and tutorials » following presentations » note taking

ACADEMIC READING

» understanding specialist and non-specialist

academic writing » identifying text types » scanning and skimming

ACADEMIC WRITING

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

GRAMMAR FOR ACADEMIC PURPOSES

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

VOCABULARY FOR ACADEMIC PURPOSES

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

Wroclaw a great place to be