



## KURSPLAN

# Formmaterial i gjuteriteknik, 3 högskolepoäng

*Moulding Materials in Foundry Technology, 3 credits*

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<b>Kurskod:</b>	TFGS26	<b>Utbildningsnivå:</b>	Avancerad nivå
<b>Fastställd av:</b>	VD 2016-03-01	<b>Utbildningsområde:</b>	Tekniska området (95%) och samhällsvetenskapliga området (5%)
<b>Gäller fr.o.m.:</b>	2016-08-01	<b>Ämnesgrupp:</b>	MA2
<b>Version:</b>	1	<b>Fördjupning:</b>	A1F
<b>Diarienummer:</b>	JTH 2016/1129-313	<b>Huvudområde:</b>	Produktutveckling

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### Lärandemål

After a successful course, the student shall

Kunskap och förståelse

- show familiarity with the complete range of different moulding materials used in foundry technology, including the various types of aggregates as refractory, inorganic and organic binder systems, coatings, additives, tools, etc.
- display understanding of the most important mould and core making methods used in the foundries.

Färdighet och förmåga

- demonstrate skills of performing the significant quality control measurements of moulding aggregates and moulding mixtures.
- demonstrate the ability to evaluate these measurements and to produce relevant information for the casting manufacturing process.

Värderingsförmåga och förhållningssätt

- demonstrate the ability to choose the suitable type of moulding material/mould or core making method necessary for the manufacturing of different types of castings.

### Innehåll

This course provides a general overview of different moulding materials, mould/core making methods and quality control measurements. The main aim of the course is to enhance the knowledge by giving explanations to the mould and core making processes commonly employed.

The course includes the following topics

- Introduction to Moulding Materials
- Moulding Aggregates, Measurements of Sand Properties
- Chemically Bonded Systems: Cold and Thermosetting Processes, Quality Control
- Fundamentals of Green Sand Moulding, Quality Control
- Moulding and Core making Methods, Reclamation

## Undervisningsformer

Lectures, entry assignment, weekly quizzes, discussion forums, laboratory exercises.

Undervisningen bedrivs på engelska.

## Förkunskapskrav

Passed courses at least 90 credits within the major subject in Mechanical Engineering, and 21 credits Mathematics and Component Casting, 6 credits, and Melting and Casting of Ferrous Alloys, 3 credits. English Language requirements corresponding to English 6 or English B in the Swedish upper secondary school (eller motsvarande kunskaper).

## Examination och betyg

Kursen bedöms med betygen 5, 4, 3 eller Underkänd .

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Examination <sup>1</sup>	2 hp	5/4/3/U
Laborationer <sup>2</sup>	1 hp	U/G

<sup>1</sup> Bestämmer kursens slutbetyg vilket utfärdas först när samtliga moment godkänts.

<sup>2</sup> Laboratory exercises are designed to cover a wide variety of the lecture materials, and also the individual topics. Passing all of the labs are mandatory to complete the course. Labs 1-2 will be online and Labs 3-4 will cover 1 day on campus.

## Övrigt

Laboratory exercises are designed to cover a wide variety of the lecture materials, and also the individual topics. Evaluation of laboratory exercises are graded with Pass (G) or Fail (U). Passing all of the labs are mandatory to complete the course. Labs 1-2 will be online and labs 3-4 will cover 1 day on campus.

## Kurslitteratur

The literature list for the course will be provided one month before the course starts.

### Mandatory literature:

ASM Metals Handbook Volume 15, on-line available via the University Library

J.R. Brown - Foseco Ferrous and Non-ferrous Foundryman's Handbook

Lecture slides and additional literature provided in PingPong.

### Reference literature:

Chemically Bonded Cores and Moulds - An Operator's Manual for the use of chemically bonded, self-setting sand mixtures - American Foundry Society

Principles of Sand Control - American Foundry Society

C.W. Ammen - The Complete Handbook of Sand Casting

J. Campbell - Complete Casting Handbook, 1st edition, Chapter 4, 15.