



LUND
UNIVERSITY

Faculty of Science

KEMA91, Introduction to Biomaterials, 3 credits *Introduktion till biomaterial, 3 högskolepoäng* First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2022-12-14 to be valid from 2022-12-14, spring semester 2023.

General Information

The course is a free standing first-cycle course in chemistry and provides an introduction to biomaterials.

Language of instruction: English

Main field of studies

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Depth of study relative to the degree requirements

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The course gives students a basic introduction to biomaterials in biomedicine applications and their advantages and limitations. The key definitions and concepts will be explained and discussed. Related treatments such as sterilisation, surface modifications, drug delivery and tissue engineering will also be discussed.

Knowledge and understanding

On completion of the course, the student shall be able to:

- describe different materials used in biomedical applications, such as metal, polymer, inorganic, and natural materials such as collagen
- account for different methods for characterisation of the materials
- describe the fundamentals of drug delivery
- account for the basics of tissue engineering
- describe biomaterials basics.

Competence and skills

On completion of the course, the student shall be able to:

- use materials in biomedicine applications and characterise their physical and chemical properties
- apply and discuss different analytical methods
- propose a design procedure for biomaterials and its roadmap before the product can be utilised on patients.

Judgement and approach

On completion of the course, the student shall be able to:

- discuss how tissue engineering and drug delivery have improved human life
- evaluate and discuss various materials and their properties for tissue engineering and drug delivery .

Course content

The course provides specialised knowledge of biomaterials, their characteristics, and their critical role in biomedicine application.

Course design

Teaching consists of lectures and project work. Participation in project work and associated elements is compulsory.

The course is offered mainly as a distance learning course and makes use of an online learning platform and digital tools. Students are required to participate under these conditions, and to have access to a computer with an Internet connection as well as functioning speakers, microphone and web camera. The department will provide information about the technical requirements

Assessment

Assessment takes the form of a written project report, an oral presentation at the end of the course, as well as participation in compulsory components.

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.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass.

For the grade of Pass on the whole course, the student must have Pass grades on the written report and the oral presentation.

Entry requirements

To be admitted to the course, students must have proficiency in English equivalent to English 6/B from a Swedish upper secondary school and have passed 30 credits in natural science studies, including knowledge equivalent to:

- KEMA20 General Chemistry, 15 credits
- KEMA01 Organic Chemistry - Basic Course, 7.5 credits
- KEMA03 Biochemistry - Basic Course, 7.5 credits.

Further information

The course is given by the Department of Chemistry, Lund University.

Subcourses in KEMA91, Introduction to Biomaterials

Applies from V23

- 2301 Project report, 2,0 hp
Grading scale: Fail, Pass
- 2302 Oral presentation, 1,0 hp
Grading scale: Fail, Pass