Course Syllabus for:
Human Factors
769A19

Fall Term 2022

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Version 1

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1 Kursplan (svenska)

Huvudområde: Kognitionsvetenskap

Utbildningsnivå: Avancerad nivå

Fördjupningsnivå: A1X

Kursen ges för: Kognitionsvetenskap, masterprogram

Förkunskapskrav: Kandidatexamen 180 hp i huvudområdet kognitionsvetenskap, eller Kandidatexamen 180 hp i huvudområdet datalogi eller motsvarande samt godkända kurser om 30hp i något eller några av ämnena: psykologi, lingvistik, filosofi, neurovetenskap, antropologi eller motsvarande, eller Kandidatexamen 180 hp i något av huvudområdena Psykologi eller Neurovetenskap samt godkända kurser om 30hp i datavetenskap eller motsvarande.

Lärandemål

Efter avslutad kurs ska den studerande på en avancerad nivå kunna:

- redogöra för och kritiskt diskutera teorier, modeller och metoder in Human Factors både muntligen såväl som skriftligen
- tillämpa Human Factors-metoder för att studera komplexa företeelser, frågeställningar och fenomen av vetenskapligt eller samhälleligt intresse
- analysera och tolka studerade företeelser, frågeställningar och fenomen utifrån relevanta och aktuella vetenskapliga teorier och modeller inom Human Factors
- reflektera över och problematisera kring aktuell forskning inom området Human Factors utifrån vetenskapliga, samhälleliga och etiska aspekter
- generalisera aktuell Human Factors-forskning till samhällsrelevanta frågeställningar och identifiera behov av ytterligare kunskapsutveckling

Kursinnehåll

I kursen behandlas teorier, modeller och metoder inom Human Factors samt centrala begrepp kopplade till dessa. Detta kan exempelvis vara automation, fysisk ergonomi, expertis, mänskliga fel, individuella skillnader, mänsklig prestation i extrema miljöer, makrokognition, situationsmedvetenhet, stress, uppgiftsanalys, teamprestation, träning och utbildning, förstärkt kognition, vigilans, varningar och larm-design, kommunikation eller mental arbetsbelastning. I kursen behandlas även aktuell forskning inom Human Factors och dess relation till vetenskapliga, samhälleliga och etiska aspekter.

Undervisnings- och arbetsformer:

Undervisningen består av föreläsningar, seminarier och praktiska övningar. Utöver detta ska den studerande utöva självstudier.

Examination:

Kursen examineras genom:

- individuell skriftlig tentamen, betygsskala: EC
- individuella skriftliga inlämningar inför och aktivt deltagande i seminarier, betygsskala: UG
- praktiska övningar i grupp med skriftliga inlämningar, betygsskala: UG

För Godkänt (E) slutbetyg krävs Godkänt (E) på tentamen samt Godkänt på övriga moment. Högre betyg baseras på den individuella skriftliga tentamen.

Detaljerad information återfinns i studieanvisningen.

Om det finns särskilda skäl, och om det med hänsyn till det obligatoriska momentets karaktär är möjligt, får examinator besluta att ersätta det obligatoriska momentet med en annan likvärdig uppgift.

Om LiU: s koordinator för studenter med funktionsnedsättning har beviljat en student rätt till anpassad examination vid salstentamen har studenten rätt till det.

Om koordinatorn har gett studenten en rekommendation om anpassad examination eller alternativ examinationsform, får examinator besluta om detta om examinator bedömer det möjligt utifrån kursens mål.

Examinator får också besluta om anpassad examination eller alternativ examinationsform om examinator bedömer att det finns synnerliga skäl och examinator bedömer det möjligt utifrån kursens mål.

Studerande, vars examination underkänts två gånger på kursen eller del av kursen, har rätt att begära en annan examinator vid förnyat examinationstillfälle.

Den som godkänts i prov får ej delta i förnyat prov för högre betyg.

Betygsskala: ECTS, EC

Övrig information: Planering och genomförande av kurs ska utgå från kursplanens formuleringar. Den kursvärdering som ska ingå i varje kurs ska därför behandla frågan om hur kursen överensstämmer med kursplanen.

Kursen bedrivs på ett sådant sätt att både mäns och kvinnors erfarenhet och kunskaper synliggörs och utvecklas.

Om det föreligger synnerliga skäl får rektor i särskilt beslut ange förutsättningarna för, och delegera rätten att besluta om, tillfälliga avsteg från denna kursplan.

Institution: Institutionen för Datavetenskap

2 Course introduction

Welcome to 769A09, a course that centers on Human Factors theories, methods, and issues. This is an advanced, masters' level course with a student-centered learning perspective. The course offers a lot of freedom to choose topics of particular interest to the students in the course, and to focus in depth on one area of interest to you in particular. There are three main components to the course: weekly seminars, weekly team challenges, and a written individual work called a *proposal*. This document explains the course structure and format in detail.

2.1 Teachers and staff

Erik Prytz (erik.prytz@liu.se) at the Department of Computer and Information Science (IDA) is the course examiner and sole teacher in this course.

Wilhelm

Anna Grabska Eklund (anna.grabska.eklund@liu.se) is the course administrator.

2.2 A note on language

This course is offered to international students. Therefore, all written course information is provided in English. The course itself will be conducted in either English or Swedish, depending on the language competences of the registered students.

3 Lectures

This is an advanced level course and will not rely on lectures to convey information. The only "lecture" is the course introduction, which is intended to present the course structure and requirements, introduce content topics, and provide a fundament for the rest of the course content (including the seminars and proposal work). The remaining course will be a mix of primarily seminars and some hands-on lessons and advising sessions. However, at the start of each seminar there will also be a brief in-person flipped classroom component to provide some additional insight into the readings and answer any questions you may have about the material.

4 Seminars

The course will feature six seminars. The topics of the seminars are selected by the students based on a list of suitable topics relevant to the overall course goals. The purpose of this is to allow some flexibility to pursue topics of particular interest to the students. The available topics will be provided in a separate document on Lisam, and the selection will take place during the course introduction lecture.

4.1 Seminar structure

The structure of each seminar will be roughly as follows:

1. **Challenge review** (ca 5 minutes): The course examiner provides a review of the previous week's challenge and awards points to the teams.
2. **Flipped classroom** (ca 10 minutes): The course examiner answers questions about the reading material.
3. **Student-led discussion** (ca 70 minutes): The students discuss the material based on submitted questions.
4. **Class discussion and presentation of next week's challenge** (ca 5 minutes): The students and course examiner review the discussions during the seminar. The course examiner also presents next week's challenge.

The **challenge review** part is explained further in section 5, Team Challenges.

The **flipped classroom** part is intended to cover fundamental or basic questions about the topic, as well as to clarify the literature. The students will either submit questions in advance (more on this in the next section) or come prepared with questions for the flipped classroom part.

The **student-led discussion** portion will be conducted either with the whole class together or divided into smaller groups, depending on the number of students in the course. For each seminar, one student per group will be responsible to act as *seminar leader*. This will be assigned during the first lecture.

There is a given set of "core" articles or chapters to read for each topic (see section 4.2 Seminar Literature). All students are responsible for reading the assigned material before the seminar and to submit 1) one to two discussion questions *per core article* and 2) two *overarching* questions spanning all assigned reading for that week. These questions will be submitted using a *Microsoft Form*. More information on this procedure is provided during the introductory lecture.

Students can also submit additional clarifying (non-discussion) questions to the course examiner prior to the seminar. These questions will be used during the flipped classroom part of the seminar.

The course examiner will anonymize and forward the discussion questions to the seminar leader(s). The seminar leader(s) will summarize the questions into a structured set of discussion topics that can be used as an aid during the discussion part of the seminar. This summary is intended to reduce the number of questions to a manageable and usable set that will be a helpful guide for the discussions during the seminars. The seminar leader(s) have full discretion in what questions they select, but should keep the following general recommendations in mind:

1. Redundant questions (i.e., multiple questions that ask more or less the same thing as other questions) should be removed or merged into one, single question.

2. Irrelevant questions should be removed. Irrelevant questions are questions that are 1) off-topic, 2) do not mention or make use of the assigned reading, or 3) are vague "standard questions" that could be applied to any reading ("What did you think of [insert article title here]?", "Did you find [insert article title here] useful?", "How can we as cognitive science students use this information?", etc).
3. The selected questions should be *meaningful to discuss in a group of students*. That is, questions should help you as a group to discuss the articles in a way that deepens your understanding of the topic.
4. Questions that other students cannot reasonably be expected to answer should be removed (e.g., "What impact did this article have on the research field?", "Has the author written anything else on this topic?", "Is this method commonly used in human factors today?", "Is there any new research on this topic?", etc). These questions are better asked to the course examiner during the flipped classroom part of the seminar. The seminar leader is welcome to forward such question to the course examiner, who will answer them in the flipped classroom portion of the seminar.
5. You may keep "clarifying" questions about the articles, if you think that it will lead to a meaningful discussion among the students. Most clarifying questions should, however, be asked to the course examiner during the flipped classroom part of the seminar.
6. The total number of questions should be small enough that the guide will be usable during the seminar – a rough guideline is 5-8 questions per article and then a few questions that concern the reading overall.

The main thing the seminar leader(s) should keep in mind when selecting the questions is essentially "will this question lead to interesting and meaningful discussions and help us learn or understand the material better?".

Summary: responsibilities of the seminar leader

Before the seminar

- Summarize the submitted questions to a format that will support discussion during the seminar.

During the seminar

- Lead and facilitate the group discussion, supported by the submitted questions.

Summary: responsibilities of all students

Before the seminar

- Read the assigned literature.
- Submit 1-2 discussion questions per article and 2 overarching questions no later than one full weekday prior to the seminar.

During the seminar

- Actively participate in the discussions.

4.2 Seminar Literature

This course does not have a specific textbook to cover the entire course. Rather, the required readings are based on the chosen topics. The list of literature per topic is provided in a separate document on Lisam ("Seminar topics"). Please note that not all of the articles listed in that document will be included during the course. Only the topics chosen by the students will be covered.

Each topic contains a set of "Core" articles and a set of "Extra" articles. The core articles are mandatory, and it is those articles that will be discussed during the seminar. The extra articles are *not* mandatory but rather provided as additional reading for the interested student. They can serve as a useful fundament for the proposal and other future work.

4.3 Absence

If you are absent from a seminar you will instead complete a written reflection on the material. This reflection should summarize and review the core literature for the seminar and include an overall reflection connected to the topic of the seminar. The entire reflection should be about 2 pages in length. Some absences are excused (e.g., death in the family, hospitalization, and similar) if cleared by course examiner prior to the seminar.

5 Team Challenges

The purpose of the team challenges is to provide an engaging learning activity tied to the topic discussed in the course. All students will be assigned to teams of about 4-5 members each. These teams will complete weekly challenges based on the previous week's topic. The challenges will be presented at the end of each seminar.

Each individual challenge is unique and will have specific goals and requirements. The way the challenge should be presented or reported is specific to each challenge. Points are awarded by the course examiner depending on well the team meets the challenge goals and requirements. To 'pass' the challenge the team must score greater than zero. A score of zero is typically given on a "did not attempt" basis.

The teams will accumulate points by completing challenges. A weekly scoreboard will be kept and updated. The team with the highest score at the end of the course will win a *special and very secret prize*.

6 Take-home exam

info

7 Course grade

To receive a passing grade (G) in this course you will need to:

- Be the seminar leader for one seminar
- Actively participate during the other seminars
- Pass the weekly team challenges
- Receive a passing grade on the proposal

The grade of pass with distinction (VG) will be given based on the quality of the written proposal.

7.1 Make-up work

If a student fails any of the course components, they can submit make-up work twice before the next course iteration starts. The specific deadlines and make-up assignments will be presented during the course.

8 Deadlines

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8.1 Seminar question deadlines

Each student must submit questions for each seminar (as outlined in section 4 on Seminars) before the following deadlines.

Seminar #	Date	Deadline	Time
1	10/11	8/11	17:00
2	17/11	15/11	17:00
3	24/11	22/11	17:00
4	1/12	29/11	17:00
5	8/12	6/12	17:00
6	15/12	13/12	17:00

8.2 Question summary deadlines

The seminar leader(s) for each seminar will summarize the submitted questions into a discussion guide. This guide is to be emailed to the course examiner no later than *one hour before the seminar*.

8.3 Team challenge deadlines

The deadline for the team challenge is always 12:00 the day before the next seminar. Some of these will be submitted through Lisam, others may require other submissions. Each challenge will specify this further.

Seminar #	Date	Deadline	Time
1	10/11	9/11	12:00
2	17/11	16/11	12:00
3	24/11	23/11	12:00
4	1/12	30/11	12:00
5	8/12	7/12	12:00
6	15/12	14/12	12:00

8.4 Proposal deadlines

9 Plagiarism and academic dishonesty

As with all courses at LiU, plagiarism and academic dishonesty is not allowed. Unfortunately, there have been recent instances in this course where students have tried to cheat, e.g. copied text from articles or used google translated text without editing. All such instances *will* be reported to the Disciplinary Board, and may result in a disciplinary action such as a suspension. The decision to report a suspected attempt to cheat is not made by the course examiner. The course examiner *must* report such attempts as per the university guidelines:

"Suspected attempts at cheating and disturbances of the peace *shall* be reported to the Vice-Chancellor and the matter treated by the University Disciplinary Board." (link to source, my emphasis)

Cheating (from LiU Disciplinary Board):

According to chapter 10 in the Higher Education Ordinance, disciplinary measures can be used against a student who:

1. Uses prohibited aids and equipment, or in any other way, purposely acts inappropriately during the examination or the assessment of a study assignment.
2. Causes disturbance, prevents teaching, examinations or other university related activities from taking place.

Examples of what LiU's Disciplinary Board has judged as cheating:

- text written onto a formula sheet
- loose sheets of paper containing the student's own writing during a test

- plagiarizing an essay
- copying a programming project
- working with another group during individual projects when doing so was not allowed

Plagiarism (from LiU Library):

What is plagiarism?

To plagiarize means using somebody else's work and presenting it as your own without referring to the source. It may be a text, idea, theory, image, chart, figure, music, computer program or a product. Even reformulation, paraphrasing, text to your own words, without referencing the source is plagiarism.
Plagiarism may also violate Copyright laws.

What happens if I plagiarize?

Plagiarism is a serious offense against good academic practice and can if worse comes to worst result in temporary suspension from studies by decision of The Disciplinary Board at Linköping University. A student who is suspended may not participate in lectures, laboratory sessions, seminars, exams, tutorials, assignments, and may not access to LiU's computer labs. The suspension may also affect payment of student support.