Medicinski fakultet u Rijeci

IZVEDBENI NASTAVNI PLAN
2025/2026

Za kolegij

Robotics in Medicine

Studij:	**Medical Studies in English (R)** (izborni) Sveučilišni integrirani prijediplomski i diplomski studij
Katedra:	**Centar za biomodeliranje i inovacije u medicini**
Nositelj kolegija:	**izv. prof. dr. sc. Maričić Sven**
Godina studija:	**3**
ECTS:	**1.5**
Stimulativni ECTS:	**0 (0.00%)**
Strani jezik:	**Mogućnost izvođenja na stranom jeziku**

Podaci o kolegiju:

Utilizing robotic systems in biomedicine and pharmaceutical manufacturing, along with the integration of cutting-edge information and communication technologies within the virtual space of preclinical environments. Acquainting students with a several robotic systems, providing an technology introduction to biotechnological applications and robotics laws. The structure and operational principles of robotic systems, developing skills in their use and navigating within virtual 3D space.

Popis obvezne ispitne literature:

Popis dopunske literature:

Nastavni plan:

Seminari popis (s naslovima i pojašnjenjem):

Introduction to the course. A brief overview of robotics and technology.

Basic terms and concepts of robotic systems in medicine. 3D space mapping.

Coordinates, measurement units and their conversion.

Use and navigation in coordinate space. Analysis and presentation of the used measurement units. Conversion.

Parts of the robotic system.

Structure of the robotic system. Principles and working principles. Control structure. Overview of standards and usage protocols.

Application in biomedicine.

Presentation and analysis of the application of robotics in biomedicine. Fundamentals of virtualization in a laboratory environment.

Computer assistance

- Computer development environments.
- Principles of operation.
- Overview of used solutions.
- Demonstration of the operation of a manipulative robotic arm with 4 degrees of freedom of movement (DoF).

Computer assistance, continued.

Application of artificial intelligence (AI). Presentation of different technological solutions. Planning and designing robotic systems in the biomedical field.

The development trend of robotic systems.

Overview and development guidelines. The future of robotics in medicine. Advanced forms of use - thought control.

Obveze studenata:

Regular attendance of classes, writing of a seminar paper.

Ispit (način polaganja ispita, opis pisanog/usmenog/praktičnog dijela ispita, način bodovanja, kriterij ocjenjivanja):

Ostale napomene (vezane uz kolegij) važne za studente:

Uporaba robotskih sustava u biomedicini i proizvodnji lijekova. Razvoj informacijskih i komunikacijskih tehnologija virtualnog prostora u predkliničkom okruženju. Upoznavanje studenata s različitim robotskim sustavima. Upoznavanje s biotehnološkim smjernicama i zakonima robotike. Građa i načela rada robotskih sustava te vještine korištenja i snalaženje u 3D prostoru.

SATNICA IZVOĐENJA NASTAVE 2025/2026

Robotics in Medicine

Seminari (mjesto i vrijeme / grupa)
20.03.2026
Introduction to the course. A brief overview of robotics and technology.: • ONLINE (10:00 - 11:30) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]
03.04.2026
Coordinates, measurement units and their conversion.: • ONLINE (10:00 - 12:15) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]
16.04.2026
Parts of the robotic system.: • ONLINE (11:00 - 13:00) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]
24.04.2026
Application in biomedicine.: • ONLINE (09:00 - 12:15) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]
05.05.2026
Computer assistance: • ONLINE (18:15 - 19:45) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]
06.05.2026
Computer assistance, continued.: • ONLINE (17:00 - 19:00) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]
05.06.2026
The development trend of robotic systems.: • ONLINE (11:30 - 13:15) [1626]   ○ RiM
izv. prof. dr. sc. Maričić Sven [1626]

Popis predavanja, seminara i vježbi:

SEMINARI (TEMA)	Broj sati	Mjesto održavanja

Introduction to the course. A brief overview of robotics and technology.	4	ONLINE
Coordinates, measurement units and their conversion.	3	ONLINE
Parts of the robotic system.	4	ONLINE
Application in biomedicine.	4	ONLINE
Computer assistance	4	ONLINE
Computer assistance, continued.	3	ONLINE
The development trend of robotic systems.	3	ONLINE

ISPITNI TERMINI (završni ispit):