TEHISINTELLEKT TERVISHOIUS

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School of Information Technology
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ARTIFICIAL INTELLIGENCE IN HEALTHCARE

MAIN COURSE INFO

Course code	**IHB0090**
Course title in Estonian	Tehisintellekt tervishoius
Course title in English	Artificial Intelligence in Healthcare
ECTS credits	6,00
Assessment form	Examination
Teaching semester	spring
Lecturers	**Lecturer in charge: Maie Bachmann,** Tallinn University of Technology Lecturers: Ardo Allik, Ivo Fridolin, Kristjan Pilt, Laura Päeske, *Kai Siinmaa*

TAL TECH

COURSE AIM/EESMÄRK

- The aim of the course is to give theoretical and practical knowledge about artificial intelligence (AI) to engineers who will work with AI healthcare technology. The subject will give knowledge about basic AI concept, principles and algorithms, as well as applications, importance, economic influence and legal and ethical aspects in healthcare technology

- Aine eesmärgiks on anda tulevasele tehisintellekti sisaldava tervisetehnoloogiaga kokkupuutuvale insenerile vajalikud teadmised ja oskused tehisintellektiga seotud mõistetest, põhimõtetest ja peamistest meetoditest ning praktiline kogemus erinevate meetodite kasutamisel. Lisaks anda ülevaade tehisintellekti vajadustest, rakendustest ja majanduslikust mõjust kaasaegses tervishoius ning rakendamisega seotud õiguslikest ja eetilistest aspektidest.

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LEARNING OUTCOMES

The student:

- knows machine learning principles to solve problems related to health care technology emerging from healthcare needs and applications;
- uses AI vocabulary and has understanding about the main principles and methods;
- uses components of machine learning;
- knows different methods to prepare data for machine learning and model optimization and can apply these methods;
- creates machine learning models;
- can assess the fitness of a machine learning model;
- combines and applies clustering algorithms and parameters;
- analyses legal and ethical aspects of AI.

TAL TECH

Date	Topic	Lecturer
12.02.2025 14:00-15:30	Introduction and assessment principles /Sissejuhatus ja hindamispõhimõtted AI motivation, definitions, terminology, structure and the main principles */Tehisintellekti motivatsioon , definitsioonid , põhimõisted , struktuur ja põhimõtted*	Maie Bachmann Ivo Fridolin
19.02.2025 Moodle	Structure and components of ML */Masinõppe komponendid*	Kristjan Pilt
26.02.2025 14:00-15:30	**Naive Bayes Classifier and Feature Discretization**	Kristjan Pilt
05.03.2025 Coursera	AI Act	Coursera
12.03.2025 Moodle	Introduction to supervised learning and linear regression. */Sissejuhatus juhendatud õppesse ja lineaarne regression.*	Laura Päeske
19.03.2025 Moodle	Logistic regression and introduction to artificial neural networks. */Logistiline regressioon ja sissejuhatus tehisnärvivõrkudesse .*	Laura Päeske
26.03.2025 14:00-15:30	**Regression**	Laura Päeske
02.04.2025	Have some rest!	
09.04.2025 Moodle	Classification validation methods */Klassifitseerimise valideerimismeetodid*	Ardo Allik
16.04.2025 Moodle	Multiclass classification */Mitmeklassiline klassifitseerimine*	Ardo Allik
23.04.2025 14:00-17:00	**Decision tree classification.**	Ardo Allik
30.04.2025 Moodle	Introduction to unsupervised learning. Hierarchical clustering. */Sissejuhatus järelvalveta masinõpesse . Hierarhiline klasteranalüüs*	Maie Bachmann
07.05.2025 12:00-13:30	Legal aspects of Medical Device (incl AI) */Meditsiiniseadme õiguslikud aspektid (k.a.AI)*	Kai Siinmaa (HealthCode AI)
14.05.2025 Moodle	**Flat or partitional clustering (K-means)**	Maie Bachmann

ASSESSMENT CRITERIA

Evaluation method: **Exam.**

The prerequisites for the examination :

1. Performed laboratory works, including successfully defended reports, all of which must be submitted and defended by the deadline.
2. Obligatory participation in the final lecture.

TAL TECH

EVALUATION CRITERIA FOR CONTINUOUS ASSESSMENT

Pass or fail **the lab assessment**

- Understanding of the manual –the student can answer to preparatory questions.
- Correct performance of different moments of the lab.
- Report has a logical structure and meets the appropriate requirements.
- The student can answer to the questions about the content and report of the lab.

TAL TECH

THE FINAL GRADE OF THE SUBJECT

The examination at the end of subject determines 100 % of the final grade.

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STUDY LITERATURE

1. Machine learning : the art and science of algorithms that make sense of data. Peter Flach, United Kingdom 2012,2017
2. Machine Learning: Hands-On for Developers and Technical Professionals. Jason Bell, Wiley, 2015
3. Data Science and Big Data Analytics : Discovering, Analyzing, Visualizing and Presenting Data. Somerset, US: Wiley, 2015.
4. Machine learning: a probabilistic perspective. Kevin Murphy, The MIT Press, 2012

TAL TECH

Tänan tähelepanu eest!

TALLINNA TEHNIKAÜLIKOOL

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