

CC6 Sports Engineering (LC)

LEARNING OBJECTIVES

The Sports Engineering track aims to train mechanical engineers with specific skills in designing, producing, and optimizing sports equipment. The learning outcomes primarily focus on a deep understanding of the principles of biomechanical engineering applied to sports. Therefore, students will need to acquire different skills related to sports and its lifecycle. Graduates will gain practical skills necessary for designing, developing, and testing innovative sports equipment. They will become familiar with emerging technologies, such as wearable sensors, 3D printing, composite materials, artificial intelligence, and performance optimization using numerical and mathematical models.

PRE-REQUISITES

The main requirement for prospective Sports Engineering students is a passion for sports. Bachelor's degree holders in Engineering opting for the Sports Engineering specialization do not require different prerequisites compared to other Mechanical Engineering tracks. However, strong skills in mathematics and physics and a strong inclination towards experimental activities are recommended.

LEARNING OUTCOMES

A mechanical engineer specializing in Sports Engineering is a professional with a broad cultural background. In-depth study of subjects bridging mechanical and biomedical engineering enables them to tackle complex problems in both fields.



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JOB OPPORTUNITIES

Graduates of the Sports Engineering track can aspire to successful careers in companies specializing in designing or manufacturing sports equipment. The diverse skill set acquired throughout the program opens doors to various sectors closely tied to sports or where human interaction is paramount. Career opportunities extend beyond traditional sports equipment roles to encompass areas such as safety equipment, rehabilitation tools, training gear, or even enhancing the ergonomics of machinery.

PARTNER UNIVERSITIES

Currently, there are no specific student mobility agreements other than those established by the university. Research collaborations are active with leading companies in the sports field, sports medicine centres, sports medicine universities, and international-level teams or athletes.

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1 YEAR COURSES 60 ECTS

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ECTS

<u>Data Analysis for Mechanical Systems A</u>	10
<u>Dynamics of Mechanical Systems</u>	5
<u>Advanced Machine Design</u>	10
<u>Production Management</u>	5
<u>Materials for Sport and Rehabilitation</u>	5
<u>Sports Physiology for Engineering</u>	5
<u>Manufacturing and De-manufacturing of Sport Equipment</u>	10
<u>Sports Biomechanics and Evaluation of Human Performance</u>	10

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2 YEAR COURSES

40 ECTS + 20 ECTS Master's Thesis

15 ECTS

	ECTS
<u>Collaborative Robotics</u>	5
<u>Finite Elements Analysis in Sport Equipment Design</u>	5
<u>Virtual and Augmented Reality for Sport Engineering</u>	5

25 ECTS

	ECTS
<u>Data Visualization for Sport</u>	5
<u>Industrial Design Studio for Wearable Sport</u>	5
<u>Paralympics and Sport Rehabilitation</u>	5
<u>Energy Systems for Sustainable Engineering</u>	5
<u>Laboratory of Materials and Damage Analysis</u>	10
<u>Innovation Management</u>	5
<u>Value Analysis in Tech Sport Business</u>	5
<u>Technologies for Artificial Intelligence</u>	5
<u>Sport Strategies and Data Science</u>	5