



LTH

FACULTY OF
ENGINEERING

Course syllabus

Pulverteknologi Powder Technology

FKMN05, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED M

Date of Decision: 2023-04-11

General Information

Elective for: MPRR1

Language of instruction: The course will be given in English

Aim

The aim of the course is to help the student acquire a deep understanding of Powder Materials and Powder Metallurgy fundamentals and their Applications.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be familiar with commonly used powder materials.
- know relevant structure-property correlations
- know powder treatment and processes for producing powder products.

Competences and skills

For a passing grade the student must

- be able to characterize powder materials and products.
- be able to design processes for treating powders and powder products to achieve desired properties.

Judgement and approach

For a passing grade the student must

- demonstrate the ability to choose suitable powder materials for different applications.

- demonstrate the ability to analyse the behaviour of powder products.
- demonstrate the ability to make written and oral presentations of powder metallurgical concepts and processes.

Contents

Metallic and ceramic powders. Powder characterisation. Powder production methods. Powder compaction. Isostatic pressing. Sintering of powder compacts. Diffusion and surface phenomena in sintering. Liquid phase sintering. Sintering of steel and cemented carbide powders. Powder products and their usage.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Examination takes place through compulsory assignments and projects with oral and written presentation. Optional quizzes for continuous knowledge assessment. In the assignments, the students work individually and in the projects in groups of 3–5 students. Approved assignments and projects are required for a passing grade.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: Materials Engineering, Basic Course and/or Advanced Materials Technology and Linear Algebra, Calculus in One Variable, Thermodynamics and Fluid Mechanics and a course in Physics.

The number of participants is limited to: No

The course might be cancelled: If the number of applicants is less than 12.

Reading list

- Randall M. German: Powder Metallurgy and Particulate Materials Processing. Metal Powder Industries Federation, 2005, ISBN: 0-9762057-1-8.

Contact and other information

Course coordinator: Professor Dmytro Orlov, dmytro.orlov@material.lth.se

Course administrator: Rose-Marie Hermansson, rose-marie.hermansson@mel.lth.se

Course homepage: <http://www.material.lth.se>

Further information: The course is given every alternate year (2023, 2025 ...) during the Spring Term (last quarter)