EE-526

Introduction to bioengineering

Maerkl Sebastian

Cursus	Sem.	Type
Electrical and Electronical Engineering	MA2, MA4	Opt.
Microtechnics	BA6, MA2, MA4	Opt.
Robotics	MA2, MA4	Opt.

Language of teaching	English
Credits	3
Session	Summer
Semester	Spring
Exam	Written
Workload	90h
Weeks	14
Hours	**3 weekly**
Lecture	2 weekly
Exercises	1 weekly
Number of positions	

Summary

This course provides engineering students with a foundational understanding of bioengineering, a multidisciplinary field that integrates principles of biology, chemistry, and engineering.

Content

This course serves as an entry point for engineering students with limited background in biology to explore the interdisciplinary realm of bioengineering. From the fundamentals of cell biology to cutting-edge topics like synthetic biology and microfluidics, students will gain insight into how biological principles intersect with engineering to drive innovation. The course emphasizes key concepts, techniques, and applications, preparing students to apply engineering principles to biological systems, laying the groundwork for future advancements in healthcare, biotechnology, and beyond.

Course outline:
- General Introduction
- Cell Biology
- DNA and RNA
- Proteins
- Biochemistry
- Molecular Interactions
- Techniques and Methods
- Microfluidics
- Biotechnology
- Molecular Diagnostics
- Synthetic Biology

Learning Outcomes

By the end of the course, the student must be able to:

- Explain the fundamental concepts of biology and how they relate to engineering
- Choose appropriate techniques and methods when studying or engineering biological systems
- Integrate engineering and biological know-how
- Develop new bioengineering techniques and methods
- Explain the current state-of-the-art in various bioengineering domains.

Assessment methods

Written mid-term and final exam.