



AALBORG UNIVERSITY
DENMARK

Study Board of
Communication and Digital Media
Fall 2016

Semester description: 7th semester Information Studies, Copenhagen

About the semester

School: Skolen for Communication, Art and Technology (CAT)
Study Board: Communication and Digital Media
Study: Regulations and curriculum for the Master's Programme in Information Technology (Information Studies), september 2016:
Regulation: http://www.fak.hum.aau.dk/digitalAssets/153/153006_ka_information-studies_2016_hum_aau.dk.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: Bjarke Madsbøll

Project module: User Practice, User Analysis and Pilot Studies

15 ECTS, 412,5 work hours

Location

7. Semester

Module coordinator

Anders Drachen

Type and language

Projektmodul

Teaching in English

Objectives

In this module students will acquire:

Knowledge of:

- 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.

Academic content and basis

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.

Scope and expectations

Apr. 28 teaching hours (+ preparation)

Module activities

Note: Total literature list is comprised of the required reading listed here as well as the literature selected by students for their semester project.

Software requirements:

SPSS

AAU has a site license for the SPSS analysis software. Get it installed on your laptops so it is ready to use in class: <http://www.software.aau.dk/spss/>

NVIVO

AAU has a site license for the NVIVO analysis software. Get it installed on your laptops so it is ready to use in class: <http://www.software.aau.dk/nvivo/>

Course books

Bordens, K. S. and Abbott, B. B. "Research Design and Methods – A Process Approach". McGraw Hill. 8th edition or newer.

Dix, A.; Finlay, J. E.; Abowd, G. D. and Beale, R. "Human-Computer Interaction", 3rd edition, McGraw Hill.

Goodman, E.; Kuniavsky, M. and Moed, A. "Observing the User Experience", Morgan Kaufman Publishing.

Another good book is Andy Field, Discovering Statistics using SPSS, 5th edition or newer, Sage Publishing.

1 – Semester Introduction

The first session of the module will focus on: The requirements of the degree and the course; the aims and scope of conducting stakeholder analysis and requirements specification for software; and what it means to conduct and write a PBL project.

Required reading

Pickard, A. J. (2013). "Chapter 1" in: Research Methods in Information. 2nd Ed. London: Facet Publishing. [35 pages]

Rogers, Y. (2004) New Theoretical approaches for Human-Computer Interaction. Annual Review of Information, Science and Technology, 38, 87-143. Link:

http://users.mct.open.ac.uk/yvonne.rogers/papers/ARIST_Rogers.pdf [56 pages]

Ioannidis, J. P. A. "Why Most Published Research Findings Are False", PLoS Medicine, 2005, 8(2) [6 pages]

2 – Research Models: Causality and Variables

Introduces the concept of causality in empirical research and how to handle variables when doing observational or experimental research.

Required reading

Bordens, K. S. and Abbott, B. B. "Research Design and Methods – A Process Approach". McGraw Hill. 8th edition or newer.

Chapter 1: Explaining Behavior [30 pages]

Chapter 2: Developing and Evaluating Theories of Behavior [33 pages]

Chapter 3: Getting Ideas for Research [45 pages] (recap from PI course)

Chapter 4: Choosing a Research Design [25 pages] (recap from PI course)

Chapter 5: Making Systematic Observations [35 pages]

3 – Experimental and observational methods

Describes and discusses the differences between experimental and observational methods, and how they lead to different types of results.

Required reading

Bordens, K. S. and Abbott, B. B. "Research Design and Methods – A Process Approach". McGraw Hill. 8th edition or newer.

Chapter 4: Choosing a Research Design [25 pages]

4 – Empirical Research with humans and ethics

Covers the challenges and procedures associated with involving humans in HCI experiments and user testing, and the ethical guidelines for human-centered research.

Required reading

Bordens , K. S. and Abbott, B. B. “Research Design and Methods – A Process Approach”. McGraw Hill. 8th edition or newer.

Chapter 7: Understanding Ethical Issues in the Research Process [25 pages]

5 – Descriptive Stats

Introduces the basic descriptive methods of quantitative data, including central tendencies, frequency plots and z-scores.

Required reading

Bordens , K. S. and Abbott, B. B. “Research Design and Methods – A Process Approach”. McGraw Hill. 8th edition or newer.

Chapter 13: Describing Data [37 pages]

6 – Simple inferential Stats 1

Introduces the use of sample to make inferences about populations, the use of probability statistics and the basic tools in the statistician’s toolbox.

Required reading

Bordens , K. S. and Abbott, B. B. “Research Design and Methods – A Process Approach”. McGraw Hill. 8th edition or newer.

Chapter 14: Using Inferential Statistics [35 pages]

7 – Inferential stats 2

Introduces the use of sample to make inferences about populations, the use of probability statistics and the basic tools in the statistician’s toolbox.

Required reading

Bordens , K. S. and Abbott, B. B. “Research Design and Methods – A Process Approach”. McGraw Hill. 8th edition or newer.

Chapter 14: Using Inferential Statistics [35 pages]

Curran-Everett, D. and Benos, D. J. “Guidelines for reporting statistics in journals published by the American Physiological Society”, 287(2), 2004, 247-249 [3 pages]

8 – Usability and usability testing

Basic theory on usability and evaluation methods

Required reading

Goodman, E.; Kuniavsky, M. and Moed, A. “Observing the User Experience”, Morgan Kaufman Publishing, chapters 1-4 and 11 [72+53 pages]

Dix et al. “Evaluation techniques”, chp. 9 in “Human Computer Interaction” [46 pages]

9 – Cognitive Human Modelling and Basic HCI Theory

Introduction to basic HCI theory including humans, computers and their interaction, as well as how this connects with and forms the basis for empirical research.

10 – Stakeholder Analysis

Introduces stakeholder analysis as a tool for gathering requirements for software.

Required reading

Schmeer, K. “Stakeholder Analysis Guidelines” [48 pages]

Dix et al. “Socio-Organizational Issues and Stakeholder Requirements”, chp. 13 in “Human Computer Interaction” [24 pages]

Pan, G. S. C. “Information systems project abandonment: a stakeholder analysis”, International Journal of Information Management, 25, 2005, 173-184 [11 pages]

Additional reading

Sharp, H, Finkelstein, A. and Galal, G. "Stakeholder Identification in the Requirements Engineering Process". 1999, IEEE Publishers. [5 pages]
Puloudi, A. "Aspects of the Stakeholder Concept and their Implications for Information Systems Development". Proceedings of the 32nd Hawaii International Conference on System Sciences, 1999. [17 pages]
McAfee, A. P. "Enterprise 2.0: The Dawn of Emergent Collaboration". MIT Sloan Management Review, 2006, 47(3). [10 pages]
Majchrzak A.; Cherbakov, L. and Ives, B. "Harnessing the Power of the Crowds with Corporate Social Networking Tools: How IBM Does It. MIS Quarterly Executive, 8(2), 2009. [7 pages]

11 – Semester evaluation

Semester evaluation in the class.

Examination 2

An external oral examination in: "User Practice, User Analysis and Pilot Studies".

The examination is a conversation between the student(s) and the examiner and external examiner based on a project report produced individually or in a group. The project report/written work will be considered the shared responsibility of the group. Students will be examined and assessed on the basis of the entire project report, and one combined grade will be awarded each student for the project report and the oral performance.

Literature foundation: 1500 standard pages supervisor approved, self-selected literature related to the project.

The project report: the total number of pages must be no less than 15 pages and no more than 20 pages per student in a project group, and 30 pages if written individually.

Duration of examination: 20 minutes per student and 10 minutes per group for assessment and announcement of result, although no longer than a total of two hours. 30 minutes in total for individual examinations.

Evaluation: Grading according to the 7-point scale.

At oral group examinations, the examination must be conducted in such a way that individual assessment of each individual student's performance is ensured.

Credits: 15 ECTS.

The project report and the conversation must demonstrate that the student fulfils the objectives for the module stated above.

In the evaluation of the examination performance, the grade 12 will only be awarded to students who give an excellent performance and demonstrate that they have fulfilled the above objectives exhaustively or with only few insignificant omissions.

Any re-examinations will be held on the basis of the revised project report.

Study Subject Module: ICT-based Data Collection & Analysis

Location

7. Semester

Module coordinator

Birger Larsen

Type and language

Modulet er et studiefagsmodul
Undervisningen foregår på engelsk

Objectives

In this module students will acquire:

Knowledge of:

- 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 studies
- ICT systems for data collection and analysis in relation to user analyses and pilot studies
- principles, including ethical principles, for managing ICT systems for data collection and analysis in relation to user analyses and pilot studies.

Skills in:

- assessing and selecting a method for qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studies
- selecting, configuring and adapting ICT systems for qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studies
- communicating methods for ICT based data collection and analysis to peers and laymen
- communicating results on ICT based data collection and analysis to peers and laymen.

Competences in:

- taking an analytical, reflective and critical approach to qualitative and quantitative oriented data collection and analysis in relation to user analyses and pilot studies
- engaging in interdisciplinary collaboration on ICT based data collection and analysis in relation to user analyses and pilot studies
- identifying own learning needs and structuring own learning in relation to the subject area of ICT based data collection and analysis in relation to user analyses and pilot studies.

Scope and expectations

20 teaching hours

Academic content and basis

1. Introduction

The first lecture will introduce students to the formalities of the DCA course and provide you with a general introduction to different paradigms of data collection. We will also discuss the different interpretations of 'Big Data' and the promises and pitfalls it brings.

Required reading

- boyd, d. & Crawford, K. (2012). Critical Questions for Big Data, *Information, Communication & Society*, 15(5), 662-679 [18 pages]
- Lohr, S. (2012). The Age of Big Data, *New York Times*, p. SR1, Retrieved September 10, from <http://www.nytimes.com> [6 pages]

2a. Data collection (part 1): Surveys

This lecture will provide students with an overview of the different qualitative data collection methods we have at our disposal. Through group-based exercises students will work on creating their own surveys.

Required reading

- Lazar, J., Feng, J.H., and Hochheiser, H. (2010). Automated Data Collection Methods (chapter 12). In: *Research Methods in Human-Computer Interaction* (pp. 307-342). Wiley [36 pages]

Supplementary reading

- Kuniavsky, M. (2003). Surveys (chapter 11). In: *Observing the User Experience: A Practitioner's Guide to User Research* (pp. 303-366). Morgan Kaufman [64 pages]

2b. Data collection (part 2): Web-based methods

Lecture 2 will provide students with an overview of different quantitative data collection methods. They will receive hands-on experience with a versatile tool for data collection on the Web called **Import.IO**. Finally, crowdsourcing will be introduced as an alternative data collection method.

Required reading

- Howe, J. (2006). *The Rise of Crowdsourcing*, *Wired* [13 pages]
- Estellés-Arolas, E. and González-Ladrón-de-Guevara, F. (2012). Towards an Integrated Crowdsourcing Definition, *Journal of Information Science*, 38(2), pp. 189-200 [12 pages]
- Parvanta, C., Roth, Y. and Keller, H. (2013): Crowdsourcing 101: A Few Basics to Make You the Leader of the Pack. *Health Promotion Practice*, 14(2), 163–167 [5 pages]

3. Data collection (part 3): Observation

Lecture 3 will provide students with an overview and examples of different IT-based observation techniques, including screen recording, remote usability testing and eyetracking.

Required reading

- Webb, N., & Renshaw, T. (2008). Eyetracking in HCI. In P. Cains & A. L. Cox (Eds.), *Research Methods for Human-Computer Interaction* (pp. 35-69). Cambridge, UK: Cambridge University Press [35 pages]

4. Data analysis

Lecture 4 will highlight some commonly used techniques for analyzing and enriching data. Content analysis is a commonly used technique for coding textual data, such as interviews, focus groups transcripts and usability logs. Through exercises, students will try their hand at coding data collected for a real research project on movie search. In addition, the lecture covers automatic sentiment analysis, detecting the sentiment and opinions expressed in text.

Required reading

- Lazar, J., Feng, J.H., and Hochheiser, H. (2010). Automated Data Collection Methods (chapter 11). In *Research Methods in Human-Computer Interaction* (pp. 288-299). Wiley [12 pages]
- Wright, A. (2009). Our Sentiments, Exactly. *Communications of the ACM*, 52(4), pp. 14-15 [2 pages]

5. Legal & ethical aspects

Lecture 5 will focus on the legal and ethical aspects of online data collection.

Required reading

- boyd, d. & Crawford, K. (2012). Critical Questions for Big Data, *Information, Communication & Society*, 15(5), pp. 662-679 [18 pages]

Examination

7-day take-home exam

An internal written examination in English in “ICT Based Data Collection and Analysis”.
The examination is a seven-day take-home assignment on a set topic. On the basis of the module, students will respond to one or a number of questions and assignments within the subject area of the module. The assignment paper must not exceed eight pages, and it must be prepared individually.

Evaluation: Grading according to the 7-point scale.

The study elements on which the examination is based is equivalent to 5 ECTS.
In the evaluation of the examination performance, the grade 12 will only be awarded to students who give an excellent performance and demonstrate that they have fulfilled the above objectives exhaustively or with only few insignificant omissions.

Substitution

Xxx

Project module: Professional Inquiry

5 ECTS

Location

7. Semester

Module coordinator

Birger Larsen

Type and language

Project module

Teaching in English

Objectives

In this module students will acquire:

Knowledge of:

- 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

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

Lecture 1: Doing research (1)

In this lecture we will take a closer look at:

- Writing in English
- Report writing

Required reading

Chapter 4 in Hämäläinen, W. (2006): *Scientific Writing for Computer Science Students*. University of Joensuu, 123 p. (<http://www.cs.joensuu.fi/pages/whamalai/sciwri/sciwri.pdf>) [43 pages]

Chapters 1, 6, 7 and 8 in Zobel, J. (2014): *Writing for Computer Science*. 3rd edition. Springer Science Verlag, 284 p. (Full book can be downloaded via AUB) [62 pages]

Lecture 2: Doing research (2)

In this lecture we will discuss:

- How to read and write research papers
- How to do a literature review

Required reading

Chapters 3 and 5 in Zobel, J. (2014): *Writing for Computer Science*. 3rd edition. Springer Science Verlag, 284 p. (Full book can be downloaded via AUB) [17 pages]

Cronin, P., Ryan, F., & Coughlan, M. (2008): *Undertaking a Literature Review: A Step-By-Step Approach*. *British Journal of Nursing*, 17(1), 38–43. (Available through AUB) [6 pages]

Rowley, J., & Slack, F. (2004): *Conducting a Literature Review*. *Management Research News*, 27(6), 31–39. (Available through AUB) [9 pages]

Lecture 3: Theory in ICT + The Scientific Method

In this lecture we will discuss what constitutes theory and epistemology in ICT research, and also the overall scientific method as such.

Required reading

Carroll, J. M. (2014): *Human Computer Interaction - brief intro*. In: Soegaard, M. and Dam, R. F. (eds.). *The Encyclopedia of Human-Computer Interaction, 2nd Ed.*. Aarhus, Denmark: The Interaction Design Foundation. (Available online for free) [25 pages]

Charters (2003): *The Use of Think-aloud Methods in Qualitative Research - An Introduction to Think-aloud Methods*. *Brock Education*, 12(2). [15 pages]

Lecture 4: Information Literacy

In this lecture we will focus on Information Literacy, the most important skill to learn at a higher education no matter what field you are in. Information Literacy is the adoption of appropriate information behavior identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society. IL is also a transformational process in which the learner needs to find, understand, evaluate and use information in various forms. Strong analytical, critical thinking and problem solving skills are key attributes of valuable employees in the HCI sectors.

Required reading

Zobel, J. (2014): *Writing for Computer Science*. 3rd edition. Springer Science Verlag, 284 p. (Full book can be downloaded via [AUB](#))

Chapter 4 (see above for instructions) [18 pages]

Bordens , K. S. and Abbott, B. B. "Research Design and Methods – A Process Approach". McGraw Hill. 8th edition or newer.

Chapter 3: Getting Ideas for Research [45 pages]

Chapter 4: Choosing a Research Design [25 pages]

(students already have this book for the project module course).

Additional reading

Forsyth Tech (2015) 'Information Literacy in Today's Workplace: The Employer's Perspective Day 1'. Available at <https://www.youtube.com/watch?v=PglZ0fNrkn4>

Forsyth Tech (2015) 'Information Literacy in Today's Workplace: The Employer's Perspective Day 2'. Available at <https://www.youtube.com/watch?v=7jdMw74-rBU>

Lecture 5: Finding a research topic and planning research

In this lecture we will focus on some of the very early steps that you go through in order to find a research topic, a.k.a. solving problems. The process of defining a constrained research project leading to the solution of a complex problem related to humans and information systems is important to understand and will be used throughout the degree.

Required reading

Zobel, J. (2014): *Writing for Computer Science*. 3rd edition. Springer Science Verlag, 284 p. (Full book can be downloaded via [AUB](#)) [25 pages]

Chaper 2 (see above for instructions)

Bordens , K. S. and Abbott, B. B. "Research Design and Methods – A Process Approach". McGraw Hill. 8th edition or newer.

Chapter 3: Getting Ideas for Research [45 pages]

Chapter 4: Choosing a Research Design [25 pages]

(students already have this book for the project module course).

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 completed by satisfactory and active participation in the module, i.e. a minimum of 80% attendance and completion of set tasks.

Modultitel, ECTS-angivelse og STADS-kode
Web Programming 5 ECTS
Placering
7. Semester
Modulansvarlig
Toine Bogers

Type og sprog

Valgfagsmodul
Engelsk

Mål

At the end of the module, students are expected to be able to:

Knowledge

- understand the basics of programming in PHP
- understand fundamental relational database concepts

Skills

- write and debug procedural PHP scripts
- design a basic relational database

Competences

- 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 7th semester KOM and IV degrees. No prior experience is required, although experience with HTML will be very useful.

Modulaktiviteter (kursusgange med videre)**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 [23 pages]
- Gaddis, T. (2012). *Starting Out with Python*, 2nd edition, chapter 1, Addison-Wesley [20 pages]

Supplementary reading:

- Connolly, R. & Hoar, R. (2014). *Fundamentals of Web Development*, Pearson, chapter 1 ("How the Web works") [51 pages]

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 [30 pages]
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 2 [18 pages]
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 4 [18 pages]
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 5 [24 pages]

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 [24 pages]
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 4 [18 pages]
- Ullman, L. (2011). *PHP for the Web*, 4th edition, Peachpit Press, chapter 5 [24 pages]

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 [31 pages]

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 [30 pages]

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 [9 pages]

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 [32 pages]

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 [18 pages]
- Ullman, L. (2011). *PHP and MySQL for Dynamic Web Sites*, 4th edition, Peachpit Press, chapter 5, pp. 129-152 [33 pages]

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 [18 pages]

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> [9 pages]
- Van Roy, P. (2009). Programming Paradigms for Dummies: What Every Programmer Should Know. *New Computational Paradigms for Computer Music*, pp. 9-13 [5 pages]

Omfang og forventning

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.

Eksamen

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.