

Faculty of Medicine in Rijeka

**Curriculum  
2023/2024**

For course

**Ethics and Artificial Intelligence**

|                     |                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------|
| Study program:      | <b>Medical Studies in English (R)</b> (elective)<br>University integrated undergraduate and graduate study |
| Department:         | <b>Department of Humanities and Social Sciences in Medicine</b>                                            |
| Course coordinator: | <b>izv. prof. dr. sc. Horvat Saša</b>                                                                      |
| Year of study:      | <b>1</b>                                                                                                   |
| ECTS:               | <b>1.5</b>                                                                                                 |
| Incentive ECTS:     | <b>0 (0.00%)</b>                                                                                           |
| Foreign language:   | <b>Possibility of teaching in a foreign language</b>                                                       |

## **Course information:**

Introduce participants with fundamental ethical issues related to the development and application of artificial intelligence.

## **List of assigned reading:**

Lecture presentations.

Christoph Bartneck , Christoph Lütge , Alan Wagner , Sean Welsh, *An Introduction to Ethics in Robotics and AI*, Springer, 2021.  
Open access: <https://link.springer.com/book/10.1007/978-3-030-51110-4>

Silja Voenekey, Philipp Kellmeyer, Oliver Mueller, Wolfram Burgard, *The Cambridge Handbook of Responsible Artificial Intelligence: Interdisciplinary Perspectives*, Cambridge, 2022. (selected parts)

High-Level Expert Group on Artificial Intelligence (AI HLEG). *Ethics Guidelines for Trustworthy AI*, Brussels, 2019, available at: <https://ec.europa.eu/futurium/en/ai-alliance-consultation.1.html> (selected parts)

Niklas Lidströmer, Hutan Ashrafian (eds.), *Artificial Intelligence in Medicine*, Springer, 2022. (selected parts)

## **List of optional reading:**

Manda Raz, Tam C. Nguyen, Erwin Loh (eds.), *Artificial Intelligence in Medicine. Applications, Limitations and Future Directions*, Springer, 2022. (selected parts)

## Curriculum:

### Seminars list (with titles and explanation):

#### Introduction to the topic

Students will be able to explain the fundamental concepts related to the topic of ethics of artificial intelligence.

#### Trust and Fairness in AI Systems

Students will be able to recognize and identify the key aspects of trust and fairness in AI Systems.

#### Responsibility and Liability in the Case of AI Systems

Students will be able to identify the main arguments concerning responsibility and liability in the case of AI systems.

#### Psychological Aspects of AI

Students will be able to recognize and identify main issues regarding psychological aspects of AI.

#### Privacy Issues of AI

Students will be able to describe and discuss fundamental elements of privacy issues of AI.

#### Application Areas of AI

Students will be able to identify the main concerns regarding application areas of AI.

#### Artificial Intelligence

Students will be able to recognize, describe and critically discuss the following topics related to AI: The Turing Test; Strong and Weak AI; Types of AI Systems; What Is Machine Learning?; What Is a Robot?; Sense-Plan-Act / System Integration. Necessary but Difficult; What Is Hard for AI; Science and Fiction of AI.

#### Ethical theories related to AI

Students will be able to describe and discuss fundamental elements of ethical theories related to AI, such as: Descriptive Ethics; Normative Ethics; Deontological Ethics; Consequentialist Ethics; Virtue Ethics; Meta-ethics; Applied Ethics; Relationship Between Ethics and Law; Machine Ethics / Machine Ethics Examples / Moral Diversity and Testing.

#### Presentations of students' essays on selected topics

Students critically analyze a selected topic related to ethics and artificial intelligence and showcase their depth of understanding and analytical skills.

### Lectures list (with titles and explanation):

#### Artificial Intelligence

Students will be able to recognize, describe and critically discuss the following topics related to AI: The Turing Test; Strong and Weak AI; Types of AI Systems; What Is Machine Learning?; What Is a Robot?; Sense-Plan-Act / System Integration. Necessary but Difficult; What Is Hard for AI; Science and Fiction of AI.

#### Ethical theories related to AI

Students will be able to describe and discuss fundamental elements of ethical theories related to AI, such as: Descriptive Ethics; Normative Ethics; Deontological Ethics; Consequentialist Ethics; Virtue Ethics; Meta-ethics; Applied Ethics; Relationship Between Ethics and Law; Machine Ethics / Machine Ethics Examples / Moral Diversity and Testing.

## Student obligations:

Regular attendance, written seminar paper and final examination.

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

Assessment is carried out in accordance with the Rules of Assessment of the Faculty of Medicine, University of Rijeka: course attendance 54 (%), written seminar paper 23 (%), and final exam 23 (%).

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

-

## COURSE HOURS 2023/2024

### Ethics and Artificial Intelligence

| Lectures<br>(Place and time or group)                                                                                                                                            | Seminars<br>(Place and time or group)                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>11.03.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |
| Artificial Intelligence: <ul style="list-style-type: none"><li>• Z-hall (16:00 - 17:30) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>        | Introduction to the topic: <ul style="list-style-type: none"><li>• Z-hall (17:30 - 18:15) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>                                                                                                                                                                                         |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>14.03.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                  | Ethical theories related to AI: <ul style="list-style-type: none"><li>• Z-hall (16:00 - 18:15) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul> Trust and Fairness in AI Systems: <ul style="list-style-type: none"><li>• Z-hall (18:15 - 19:00) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul> |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>21.03.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |
| Ethical theories related to AI: <ul style="list-style-type: none"><li>• Z-hall (16:00 - 17:30) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul> | Privacy Issues of AI: <ul style="list-style-type: none"><li>• Z-hall (17:30 - 18:15) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul> Application Areas of AI: <ul style="list-style-type: none"><li>• Z-hall (18:15 - 19:00) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>                    |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>28.03.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                  | Artificial Intelligence: <ul style="list-style-type: none"><li>• ONLINE (16:00 - 19:00) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>                                                                                                                                                                                           |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>15.04.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |
| Artificial Intelligence: <ul style="list-style-type: none"><li>• ONLINE (17:00 - 17:45) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>        | Trust and Fairness in AI Systems: <ul style="list-style-type: none"><li>• ONLINE (17:45 - 19:15) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>                                                                                                                                                                                  |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>22.04.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                  | Responsibility and Liability in the Case of AI Systems: <ul style="list-style-type: none"><li>• ONLINE (17:00 - 19:15) <sup>[1602]</sup><ul style="list-style-type: none"><li>◦ EAAI</li></ul></li></ul>                                                                                                                                                            |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup>                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>02.05.2024</b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                     |

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                  | Psychological Aspects of AI: <ul style="list-style-type: none"> <li>• Z-hall (13:30 - 14:15) <sup>[1602]</sup> <ul style="list-style-type: none"> <li>◦ EAAI</li> </ul> </li> </ul> Presentations of students' essays on selected topics: <ul style="list-style-type: none"> <li>• Z-hall (14:15 - 16:30) <sup>[1602]</sup> <ul style="list-style-type: none"> <li>◦ EAAI</li> </ul> </li> </ul> |
| izv. prof. dr. sc. Horvat Saša <sup>[1602]</sup> |                                                                                                                                                                                                                                                                                                                                                                                                  |

### List of lectures, seminars and practicals:

| LECTURES (TOPIC)               | Number of hours | Location         |
|--------------------------------|-----------------|------------------|
| Artificial Intelligence        | 3               | ONLINE<br>Z-hall |
| Ethical theories related to AI | 2               | Z-hall           |

| SEMINARS (TOPIC)                                       | Number of hours | Location         |
|--------------------------------------------------------|-----------------|------------------|
| Introduction to the topic                              | 1               | Z-hall           |
| Trust and Fairness in AI Systems                       | 3               | ONLINE<br>Z-hall |
| Responsibility and Liability in the Case of AI Systems | 3               | ONLINE           |
| Psychological Aspects of AI                            | 1               | Z-hall           |
| Privacy Issues of AI                                   | 1               | Z-hall           |
| Application Areas of AI                                | 1               | Z-hall           |
| Artificial Intelligence                                | 4               | ONLINE           |
| Ethical theories related to AI                         | 3               | Z-hall           |
| Presentations of students' essays on selected topics   | 3               | Z-hall           |

### EXAM DATES (final exam):

---