



GENERAL INFORMATION	
DEGREE PROGRAMME	Degree Programme in Mechanical and Production Engineering
PERIOD OF EXECUTION	2013-2017
SCOPE	240 ECTS credits
DESCRIPTION	The Degree Programme in Mechanical and Production Engineering provides the skills for the practical application of mechanical engineering either in workshop production engineering (eg. production development), in the design of the machine, or in operating/maintenance work that is specifically linked to production.
LANGUAGE OF STUDY	Finnish
CODE	TKO13S1
DEGREE	Bachelor of Engineering
DEGREE LEVEL	National Qualifications Framework level 6.
TARGET GROUP AND ADMISSION CRITERIA	See: http://www.jamk.fi/download/38509_JAMK_nuorten_hakijanopas_2013_kevyt.pdf
STUDIES	
KEY LEARNING OUTCOMES	<p>Upon graduation from the Degree Programme in Mechanical and Production Engineering, students:</p> <ul style="list-style-type: none">- Are capable of continuous self-development, and a wide range of communications and information retrieval in various work and cultural environments, as well as possessing a strong ethical foundation and an entrepreneurial attitude in their own field. They will acquire the capacity to act as an entrepreneur.- Are capable of technical computing and will understand the technical documentation, as well as being able to understand domestic and foreign publications in the technical field and being able to apply them to their own work.- Understand the importance of automation in the global industry and know about the various levels of implementing automation in an industrial plant, and is able to design and implement a simple control system. Students will have acquired the basics of electrical safety.- Understand the operating principles of and the selection criteria for the main components of the machine.- Are able to perform sustainability calculations and are able to model machine parts and create working drawings for them.- Understand the realities of the global engineering industry and the production industry and are able to perceive engineering production as a whole. Students possess basic skills in production engineering and production economics.



	<p>Students who have specialised in production engineering:</p> <ul style="list-style-type: none">- Are familiar with the different production systems and are able to consider them when making choices.- Are able to oversee production and are familiar with the methods and the software used by it and are able to develop processes for it.- Manage engineering production, in particular in terms of sheet metal products, production technologies, and service production criteria in such a way that they are able to make informed choices and develop production.- Are familiar with the knowledge and skills necessary for the management of production. <p>Students who have specialised in machine design:</p> <ul style="list-style-type: none">- Are capable of developing and designing cost-effective machines and equipment from the point of view of international customers.- Have the ability to make use of modern software and take into account the strength, material and manufacturing technical aspects.- Know the basics of actuator technology and are able to choose the equipment used therein. <p>Students who have specialised in maintenance:</p> <ul style="list-style-type: none">- Master in particular, the business model of production maintenance and its development conditions.- Are able to develop preventive maintenance programmes and will possess the skills to lead them towards practical implementation.- Are able to develop daily maintenance activities.
<p>PROFILE</p>	<p>In the capacity of a mechanical and production engineer, graduates will work on the design and implementation of tasks for the latest technologies in production machine shops, in a variety of machine design tasks, or will be able to take care of the maintenance systems in machine shops. Cooperation between the degree programme and external education institutions and companies will provide students with the opportunity for strong internationalisation. The Degree Programme in Mechanical and Production Engineering especially focuses on sheet metal technology. The perspective of entrepreneurship and an entrepreneurial attitude are also characteristic features.</p> <p>The key themes of the course depend on one's specialisation, the production engineering (with special competence in production technologies, production control, and sheet metal technologies), machine design (general machine design) or maintenance (preventive maintenance) using the most advanced information technology design and maintenance software.</p>

	<p>The staff and students continuously monitor developments in this field in order to provide them with the ability to respond to the challenges of the internationalisation of their business life. During the course of their studies, students will be carrying out project work in cooperation with companies, as well as studying on computer networks and in virtual environments that correspond to reality.</p> <p>The programme provides students with the opportunity to acquire the extensive knowledge and skills that are required for operating in production development tasks, as a machine designer, and as a maintenance engineer.</p>																																			
<p>COURSE STRUCTURE</p>	<div data-bbox="603 611 1544 1400" data-label="Figure"> <table border="1"> <caption>KONE- JA TUOTANTOTEKNIIKAN KOULUTUSOHJELMA 240 op</caption> <thead> <tr> <th>Year</th> <th>Pakolliset perusopinnot</th> <th>Pakolliset ammattiopinnot</th> <th>Vaihtoehtoiset ammattiopinnot</th> <th>Oppinäyte</th> <th>Harjoittelu</th> <th>Vapaasti valittavat</th> </tr> </thead> <tbody> <tr> <td>1. VUOSI</td> <td>17</td> <td>43</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>2. VUOSI</td> <td>30</td> <td>15</td> <td>15</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>3. VUOSI</td> <td>4</td> <td>20</td> <td>30</td> <td>0</td> <td>6</td> <td>0</td> </tr> <tr> <td>4. VUOSI</td> <td>30</td> <td>15</td> <td>0</td> <td>15</td> <td>0</td> <td>0</td> </tr> </tbody> </table> </div> <p>(the figure is explained for students in English)</p>	Year	Pakolliset perusopinnot	Pakolliset ammattiopinnot	Vaihtoehtoiset ammattiopinnot	Oppinäyte	Harjoittelu	Vapaasti valittavat	1. VUOSI	17	43	0	0	0	0	2. VUOSI	30	15	15	0	0	0	3. VUOSI	4	20	30	0	6	0	4. VUOSI	30	15	0	15	0	0
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<p>COURSE CONTENT AND PERFORMANCE</p>	<p>The course includes basic and vocational studies, elective studies, specialization training, and a graduation thesis.</p> <p>As part of their basic course studies, students will examine the natural sciences, languages, communications, ICT skills, and basic machine technology subjects such as manufacturing and material technology. As part of their vocational studies and depending on their area of specialisation, students will focus either on the development of engineering production, machine design, (from the perspective of using sheet metal in particular), or on the design and development of preventive maintenance.</p> <p>The course shall be completed within two semesters from its beginning. The exception is the graduation thesis, practical training, special working life oriented project studies, as well as extensive courses implemented in a number of semesters. In cases where a course remains incomplete, the student shall re-start it.</p>																																			



	<p>In the first contact lesson of a course, a review is carried out of the course's learning objectives and content, along with the different procedures and evaluation criteria; additionally, the possible examination date is agreed upon (the immediate time at which this will be carried out) and the course completion date is announced, after which no further attempts are accepted. Students have the opportunity to try to complete a course a total of three times: during the immediate performance of the course or in two specially determined resit exam times.</p>
LEARNING ASSESSMENT	<p>Learning outcomes are assessed in relation to the course's learning objectives. Assessment decisions are based on the evaluation criteria provided in the course descriptions. Courses are assessed on the assessment scale that is specified in the course description. According to its purpose, the scale may be one of five steps: 5 (excellent), 4 (very good), 3 (good), 2 (satisfactory) and 1 (adequate) or a pass (P) or fail (0). The course has been failed (with a fail (0)) if the student does not achieve the minimum outcomes that are set for the completion of the course.</p> <p>Students have the right to know how the evaluation criteria are applied to their skills. Course performance is recorded in the transcript of records no later than one month after the declared point of completion for the course and always before the end of the academic year.</p>
ACCREDITATION AND RECOGNITION OF PRIOR LEARNING (RPL)	<p>The procedures for accreditation are described in the Degree Regulations and in the Study Guide.</p>
MODE OF STUDY	<p>The main method for the performance of the studies is as follows:</p> <p>Contact study as well as distance learning</p> <p>Contact study as well as distance learning, group work, independent study, online learning, problem based learning, specialization training, project work, entrepreneurial studies, studies supporting internationalisation skills (including courses in English and studies that are carried out abroad).</p>
PROFESSIONAL GROWTH AND KNOW-HOW	<p>During the training, competence is built of profession specific competencies and of the common competence of various professional groups developing transferable skills, in addition to the graduating student's own entrepreneurial skills.</p> <p>Competency areas for the Degree Programme in Mechanical and Production Engineering, where this profession's specific competencies for creating joint transferable skills are:</p> <p>Transferable skills which will help students to become capable of continuous self-development and a wide range of communications and information retrieval in various work and cultural environments, as well as providing them with a strong ethical foundation in their own field.</p> <p>Basic technical skills which will help students to become capable of technical computing, will help them to understand technical documentation, will provide them with an understanding of domestic and foreign publications in the technical field, and will allow them to be able to apply these areas to their own work. Students understand the operating principles of the equipment.</p>



	<p>Basic skills in production engineering: students possess the basic skills in production engineering management that are required for advanced studies.</p> <p>Machine design capability: students are able to develop and design cost-effective machines and equipment from the customer-centred point of view. They have the ability to make use of modern software and to take into account the strength, materials and manufacturing technical aspects. They know the basics of actuator technology and are able to choose the equipment used therein.</p> <p>Maintenance skills: students master the operation model and development conditions of production maintenance. Students are able to develop preventive maintenance programmes and have the capability to lead them to practical implementation. Students are also able to develop daily maintenance activities.</p> <p>Production engineering skills: students master the production technologies for piece goods production; in particular, they learn about engineering production and the basics of service production in such a way that they are able to make informed choices and develop production. They are familiar with the knowledge and skills that are necessary for production management.</p> <p>Operational control and development capabilities: students are familiar with the various production systems and are able to take them into account when making choices. They are able to control the production and are familiar with the methods and the software used therein and are able to develop processes.</p>
QUALIFICATION REQUIREMENTS AND REGULATIONS	<p>The profession does not have specific eligibility requirements based on legislation.</p>
ADDITIONAL INFORMATION	<p>Students may be charged separately for the cost of materials where such costs correspond to real life acquisitions or production costs in terms of teaching materials, tools, equipment, or supplies that remain in the student's possession after their education has been completed. If a student obtains similar materials from other sources, he or she is not charged for the cost of materials (Government Decree 1230/2009 2 §).</p> <p>Bachelor's degree programme is free for students.</p>
GRADUATION	<p>The requirement for the receipt of the certificate of Bachelor degree is that students complete the studies for their degree programme during the study period in accordance with the personal learning plan (PLP).</p> <p>JAMK University of Applied Sciences provides students with a certificate of completion of the Bachelor's degree (210, 240 or 270 ECTS credits). A transcript is attached to the certificate.</p>
EMPLOYMENT AND FURTHER STUDIES	
EMPLOYMENT OPPORTUNITIES	<p>The degree programme prepares students for development and specialist positions or for various types of design tasks in terms of industrial production. In addition, it provides the skills required for operating as an entrepreneur and supplies experience in working in managerial positions.</p>



	<p>Production engineering: production development and monitoring tasks. Where individuals possess more experience, production management can be added to this.</p> <p>Machine design: the basic machine design tasks.</p> <p>Maintenance: planning and operating maintenance tasks in terms of production maintenance.</p>
OPPORTUNITIES FOR POST-GRADUATE STUDIES	<p>After graduation and after about three years of a working life phase, the students of a Bachelor's degree programme can continue their studies in a Master's degree programme. The Master's degree at the University of Applied Sciences is a university level Master's degree. Students can also continue their studies by applying for courses such as, for example, the Master's degree programmes at universities or for an equivalent training course. After the completion of Bachelor's studies it is, of course, also possible to continue in foreign institutions of higher education on the Master's level degree programmes.</p> <p>The University of Applied Sciences also offers continuing education opportunities for specialisation studies, learning agreement type in-service training, as well as in working life based continuing education. If a student graduates from the Master's degree programme, he or she can get the opportunity to continue their studies in the scientific or artistic studies at universities (37 §/558/2009). All further studies must be applied for separately.</p>
OTHER INFORMATION	
HEAD OF THE DEGREE PROGRAMME	Harri Peuranen, programme coordinator, harri.peuranen@jamk.fi, +358 (0)400 647069
PROGRAMME PLANNING PROCESS	<p>The aim of the Degree Programme in Mechanical and Production Engineering is to produce engineers who meet the needs of business life. Based on this, the learning objectives of the degree programme have been defined on the basis of the current and future needs of the business life, benefiting from the staff of companies, experts in the field and public and prospective studies. The Head of Department together with the programme coordinator are responsible for monitoring the progress for planning the learning objectives for the Degree Programme in Mechanical and Production Engineering and for the management of resources.</p> <p>The preparation of learning objectives is performed by the working group, which consists of the teachers of the degree programmes. Members of the working group will negotiate with the representatives of business life in their competence area when it comes to the requirements of working life skills. The working group collects the learning objectives needed and determines them for the degree programme.</p> <p>Learning objectives are divided into competence areas and the competencies therein and included into the structure of the degree programme in the form of various courses. Learning objectives are reviewed in the Advisory Committee, which consists of business life representatives, student members, Head of Department and programme coordinator. The Advisory Committee will meet yet again to investigate the compliance of the structure of the degree programme to the skill requirements of the working life.</p>
SCHOOL	JAMK University of Applied Sciences School of Technology, Degree Programme in Mechanical and Production Engineering Rajakatu 35, 40200 Jyväskylä



QUALITY MANAGEMENT	<p>JAMK University of Applied Sciences is using the quality management system that has been audited by the Finnish Higher Education Evaluation Council (FINHEEC). Education is developed on the basis of course feedback collected from students.</p> <p>In addition to course feedback, in School of Technology is used mid-term feedback based on which the teacher can make immediate corrective measures to their teaching. See more information in the JAMK's quality guide of School of Technology.</p> <p>The principles of the curriculum are approved by the JAMK University of Applied Sciences Academic Board and by the Vice Rector of the degree programme specific curriculum.</p>
PEDAGOGICAL PRINCIPLES	<p>The degree programme is implemented in accordance with the pedagogical principles established by the University of Applied Sciences Academic Board.</p> <p>For more information: http://www.jamk.fi/english/aboutus/facts/pedagogical-principles</p>
ETHICAL PRINCIPLES	<p>The students and employees of JAMK University of Applied Sciences operate jointly according to the accepted (by JAMK Academic Board on 15.12.2010) ethical principles. For more information: http://www.jamk.fi/english/aboutus/facts/ethicalprinciples</p>
LAST UPDATE	20.12.2012
CURRICULUM APPROVED	21.12.2012 Heikki Malinen, Vice Rector