[Medicinski fakultet u Rijeci]

Curriculum
2024/2025

[Za kolegij]

Artificial Intelligence

Study program:	**Medical Studies in English (R)** (elective) [Sveučilišni integrirani prijediplomski i diplomski studij]
Department:	**[Centar za biomodeliranje i inovacije u medicini]**
Course coordinator:	**izv. prof. dr. sc. Maričić Sven**
Year of study:	**2**
ECTS:	**1.5**
Incentive ECTS:	**0 (0.00%)**
Foreign language:	**Possibility of teaching in a foreign language**

Course information:

Overview of the field and development of artificial intelligence (UI). The Turing Test. Importance and perspectives of artificial intelligence in biomedicine. Topology of neural networks. Methods and techniques of artificial intelligence. Basic concept of machine learning. Application of neural networks, genetic algorithm. Robotics and artificial intelligence in the biomedical field. Working with data – assessment of basic parameters through image recording. The perspective of AI in biomedical systems. Application trends and direction of future development.

List of assigned reading:

- Russel S., Norvig P.: Artificial Intelligence: A Modern Approach, 2021, ISBN: 978-0134610993
- Topol E.: Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again, 2019, ISBN: 978-1541644632
- Agah A.: Medical Applications of Artificial Intelligence, CRC Press 2017, ISBN: 978-1138072275

List of optional reading:

- Smith B., C.: The Promise of Artificial Intelligence, MIT press 2019, ISBN: 978-0262043045
- Crayton E.D.: Redefining Life Sciences with Artificial Intelligence and Blockchain, 2019, ISBN: 978-1795786737

Curriculum:

[Seminari] list (with titles and explanation):

Introduction to the course, overview of the development of artificial intelligence. Basic concepts.

An overview of the field and the current development of artificial intelligence (AI). Overview of seminar topics.

Concept and structure of neural networks. Machine learning. The Turing test.

Basic settings, neural networks tasks. Their role and application in machine learning. The elements of the Turing test. Importance and significance in the biomedical field.

The concept of neural networks. The concept of genetic algorithm.

Application of neural networks in a laboratory environment. Presentation of the concept of the genetic algorithm. Defining important parameters.

Application in biomedical robotics.

Analysis of biomedical robotics examples. Advantages and disadvantages of using artificial intelligence in biomedical robotics.

Different uses of artificial intelligence: laboratory examples, clinical examples.

The utilization of artificial intelligence-based systems is analyzed, emphasizing laboratory and clinical case studies. The advantages and methodologies of usage are explored. Additionally, potential disadvantages and technological limitations are discussed, highlighting the critical assessment of AI's application in various fields.

Advanced technological solutions. Application in biomedical systems.

Advanced technological solutions based on artificial intelligence. Presentation of application in biomedical systems. Presentation of the technological solution.

Trends, the future of artificial intelligence development.

An overview of the development trends. Emphasis on the practical application of artificial intelligence.

Student obligations:

Regular attendance of classes, writing of a seminar paper.

Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

Other notes (related to the course) important for students:

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COURSE HOURS 2024/2025

Artificial Intelligence

[Seminari] (Place and time or group)
10.10.2024
Introduction to the course, overview of the development of artificial intelligence. Basic concepts.: • [P08] (16:00 - 18:45) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]
18.10.2024
Concept and structure of neural networks. Machine learning. The Turing test.: • [P04] (14:15 - 16:30) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]
21.11.2024
The concept of neural networks. The concept of genetic algorithm.: • [P03 - INFORMATIČKA UČIONICA] (17:00 - 19:15) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]
28.11.2024
Application in biomedical robotics.: • [P08] (17:00 - 20:00) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]
15.01.2025
Different uses of artificial intelligence: laboratory examples, clinical examples.: • [P03 - INFORMATIČKA UČIONICA] (15:00 - 18:00) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]
16.01.2025
Advanced technological solutions. Application in biomedical systems.: • [P05] (09:00 - 11:15) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]
17.01.2025
Trends, the future of artificial intelligence development.: • [P08] (12:30 - 15:30) [1626]   ◦ AI
izv. prof. dr. sc. Maričić Sven [1626]

List of lectures, seminars and practicals:

[SEMINARI] (TOPIC)	Number of hours	Location

Introduction to the course, overview of the development of artificial intelligence. Basic concepts.	3	[P08]
Concept and structure of neural networks. Machine learning. The Turing test.	4	[P04]
The concept of neural networks. The concept of genetic algorithm.	3	[P03 - INFORMATIČKA UČIONICA]
Application in biomedical robotics.	4	[P08]
Different uses of artificial intelligence: laboratory examples, clinical examples.	3	[P03 - INFORMATIČKA UČIONICA]
Advanced technological solutions. Application in biomedical systems.	4	[P05]
Trends, the future of artificial intelligence development.	4	[P08]

EXAM DATES (final exam):
