FDH3006 Introduction to Learning Analytics 7.5 credits

Introduktion till inlärningsanalys

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FDH3006 valid from Spring 2021

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

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Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completing the course, the PhD student will be able to:

1. Identify the taxonomy of learning analytics, the main themes and applications.

2. Recognize the different theoretical models underpinnings the learning analytics process, and apply such theories to different problems.
3. Describe the learning analytics data cycle as well as how to apply these principles in research and practice.
4. Identify key epistemological, pedagogical, ethical, and technical factors informing the design and implementation of learning analytics.
5. Apply basics of collecting, cleaning, transforming, and analyzing educational data with real life examples.
6. Apply popular data analytic techniques, including predictive models, epistemic network analysis, multimodal learning analytics, relationship mining, social network analysis, and visualizations
7. Perform a research project using the learnt methodological research skills in learning analytics empirically as well as theoretically.

Course contents

The pervasive integration of digital technology in education influences both teaching and learning practices, and allows access to data, mainly available from emerging online learning environments, that can be used to improve conditions for students' learning and to improve teacher support. Increased access to previously unavailable digital learner data allows us to perform new types of analyses that aim to measure chosen learning and teaching activities more objectively compared to the use of more traditional methods that are often based on learners' and/or teachers' perceived attitudes and/or observations. These new forms of analyses constitute the field of Learning Analytics (LA), defined as the "measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs".

The LA field of research and practice is built on the developments and success of other domains and disciplines and the rapid growth of data and analytics methods. LA has achieved significant advances in multiple areas: student recommenders systems, learning dashboards, adaptive feedback, early warning systems and personalized support for students.

This course aims to provide a sound ground for the understanding of the LA area of research and practice. The course will address the taxonomy of learning analytics and related terms such as educational data mining and academic analytics. It will also present the theoretical background behind learning analytics and the concepts of the big data paradigm shift. The LA process and procedures will be discussed in detail, including data gathering, analysis and generation of insights. The key ethical and privacy issues will also be covered. The practical aspect of the course will enable the students to practice the use of different LA methods, including epistemic network analysis, social network analysis, process- and sequence mining, as well as basics of visualization.

Examination

- EXA1 - Examination, 7.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

EXA1 – Examination, 5 ECTS: Pass/Fail

EXA2 – Final esssay, 2.5 ECTS: P/F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

To complete the course, students must:

Part 1: 5 ECTS

- Read the course literature and actively participate in the seminars.
- Complete seminar exercises
- Present one of the articles from the recommended course literature orally during one session.
- Complete group project to develop a proposal for a learning analytics project and present the idea at the final meeting.
- Write a reflection note over what you learned during the course.

Part 2: 2.5 ECTS

- Present your paper idea at the final seminar and receive feedback.
- Submit and get approved a 4000 - 6000 word paper

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.