STUDY PROGRAMME

Master's Programme
Management and Production Engineering

Valid for students admitted from October 2016

Faculty of Mechanical Engineering
University of Zielona Góra

April 2016

University of Zielona Góra
Faculty of Mechanical Engineering
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More information for foreign students:

Admission documents for non-national candidates,

Basic information,

Tuition fees,

Recruitment calendar,

Enrolment form (electronic registration)

on website: http://www.uz.zgora.pl/index.php?en-for-foreigners

1. GENERAL DESCRIPTION

Master's programme in Management and Production Engineering will provide knowledge in both engineering and management aspects of production. Beyond the goals which are specified by the Higher Degree ordinance, there are also specific goals for this Master's Programme.

A graduate from the programme:

the students will have a broad scientific foundation for work within the production engineering area and understanding how different variables interact in areas which constitutes production engineering.

General knowledge and understanding:

- understanding of how environmental and cultural differences effect the production process,
- communication and presentation skills necessary for leadership positions,
- understanding of various dimensions and functions of the broad field of production,
- knowledge needed to tackle the ever-changing problems and situations of modern competitive production,
- conceptual and reasoning skills with appropriate decision support methods and tools used in production management,
- understanding the need for and requirements on sustainable and energy efficient production processes,

Skills

- have the ability to analyze, synthesise and implement a production system,
- have the ability to solve engineering problems, using advanced computer techniques (CAD/CAM/CAx),
- can use standard tools and techniques in order to solve problems within the production engineering area,
- have a good ability to utilize modern modelling and simulation methods as support for decisions,
- they have communication skills and are trained in presentations, which provide them with prerequisites for efficient work both in a group and individually,
- have the ability to fullfil both engineering and managerial functions,

- have developed and deepened the analytical and reasoning abilities which are required in order to handle the continuously changing problems and challenges within the area of production engineering,

Ability to formulate and present opinions

- understand the central role of production engineering for development and competition in the global economy,
- have developed a rational perspective on energy efficient process technologies and production systems,
- have insights about how surroundings and cultural differences affect production processes

2. RULES FOR RECRUITMENT

The recruitment rules and opportunities for foreign students to enrol in the University are given on the University webpage: http://www.uz.zgora.pl/index.php?en-for-foreigners

Within the limits for admissions, set by the Rector of the University, for academic year 2016/2017, the Faculty of Mechanical Engineering will carry out the recruitment process for the second cycle studies, for the field of studies "Management and Production Engineering" in English, in 2016.

Courses

The programme is course-based. Full list of course are included in appendix 2.

Career prospects

As production is global, graduates from our programme will be able to find positions as technical specialists, production developers, production engineers, production managers or consultants in various production fields, all over the world.

Appendix 1

Table of references of effects of particular directions to the effects of areas

(table of references of learning outcomes)

Explanation of notations:
T – area of education in technical sciences
2 – second cycle studies
A – general academic profile

W – knowledge
U – skills
K – cosial competences
01, 02, 03, and further – number of the learning outcome

Field of study: Management and Production Engineering Level of education: second cycle studies Education profile: **general academic profile**	
Symbol	Learning outcomes for particular field of studies
KNOWLEDGE The graduate student of the second cycle studies:	
K_W01	has the extended and deep knowledge of the application of mathematical methods to formulate and solve complex tasks related to *Management and Production Engineering.*
K_W02	has the extended and deep knowledge of the branch of physics and chemistry useful to formulate and solve complex tasks related to *production engineering.*
K_W03	has detailed knowledge of selected issues of broadly understood Mechanical Engineering, associated with the Production Engineering, and computer aided techniques (CAD / CAM, Cax).

K_W04	has the ordered, theoretical knowledge of strategic management, in particular: - the role of business development strategies and their types, - drawing up a strategic plan - portfolio methods - an integrated process of strategic management and marketing
K_W05	has well-ordered, theoretical knowledge in the field of computer-aided management in an enterprise.
K_W6	the well-ordered, theoretical knowledge of forecasting and simulation in an enterprise.
K_W7	has the ordered, theoretical knowledge in the field of integrated management systems, quality management systems and ethics in management .
K_W8	has the ordered, theoretical knowledge of the organization of production systems.
K_W9	has the ordered, theoretical knowledge of project management and innovation
K_W10	has the ordered, theoretical knowledge of decision support systems and knowledge management with regard to ethics.
K_W11	has knowledge of development trends and new developments in the field of management, information technology, manufacturing engineering.
K_W12	has general knowledge necessary to understand social, economic, legal and other non-technical aspects of ethical engineering activities and the importance of taking them into account in engineering practice.
K_W13	has knowledge of marketing and quality management and business management.
K_W14	knows the general principles for the foundation and development of individual entrepreneurship, based on knowledge of the Management and Production Engineering Mechanical
SKILLS	
K_U01	The student is able to obtain information from literature, databases and other sources, integrate, interpret and critically evaluate it as well as to draw conclusions and formulate and sufficiently justify opinions.
K_U02	can work individually and in a team; they are also able to select team members for a specific task , assign tasks for the members and manage a small team.

K_U03	The student is able to obtain, integrate, interpret knowledge, draw conclusions and formulate opinions on the basis of: catalog entries issued by manufacturers of appliances , advertising materials, information obtained from literature, databases and other modern means of communication, which relate to issues of mechanical engineering and management methods in this field.
K_U04	The student is able to prepare, document and elaborate issues for the field of technical sciences and scientific disciplines relevant to the Management and Production Engineering in writing, presenting the results of their research.
K_U05	The student is able to determine the directions of further learning and pursue the process of self-education, in order to increase skills and professional competence with the use of library resources, electronic resources and databases.
K_U06	The student is able to speak at least one foreign language,at the level of B2 + (at least) according to European Framework of Reference for Languages of the Council of Europe, especially English or other foreign languages considered to be the language of international communication in their professional activities and everyday life.
K_U7	Student uses terminology related to management and production engineering in English.
K_U8	The student is able to choose and use appropriate computer applications for calculation, simulation, design and solution verification related to Management and Production Engineering.
K_U9	Student is able to choose the relevant modules and to use integrated management information systems.
K_U10	The student is able to use known analytical, simulational and experimental methods for solving problems of mechanical engineering as well as in the decision-making process for production planning and control.
K_U11	The student is able to select and use appropriate methods of optimization to solve simple research problems related to Management and Mechanical Production Engineering .
K_U12	The student is able to document the progress of work in the form of test or measurements reports and to elaborate the results of the work, to formulate directions for further research and to present them in a clear report.
K_U13	The student can use known methods and mathematical models and computer simulations to analyze and evaluate management and decision-making systems.

K_U14	The student is able to formulate and solve tasks related to production engineering and management; to use a system approach, taking into account ethical, economic, legal and social aspects.
K_U15	The student is able to formulate and test hypotheses related to engineering problems and simple research problems related to Management and Production Engineering.
K_U16	The student is able to assess the usefulness and applicability of the latest techniques and technologies in the area of Management and Production Engineering, in terms of quality and modern marketing.
K_U17	The student is able to plan and carry out engineering experiments, including measurements of parameters of technological processes and computer simulations; to interpret the results and draw conclusions.
K_U18	The student is able to assess the initial costs and the estimated costs of implemented engineering projects; to make a preliminary economic analysis of undertaken engineering activities.
K_U19	Student is able to design a complex manufacturing system and to choose methods for managing the flow of the processes (using innovative methods) to design workplaces and to make a critical analysis of the functioning of the proposed solutions.
K_U20	The student is able to formulate the requirements for supply chain and to design complex logistics system.
K_U21	The student is able to choose the method for decision-making support in management and to introduce modifications of the methods applied.
K_U22	The student is able to design and apply tools of quality control processes and products of mechanical engineering
SOCIAL COMPETENCIES	
K_K01	The student understands the need for learning throughout life, can inspire other people to learn and organize the learning process for them.
K_K02	The student is aware of the importance and understanding of the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for their decisions.

K_K03	The student is able to interact and work in a group accepting various roles
K_K04	The student is able to think and act in a creative and entrepreneurial way
K_K05	The student is aware of the social role of a technical university graduate, and especially understands the need to formulate opinions and to inform the public, e.g. through the mass media, about technological achievements and other aspects of engineering; endeavors to provide such information and opinions in a manner commonly understood, and justifies various points of view.

Course List

Master's Programme, Management nad Production Engineering

90 credits

Semester I								
Course code	course name	Hours						
		Lecture	excercise	laboratory	project	sem	form of pass	ECTS
Mandatory courses								
MD-01-WM-ZIP	Strategic Management (zarządzanie strategiczne)	15	15					3
MD-02-WM-ZIP	Organization of Production Systems (Organizacja systemów produkcyjnych)	15			15		E	4
MD-03-WM-ZIP	Integrated Management Systems (zintegrowane systemy zarządzania)	15			30		E	4
MD-04-WM-ZIP	Business Prognossis and Symulation (prognozowanie i symulacja w przed-sięborstwie)	15		15			E	4
MD-05-WM-ZIP	Project management and innovations (Zarzadzanie projektem i innowacje)	15			15			3
MD-06-WM-ZIP	Decision Support Systems (Systemy wspomagania decyzji)	15			15			3
Conditionaly Elective courses one foreign language from school's ofert must be taken one from MD-08 and one from MD-09 must be taken								
MD-07-WM-ZIP	Professional Foreign Language Skills		30					3
MD-08-WM-ZIP	Design for manufacturing or Design for assembly	15			30			4
MD-09-WM-ZIP	Computer Aided Manufacturing or Cax techniques in production engineer-ing				30			5
		105	**45**	**15**	**135**	**0**		**30**
		Total hours		300				

Semester II				
Course	course name	Hours		

code		Lecture	excercise	laboratory	project	sem	form of pass	ECTS
Mandatory courses								
MD-10-WM-ZIP	Knowledge management (Zarządzanie wiedzą)	15			30		E	4
MD-11-WM-ZIP	Logistic of manufacturing enterprises (Logistyka przedsiębiorstw)	15			30			4
MD-12-WM-ZIP	Quality management (zarządzanie jakością)	15			30		E	4
MD-13-WM-ZIP	Modelling and simulation of production processes Modelowanie i symulacja procesów produkcyjnych	15			30		E	4
MD-14-WM-ZIP	Production controlling	15			15			3
Conditionaly Elective courses one from MD-17 and one from MD-18 must be taken								
MD-15-WM-ZIP	Professional Foreign Language Skills		30					3
MD-16-WM-ZIP	Advanced CAD Modelling and Rapid Prototyping or Advanced Manufacturing Technology				30			4
MD-17-WM-ZIP	Costing for Engineers or B2B Marketing	15			15			4
		90	**30**	**0**	**180**	**0**		**30**
		Total hours		300				

Semester III								
Course code	course name	Hours						
		Lecture	excercise	laboratory	project	sem	form of pass	ECTS
Mandatory courses								
MD-18-WM-ZIP	Master thesis (final project) Praca dyplomowa magisterska				225			20
MD-19-WM-ZIP	Master thesis seminar Seminarium dyplomowe					45		2
MD-20-WM-ZIP	Practice Praktyka							4
Conditionaly Elective courses one from MD-21 and one from MD-22 must be taken								

MD-21-WM-ZIP	Ethics in Managemenet (Etyka w zarzadzaniu) or International project management		15					2
MD-22-WM-ZIP	Environmental Management systems (Systemy zarządzania środowiskiem) or Systems of Occupational Safety Management (Systemy zarządzania bezpieczeństwem pracy)		15					2
		0	**30**	**0**	**225**	**45**		**30**

Total hours 300

3. RELATION TO THE MISSION OF THE UNIVERSITY AND ITS DEVELOPMENT STRATEGY

The University of Zielona Góra strives to become a modern university, established to develop and disseminate scientific knowledge and to educate researchers based on its own resources and its own scientific staff. The University is open to both the latest scientific and technical achievements and societal demands in the field of educational services carried out in the spirit of the common good, taking account of special educational needs of young people with disabilities.

The main objectives of the University of Zielona Góra are:

- scientific research,
- education of specialists in selected fields of humanities, science, technology, economics, computer science, ecology, finance and widely understood art sciences,
- education of its own scientific staff,
- civilizational activities striving for the dissemination of knowledge and culture in the society as well as supporting all forms of social activity fostering its development.
- preparing its graduates to meet the labor market requirements, which has been based on skill-oriented teaching (especially skills to perform specific tasks, including tasks carried out as teamwork). The basis for the outlined specialist education of graduates is their thorough general education - in the field of humanities, mathematics, computer sciences and technology with elements related to economics, marketing and management, and the organization and execution of production processes.

The University actively participates in the life of the region and the city. This activity is most significant in the field of education as well as in developing the cooperation with manufacturing and service industries in the region. The university has provided inhabitants of Lubuskie Province and adjoining regions with educational opportunities for years. In this area,

the university cooperates with more than 250 schools, career guidance centres and regional centers of vocational education, in particular with centers in Poznan and Wroclaw.

Management and Production Engineering is one of the fastest growing technical studies at the University of Zielona Góra, which allows training professionals who can combine knowledge in the field of production engineering, in particular mechanical engineering, as well as economics and management. The graduate has the managerial skills as well as the abilities to solve production engineering problems.

4. GENERAL OBJECTIVES OF EDUCATION AS WELL AS EMPLOYMENT OPPORTUNITIES (TYPICAL WORKPLACES) AND CHANCES OF FURTHER EDUCATION FOR GRADUATES

Management and production engineering is an interdisciplinary direction, which allows training specialists who are able to combine modern engineering knowledge and skills with managerial knowledge and skills. The main objective of education is to acquire skills to solve technical and organizational problems and to use information technology to support management of production enterprises (supply chain management, production planning and control, product design, costs engineering, etc.).

The distinctively profiled technical education with thorough knowledge of information technology, economics and management ensures employment of graduates in enterprises engaged in industrial production, trade, services or the environment as engineers, managers or marketing staff. Graduates of this field of studies can apply for positions in the area of production management, logistics, controlling, engineering design, technology development, quality control, maintenance or sales. Graduates of the second degree may continue their education at doctoral programmes in the field of production engineering.

5. ENTRY REQUIREMENTS FOR CANDIDATES TO THE SECOND CYCLE STUDIES (EXPECTED COMPETENCIES)

The Management and Production Engineering curriculum programme is associated with such programmes as mechanical engineering, management, logistics.

Applicants for the second cycle studies of management and production engineering must have the qualifications and competences required for the graduation from first cycle of the same or related field of studies (completed with the title of engineer). The applicant should have the competence in particular in:

1. knowledge of mathematics, physics, chemistry, computer science enabling the understanding of the fundamentals of physical and chemical as well as the understanding and solving of design tasks in the field of production engineering;
2. ability to use analytical, simulation and experimental methods too formulate and solve engineering tasks;
3. knowledge of the basics of management and economic sciences and managerial skills to design and supervise the existing production systems
4. has knowledge of cost, finance and capital management
5. ability to use analytical, simulation and experimental methods too formulate and solve engineering tasks;
6. is able to manage production processes in a selected range of production engineering;
7. skills related to the interpretation and documentation of the experiment results as well as the presentation and documentation of the results of a project tasks.