



Semester description:

7th. semester Human Centered Informatics

Copenhagen

Overordnet semesterbeskrivelse

About the semester

School: Skolen for Communication, Art and Technology (CAT)

Study Board: Communication and Digital Media

Study Regulation:

http://www.fak.hum.aau.dk/digitalAssets/90/90808_ma_human_centred_informatics_2014.pdf

Semester theme

From the Study Regulation

The 7th semester of the programme comprises a 5 ECTS credits module in **“Professional Inquiry”**, a project module of 20 ECTS credits in **“User Practice, User Analysis and Pilot Studies”**, a 5 ECTS credits study subject module **“ICT Based Data Collection and Analysis”** and a 5 ECTS credits elective module. The primary elective is **Web Programming**.

The semester starts out with the module on “Professional Inquiry”, which lets the students explore research questions and scientific problems.

The semester will introduce the students to project writing as a part of the project module on User Practice, User Analysis and Pilot Studies. The project module further introduces to key areas within HCI and IS. During the project module, groups will be formed in relation to the final project exam. Each group will be assigned a supervisor.

The semester then moves on to the study subject module “ICT Based Data Collection and Analysis” and a 5 ECTS credits elective module. “ICT Based Data Collection and Analysis” introduces students to a range of different tools and methods for online data collection from web pages, social media, and publication databases, and give them hands-on experience with some of the most practical tools. In addition, methods for enrichment of the collected data will be discussed, such as sentiment analysis, information extraction, and crowdsourcing. Finally, the course highlights some of the ethical and legal aspects of data collection.

The semester finishes off with a semester evaluation after the final projects have been handed in.

The semester will be organized in the following manner:

- 1) Semester introduction (Beginning of September)
- 2) Professional Inquiry (Weeks 36-37 + ongoing deliverables)
- 3) User Practice, User Analysis and Pilot Studies (Weeks 38-40)
- 4) ICT Based Data Collection and Analysis (Weeks 40-42)
- 5) Optional course (Weeks 40-46)



- 6) Semester evaluation (Week 50)
- 7) Shark Tank (Week 51)

Size

30 ECTS points, equal to 825 work hours or 22 weeks full-time work incl. Lectures, exercises, group work, supervision, exams.

Semester coordinator and administrative assistance

Anchor: Anders Drachen

Study secretary: Lone Nørstad

Module descriptions

Project module: User Practice, User Analysis and Pilot Studies
15 ECTS, 1 412,5 work hours

Placering

7. Semester

Modulansvarlige

Anders Drachen

Type og sprog

Projektmodul

Teaching in English

Mål

In this module students will acquire:

Knowledge of:

- theory of science, theory and methods as regards the understanding of human practice and more specifically user practice in relation to technology use at the highest international level
- digital culture and practice, cultural and social phenomena related to ICT use
- cognitive, conative and emotive aspects of ICT use
- the structuring of user analyses and pilot studies directed towards various domains and processes within work life, learning and knowledge sharing.

Skills in:

- assessing strategies and methods for user analyses and pilot studies on the basis of the needs of the study and knowledge of the disciplinary theories and methods.
- choosing suitable strategies and methods for user analyses and pilot studies directed towards various domains
- data collection and analysis as regards user analysis and pilot studies
- communicating user analyses and pilot studies to peers and others.

Competences in:



- taking an analytical, reflective and critical approach to the preconditions for user analyses and pilot studies
- taking an analytical, reflective and critical approach to user analyses and pilot studies
- engaging in disciplinary and interdisciplinary collaboration on user analyses and pilot studies, with a professional approach
- identifying own learning needs and structuring own learning in relation to the subject area of user analysis for pilot studies.

Fagindhold og begrundelse

Through the module, students will acquire knowledge, skills and competences in relation to the areas of user analysis and pilot studies with particular emphasis on user analysis and pilot studies in relation to the development of ICT for supporting work, knowledge and learning processes.

The module will introduce students to user analysis, user-system interaction and pilot studies within the fields of ICT innovation, design and development, which are areas of core competence within the field of informatics. This includes acquisition and application of knowledge on digital practice, organisational culture, digital culture and cognitive, conative and emotive aspects of the undertaking of user analyses and pilot studies with a view to qualifying operational processes and organisational change.

The module comprises teaching within the following areas:

- user practice, user analysis and pilot studies – theory of science and theory
- data collection and analysis methods
- user practice, user analysis and user testing in specific domains

Academic supervision will be offered in connection with the problem oriented project work.

Omfang og forventning

Appr. 28 teaching hours (+ preparation)

Module activities

Course plan:

- 0 – Introduction
- 1 – Experimental and Observational methods
- 2 – Research Models: Causality and Variables
- 3 – Empirical Research with humans and ethics
- 4 – Descriptive Stats
- 5 – Simple inferential Stats 1
- 6 – Inferential stats 2
- 7 – Usability and usability testing
- 7 – Semester evaluation

Eksamination

Study Subject Module: ICT-based Data Collection & Analysis

Placering

7. Semester

Modulansvarlig



Birger Larsen
Type og sprog <i>Modulet er et studiefagsmodul</i> <i>Undervisningen foregår på engelsk</i>
Mål In this module students will acquire: Knowledge of: <ul style="list-style-type: none">theories and methods at the highest international level as regards qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studiesICT systems for data collection and analysis in relation to user analyses and pilot studiesprinciples, including ethical principles, for managing ICT systems for data collection and analysis in relation to user analyses and pilot studies. Skills in: <ul style="list-style-type: none">assessing and selecting a method for qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studiesselecting, configuring and adapting ICT systems for qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studiescommunicating methods for ICT based data collection and analysis to peers and laymencommunicating results on ICT based data collection and analysis to peers and laymen. Competences in: <ul style="list-style-type: none">taking an analytical, reflective and critical approach to qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studiesengaging in interdisciplinary collaboration on ICT based data collection and analysis in relation to user analyses and pilot studiesidentifying own learning needs and structuring own learning in relation to the subject
Fagindhold og begrundelse The module will introduce students to ICT based data collection and analysis offering a number of opportunities to obtain vast amounts of data on the use of for example Web based ICT solutions with relative ease. These opportunities call for fundamental consideration of options and problems, including ethical concerns on the significance of the potentially extensive mappings of individual user behaviour. During the course of the module, students will engage in ICT based data collection and analysis for the support of ICT user analyses and pilot projects. The module comprises courses and exercises within the following areas: <ul style="list-style-type: none">theory and method within ICT based data collection and analysistools for ICT based data collection and analysis
Scope and expectations 20 teaching hours
Academic content and basis Course plan: Introduction



<ul style="list-style-type: none">▶ Introduction to course▶ Deep vs. surface data▶ Big data <p>Surveys</p> <ul style="list-style-type: none">▶ Surveys <p>Surveys</p> <ul style="list-style-type: none">▶ Crowdsourcing▶ Web mining using Import.IO▶ Google Analytics? <p>Content analysis</p> <ul style="list-style-type: none">▶ Manual coding▶ Automatic annotation <p>Observation</p> <ul style="list-style-type: none">▶ Screen recording▶ Remote usability testing <p>Legal & ethical aspects</p> <ul style="list-style-type: none">▶ Debate
Eksamination 7-day take-home exam

Project module: Professional Inquiry 5 ECTS
Placering 7. Semester
Module responsible Birger Larsen
Type og sprog Project module Teaching in English
Objectives: In this module students will acquire: Knowledge of: <ul style="list-style-type: none">• the connections and differences between empirical inquiry and research questions based on informatics



- the connection between research questions and the theory of science in the organisation of scientific research
- theory of science within the field of informatics

Skills in:

- describing empirical inquiry
- translating empirical inquiry into a scientific research question within the field of informatics
- combining a scientific research question with the theoretical basis of its investigation.

Competences in:

- preparing scientific research based on personal enquiry
- taking a reflective approach to the basis of scientific inquiry
- engaging in disciplinary collaboration on scientific problem formulation

The module comprises the development and phrasing of empirical inquiry for the purpose of enabling students to formulate research questions and scientific problems within the field of informatics. This will form the basis of the problem based project work and inquiries to be carried out during the course of the informatics study programme.

Scope and expectations

Appr. 18 teaching hours (+ preparation)

Academic content and basis

Course plan:

Doing research

- ▶ Writing in English
- ▶ Report writing
- ▶ How to read a research paper?
- ▶ Literature review
- ▶ Theory in ICT + The scientific method
- ▶ Information Literacy
- ▶ Finding a problem/research topic

Examination 1

An internal written examination in English in **“Professional Inquiry”**

The examination is a seven-day take-home assignment on a set topic. Evaluation: pass/fail.

The assignment paper must demonstrate that the student fulfils the objectives for the module stated above. Alternatively, the examination may be completed by satisfactory and active participation in the module, i.e. a minimum of 80% attendance and completion of set tasks.



Module Title, Web Programming 5 ECTS
Placering 7. Semester
Modulansvarlig Toine Bogers
Type og sprog Valgfagsmodul Engelsk
Objective At the end of the module, students are expected to be able to: Knowledge <ul style="list-style-type: none">• understand the basics of programming in PHP• understand fundamental relational database concepts Skills <ul style="list-style-type: none">• write and debug procedural PHP scripts• design a basic relational database Competences <ul style="list-style-type: none">• design and implement basic Web applications using PHP and relational databases
Fagindhold og begrundelse This course will provide an introduction to Web programming using PHP for motivated students with little or no prior experience in programming. The course will focus on planning and organizing programs, as well as the grammar of the PHP programming language. You will learn concepts like variables, loops, functions, methods and argument passing, classes, and general problem solving ability that will become building blocks to your programming skills. In addition, the course will provide a gentle introduction to relational databases using MySQL in the context of Web programming.
Deltagere og forudsætninger Students on the 7 th semester KOM and IV degrees. No prior experience is required, although experience with HTML will be very useful.
Module activities (course plan) 1. Introduction to programming This lecture will introduce students to the basics behind how computers work, what programming is, and give a



brief introduction to HTML. We will also spend time on installing PHP and MYSQL set up on the students' laptops.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 1, pp. 1-9, 12-21, 25-27
- Gaddis, T. (2012). *Starting Out with Python*, 2nd edition, chapter 1, Addison-Wesley

Recommended reading:

- Connolly, R. & Hoar, R. (2014). *Fundamentals of Web Development*, Pearson, chapter 1 ("How the Web works")

2. Comments & variables

This lecture will introduce students to the concepts of variables, variable types and comments in PHP.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 1
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 2
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 4
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 5

3. Input/output processing

This lecture will teach students how to get information into PHP scripts and what the possibilities are for displaying it on the screen.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 3
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 4
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 5

4. Conditionals & operators

This lecture will introduce students to the building blocks of programming logic: conditionals and operators, such as *if-then-else* and *case* statements.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 6, pp. 115-145

5. Functions

This lecture will introduce students to the concept of functions, both built-in and self-defined. In addition, this lecture will offer a mid-course recap and Q&A session.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 10

6. Repetition structures

This lecture will introduce students to repetition structures, such as *for* and *while* loops.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 6, pp. 142-150



7. Arrays

This lecture will teach students the concepts of arrays and lists, which enable much more freedom in storing and manipulating data.

Required reading

- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 7

8. MySQL querying

This lecture will introduce students to the concepts of variables, variable types and comments in PHP.

Required reading

- Ullman, L. (2011). *PHP and MySQL for Dynamic Web Sites*, 4th edition, Peachpit Press, chapter 4
- Ullman, L. (2011). *PHP and MySQL for Dynamic Web Sites*, 4th edition, Peachpit Press, chapter 5, pp. 129-152

9. MySQL programming

This lecture will introduce students to the concepts of variables, variable types and comments in PHP.

Required reading

- Ullman, L. (2011). *PHP and MySQL for Dynamic Web Sites*, 4th edition, Peachpit Press, chapter 4

10. Putting it all together

During the last lecture, students will combine all the things they've learned throughout the course. In addition, there will be an end-of-course recap and Q&A session.

Recommended reading:

- Nørmark, K. (2014). *Functional Programming in Scheme*, Aalborg University, chapter 1 & 2 ("Programming paradigms"). Available at <http://people.cs.aau.dk/~normark/prog3-03/html/notes/theme-index.html>
- Van Roy, P. (2009). Programming Paradigms for Dummies: What Every Programmer Should Know. *New Computational Paradigms for Computer Music*, pp. 9-13

Scope and expectations

Teaching is divided over ten two-hour sessions, which will be a combination of lectures and lab sessions, where the students will work on programming exercises and tasks.

Examination

The examination is a three-day, home-based, programming examination. Students are required to write a program to fulfill the requirements formulated by the examiner. The examination is individual with pass/fail grading. The home-based programming code must demonstrate that the student fulfills the objectives described above.

The examination may be substituted by satisfactory active participation in the module, which includes solving the total number of tasks and exercises during the module.



AALBORG UNIVERSITY
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Study Board of Communication and Digital Media
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