



**Karolinska
Institutet**

Course syllabus for

User Needs, Requirements Engineering and Evaluation, 10 credits

Verksamhetsanalys, användarkravhantering och utvärdering, 10 hp

This course syllabus is valid from spring 2021.

Please note that the course syllabus is available in the following versions:

Spring2018 , Spring2021 , Autumn2021 , Spring2024 , Spring2025

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| Course code | 5HI019 |
| Course name | User Needs, Requirements Engineering and Evaluation |
| Credits | 10 credits |
| Form of Education | Higher Education, study regulation 2007 |
| Main field of study | Health Informatics |
| Level | AV - Second cycle |
| Grading scale | Excellent, Very good, Good, Satisfactory, Sufficient, Fail, Fail |
| Department | Department of Learning, Informatics, Management and Ethics |
| Decided by | Utbildningsnämnden LIME |
| Decision date | 2017-10-25 |
| Revised by | Education committee LIME |
| Last revision | 2020-08-19 |
| Course syllabus valid from | Spring 2021 |

Specific entry requirements

A Bachelor's degree or a professional degree equivalent to a Swedish Bachelor's degree of at least 180 credits in healthcare, biomedicine, medical technology, computer and systems sciences, informatics or the equivalent. And proficiency in English equivalent to English B/English 6.

Objectives

The purpose of this course is that the students should learn how to use the tools and methods they will need in their work as health informaticians to analyze and model needs and requirements of patients, healthcare professionals and care providers, as well as to evaluate eHealth in different contexts. On completion of the course the student should be able to:

Knowledge and understanding

- describe and discuss the importance of understanding and analyzing healthcare organizations, users' needs and requirements in different contexts

- describe and compare different methods for analysis of healthcare organizations and user needs and their application
- explain, discuss and analyze different evaluation methods and techniques to assess functionality and usability in eHealth and effects on users, organizations and outcomes

Skills

- analyze and describe health and social care as well as patients' self-care needs and work/care processes
- using different methods and techniques to describe the context and creating models or prototypes of an eHealth system
- compare, contrast and choose different evaluation methods and instruments depending on the purpose and context of an evaluation
- plan and carry out an eHealth evaluation study
- critically assess reported evaluation studies

Attitudes

- value the use of multidisciplinary work in requirements and needs analysis
- explain and motivate the need of an iterative development process and continuous user involvement
- discuss relevant ethical issues related to needs assessments, user involvement and evaluations

Content

When developing information and communication technology (ICT) for health, social and self-care it is important to have an understanding of work routines, care processes, information needs and other central pre-conditions at the clinical and personal level. This is very context dependent and affects how eHealth needs to be designed to suit different contexts of care. This understanding must be shared between many different stakeholders, including end-users (e.g. care professionals, administrators, patients), management and system developers.

The course therefore addresses methods for analyzing health and social care organisations and user needs analysis, as well as documentation and communication of these and formulation of requirements based on the needs. Specific prerequisites for requirements engineering in health and social care are discussed. In addition, the course gives an overview over relevant methods and techniques for evaluation of e-services, computer applications and/or information systems in health, social and self-care. The course provides an understanding of the role of formative and summative evaluation during the system development lifecycle and introduces guidelines for good evaluation practice and reporting.

Different methods and tools are presented and the students get to practice these methods during the course.

Teaching methods

Lectures/teaching sessions, seminars and group assignments. For the group assignments, groups with a mix of students with a clinical background and students with a technical background are created. In each group, the collected skills should be utilized to carry out the different assignments.

The course is given in the form of a number of blocks where different themes are treated. The blocks are structured similarly:

- lectures that introduce new theory and project assignments
- opportunities for teacher guidance for group assignments
- presentations of group assignments and reflecting seminars

Examination

The examination consists of two parts:

- group assignments and
- an individual digital written examination at distance.

The final grade for the course is based on both group assignments (30%) and the digital written examination at distance (70%) and is assessed with the grading scale A-F.

The final grade for the course will be assigned when all compulsory parts have been completed.

Compulsory participation

The course includes mandatory sessions marked in the course schedule. The examiner assesses if and, in that case, how absence from compulsory parts can be compensated. Before the student has participated in all compulsory parts or has compensated for absence in accordance with the examiner's instructions, the student's results for the moment/course will not be registered in LADOK. Absence from a compulsory part may result in the student having to wait to compensate until the next time the course is given.

Limitation of number of occasions to write the exam

Students who have not passed the regular examination are entitled to participate in five more examinations. If the student has not passed the exam after four participations he/she is encouraged to visit the study advisor. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. Delayed submission affects the possibility to receive a higher grade than C. An examination for which the student registered but not participated in will not be counted as an examination.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

Transitional provisions

Examination will be provided during a time of two years after a possible cancellation of the course.

Examination can take place according to an earlier literature list during a time of one year after the date when a major renewal of the literature list has been made.

Other directives

Course evaluation will be carried out in accordance with the guidelines established by the Committee for Higher Education.

The course is given in English.

Literature and other teaching aids

Sharp, Helen; Preece, Jennifer; Rogers, Yvonne

Interaction design : beyond human-computer interaction

4th ed. : Chichester : Wiley, cop. 2015 - xiii, 567 s.

ISBN:9781119020752 LIBRIS-ID:17023916

[Library search](#)

Brender, Jytte

Handbook of evaluation methods for health informatics

Amsterdam : Elsevier Academic Press, c2006 - xv, 361 s.

ISBN:0-12-370464-2 LIBRIS-ID:10158361

[Library search](#)

Bittner, Kurt.; Spence, Ian

Use case modeling

Boston, MA : Addison Wesley, c2003. - xix, 347 p.

ISBN:0-201-70913-9 (pbk. : alk. paper) LIBRIS-ID:12384705

[Library search](#)

Sommerville, Ian

Software engineering

Tenth edition, Global edition. : Boston : Pearson Education Limited, [2016] - 810 pages

ISBN:9781292096148- LIBRIS-ID:19572637

[Library search](#)

Arnowitz, Jonathan; Arent, Michael; Berger, Nevin

Effective prototyping for software makers

San Francisco, CA : Morgan Kaufmann, c2007 - xxxviii, 584 p.

ISBN:0-08-046896-9 LIBRIS-ID:11954036

[Library search](#)

Friedman, Charles P.; Wyatt, Jeremy C.

Evaluation methods in biomedical informatics

Second Edition. : New York, NY : Springer Science+Business Media, Inc., 2006.

ISBN:978-0-387-30677-3 LIBRIS-ID:11423169

URL: [Online access for SLU](#)

[Library search](#)