



Faculty of Technology and Science  
Mechanical and Materials Engineering

## Syllabus

### Course Approval

The syllabus was approved by the Faculty Board of Technology and Science on 29 September 2011, and is valid from the Spring semester of 2010 at Karlstad University.

**Course Code:** MSGC20

**Production Systems II, 7.5 ECTS Credits**  
**(Produktionssystem II, 7.5 Swedish credit points)**

**Degree Level:** Bachelor

**Progressive Specialisation:** G1F (First cycle, has less than 60 credits in first-cycle course/s as entry requirements)

### Language of Instruction

Swedish

### Prerequisites

Production Systems I, 15 ECTS cr or equivalent

### Major Field of Study

MTA (Mechanical Engineering)

### Learning Outcomes

The aim of the course is that students acquire further knowledge in the area of production in terms of a systems perspective. The course builds on Production Systems I.

Upon completion of the course, students should be able to:

Quality and operations development

- give an account of theoretical concepts of quality assurance and quality development,
- apply the methods and models of statistical process control and design of experiments in practice,
- give an account of strategies and tools for production development.

Reliability technology

- give an account of the basics of different maintenance strategies and methods such as TPM and the connection between maintenance and reliability,
- apply methods such as FTA (Fault Tree Analysis) and FMEA in practice.

Lean production

- give an account of lean production as an overall concept and apply basic principles such as 5S, JIT (Just in Time), 6 sigma, visual control, team development and continuous improvement,
- apply lean principles to an actual case.

### Content and Form of Instruction

The course focuses on production systems control, quality and improvement. Leadership and organization aspects of quality and reliability are treated in terms of TQM (Total Quality Management) and TPM (Total Productive Maintenance). Also treated are models for quality improvement and operations development along with methods to control and ensure quality in a company's whole product development process such as SPC (Statistical Process Control) , DOE (Design Of Experiments) and FMEA (Failure Mode and Effect Analysis). In the segment lean production, there is a specialisation primarily in value stream mapping. Instruction is in the form of lectures, field trips, seminars and case studies.

#### Reading List

See separate document.

#### Examination

Assessment is based on a written exam, mandatory literature seminars, laboratory sessions and on hand-in assignments and case reports.

#### Grades

One of the grades Fail (U), Pass (G), or Distinction (VG) is awarded in the examination of the course.

#### Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

#### Course Certificate

A course certificate will be provided upon request.

#### Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.

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