



COURSE SYLLABUS

Additive Manufacturing: Concept, Methods, Applications , 5 credits

Additiv tillverkning: Koncept, Metoder, Applikationer, 5 högskolepoäng

Course Code: TATR21	Education Cycle: Second-cycle level
Confirmed by: Dean Mar 1, 2021	Disciplinary domain: Technology
Revised by: Director of Education Jan 20, 2022	Subject group: MT1
Valid From: Aug 1, 2022	Specialised in: A1N
Version: 2	Main field of study: Production Systems

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- demonstrate comprehension of fundamental concepts and basic elements of additive manufacturing (AM) technologies
- demonstrate comprehension of AM processing steps from conceptualization to production and post-processing
- demonstrate comprehension of requirements of AM technologies, including hardware, software, materials, and complementary technologies

Skills and abilities

- demonstrate required knowledge and skills to develop in-house AM productions
- demonstrate the ability to identify AM service providers and recognize their core competencies for outsourcing purposes

Judgement and approach

- demonstrate the ability to evaluate return on investment (ROI) based on case-studies and detailed analyses of cost components
- demonstrate the ability to evaluate new market opportunities

Contents

This course aims at establishing a comprehensive knowledge base within the concept of AM.

The course includes the following elements:

- Definition of basic concepts, introduction of technologies, advantages and limitations of additive manufacturing
- Classification of technologies, main characteristics, and applications

- Cataloguing workflow by covering steps from CAD generation to manufacturing and post-processing
- Comprehension of design for AM (DFAM) and its implications for manufacturers
- Exploration of applications and value propositions through studying business cases

These elements cover the most relevant topics associated with making parts/products through AM technologies. The syllabus provides professional insights into implementation of AM processes within organizations by bridging the gap between AM capabilities and the skills that are required to implement them across industries.

Type of instruction

The course is presented via video lectures, interviews with experts, studying papers and technical reports and group discussions.

The teaching is conducted in English.

Prerequisites

The applicant must have 40 credits in the main field of study, Technology, and at least 2 years of relevant work experience in the industry (or the equivalent).

Examination and grades

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

The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Seminars	3 credits	U/G
Project report	2 credits	U/G

Course literature

The literature list for the course will be provided 8 weeks before the course starts.

Additive Manufacturing Technologies – 3D Printing, Rapid Prototyping, and Direct Digital Manufacturing; Gibson, Ian, Rosen, David, Stucker, Brent

The 3D Printing Handbook – Technologies, Design, and Applications; Ben Redwood, Brian Garret, Filemon Schöffner

Scientific papers and journals