JÖNKÖPING UNIVERSITY
School of Engineering

COURSE SYLLABUS

Finite Element Analysis for Material Efficient Design of Cast Components, 2.5 credits

Finita elementanalys för materialeffektiv konstruktion av gjutgods, 2,5 högskolepoäng

Course Code:	T2FEFM	Education Cycle:	Second-cycle level
Confirmed:	May 06, 2026	Disciplinary domain:	Technology
Valid From:	Jan 18, 2027	Subject group:	Mechanical Engineering
		Specialised in:	A1N Second cycle, has only first-cycle course/s as entry requirements
		Main field of study:	Mechanical Engineering

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Knowledge and Understanding

- demonstrate knowledge of the fundamental principles of casting simulations

Skills and Abilities

- demonstrate the ability to perform solidification simulations and subsequent results-mapping using commercial finite element software

Judgement and Approach

- demonstrate the ability to assess the validity of finite element models
- demonstrate the ability to critically evaluate simulation results in relation to functional and structural requirements

Content

The course introduces casting simulation and moves on to give the student the tools and skills to perform FEA of cast metal components in their everyday work life and critically interpret the result.

The course includes the following elements:

- Introduction to casting simulations, and results-mapping onto structural meshes
- Material models for FE analysis of cast components
- Interpretation of finite element results
- Model verification and result credibility

Type of Instruction

Lectures, computer tutorials, computer-based assignments, and exercises.

Language of instruction is English.

Entry Requirements

Passed courses corresponding to 180 credits in first-cycle studies, including at least 90 credits within the main field of Mechanical Engineering OR passed courses of at least 40 ECTS in the main field of study within Engineering and/or Technology and at least 1 year of work experience within Mechanical Engineering industry OR at least 4 years of work experience within Mechanical Engineering industry. Proof of English proficiency is required. Proof of fundamental FEA skills is required. Basic CAD proficiency is recommended.

Examination and Grades

The course is graded Pass (G) or Fail (U).

Registration of examination:

Name of the Test	Value	Grading
Assignment	2.5 credits	G/U

Course Literature

Please note that the course literature may be revised up to eight weeks before the start of the course.

Recorded lectures, online tutorials and other course materials are available on Canvas.