Master Programme in Production and Materials Engineering

Programme code: TAPRR
Scope: 120 credits
Cycle: Second
Approved by: Programme Board M
Validity: 2019/2020
Date of approval: 27 March 2019
In addition to the syllabus, general regulations and information for the Faculty of Engineering apply to this programme.

1 Aim and outcomes

1.1 Aim

The overall aim is to develop knowledge, skills and competence in the area of Production and Materials Engineering.

1.2 Outcomes for a Degree of Master of Science (120 credits)

(Higher Education Ordinance 1993:100)

Knowledge and understanding

For a Degree of Master of Science (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills

For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work
- demonstrate the ability in speech and writing both nationally and internationally to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgement and approach

For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

1.3 Specific outcomes for a Degree of Master of Science (120 credits)

For a Degree of Master of Science in Production and Materials Engineering (120 credits) students must demonstrate the knowledge and skills required for working independently in research and development or in another advanced context within the area of Production and Materials Engineering.

Knowledge and understanding

For a Degree of Master of Science in Production and Materials Engineering students shall

- demonstrate knowledge and understanding in Production and Materials Engineering, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field (e.g. manufacturing processes, relationship between materials behaviour and performance of the manufacturing process, manufacturing systems, manufacturing costs, production engineering, industrial automation).
- understand and be able to apply the principles, processes, practices and tools of Production and Materials Engineering, and
- demonstrate knowledge and insight into current research and development work in the field, and
- demonstrate specialised methodological knowledge in the field of Production and Materials Engineering, and
- understand the interdependencies of functional areas.

Competence and skills

For a Degree of Master of Science in Production and Materials Engineering (120 credits) students shall

- demonstrate the ability to systematically integrate knowledge and analyse, assess complex phenomena, issues and situations within Production and Materials Engineering even with limited information
- demonstrate the ability to identify and formulate issues within Production and Materials Engineering, using appropriate methods.
- demonstrate the ability in communication, in terms of speech and writing both nationally and internationally to report clearly and discuss the conclusions and the knowledge and arguments, and
- demonstrate the skills required for participation in research and development work, with Production and Materials Engineering (e.g. literature review, research problem formulation, research design/methodology, data collection/analysis, dissemination etc.).

Judgement and approach

For a Degree of Master of Science in Production and Materials Engineering (120 credits) students shall

- demonstrate the ability to make assessments in Production and Materials Engineering informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

- appreciate the merits of collaborating with practitioners and solving problems that are relevant to industry and society at large.

1.4 Further studies
On completion of the second-cycle degree, students have basic eligibility for third-cycle studies.

2 Programme structure
The structure of the programme provides compulsory courses with a range of learning experiences to gain general and deep knowledge in Production and Materials Engineering and related subjects compared to knowledge obtained from undergraduate level. The elective courses are devoted to specific topics regarding the Production and Materials Engineering, so that future graduates are able to work at high level in the various fields of Production Engineering.
The courses included in the Master Programme basically has the contents of Manufacturing Processes and Materials Engineering, Industrial Automation as well as Production Systems, aimed at preparing students for three different professionals:
- Manufacturing processes
- Industrial automation
- Production system

The courses and the Degree Project are planned to include relevant and contemporary issues within the field in order to fulfil the aim and learning objectives.

2.1 Courses
The courses included in the programme are indicated in the timetable. In addition to these courses, students are entitled to accreditation of 7.5 credits of courses in Swedish (organised by Lund University for exchange students).

3 Specific admission requirements

3.1 Admission requirements
A Bachelor's degree in mechanical engineering, industrial engineering or equivalent. Completed basic courses in algebra and calculus corresponding to at least 20 credits/ECTS, one course in manufacturing engineering and/or production technology and one course in engineering materials. English 6.

4 Degree

4.1 Degree requirements
For a Degree of Master of Science (120 credits) students must successfully complete courses comprising 120 credits, including a degree project worth 30 credits. 90 credits must be second-cycle credits and 60 credits must be in the main field of study, including the degree project.

4.1.1 Degree project
For a Degree of Master of Science (120 credits) students must complete an independent project (degree project) of no less than 30 credits as part of the course requirements. The degree projects included in the programme are listed in the timetable.

4.2 Degree and degree certificate
When students have completed all the degree requirements, they are entitled to apply for a degree certificate for a Master of Science (120 credits). Main Field of Study: Production and Materials Engineering.