



## KURSPLAN

# **Additiv tillverkning: Koncept, Metoder, Applikationer, 5 högskolepoäng**

*Additive Manufacturing: Concept, Methods, Applications, 5 credits*

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|------------------------|---------------|---------------------------|-------------------|
| <b>Kurskod:</b>        | TATR21        | <b>Utbildningsnivå:</b>   | Avancerad nivå    |
| <b>Fastställd av:</b>  | VD 2021-03-01 | <b>Utbildningsområde:</b> | Tekniska området  |
| <b>Gäller fr.o.m.:</b> | 2021-08-01    | <b>Ämnesgrupp:</b>        | MT1               |
| <b>Version:</b>        | 1             | <b>Fördjupning:</b>       | A1N               |
|                        |               | <b>Huvudområde:</b>       | Produktionssystem |

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### Lärandemål

After a successful course, the student shall

Kunskap och förståelse

- 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

Färdighet och förmåga

- 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

Värderingsförmåga och förhållningssätt

- 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

### Innehåll

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.

### Undervisningsformer

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

Undervisningen bedrivs på engelska.

### Förkunskapskrav

40 högskolepoäng inom huvudområdet Teknik samt minst 2 års yrkeserfarenhet inom relevant område i industrin (eller motsvarande kunskaper).

### Examination och betyg

Kursen bedöms med betygen Underkänd eller Godkänd.

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

Poängregistrering av examinationen för kursen sker enligt följande system:

| Examinationsmoment | Omfattning | Betyg |
|--------------------|------------|-------|
| Seminarier         | 3 hp       | U/G   |
| Projektrapport     | 2 hp       | U/G   |

### Kurslitteratur

The literature list for the course will be provided one month 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