AALBORG UNIVERSITET

Skabelon for semesterbeskrivelse for uddannelser ved Aalborg Universitet

Semesterbeskrivelse 8.semester Information Studies KA-IS (København)

Oplysninger om semesteret

Skole: MPACT
Studienævn: Kommunikation og Digitale Medier
Studieordning: Kandidatuddannelsen i Information Technology (Information Studies) 2017

Semesterets faglige profil

The 8th semester of the programme comprises a project module of 20 ECTS credits in "Development and Design of ICT", a 5 ECTS credits study subject module "ICT for Learning, Knowledge and Content Management" and a 5 ECTS credits elective module.

Semesterets organisering og forløb

The semester is introduced in week 5, and the main 20 ECTS project module on "Development and Design of ICT" starts in week 9 and teaching ends in week 14. The project module goes in-depth into development methods, modelling, prototyping, design methods, information architecture and user testing. The module is informally split into two components, Development Methods and Design Methods. Both introduce several different methods and processes. The Development Methods section focuses on agile methods, UML and prototyping as core tools. The Design Methods section focus on the use of storyboards, flowcharts and wireframes, as well as the context of design. Furthermore, Information Architecture and basic user testing methods are covered. Two or more set cases are offered to the students as background for in-class deliverables.

The semester also includes one 5 ECTS study module on "ICT for Learning, Knowledge and Content Management", which runs in weeks 5-8 with a takehome exam in week 9. This module operates in concert with the project module. It is focused on introducing students to the design and management of systems for learning, knowledge and content management. The module focusses on networked learning, and will introduce students to the fundamentals of learning designs in support of networked learning and technology enhanced learning. The module takes the students from the process of user research and requirements defintion through to modeling system functions via use case diagrams, as well as wireframing and simple mock-ups for design. Finally, implementation of systems via CMS. Along the way 3 deliverables are generated and shared among the students, forming the dataset for the take-home exam at the end of the course.

Students can choose one 5 ECTS elective course. Either from the two courses offered under this degree ("Web Programming" and "Design Thinking"), from among the elective courses offered by the master in communication, or at other universities. Elective courses start in week 9/10

Semesterkoordinator og sekretariatsdækning

Semesterkoordinator: Birger Larsen
Studiesekretær: Bjarke Madsbøll

Modulbeskrivelse

Modultitel, ECTS-angivelse
"Development and Design of ICT"
20 ECTS-point.

Placering
8. Semester

Modulansvarlig
Birger Larsen

Type og sprog
Projektmodul
Engelsk

Mål

Knowledge of:

- the theory of science, theory and methods of system development
- user-driven techniques and tools
- organisational change and organisational culture in relation to system development and system design pertaining to ICT
- information architecture and usability
- formalisation and categorisation as regards formal models for the preparation, visualisation and communication of design solutions.

Skills in:

- assessing strategies and methods for system development and system design on the basis of user needs and/or costumer needs and knowledge of the disciplinary theories and methods.
- choosing suitable strategies and methods for system development and system design directed towards various domains
- data collection and analysis as regards system development and system design
- applying formal models for the preparation and communication of system development and system design
- communicating system development and system design to peers and others.

Competences in:

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

Fagindhold

The module will introduce students to design of ICT directed towards organisational practice or another professional practice as an additional core activity in the practice field of informatics.

The module comprises teaching within the following areas:
- system design with particular emphasis on information architecture and interaction design
- user-driven system development and system development methods in theory and practice
- formal models for preparing and communicating design solutions (for example blueprints, UML etc.)
- information theory and understanding of information with a view to reflecting on the scientific theoretical basis of design work.

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

Omfang og forventet arbejdsindsats
Modulet udgør 20 ECTS points. 1 ECTS point svarer til 27,5 times arbejde, og 20 ECTS point svarer således til 550 arbejdstimer bestående af forberedelse til undervisning, undervisningsdeltagelse, gruppearbejde, øvelser, vejledning og eksamener

Modulaktiviteter (kursusgange med videre)

NEDENSTÅENDE UDFORMES I MOODLE

En beskrivelse af hvordan fagindholdet udmøntes for det kommende semester samt en beskrivelse af andre særlige forhold der gør sig gældende for det specifikke semester (fx organisatoriske, strukturelle, studiemæssige m.m.)
En redegørelse for afløsning ved aktiv deltagelse (hvis det er en eksamensmulighed)
En oversigt over modulets undervisere
Link til gældende skema

For hver undervisningsaktivitet (eksempelvis kursusgange, workshops med videre) angives:

- *Undervisningens karakter (forelæsning, workshop, øvelse, gruppearbejde etc.)*
- *Undervisningsaktivitetens titel og nummer (i nævnte rækkefølge), kortfattet beskrivelse af aktiviteten (kursusmanchet) samt aktivitetens relation til modulets læringsmål*
- *Dato for afvikling*
- *Underviser(e)*
- *Angivelse af anvendt og anbefalet litteratur – herunder en samlet opgørelse over antal sider, samt hvilke tekster der uploades (nedenstående tabel anvendes)*
- *Slides og øvrige ressourcer*

Eksamen
Examination 4
An external oral examination in: “Development and Design of ICT”

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: 2000 standard pages supervisor approved, self-selected literature related to the project.

The project report: 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: 20 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 a revised project report.

Modulbeskrivelse

Modultitel, ECTS-angivelse
“ICT for Learning, Knowledge and Content Management”
5 ECTS

Placering
8. Semester

Modulansvarlig
Lone Dirckinck-Holmfeld

Type og sprog
Studiefagsmodul
Engelsk

Mål

Knowledge of:

 theory and methods at the highest international level as regards ICT systems for learning, knowledge and content management
 ICT systems for learning, knowledge and content management

Skills in:

 assessing, selecting and applying methods for learning, knowledge and content management
 selecting, configuring and adapting ICT systems for learning, knowledge and content management
 communicating methods and solutions for ICT for learning, knowledge and content management to peers and others.

Competences in:

 taking an analytical, reflective and critical approach to selecting, adapting and applying ICT systems for learning, knowledge and content management
 engaging in interdisciplinary collaboration on selecting, adapting and applying ICT systems for learning, knowledge and content management
 identifying own learning needs and structuring own learning in relation to selecting, adapting and applying ICT systems for learning, knowledge and content management.

Fagindhold
The module will introduce students to the management and adaptation of systems for learning, knowledge and content management in order to enable students to act independently when needing to adapt systems, implement prototypes and implement more complete solutions on the basis of the adaptation and combination of components.

The module comprises courses and exercises within the following areas:
 systems for learning, knowledge and content management
 use and adaptation of systems for learning, knowledge and content management.

Omfang og forventet arbejdsindsats
Modulet udgør 5 ECTS points. 1 ECTS point svarer til 27,5 times arbejde, og 5 ECTS point svarer således til 137,5 arbejdstimer bestående af forberedelse til undervisning, undervisningsdeltagelse, gruppearbejde, øvelser, vejledning og eksamener

Modulaktiviteter (kursusgange med videre)

NEDENSTÅENDE UDFORMES I MOODLE

En beskrivelse af hvordan fagindholdet udmøntes for det kommende semester samt en beskrivelse af andre særlige forhold der gør sig gældende for det specifikke semester (fx organisatoriske, strukturelle, studiemæssige m.m.)
En redegørelse for afløsning ved aktiv deltagelse (hvis det er en eksamensmulighed)
En oversigt over modulets undervisere
Link til gældende skema

For hver undervisningsaktivitet (eksempelvis kursusgange, workshops med videre) angives:

- *Undervisningens karakter (forelæsning, workshop, øvelse, gruppearbejde etc.)*
- *Undervisningsaktivitetens titel og nummer (i nævnte rækkefølge), kortfattet beskrivelse af aktiviteten*

(kursusmanchet) samt aktivitetens relation til modulets læringsmål

- *Dato for afvikling*
- *Underviser(e)*
- *Angivelse af anvendt og anbefalet litteratur – herunder en samlet opgørelse over antal sider, samt hvilke tekster der uploades (nedenstående tabel anvendes)*
- *Slides og øvrige ressourcer*

Eksamen

Examination 5

An internal written examination in English in “ICT for Learning, Knowledge and Content Management” 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 for an excellent performance displaying a high level of command of all aspects of the relevant material, with no or only a few minor weaknesses.

DEVELOPMENT AND DESIGN OF ICT (KDM_KA_INFORMATION STUDIES_CPH_F18)

Introduction and overview

Lecture 1 2 3 4 5 6 7

Content

The project module is focused along the semester theme of design and development of IT-based systems. The module is informally split into two components, Development Methods and Design Methods. Both introduce several different methods and processes. The Development Methods section focuses on agile methods, UML and prototyping as core tools. The Design Methods section focus on the use of storyboards, flowcharts and wireframes, as well as the context of design. Furthermore, Information Architecture and basic user testing methods are covered.

The course uses several chapters from the following books:

- Whitten, J. L. and Bentley, L. D. (2007): *Systems Analysis and Design Methods*, 7th edition. New York, USA: McGraw Hill/Irwin. xv, 747 pages.
- Moreira, M. E. (2013): *Being Agile: Your Roadmap to Successful Adoption of Agile* (1st ed.). Berkely: Apress. xi, 256 pages.
  [AUB fulltext download: https://goo.gl/PzsrQh]
- Goodman, E.; Kuniavsky, M. and Moed, A. (2012): *Observing the User Experience: A Practitioner´s Guide to User Research.* Waltham, MA: Morgan Kaufmann. xiii, 585 pages.
  [AUB fulltext download: https://goo.gl/KfkSkV]

Remaining course materials are available online.

Administrivia

Deliverables: Please see the document describing these for information about deliverables this semester.

Supervisor approval of reference lists: *Reference list bookkeeping template* — According to the Studieordning, your project must have at least 100 pages of academic literature per ECTS, to be approved by your supervisor. This list of supervisor-approved literature must be handed in at least 2 weeks before the project deadline. If you fail to do so, you risk having your project rejected.

To make this cumbersome process as easy as possible on students and supervisors alike, we propose using a Google Spreadsheet (this template) to keep track of your literature and page counts. Literature is entered on the first worksheet; the second worksheet automatically calculates how many pages of approved academic literature you already have. The link below is a template spreadsheet; please do not edit it directly! Instead, select *File* > *Make a copy...* and copy it to your one of your own Google Drive accounts. Then share it with your supervisor so (s)he) can approve literature throughout the semester. Please discuss this with your supervisor if you have any questions.

Do not use the google doc as your list - make a copy for your own use.

Remember there are 2 (two) work sheets - a literature list and a summary statistic sheet.

Deliverable completion spreadsheet: This read-only spreadsheet will allow you to keep track of which semester deliverables you have already completed and which ones are still open. If you believe you have spotted an error in the spreadsheet, please contact Anders. Link to the document.

Lecturers

Birger Larsen

Florian Meier

Meddelelser (1-way only - not used)

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Messages

Semester room, Spring 2018

Writing Theses and Dissertations

Client communication guide

8th semester deliverables

Hidden from students

ResearchDesign template Spring2017 8th-sem

Hidden from students

IS report template

Hidden from students

Reference list bookkeeping template

Active participation

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Module description - Development and Design of ICT

Project module on 8th semester (20 ECTS, equaling 550 working hours, Taught in English)

Module coordinator: Birger Larsen

Objectives - in this module students will acquire

Knowledge of

- *the theory of science, theory and methods of system development*
- *user-driven techniques and tools*
- *organisational change and organisational culture in relation to system development and system design pertaining to ICT*
- *information architecture and usability*
- *formalisation and categorisation as regards formal models for the preparation, visualisation and communication of design solutions.*

Skills in

- *assessing strategies and methods for system development and system design on the basis of user needs and/or costumer needs and knowledge of the disciplinary theories and methods.*
- *choosing suitable strategies and methods for system development and system design directed towards various domains*
- *data collection and analysis as regards system development and system design*
- *applying formal models for the preparation and communication of system development and system design*
- *communicating system development and system design to peers and others.*

Competences in

- *taking an analytical, reflective and critical approach to the preconditions for system development and system design*
- *taking an analytical, reflective and critical approach to system development and system design*
- *engaging in disciplinary and interdisciplinary collaboration on system development and system design, with a professional approach*
- *identifying own learning needs and structuring own learning in relation to the subject area of system development and system design.*

Academic content and conjunction with other modules/semesters

Prerequisites for participation - Only for students on the 8th semester of the Information Studies degree at AAU Copenhagen. All courses and deliverables on the 7th semester of the Humanistic Informatics degree at AAU Copenhagen must be completed.

Module activities (course sessions etc.)

Literature

Reference	*Mandatory (# pages)*	*Additional (# pages)*	*Upload*
Anda, B., Hansen, K. & Sand, G. (2009): An investigation of use case quality in a large safety-critical software development project. Information and Software Technology, 51(12), p. 1699-1711.	*12*		
Boehm, B. & Turner, R. (2005): Management Challenges to Implementing Agile Processes in Traditional Development Organizations. IEEE Software, 22(5), p. 30-39.		*10*	
Charters, E. (2003): The Use of Think-aloud Methods in Qualitative Research - An Introduction to Think-aloud Methods. Brock Education Journal 12(2), 68-82.	*14*		
Choi, Y. M. & Li, J. (2016): Usability evaluation of a new text input method for smart TVs. Journal of Usability Studies, 11(3), p. 110-123.	*14*		
Dix, A., Finlay, J., Abowd, G. D. & Beale, R. (2003): Human Computer Interaction, 3rd edition. Harlow: Pearson Education, xxv, 834 pages.	*33*		*x*
Dooley, J. (2011): Object-Oriented Analysis and Design. In: Software Development and Profesional Practice. Apress, p. 99-113.	*14*		
Friess, E. (2015): Personas in Heuristic Evaluation: An Exploratory Study. IEEE Transactions on Professional Communication, June 2015, 58(2), 176-191.	*16*		
Goodman, E.; Kuniavsky, M. and Moed, A. (2012): Observing the User Experience: A Practitioner´s Guide to User Research. Waltham, MA: Morgan Kaufmann. xiii, 585 pages.	*72*		
Heer, J. & Bostock, M. (2010): Crowdsourcing graphical perception: using mechanical turk to assess visualization design. In: Proceedings of the 28th international conference on human factors in computing systems, p. 203-212.	*10*		
Hertzum, M. (2016): A usability test is not an interview. Interactions, 23(2), p. 82-84.	*3*		

Hertzum, M. (2016): Usability testing: too early? too much talking? too many problems? Journal of Usability Studies, 11(3), p. 83-88.	*6*		
Kamalrudin, M., Hosking, J. & Grundy, J. (2011): Improving requirements quality using essential use case interaction patterns. In: Proceedings of the 33rd International Conference on Software Engineering (ICSE '11). New York: ACM, p. 531-540.	*10*		
Logue, K. ; Mcdaid, K. (2008): Agile Release Planning: Dealing with Uncertainty in Development Time and Business Value. In: Proceedings of the 15th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems, p. 437-442.		*6*	
Madrigal, D. & McClain, B. (2010): Do's and Don'ts of Usability Testing. In: Insights from Research - Walking in your customers' shoes, A column.		*6*	
Marcus, A. (2015): User-Interface Design and China: A Great Leap Forward. In: HCI and User-Experience Design: Fast-Forward to the Past, Present, and Future. HCI and User-Experience Design Series. London: Springer, p. 39-45.	*7*		
Matharu, G. S., Mishra, A., Singh, H. & Upadhyay, P. (2015): Empirical Study of Agile Software Development Methodologies: A Comparative Analysis. SIGSOFT Software Engineering Notes, 40(1), p. 1-6.	*6*		
Meszaros, G. & Aston, J. (2006): Adding usability testing to an agile project. Proceedings of AGILE 2006 (AGILE'06), Minneapolis, MN. p. 289-294.	*6*		
Monique W.M., Jaspers, T. S., van den Bos, C. & Geenen, M. (2004): The think aloud method: a guide to user interface design. International Journal of Medical Informatics, 73(11–12), p. 781-795.	*14*		
Moreira, M. E. (2013): Being Agile: Your Roadmap to Successful Adoption of Agile (1st ed.). Berkely: Apress. xi, 256 pages.	*55*		
Nilsson, E. G. (2009): Design patterns for user interface for mobile applications. Advances in Engineering Software, 40(12), p. 1318-1328.	*11*		
Øvad, T. & Larsen, L. B. (2015): The Prevalence of UX Design in Agile Development Processes in Industry. Proceedings of AGILE 2015 (AGILE'15), Washington, DC, p. 40-49	*10*		
Petersen, K. & Wohlin, C. (2010): The effect of moving from a plan-driven to an incremental software development approach with agile practices - An industrial case study. Empirical Software Engineering, 15(6), p. 654-693.		*39*	
Preece, J., Rogers, Y. & Sharp, H. (2015): Interaction Design - beyond human-computer interaction. 4th ed. Chichester: Wiley. xiii, 567 pages.	*71*		
Rand, C. & Eckfeldt, B. (2004): Aligning Strategic Planning with Agile Development: Extending Agile Thinking to Business Improvement. In: Proceedings of the Agile Development Conference (ADC'04). Los Alamitos, IEEE, p. 78-82.		*5*	
Regnell, B., Runeson, P., Wohlin, P. (2000): Towards integration of use case modelling and usage-based testing. Journal of Systems and Software, 50(2), 117-130.	*14*		
Rogers, T., Connelly, K., Tedesco, L., Hazlewood, W., Kurtz, A., Hall, R. E., Hursey, J. & Toscos, T. (2007): Why It's Worth the Hassle: The Value of In-Situ Studies When Designing Ubicomp. In: Proccedings of UBIcomp'2007, p. 336-353.	*18*		
Siau, K., & Rossi, M. (2011): Evaluation techniques for systems analysis and design modelling methods – a review and comparative analysis. Information Systems Journal, 21(3), p. 249-268.	*19*		
Turk, D., France, R. & Rumpe, B. (2002): Limitations of Agile Software Processes. In: Proceedings of the Third International Conference on Extreme Programming and Flexible Processes in Software Engineering (XP'2002), May 26-30, Alghero, Italy, p. 43-46.		*4*	
Vredenburg, K., Mao, J.-Y., Smith, P. & Carey, T. (2002): A survey of user-centered design practice. In: Proceedings of the SIGCHI Conference on human factors in computing systems, p. 471-478.	*8*		
Whitten, J. L. and Bentley, L. D. (2007): Systems Analysis and Design Methods, 7th edition. New York, USA: McGraw Hill/Irwin. xv, 747 pages.	*713*		
Total	1156	70	33

Course activities and literature is described below

Examination

Examination 4 - An external oral examination in: "Development and Design of ICT"

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: 2000 standard pages supervisor approved, self-selected literature related to the project.

The project report: 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: 20 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.

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1. Introduction (Birger & Florian, 2 hrs)

- Course intro
- Summary of previous semesters
- How will we build on this?
- Organization of the semester
- Case introduction (selected pre-defined cases)
- Introduction to the 3 deliverables and the deadlines around the semester projects
- Introduction to 1st semester project deliverable

Mandatory reading

- Whitten & Bentley (2007) - Chapters 1-4.
  [160 pages. systems analysis and design methods, IS building blocks, IS development and -management]

DDICT spring 2017 intro slides

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Case information

AAU student intranet.pdf

Børsen.pdf

case-slides.pptx

Google Explore.pdf

Personal art curation.pdf

Download folder

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2. Development methods (Florian, 4 hrs)

▶ Waterfall modeling

▶ SCRUM/Agile

▶ Gantt charts

Mandatory Reading

- Dix, A., Finlay, J., Abowd, G. D. & Beale, R. (2003): *Human Computer Interaction*, 3rd edition. Harlow: Pearson Education, xxv, 834 pages. Chapter 6: HCI in the Software Process.
  [33 pages - fulltext below, introduction to the role of HCI in software development]
- Moreira (2013) - Chapters 1-5.
  [54 pages, introduction to agile development]
- Goodman, Kuniavsky & Moed (2011) - Chapters 1-4.
  [72 pages. Introduces the basics of user testing in a practical situation].
- Matharu, G. S., Mishra, A., Singh, H. & Upadhyay, P. (2015): Empirical Study of Agile Software Development Methodologies: A Comparative Analysis. *SIGSOFT Software Engineering Notes*, 40(1), p. 1-6.

[6 pages - AUB fulltext link: https://goo.gl/W4ZvJ6]

- Øvad, T. & Larsen, L. B. (2015): The Prevalence of UX Design in Agile Development Processes in Industry. *Proceedings of AGILE 2015 (AGILE'15), Washington, DC, p. 40-49*.
  [10 pages - AUB fulltext link: https://goo.gl/GPtDzR (browse to find it)]
- Meszaros, G. & Aston, J. (2006): Adding usability testing to an agile project. *Proceedings of AGILE 2006 (AGILE'06), Minneapolis, MN*. p. 289-294.
  [6 pages - AUB fulltext link: https://goo.gl/0dSw8b]

Additional reading

(this is required for those students who followed the 6. semester specialization at AAU-CPH and who thus know some of the literature mentioned above. Such students will be required to present one of the below papers):

- Boehm, B. & Turner, R. (2005): Management Challenges to Implementing Agile Processes in Traditional Development Organizations. *IEEE Software*, 22(5), p. 30-39.
  [10 pages - AUB fulltext: https://goo.gl/VZVbzC]
- Logue, K. ; Mcdaid, K. (2008): Agile Release Planning: Dealing with Uncertainty in Development Time and Business Value. In: *Proceedings of the 15th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems*, p. 437-442.
  [6 pages - AUB fulltext link: https://goo.gl/pMI71T]
- Petersen, K. & Wohlin, C. (2010): The effect of moving from a plan-driven to an incremental software development approach with agile practices - An industrial case study. *Empirical Software Engineering*, 15(6), p. 654-693.
  [39 pages - AUB fulltext preprint: https://goo.gl/Wov74S] [see also Hirsch´s presentation on the topic: http://docplayer.net/2824041-Moving-from-a-plan-driven-culture-to-agile-development.html]
- Rand, C. & Eckfeldt, B. (2004): Aligning Strategic Planning with Agile Development: Extending Agile Thinking to Business Improvement. In: *Proceedings of the Agile Development Conference (ADC'04)*. Los Alamitos, IEEE, p. 78-82.
  [5 pages - AUB fulltext link: https://goo.gl/uUK4WR]
- Turk, D., France, R. & Rumpe, B. (2002): Limitations of Agile Software Processes. In: *Proceedings of the Third International Conference on Extreme Programming and Flexible Processes in Software Engineering (XP'2002), May 26-30, Alghero, Italy*, p. 43-46.
  [4 pages - AUB fulltext preprint link: https://goo.gl/Eg1ayF].

Kuniavsky c1-4

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Moreira et al. (2010), chapter 1-5

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Dix et al. (2003), chapter 6

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8sem DandD lecture2 Spring2017 developmentmethods v2

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3. From Users to Use Cases (Florian, 4 hrs)

▶ User research

▶ Requirements

▶ Functions

Mandatory reading

- Whitten & Bentley (2007) - Chapters 5-6.
  [83 pages. Introduces the techniques for requirements discovery and how to model requirements using use cases]
- Regnell, B., Runeson, P., Wohlin, P. (2000): Towards integration of use case modelling and usage-based testing. *Journal of Systems and Software*, 50(2), 117-130.
  [14 pages - AUB fulltext link: https://goo.gl/Nm0zhE]

8sem DandD lecture3 Spring2017 userstousecases moodle

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4. Modeling I (Florian, 2 hrs)

▶ Use case diagrams

Mandatory reading

- Whitten & Bentley (2007) - Chapter 7.
  [22 pages. Introduces the modeling of systems requirements with use case diagrams].
- Kamalrudin, M., Hosking, J. & Grundy, J. (2011): Improving requirements quality using essential use case interaction patterns. In: *Proceedings of the 33rd International Conference on Software Engineering (ICSE '11).* New York: ACM, p. 531-540.
  [10 pages - AUB fulltext link: https://goo.gl/WRnJ6w]
- Anda, B., Hansen, K. & Sand, G. (2009): An investigation of use case quality in a large safety-critical software development project. Information and Software Technology, 51(12), p. 1699-1711.
  [12 pages - AUB fulltext link: https://goo.gl/6onk72]

 8sem DandD lecture4 Spring2017 usecasediagrams

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5. Modeling 2 (Florian, 4 hrs)

Introduces the basics of data modeling and analysis of information systems, working from the perspective of object-oriented modeling and the UML.

Modeling of processes in systems.

Object-Oriented Analysis and -Design.

Mandatory reading

- Whitten & Bentley (2007) - Chapters 8, 9 & 11.
  [138 pages. Introduces core concepts in systems modeling and object-oriented operations].
- Dooley, J. (2011): Object-Oriented Analysis and Design. In: *Software Development and Profesional Practice*. Apress, p. 99-113.
  [14 pages - AUb fulltext link: https://goo.gl/2v8Z1M]: REVISED LINK: http://www.apress.com/us/book/9781430238010 (note the book at the AUB link is also useful, but Dooley (2011) is the correct version).
- Siau, K., & Rossi, M. (2011): Evaluation techniques for systems analysis and design modelling methods – a review and comparative analysis. *Information Systems Journal*, 21(3), p. 249-268.
  [19 pages - AUB fulltext link: https://goo.gl/3jFxG8]

 8sem DandD lecture5 Spring2017 UMLintro - Copy

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6. System design (Florian, 4 hrs)

Delves further into the core of system designs and how to model application architectures, further building on the object-oriented approaches. Covers distributed systems and various architecture strategies (chapter 12-13 in Whitten and Bentley).

This set of classes will focus on practical exercises and will only include a brief overview lecture. The bulk of the class is thus set aside for working with practical challenges around UML, System Design and Interface Design.

Mandatory reading

- Whitten & Bentley (2007) - Chapters 12-13.
  [72 pages. Introduces the basics of system design and architecture modelling]
- Marcus, A. (2015): User-Interface Design and China: A Great Leap Forward. In: *HCI and User-Experience Design: Fast-Forward to the Past, Present, and Future. HCI and User-Experience Design Series*. London: Springer, p. 39-45.
  [7 pages - AUB fulltext link: https://goo.gl/Jq8lyX]
- Monique W.M., Jaspers, T. S., van den Bos, C. & Geenen, M. (2004): The think aloud method: a guide to user interface design. *International Journal of Medical Informatics*, 73(11–12), p. 781-795.
  [14 pages - AUB fulltext link: https://goo.gl/XtO8ZS]
- Nilsson, E. G. (2009): Design patterns for user interface for mobile applications. *Advances in Engineering Software*, 40(12), p. 1318-1328.
  [11 pages - AUB fulltext link: https://goo.gl/tp91BC]

NOTE: FOR THOSE WHO WOULD LIKE TO DIG MORE INTO THE DESIGN OF THE FRONT END, THE USER INTERFACE DESIGN, WHITTEN&BENTLEY HAS SOME VERY GOOD CHAPTERS ON THIS IN CHAPTER 16: INPUT DESIGN, CHAPTER 17: USER INTERFACE DESIGN (and lesser degree chapter 18, on using UML for object oriented design).

 8sem DandD lecture6 Spring2017 SystemDesign 2

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7. User Testing (Birger, 4 hrs)

Introduction to usability and user testing, including usability (lab) tests, think-aloud, field studies, crowdsourcing and heuristic evaluation.

Mandatory reading

- Preece, J., Rogers, Y. & Sharp, H. (2015): *Interaction Design - beyond human-computer interaction*. 4th ed. Chichester: Wiley. Chapter 13 - Introducing evaluation, chapter 14 - Evaluation studies from controlled to natural settings & chapter 15 - Evaluation, Inspections, Analytics, and Models.
  [71 pages]
- Charters, E. (2003): The Use of Think-aloud Methods in Qualitative Research - An Introduction to Think-aloud Methods. *Brock Education Journal* 12(2), 68-82.
  [14 pages - Full text download]
- Choi, Y. M. & Li, J. (2016): Usability evaluation of a new text input method for smart TVs. *Journal of Usability Studies*, 11(3), p. 110-123.
  [14 pages - AUB fulltext link: https://goo.gl/LK2xfF]
- Friess, E. (2015): Personas in Heuristic Evaluation: An Exploratory Study. *IEEE Transactions on Professional Communication*, June 2015, 58(2), 176-191.
  [16 pages - AUB fulltext link: https://goo.gl/E4yeHu]
- Heer, J. & Bostock, M. (2010): Crowdsourcing graphical perception: using mechanical turk to assess visualization design. In: *Proceedings of the 28th international conference on human factors in computing systems*, p. 203-212.
  [10 pages - AUB fulltext link: https://goo.gl/GeZbke]
- Hertzum, M. (2016): Usability testing: too early? too much talking? too many problems? *Journal of Usability Studies*, 11(3), p. 83-88.
  [6 pages - AUB fulltext link: https://goo.gl/LK2xfF]
- Hertzum, M. (2016): A usability test is not an interview. *Interactions*, 23(2), p. 82-84.
  [3 pages - AUB fulltext link: https://goo.gl/2WubdC]
- Rogers, T., Connelly, K., Tedesco, L., Hazlewood, W., Kurtz, A., Hall, R. E., Hursey, J. & Toscos, T. (2007): Why It's Worth the Hassle: The Value of In-Situ Studies When Designing Ubicomp. In: *Proccedings of UBIcomp'2007*, p. 336-353.
  [18 pages - AUB fulltext link: https://goo.gl/rDHpqN]
- Vredenburg, K., Mao, J.-Y., Smith, P. & Carey, T. (2002): A survey of user-centered design practice. In: *Proceedings of the SIGCHI Conference on human factors in computing systems*, p. 471-478.
  [8 pages - AUB fulltext link: https://goo.gl/T5rlWA]

Additional reading

- Madrigal, D. & McClain, B. (2010): Do's and Don'ts of Usability Testing. In: *Insights from Research - Walking in your customers' shoes, A column*.
  [6 pages - http://www.uxmatters.com/mt/archives/2010/03/dos-and-donts-of-usability-testing.php]

L7 UserTesting

Hidden from students

Upload presentaitons here - DO NOT START A NEW THREAD

Hidden from students

Shark Tank session (May 29)

Presentation uploads

Slides ('Shark tank')

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Tricider feedback poll

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ICT FOR LEARNING, KNOWLEDGE AND CONTENT MANAGEMENT (KDM_KA_INFORMATION STUDIES_CPH_F18)

Introduction

This module operates in concert with the project module. It is focused on introducing students to the design and management of systems for learning, knowledge and content management. The module focusses on networked learning, and will introduce students to the fundamentals of learning designs in support of networked learning and technology enhanced learning. The module takes the students from the process of user research and requirements defintion through to modeling system functions via use case diagrams, as well as wireframing and simple mock-ups for design. Finally, implementation of systems via CMS. Along the way 3 deliverables are generated and shared among the students, forming the dataset for the take-home exam at the end of the course.

The course uses several chapters from the following books:

- Dirckinck-Holmfeld, L., Hodgson, V., & McConnell, D. (Eds.). (2012). *Exploring the Theory, Pedagogy and Practice of Networked Learning*. New York, NY: Springer New York. Retrieved from http://link.springer.com/10.1007/978-1-4614-0496-5
- Morville, P. & Rosenfeld, L. (2007): *Information Architecture for the World Wide Web*, 3rd. edition. Sebastopol, CA: O'Reilly. xix, 504 pages. [AUB fulltext access: http://primo.aub.aau.dk/desktop:Samlet:dedupmrg253830810]
- Preece, J., Sharp, H. & Rogers, Y. (2015): *Interaction Design*, 3rd or 4th edition. Hoboken NJ : John Wiley & Sons, 567 pages.

Lecturers

- Lone Dirckinck-Holmfeld <lone@hum.aau.dk>
- Rikke Magnussen, <rikkem@hum.aau.dk>

Meddelelser

Messages

News forum

Writing Theses and Dissertations

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Digital Exam

Hidden from students

Active participation

All about the deliverables

The 3 deliverables are:

1. Stakeholder analysis [deadline Thursday, March 2nd at 23:59]
2. Interviews/surveys with specific user groups (divided among groups) [deadline Friday, March 10th at 23:59]
3. User requirements and sharing of these data with other groups [deadline Friday, March 17 at 23:59]

The deliverables form the basis for the 7-day take-home exam. During this exam, the students take on the role of a research consultant working with learning design based on the principles of pbl and networked learning. They need to develop at solution for a re-design of the learning infrastructure at MAster in ICT and Learning (MIL), and provide scientific arguments as to why their solution should be used to promote MIL, and the pros and cons of the re-design of the platform. It is expected that students integrate one or more system functionalities via the chosen LMS. For more information see the course case description below.

See the 'Questions for the interviews' Google Doc for a list of interviewees and to coordinate and schedule the interviews.

Course case description

Deliverable 1 (stakeholder analysis)

Hidden from students

Deliverable 2 (interviews/surveys)

Hidden from students

Questions for the interviews

Hidden from students

Deliverable 3 (requirements analysis)

Hidden from students

Module description - ICT for Learning, Knowledge and Content Management

Study subject module on 8th semester (5 ECTS, equaling 137,5 working hours, Taught in English)

Module coordinator: Lone Dirckinck-Holmfeld and Rikke Magnussen

Objectives - in this module students will acquire

Knowledge of

- *theory and methods at the highest international level as regards ICT systems for learning, knowledge and content management*
- *ICT systems for learning, knowledge and content management*

Skills in

- *assessing, selecting and applying methods for learning, knowledge and content management*
- *selecting, configuring and adapting ICT systems for learning, knowledge and content management*
- *communicating methods and solutions for ICT for learning, knowledge and content management to peers and others.*

Competences in

- *taking an analytical, reflective and critical approach to selecting, adapting and applying ICT systems for learning, knowledge and content management*
- *engaging in interdisciplinary collaboration on selecting, adapting and applying ICT systems for learning, knowledge and content management*
- *identifying own learning needs and structuring own learning in relation to selecting, adapting and applying ICT systems for learning, knowledge and content management.*
-
- Check the study regulation: http://www.fak.hum.aau.dk/digitalAssets/288/288826_ka_information-studies_2017_hum_aau.dk.pdf

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Lecture 1 Intro to course, case and networked learning (LDH/RM - 4 hrs, 8:15-12:00, Feb 2)

Plan

LDH/RM: Intro to the modul, the focus on networked learning and learning design

LDH: Intro to the MIL case, the deliverables and forming of groups

VH: Guest lecture through video conference/skype: Vivian Hodgson, Lancaster University: Networked learning and a redesgin of Moodle.

LDH: Reflections on Learning Management systems as infrastructure

RM: Learning Design Workshop: Developing the first designs ideas

Mandatory reading

#

- Beetham, H. (2007). An approach to learning activity design. In *Rethinking Pedagogy for a Digital Age,* Beetham, H. & Sharpe, R. (eds). London: Routledge, p. 26–38.
  [13 pages]
- Creed-Dikeogu, G. & Clark, C. (2013): Are You MOOC-ing Yet? A Review for Academic Libraries. *Kansas Library Association College and University Libraries Section Proceedings*, 3(1), p. 9-13.
  [5 pages, fulltext: http://newprairiepress.org/culsproceedings/vol3/iss1/5/]
- Mazoue, J. G. (2013): The MOOC Model: Challenging Traditional Education. *Educause Review Online*, Jan/Feb 2013.
  [9 pages, fulltext download: http://er.dut.ac.za/handle/123456789/71]
- Sandeen, C. (2013): Integrating MOOCS into Traditional Higher Education: The Emerging "MOOC 3.0" Era. *Change: The Magazine of Higher Learning*, 45(6), 34-39.
  [6 pages, http://www-tandfonline-com.zorac.aub.aau.dk/doi/full/10.1080/00091383.2013.842103]
- Stahl, G., Koschmann, T., & Suthers, D. (2006): Computer-supported collaborative learning: A historical perspective. In: R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences*. Cambridge, UK: Cambridge University Press., p. 409-426).
  [20 pages, fulltext download: http://GerryStahl.net/cscl/CSCL_English.pdf]

Questions for the interviews (new link)

Hidden from students

Deliverable 3 (requirements analysis)

Hidden from students

Beetham

Hidden from students

TH slides

Hidden from students

Lecture 2 - Networked learning theory and learning design, LDH & RM, 6 hrs, 8:15-14:15, Feb 7th)

Plan
BG: Betty, : Scaling up open university education in the context of Keniya
LDH: Networked learning theory and different concepts of e-learning
RM: Digital learning design and execises
Mandatory reading

#

- Preece, Sharp & Rogers (2015) - Chapter 1: What is Interaction Design?, Chapter 2: Understanding and Conceptualizing Interaction, Chapter 9: The Process of Interaction Design. [95 pages]
  - The 3rd edition online: Link to AUB (8 simultanious users - remember to log out after reading!!)
  - Buy the 4th edition from FACTUM books online
  - Buy the 4th edition from Amazon

8sem-F2017-ICT4L InteractionDesign

Hidden from students

SmartWatch design uploads

Hidden from students

Lecture 3 - Learning platforms (4 hrs, 9/2 kl. 10.15 - 14.15 (LDH))

Plan
All groups: Presentations of learning platforms
LDH: Lecture and discussions on learning platforms as infrastructure for learning
All groups: Requirement specification based on interviews

#

Mandatory reading

- Dix, A., Finlay, J., Abowd, G. D. & Beale, R. (2003): *Human Computer Interaction*, 3rd edition. Harlow: Pearson Education, xxv, 834 pages. - Chapter 5: Interaction design basics, Chapter 7: Design rules. [68 pages]
- Preece, Sharp & Rogers (2015) - Chapter 11: Design, Prototyping and Construction, Chapter 12: Introducing Evaluation. [67 pages]

8sem-F2017-ICT4L Design2

Hidden from students

Balsamiq link

Hidden from students

Wireframe uploads

Hidden from students

Lecture 4 - Implementation (2 hrs, 12.2 kl. 10.15-12.00 and lab work 12.30 - 14.15.30, LDH)

ITS: Implementation and tailoring Moodle (sand box: https://demo.moodle.net/??)
Groups work on implementation in Moodle.

Students will be introduced to the basics of the Learning Management System (LMS) and will gain practical experience with one of the most popular LMS: Moodle. To prepare for this lecture, read the assigned literature and watch the lecture video. The lecture itself will be a lab session where you can get practical experience with Moodle and the groups can begin to implement there design ; Aalborg University IT service will participate and try to answer any questions and solve any problems you may run into.

Preparation

Self study: Moodle: Lynda's Moodle Advanced Techniques and Moodle Essential training

Youtube presentations of Moodle

Mandatory reading

#

- Morville and Rosenfeld (2007) - Chapters 1 & 4-8.
  [167 pages]

8sem-F2017ICT4l DesigningInformationSpaces

Hidden from students

Lecture 5 - Test and knowledge sharing, 4 hrs 13.2 kl. 12.30 - 16.15 LDH

Plan
Student presentations - invited panel: Head of School: Tom Nyvang, MIL K-group: Janni Nielsen, Copenhagen Business School (MIL KO group)
► Meet requirements
► Which learning activities?
► Organizational aspect
2. Research issues and design reflections to explore in "take-home exam"

Mandatory reading

- Connolly, R. & Hoar, R. (2014). *Fundamentals of Web Development*, Pearson. 954 pages. - Chapter 18. [27+28 pages - fulltext below]
  - 18.1-18.4 is required reading, the rest is for those of you who understand PHP
- McKeever, S. (2003). Understanding Web Content Management Systems: Evolution, Lifecycle and Market, *Industrial Management & Data Systems*, 103(9), p. 686-692.
  [7 pages - AUB fulltext: https://goo.gl/AIYZWs]

McKeever (2010)

Hidden from students

Connolly and Hoar (2014), chapter 18

Hidden from students

ICT4L lecture video ('Content Management Systems')

Hidden from students

Slides ('Content Management Systems')

Hidden from students

Lab session: Using WordPress

- Installing WordPress.pdf
- WordPress tutorial.pdf

Download folder

Hidden from students

6: Wrapping things up (Birger - 2 hrs)

Hidden from students

- Groups presenting wireframes for a personalised welcome MOOC screen (follow up on exercise from section #4, which you must upload in Moodle)
- Learning theories and E-Learning
- Design principles for MOOCs
- Usability metrics
- Developing and ranking requirements based upon stakeholder analysis

Mandatory reading

- Dalsgaard, C. (2005): Pedagogical quality in e-learning. Designing e-learning from a learning theoretical approach. *E-Learning and Education*, Vol. 1.
  [9 pages - fulltext link: https://eleed.campussource.de/archive/1/78]

- Guàrdia, L., Maina, M. & Sangrà, A. (2013): MOOC Design Principles. A Pedagogical Approach from the Learner's Perspective. *eLearning Papers*, No 33: page 1-6.
  [6 pages - fulltext link]
- Lackner, E., Kopp, M., Ebner, M. (2014): How to MOOC? – A pedagogical guideline for practitioners. Roceanu, I. (ed.). *Proceedings of the 10th International Scientific Conference "eLearning and Software for Education" Bucharest, April 24 - 25, 2014.* Publisher: Editura Universitatii Nationale de Aparare "Carol I".
  [8 pages - fulltext link]

test

8sem LKCM lecture6 wrapup-BL (Updated)

F2017-8sem-ICT4L-L06 - wrapup

Ranked requirements upload

Exam

7-DAY TAKE-HOME ASSIGNMENT IN "ICT FOR LEARNING, KNOWLEDGE AND CONTENT MANAGEMENT"

The exam descrption will be handed out - and needs to be submitted electronicaly - via the new electronic exam system: http://www.en.de.aau.dk/students/. This page has the basic information you need to submit your exam files electonically - as well as a login link. You need to login using your AAU credentials. We recommend that you do a test login already now to make sure that there are no problems. For more information about the Digital Exam system please see this post: https://www.moodle.aau.dk/mod/forum/discuss.php?d=92914

Formal considerations

- Max. number of standard pages: 8 (strict limitation) + appendices.
- The exam is made available Monday February 19, 2018 @ 12:00
- The exam is due on Monday February 26, 2016 @ 12:00 (noon).
- The exam 7-day take-home is individual (i.e. cannot be done in groups), and is assessed by the course instructors and an internal AAU censor if needed.
- The reports will be evaluated according to criteria defined in the study guide for the master´s degree in Human-Centered Informatics.

Re-exam

Hidden from students

7-DAY TAKE-HOME ASSIGNMENT IN "ICT FOR LEARNING, KNOWLEDGE AND CONTENT MANAGEMENT"

The exam description can be found below - and needs to be submitted electronically - via # the electronic examen. Take a good look at ALL the content in this Moodle - in particular the 3 deliverabeles and the slides from the lectures.

Formal considerations

- Max. number of standard pages: 8 (strict limitation) + appendices.
- # The exam is made available Monday Februar 19, 2018 @ 12:00
- # The exam is due on Monday Februar 26, 2018 @ 12:00 (noon).
- The exam 7-day take-home is individual (i.e. cannot be done in groups), and is assessed by the course instructors and an internal AAU censor if needed.
- The reports will be evaluated according to criteria defined in the study guide for the master´s degree in Human-Centered Informatics.

7-Day Take-home re-exam in ICT Learning, Knowledge and content

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AALBORG UNIVERSITET

STUDIENÆVNET FOR KOMMUNIKATION OG DIGITALE MEDIER
FORÅR 2017

Module description for 8th semester, Copenhagen

Spring 2018

Elective description: Programming in Python

Skole: Skolen for Communication, Art and Technology (CAT)
Studienævn: Kommunikation og Digitale Medier
Studieordning:
http://www.fak.hum.aau.dk/digitalAssets/151/151342_valgfagsmoduler_kdm_2016_hum_aau.dk.pdf

Elective: "Programming in Python"

5 ECTS

Location

8th Semester IS
Study council for Communication and Digital Media

Module coordinator

Toine Bogers

Type and language

Elective
English

Objectives

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

Knowledge

- understand the basics of programming in Python
- understand fundamental programming concepts

Skills
- write and debug procedural Python scripts
- design a basic program

Competences
- design and implement basic programs using Python

Academic content and basis

This course will provide an introduction to programming using Python 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 Python programming language. You will learn concepts like variables, loops, functions, methods and argument passing, and general problem solving ability that will become building blocks to your programming skills.

Scope and expectation

The module comprises 5 ECTS, which corresponds to 137.5 working hours.

Teaching will be a combination of 11 two-hour lab sessions. Before each lecture, students can send in their questions about the required reading, which will then be answered at the start of the lecture. The rest of the time will be spent on practical programming exercises.

Module activities (lectures, etc.)

1. Introduction [2 hours]
This session introduces students to the basics of basics of how computers work, the differences between software and hardware, and what role computer programs play in making modern computers work the way they do. The focus of the lab session is on installing a Python compiler and IDLE to work on students' computers and running elementary programs.

Preparation
Read through chapter 1 to get a solid foundational understanding of how computers work. If you use Windows, try installing Python already using the guides in the two appendices. Mac users should already have Python installed; it should not matter if this is Python version 2.x, instead of version 3.3. Try playing around with the IDLE as well. If you already have Python up and running have the time, try to start reading ahead in chapter 2 so you have more stuff to try out during the lab session.

Required reading
- Gaddis, T. (2015). Chapter 1: Introduction to Computers and Programming. In *Starting Out With Python* (3rd ed., pp. 19-47). Harlow: Pearson Education Limited. [29 pages / Introduction to the basics of how

computers work, including the difference between hardware and software and, more importantly, the difference between compilers and interpreters.]

Supplementary reading

- Gaddis, T. (2015). Appendix A: Installing Python. In *Starting Out With Python* (3rd ed., pp. 583-585). Harlow: Pearson Education Limited. [3 pages / This appendix describes how to install Python for Windows. Macs already come with Python pre-installed.]
- Gaddis, T. (2015). Appendix B: Introduction to IDLE. In *Starting Out With Python* (3rd ed., pp. 587-594). Harlow: Pearson Education Limited. [8 pages / This appendix describes how to start and use IDLE (= Integrated DeveLopment Environment) on Windows.]
- Gaddis, T. (2015). Chapter 2: Input, Processing, and Output. In *Starting Out With Python* (3rd ed., pp. 49-97). Harlow: Pearson Education Limited. [49 pages / This chapter covers the basics of input, processing that input, and producing output through concepts such variables, data types, and mathematical operators. It also introduces the use of comments to document programming code.]

2. Input, Processing, and Output [2 hours]
This session introduces students to the essential concepts related to input, processing, and output in Python, such as variables, data types, operators, and comments.

Preparation
I recommend reading all of chapter 2, but focus your efforts on pages 49-84. The techniques described on pages 85-91 are also useful to know, but if you have to prioritize, then you can live without learning about them this early in the course. Consider coming back to them during the first recap lecture for instance.

Required reading

- Gaddis, T. (2015). Chapter 2: Input, Processing, and Output. In *Starting Out With Python* (3rd ed., pp. 49-97). Harlow: Pearson Education Limited. [49 pages / This chapter covers the basics of input, processing that input, and producing output through concepts such variables, data types, and mathematical operators. It also introduces the use of comments to document programming code.]

3. Conditionals and Operators [2 hours]
This session introduces students to the building blocks of programming logic: conditionals and operators, such as *if-then-else* and *case* statements.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 3: Decision Structures and Boolean Logic. In *Starting Out With Python* (3rd ed., pp. 99-137). Harlow: Pearson Education Limited. [39 pages / ???]

4. Repetition structures [2 hours]
This session introduces students to repetition structures, such as *for* and *while* loops.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 4: Repetition Structures. In *Starting Out With Python* (3rd ed., pp. 139-182). Harlow: Pearson Education Limited. [44 pages / ???]

5. Recap (part 1) [2 hours]
This session does not introduce any new material, but instead allows students to combine all of the concepts and techniques covered in the first four lectures. The first active participation assignment, covering these concepts, is introduced and students can work on it in class.

Preparation
Reread the parts of chapters 1-4 that you find difficult. Try to re-do some of the earliest exercises; they will be much easier to do the second time around, which is a great confidence builder as well as good way to repeat the material.

Active participation requirement(s)

- Assignment 1 [8 hours / This assignment consists of a small number of programming exercises covering the material covered in the first half of the course.]

6. Functions [2 hours]
This session introduces students to the concept of functions, both built-in and self-defined.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 5: Functions. In *Starting Out With Python* (3rd ed., pp. 183-251). Harlow: Pearson Education Limited. [69 pages / ???]

7. Files and Exceptions [2 hours]
This session introduces students to working with files for both input and output purposes, and to dealing with exceptions.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 6: Files and Exceptions. In *Starting Out With Python* (3rd ed., pp. 253-308). Harlow: Pearson Education Limited. [56 pages / ???]

8. Lists and Tuples [2 hours]
This session introduces students to lists and tuples, data structure types whichenable much more freedom in storing and manipulating data.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 7: Lists and Tuples. In *Starting Out With Python* (3rd ed., pp. 309-355). Harlow: Pearson Education Limited. [47 pages / ???]

9. String manipulation [2 hours]
This session introduces functions and techniques for more advanced string manipulation.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 8: More about strings. In *Starting Out With Python* (3rd ed., pp. 357-386). Harlow: Pearson Education Limited. [30 pages / ???]

10. Dictionaries [2 hours]
This session introduces students to dictionaries, another data structure type for storing and manipulating data.

Preparation
TBA

Required reading

- Gaddis, T. (2015). Chapter 9: Dictionaries and Sets. In *Starting Out With Python* (3rd ed., pp. 387-436). Harlow: Pearson Education Limited. [29 pages / ???]

11. Recap (part 2) [2 hours]
Like the first recap session, this session does not introduce any new material, but allows students to combine all of the concepts and techniques covered in the course. The second active participation assignment covers all of these concepts and students can work on it in class.

Preparation
Reread the parts of chapters 1-9 that you find difficult. Try to re-do some of the earlier exercises; they will be much easier to do the second time around, which is a great confidence builder as well as good way to repeat the material.

Active participation requirement(s)

- Assignment 2 [16 hours / This assignment consists of a small number of programming exercises covering the all of the material covered in the entire course.]

Active participation

Active participation in the course requires the students to hand in functional programming code for two assignments:

- Assignment 1 [8 hours / This assignment consists of a small number of programming exercises covering the material covered in the first half of the course.]
- Assignment 2 [16 hours / This assignment consists of a small number of programming exercises covering the all of the material covered in the entire course.]

Literature

	Req. reading (#pages)	Sup. reading (#pages)	Dig. upload
1. Introduction			
Gaddis, T. (2015). Chapter 1: Introduction to Computers and Programming. In *Starting Out With Python* (3rd ed., pp. 19-47). Harlow: Pearson Education Limited.	29		✓
Gaddis, T. (2015). Appendix A: Installing Python. In *Starting Out With Python* (3rd ed., pp. 583-585). Harlow: Pearson Education Limited.		3	✓
Gaddis, T. (2015). Appendix B: Introduction to IDLE. In *Starting Out With Python* (3rd ed., pp. 587-594). Harlow: Pearson Education Limited.		8	✓
Gaddis, T. (2015). Chapter 2: Input, Processing, and Output. In *Starting Out With Python* (3rd ed., pp. 49-97). Harlow: Pearson Education Limited.		49	✓
2. Input, Processing, and Output			
Gaddis, T. (2015). Chapter 2: Input, Processing, and Output. In *Starting Out With Python* (3rd ed., pp. 49-97). Harlow: Pearson Education Limited.	49		✓
3. Conditionals and Operators			
Gaddis, T. (2015). Chapter 3: Decision Structures and Boolean Logic. In *Starting Out With Python* (3rd ed., pp. 99-137). Harlow: Pearson Education Limited.	39		
4. Repetition structures			
Gaddis, T. (2015). Chapter 4: Repetition Structures. In *Starting Out With Python* (3rd ed., pp. 139-182). Harlow: Pearson Education Limited.	44		
5. Recap (part 1)			
N/A			
6. Functions			
Gaddis, T. (2015). Chapter 5: Functions. In *Starting Out With Python* (3rd ed., pp. 183-251). Harlow: Pearson Education Limited.	69		
7. Files and Exceptions			
Gaddis, T. (2015). Chapter 6: Files and Exceptions. In *Starting Out With Python* (3rd ed., pp. 253-308). Harlow: Pearson Education Limited.	56		

8. Lists and Tuples			
Gaddis, T. (2015). Chapter 7: Lists and Tuples. In *Starting Out With Python* (3rd ed., pp. 309-355). Harlow: Pearson Education Limited.	47		
9. String manipulation			
Gaddis, T. (2015). Chapter 8: More about strings. In *Starting Out With Python* (3rd ed., pp. 357-386). Harlow: Pearson Education Limited.	30		
10. Dictionaries			
Gaddis, T. (2015). Chapter 9: Dictionaries and Sets. In *Starting Out With Python* (3rd ed., pp. 387-436). Harlow: Pearson Education Limited.	29		
11. Recap (part 2)			
N/A			
Total	**392**	**60**	

Examination

Exam 61

An internal written examination in programming.

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

Exam assignments will be evaluated by the examiner. Assignments judged as ‘fail’ will be evaluated by an internal censor as well.

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

Examination form: pass/fail.