ÖREBRO UNIVERSITET

Course syllabus
Third-cycle courses and study programmes

This is a translation of a Swedish document. In the event of a discrepancy, the Swedish-language version shall prevail.

Ethics of AI and Robotics, 3 credits
Etik inom AI och Robotik, 3 högskolepoäng

Course Code/Codes	*50DT063*
Subject Area	*Computer Science*
School/equivalent	*Institutionen för Naturvetenskap och teknik*
Valid from	2023-05-01
Approved	*2023-03-08*
Revised	
Approved by	*Head of School*
Translation to English, date and signature	*2023-02-20 J.R*

1 Course content

This course discusses the ethical implications of developing and conducting research about AI and robotics systems. It will provide the students with a theoretical understanding of ethical questions related to AI and robotics as well as practical exercises and case studies to apply this knowledge and learn how to practically approach their thesis and future research and development work from an ethical point of view. Upon completion of the course, the students are expected to be able to autonomously reflect and act upon ethical considerations related to their research work.

2 Outcomes

2.1 The course in relation to the doctoral programme

The course shall primarily refer to the following intended learning outcomes for third-cycle courses and study programmes as described in the Higher Education Ordinance, i.e. the doctoral student shall demonstrate:

Knowledge and understanding
- broad knowledge and systematic understanding of the research field (part of outcome 1)

Competence and skills
- the capacity for scholarly analysis and synthesis (part of outcome 3)
- the capacity to review and assess new and complex phenomena, issues and situations autonomously and critically (part of outcome 3)
- the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively (part of outcome 4)
- the ability to review and evaluate research and other qualified tasks (part of outcome 4)
- the capacity to support the learning of others (part of outcome 8)

Judgement and approach
- intellectual autonomy and disciplinary rectitude (part of outcome 9)

- the ability to make assessments of research ethics (part of outcome 9)
- specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used (outcome 10)

The intended learning outcomes are listed in the same order as in the general syllabus for the programme.

2.2 Intended course learning outcomes

To obtain a passing grade, the doctoral student shall demonstrate:

- a broad understanding of the relevant ethical concepts and their relevance to a given research or application
- their ability to critically examine their own and others' scientific work from an ethical perspective, to give and recieve constructive criticism
- their ability to implement existing guidelines, strategies, and processes to their own research to ensure that they conduct it in an ethical way.

3 Reading list and other teaching material

The following course readings and teaching material will be used on the course:

Dignum, Virginia. Responsible artificial intelligence: how to develop and use AI in a responsible way. Cham: Springer, 2019.

Gratton, C, & Gagnon-St-Pierre, E. Heuristics and cognitive biases, trans. E. Muszynski. Shortcuts: A handy guide to cognitive biases Vol.2. Online: www.shortcogs.com, 2020

Schaake Marietje. The European Commission's Artificial Intelligence Act. Stanford HAI Issue Brief. Online: https://hai.stanford.edu/issue-brief-european-commissions-artificial-intelligence-act, 2021

Paullada, Amandalynne, et al. "Data and its (dis) contents: A survey of dataset development and use in machine learning research." *Patterns* 2.11 (2021): 100336.

4 Teaching formats

Teaching on the course takes the following format:

- Pre-recorded lectures associated with a recommended watch order. Thes lectures will cover the theoretical concepts to be apprehended by the students and organized in modules.
- Self-correcting quizzes associated to each module. The quizzes can be taken any number of times and aim for the student to assess their own understanding and knowledge after watching the pre-recorded lectures.
- Three in-person seminars during which the students will discuss in group, reflect on various cases, and present the result of this reflection to the whole class.

5 Examination

[Alt. 1b] – when one examination consists of several examination components
- All self-corrected quizzes must have been taken and students must have 75% of the questions answered correctly for each module to obtain a passing grade (Learning outcome #1).
- An oral examination during which the student will provide and receive feedback on their work (Learning outcome #1 and #2).

- A written examination taking the form of an essay critically examining existing work (their own or another) form an ethical perspective and providing concrete guidelines and recommendations (Learning outcome #3).

6 Grades

Examinations on third-cycle courses and study programmes are to be assessed according to a two-grade scale with either of the grades ‘fail’ or ‘pass’ (local regulations).

The grade shall be determined by a teacher specifically nominated by the higher education institution (the examiner) (Higher Education Ordinance).

To obtain a passing grade on examinations included in the course, the doctoral student is required to demonstrate that he/she attains the intended course learning outcomes as described in section 2.2. Alternatively, if the course consists of multiple examinations generating credit, the doctoral student is required to demonstrate that he/she attains the outcomes that the examination in question refers to in accordance with section 5.

A student who has failed an examination is entitled to a retake.

If an examination consists of several examination components, and a student fails an examination component, the examiner may, as an alternative to a retake, set a make-up assignment with regard to the examination component in question.

A doctoral student who has failed an examination twice for a specific course or course element is entitled, upon his/her request, to have another examiner appointed to determine the grade.

7 Admission to the course

7.1 Admission requirements

To gain access to the course and complete the examinations included in the course, the applicant must be admitted to a doctoral programme at Örebro University.

7.2 Selection

Selection between applicants who are admitted to doctoral studies and who otherwise meet the admission requirements is based on the following order of priority.

1. Doctoral students admitted to the university´s doctoral research school CoAIRob
2. Doctoral students admitted or associated to the International Artificial Intelligence Doctoral Academy (AIDA) see section 7.3.
3. Other applicants admitted to a doctoral programme

If no other selection criteria are specified in this section, priority shall be given to applicants with a lower number of course credits left before the award of their degree over applicants with a higher number of remaining course credits. Should two or more students have equal number of credits, selection will be done through the drawing of lots. This also applies within any selection groups listed unless otherwise stated.

7.3 Other applicants than doctoral students admitted at Örebro University

Other applicants than doctoral students admitted at Örebro University may be given access to the course on the grounds of provisions for and/or agreements regarding contracted courses, joint degrees, national graduate schools or cooperation in other respects with other universities.

Any decisions on what such other applicants may be given access to the course are made separately and on the basis of the provisions and/or agreements that occasion the student to apply for the course.

For participation in the course in other respects, the same provisions shall apply as for doctoral students admitted to Örebro University.

8 Transfer of credits for courses, study programmes and other experience

Provisions on the transfer of credits can be found in the Higher Education Ordinance and on the university's webpage.

9 Other information

The language of instruction of the course is English.