Course catalogue for doctoral education

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Title : Cytokines in Inflammation

Course number : 1626
Credits : 3.0
Date : 2021-04-12 -- 2021-04-30
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements : Knowledge in immunology corresponding to course "Basic Immunology" is required

Purpose of the course : The aim of the course is to provide an increased understanding of the function of cytokines in the context of a healthy immune system and in different disease contexts.

Intended learning outcomes : At the end of the course the participant should be able to: - select adequate experimental methods to analyse cytokines based on specific scientific questions. - understand the relevance of cytokines in the context of their research project. - compare and contrast the function of cytokines in different organs and different diseases. - explain how a disease can be treated with drugs targeting cytokines. - hypothesize future treatment of a disease, where the modification of a cytokine pattern is the target.

Contents of the course : The course contains lectures on the roles of cytokines in health and disease. Different methodologies for analysis of cytokines will be covered by theoretical and practical sessions.

Teaching and learning activities : The course is partly theoretical, partly practical, where lectures, research seminars and laboratory demonstrations are integrated. Time is also allocated for discussing lab results and the content of the lectures. Practical laboratory sessions will be conducted in small groups.

Examination : The participant has to: - actively participate in the discussions during the course and show that the learning outcomes of the course are reached by the end of the course - prepare a group presentation of a selected topic on the course's content and in the context of their own research project. The presentations will be evaluated by the course organisers. Every student will be assessed individually.

Compulsory elements : All activities included in the course are compulsory. Absence needs to be compensated by an assignment in agreement with the course coordinators.

Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : The Course is equivalent to two weeks of work spread across three weeks. There will be lectures equivalent to 7 days, 1 day equivalent of student assignment presentation and discussion and 2 day equivalent of practical session. Exact schedule of when and where the lectures will be held (or on Zoom) and practical sessions will be communicated closer to the beginning of the course. The practical sessions will be held in smaller groups.

Course responsible :
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Contact person :
Harald Lund
Institutionen för fysiologi och farmakologi
harald.lund@ki.se
**Title : Human embryonic stem cells**

**Course number :** 2212  
**Credits :** 1.5  
**Date :** 2021-05-17 -- 2021-05-21  
**Language :** English  
**Level :** Doctoral level  
**Responsible KI department :** Department of Biosciences and Nutrition  

**Specific entry requirements :**  

**Purpose of the course :** The purpose of the course is to enable doctoral students to obtain a basic understanding of human reproductive biology with focus on human embryonic stem cell knowledge and cells replacement therapies and translational medicine. Experts in the field will provide a fresh overview of clinical and pre-clinical research aiming at development of novel treatment possibilities, but also discussing current limitations and general ethical aspects. Finally the students will be enabled to improve their capacity to produce coherent, logical and concise explanations of data and concepts - both written and orally, through consideration of the course material.

**Intended learning outcomes :** At the conclusion of this course students should be able to show a comprehensive view of:  
- Pre implantation Embryology  
- Derivation methods and culture conditions of hESCs  
- Nutritional requirements of the blastocyst and stem cells  
- Functional characteristics of different tissue culture incubators  
- Characterization of the embryonic stem cells and the importance of the pluripotency of these cells and what is ongoing in this field  
- Production of isogenics embryonic stem cells by somatic cell nuclear transfer (SCNT)  
- The pluripotence induction of somatic cell by transduction (the iPS cells)  
- Know the prospective possibilities of having a good culture system and be aware of potential development of hESC technology in the future.  
- Be aware of the general aspects and implication of the stem cells research and the potentiality that these represent for clinical application.

**Contents of the course :**  
1. Embryology theory (lectures)  
2. In vitro culture system (lectures)  
3. Human Embryonic Stem cells culture (lectures)  
4. Characterization of hESC (lectures)  
5. Laboratory demonstrations  
6. Genetics (lectures)  
7. Introduction to different cell types (lectures)  
8. Cell reprogramming (lectures)  
9. Stem cells therapy and challenge today  
10. Future in human embryonic stem cells (lecture)  

**Course test, evaluation, discussions, examination and closing of course.**

**Teaching and learning activities :** Lectures and laboratory demonstrations.

**Examination :** Written individual examination

**Compulsory elements :** The laboratory parts are obligatory. If absent at laboratory activity; student should present a literature work related with the subject of the missing activity

**Number of students :** 8 - 14

**Selection of students :** Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)

**More information :**

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**Course responsible :**  
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Department of Biosciences and Nutrition  
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Jose.Inzunza@ki.se

Hälsovägen 7, Novum  
141 86  
Stockholm

**Contact person :**  
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Institutionen för biovetenskaper och näringslära  
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Jose.Inzunza@ki.se

Hälsovägen 7, Novum  
141 86  
Stockholm
Title: Redox Regulation, Oxidative Stress and Selenoproteins

Course number: 2214
Credits: 3.0
Date: 2021-06-07 -- 2021-06-11
Language: English
Level: Doctoral level
Responsible KI department: Department of Medical Biochemistry and Biophysics

Specific entry requirements:

Purpose of the course: The purpose of the course is to give doctoral students and post docs a good understanding of redox biology and redox biochemistry in living cells and organisms. The course is also designed to give the participants experience in scientific networking, and to increase generic skills in understanding, presenting and discussing frontline research topics.

Intended learning outcomes: After the course, each student should have acquired the following knowledge:
- Good knowledge of structure-function relationships for the major low molecular-weight antioxidant compounds found in cells (GSH, Ascorbate, tocopherol)
- Good knowledge of the major antioxidant and redox regulatory systems and redox sensitive signaling pathways (glutathione-dependent systems, thioredoxin systems, Nrf2/Keap1, Yap1, peroxiredoxins, methionine sulfoxide reductases, peroxidases, catalases, superoxide dismutase, NADPHoxidase, oxidative burst, PTP regulation, cyt c, ASK-1)
- Good knowledge of selenoprotein synthesis and selenoprotein function. After the course, each student should also have the skill to present and discuss a redox-regulated research project at a level generally expected for presentations held at international cutting-edge conferences in the subject.

Contents of the course: The course is planned as a joint training encompassing an international exchange graduate course, with students and lecturer’s primarily recruited from Karolinska Institutet together with Medical University of South Carolina (MUSC) and the Redox Biology Center of the University of Nebraska in Lincoln (UNL), Nebraska, which are two NIH COBRE (Center of Biological Research Excellence) initiatives focused on research in redox biology. The course is planned to be annually held and will have the following major components:
- Students from MUSC, UNL and Karolinska Institutet
- Lecturers from MUSC, Karolinska Institutet and UNL

Planned lectures will contain subjects such as the following examples:
- “Glutathione S-transferases in redox regulation and glutathione dependent catalysis”
- “Nitric oxide (NO) signaling in relation to redox state”
- “Calcium signaling in oxidative stress and in relation to apoptosis”
- “Glutaredoxin and thioredoxin systems”
- “The concepts and effects of redox cycling and selenoprotein reactivity”
- “Selenoproteomes and dedicated Cys- and/or Sec-dependent redox systems”
- “Using protein crystallography to probe the function of redox active enzymes”
- “Redox activities of proline in a cellular context”
- “The effects of metals on metabolism and oxidative stress in human disease”
- “With the sight on redox: glutaredoxin and thioredoxin systems in the ocular lens and their relation to cataract”
- “Redox control of ion channels”
- “How oxygen can be sensed in the carotid body”
- “Mitochondrial production of reactive oxygen species in relation to human disease”

Teaching and learning activities: The course it is built upon a pedagogic framework of discussions between graduate students in redox biology with leading experts in the field, combined with cutting-edge lectures, training in oral presentation, career counseling sessions and a written exam for control of detailed basic knowledge in redox biology. It is the firm belief of the course organizers that this pedagogic framework should well support the students to obtain the learning objectives of the course. It should furthermore help the students to prepare for their next level of a career beyond the doctoral examination. The type of teaching will be:
- Morning sessions with lectures in basic concepts as well as cutting-edge front-line research findings in the field
- Afternoon sessions with student presentations followed by discussions between lecturers and students
- Career discussions and future perspectives in the field of redox biology

Examination: The student skills are examined as follows:
- Evaluation of the degree of participation in student-led discussions and the level of initiated comments and questions during those discussions (grade pass/not pass)
- Evaluation of the presentation of the student’s own project (grade pass/not pass)
- Results at written examination (at least 60% right answers for the grade of pass) Attendence during compulsory parts of the course as well as the grade of “Pass” in all three parts of the examination must be fulfilled for a final grade of “Pass”.

Compulsory elements: Absence from any part of the course (lectures, student presentations, career discussions, exam and award ceremony) is generally not accepted but could in special cases be compensated by an individually tailored additional discussion and a special written examination organized by the course committee.

Number of students: 20 - 30

Selection of students: Admitted participants for the course that should have been held in 2020 but was postponed due to the coronavirus pandemic will have first priority for this course. Thereafter selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Note that this is a rather demanding course that is full time and also encompasses several events in evenings, such as poster sessions, joint career discussions, and more.

Course responsible:
Elias Arnér
Department of Medical Biochemistry and Biophysics
0852486983
Elias.Anrer@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Contact person:
Elias Arnér
Institutionen för medicinsk biokemi och biofysik
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Elias.Arner@ki.se
Title : Antigen Presentation and T Cell Activation

Course number : 2363
Credits : 1.5
Date : 2021-05-24 -- 2021-05-28
Language : English
Level : Doctoral level
Responsible KI department : Department of Oncology-Pathology
Specific entry requirements : Basic immunology course, or otherwise have attained the same level of previous knowledge.
Purpose of the course : This course will provide an overview of antigen presentation and T cell activation. This course is suitable for PhD students with basic immunology knowledge who want to deepen their knowledge in important aspects of various lymphocyte subsets biology.

Intended learning outcomes : - Describe and compare different types of antigen capture and processing, antigen presentation pathways, i.e. MHC class I & II, MR1 and CD1 system, peptide/lipid/glycolipid presentation, as well as the main T cell subsets and invariant lymphocytes. - Identify gaps of knowledge about T lymphocyte activation, differentiation, antigen-presentation. - Formulate a research question (including experimental plan) related to lymphocyte activation in steady state, disease, or cell therapy.

Contents of the course : The following will be covered during the course: Thorough walk-through of the antigen presentation pathways, both MHC class I and II, upstream and downstream of TCR activation. The CD1 system, presentation of lipids, glycolipids, MR1 presentation and MAIT cell activation will be discussed. Manipulation of T cell activation by checkpoint inhibitors, T cell exhaustion, the impact of tumor micro-environment, and practical applications such as immunotherapy, will also be covered.

Teaching and learning activities : The course will be based on lectures, as well as time for questions and discussions. In addition, work (in small groups) will enable the students to gain deeper knowledge in a specific area of interest. The students are also given literature (see below) in order to prepare for the lectures and discussions.

Examination : To pass the course, the student has to show that the learning outcomes have been reached. The students will be assessed with a group project presented in a written report, along with individual oral presentations. The focus of the examination is gain of knowledge rather than test of knowledge.

Compulsory elements : All lectures and group sessions are considered mandatory. Missed events should be compensated for with a written report on the subject in accordance with the indications of the course organizer.

Number of students : 10 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information :

Course responsible :
Isabelle Magalhaes
Department of Oncology-Pathology
Isabelle.Magalhaes@ki.se

Contact person :
Isabelle Magalhaes
Institutionen för onkologi-patologi
Isabelle.Magalhaes@ki.se
Title: Contemporary Nursing Science - Theory and Praxis

Course number: 2407
Credits: 4.5
Date: 2021-01-22 -- 2021-03-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Neurobiology, Care Sciences and Society
Specific entry requirements: Previous studies in the healthcare field and related areas in relation to research projects.

Purpose of the course: Objectives for learning are students' attributes of nursing and caring science concepts and theory, as well as ongoing scientific discourses and paradigms.

Intended learning outcomes: After the course the student: • Should be able to put together theoretical fundamentals for theory and concept development in nursing and caring sciences and be able to apply this in relation to their own discipline and own research focus. • Students should be able to explain the historical development of caring science and be able to summarize the content of selected theories. • Students should be able to critically review, analyze and evaluate the development of caring science concepts related to their own research focus.

Contents of the course: • Theory development and concept development in health sciences and main areas. • History of caring science and development until today. • Review and evaluation of concepts and models and ongoing caring science theory development.

Teaching and learning activities: The course is web-based and uses online collaboration platforms like Zoom and Canvas: Course moments include: reading and studying of the course literature, online symposium, concluding session with student presentations. Course seminars on web, learning activities in Canvas, and recorded introduction lectures.

Examination: Literature assignments and a completing analysis of caring science concept related to own project.

Compulsory elements: The teaching elements according to the schedule, lectures, seminars and web-based activities during the course are mandatory. Absence is compensated by written or oral extra assignments which are decided by the examiner.

Number of students: 10 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Welcome to the course that will take you further to the theoretical foundations of nursing science which can enrich both your research and your clinical practical work. The course is based on self-studies of litterature under guidance including web-discussions. For lectures and reflective seminars there is three days mandatory web presence. The course is completely web-based and we use the learning platform Canvas and Zoom for information, communication and assignments. Dates for attendance are 29/1, 19/2 and 12/3, 2021.

Course responsible:
Maria Arman
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0852483973
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Contact person:
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0852483973
Maria.Arman@ki.se
Title: Causal Inference for Epidemiological Research

Course number: 2416
Credits: 1.5
Date: 2021-03-08 -- 2021-03-12
Language: English
Level: Doctoral level

Responsible KI department: Department of Medical Epidemiology and Biostatistics

Specific entry requirements: The students are expected to have taken Epidemiology I, Epidemiology II, Biostatistics I, and Biostatistics II. Exceptions can be made if the students have taken other courses with an equivalent content.

Purpose of the course: This course aims to present causal theory and introduces how concepts and methods can be understood within a general methodological framework.

Intended learning outcomes: After the course the student will:
- be able to use counterfactuals to express and interpret causal queries
- be able to judge when standard statistical methodology is appropriate for causal inference, and when it is not
- be able to use Directed Acyclic Graphs to describe and analyze complex epidemiological scenarios
- be able to use Instrumental Variables to analyze observational data, with additional help from a skilled statistician

Contents of the course: Causal inference from observational data is a key task of biostatistics and of allied sciences such as sociology, education, behavioral sciences, demography, economics, health services research, etc. These disciplines share a methodological framework for causal inference that has been developed over the last decades. This course presents this unifying causal theory and shows how biostatistical concepts and methods can be understood within this general framework. The course emphasizes conceptualization but also introduces statistical models and methods for time-varying exposures. Specifically, this course strives to:
  a) formally define causal concepts such as causal effect and confounding,
  b) identify the conditions required to estimate causal effects, and
  c) use analytical methods that, under those conditions, provide estimates that can be endowed with a causal interpretation.

Teaching and learning activities: Lectures and group discussions.

Examination: There will be a take-home exam handed out at the last day of the course. Students who fail will be given the opportunity to write at a maximum 2 re-exams. Dates for the re-exams will be announced later.

Compulsory elements:
Number of students: 8 - 25
Selection of students: Eligible doctoral students will be prioritized according to:
  1) the relevance of the course syllabus for the applicant's doctoral project (according to written information),
  2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information:

Course responsible:
Arvid Sjölander
Department of Medical Epidemiology and Biostatistics
0852483859
Arvid.Sjolander@ki.se

Contact person:
Gunilla Nilsson Roos
Institutionen för medicinsk epidemiologi och biostatistik
08-524 822 93
gunilla.nilsson.roos@ki.se
Title: Career Skills for Scientists

Course number: 2463  
Credits: 1.5  
Date: 2021-01-25 -- 2021-03-19  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Learning, Informatics, Management and Ethics  
Specific entry requirements:

Purpose of the course: The goal of the course is to prepare PhD students for work life after dissertation. Be it for the next academic step, to move outside of the academic world, or simply to find out which of these who might be right for you at the moment, we aim to help you get better insight in yourself, the jobs and how to get them.

Intended learning outcomes: After the course the participants should be able to: - discuss their interests and the transferable skills achieved during doctoral training and explain the value of these skills within as well as outside academia. - discuss career options in academic and non-academic settings, covering different sectors, organizations and career paths. - apply what they have learned in the course to communicate their skills in different forms (oral, written) and situations (interviews, presentations)

Contents of the course: The course is split up in different sessions, given over multiple weeks, so you can continue with your research as much as possible. The different sessions cover exploration of your own skills and interests, information and experiences from academic careers like finding postdoc positions, exploring other career paths to start figuring out “what’s out there”, and preparing you CV. Throughout the course you will get many chances to put your “networking” into practice, through different presenters, the assignments where you will reach out to people, and the possibility to apply for an internship with a company or organization, which tests your CV and interviewing ability against reality.

Teaching and learning activities: The course is planned to take place online. Parts of the info is planned to be available in video format through the course web page in Canvas, part to be live sessions on Zoom for interaction with speakers and group discussion. Written homework assignments will be provided and submitted through the course web. The course demands active input and reflection from the participants, so even though it is not provided as a block of 1 week fulltime but as shorter digital sessions over multiple weeks, you will need to carve out time (equivalent to one week fulltime) to prepare and reflect, and to attend live sessions.

Examination: Digital oral presentations and written projects.

Compulsory elements: All live sessions are compulsory. Missing of live sessions will need to be compensated by extra tasks as specified during the course.

Number of students: 30 - 40

Selection of students: Selection will be based on 1) Time left to defence: the further you are in your doctoral studies the higher your priority, as long as you defend after the end of the course. Write your expected end date in your application. In case spots are available for postdocs the selection is based on time until end of final contract/position. 2) Written motivation: this course has many applicants and limited spots, please only apply if you are sure you want to take the course and will make time for it.

More information: The course is built up as follows: Jan 25th – Feb 26th: 5 weeks of live course sessions (in Zoom, max 3h/week, focused on Tuesday and Thursday afternoons) and private study (total ++ 6h/week). March 1st – March 12th: 2 weeks of individual exam prep and internship info sessions (total ++ 4h/week). March 15th – March 19th: 1 week of exam presentations in smaller groups (+- 2h). More detailed schedule will be available to course participants on the course web. For questions about the course content, contact Ayla (ayla.de.paepe@ki.se). For practical questions about your application, contact Liisa (liisa.olsson@ki.se).

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Course responsible:
Hanna Jansson  
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hanna.jansson@ki.se

Contact person:  
Ayla De Paepe  
Universitetsförvaltningen  
ayla.de.paepe@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Writing Science and Information Literacy

Course number: 2561  
Credits: 3.0  
Date: 2021-02-08 -- 2021-03-19  
Language: English  
Level: Doctoral level  
Responsible KI department: Karolinska Institutet University Library  
Specific entry requirements: 

Purpose of the course: The aim of the course is to develop the medical scientific writing skills and information literacy of the participant.

Intended learning outcomes: After the course, you will be able to demonstrate: -Understanding of how to write an original scientific article and submit it for publication. -The ability to write other types of texts required for a scientific career. -The ability to give, take and make use of constructive criticism. -The ability to search and manage the medical sciences literature in a structured way. -The ability to use resources which facilitate choosing a journal to publish your research. -And be able to describe aspects of post-publication evaluation and processing of the medical sciences literature.

Contents of the course: Basics of scientific writing, Searching the literature, Writing an original scientific paper, Supporting the text, Managing the literature, Scientific writing in other contexts, Choosing a journal, The publication process, Evaluating published science.

Teaching and learning activities: This DISTANCE course will take place in the learning platform Canvas. Content will be learnt with various learning objects and learning practiced by exercises. Formative feedback will be implemented by teachers/peer/self-assessment. Scientific writing, literature management and other IT-related skills will be developed in the context of scientific communication.

Examination: The intended learning outcomes are assessed in the summative examination. Participants will write and rewrite a grant application and popular science summary based on teacher and peer feedback. Participants will also complete a number of assignments which demonstrate their ability to use relevant IT resources in a context of scientific writing and communication.

Compulsory elements: There will be a number of obligatory assignments and assessments to be completed.

Number of students: 20 - 22  
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information:

Course responsible: Gabriella Ekman  
Karolinska Institutet University Library  
gabriella.ekman@ki.se

Contact person: Katarina Amcoff  
Karolinska Institutet universitetsbibliotek  
08-524 840 47  
katarina.amcoff@ki.se
Title: Writing Science and Information Literacy

Course number: 2561
Credits: 3.0
Date: 2021-05-03 -- 2021-06-11
Language: English
Level: Doctoral level
 Responsible KI department: Karolinska Institutet University Library
Specific entry requirements:
Purpose of the course: The aim of the course is to develop the medical scientific writing skills and information literacy of the participant.

Intended learning outcomes: After the course, you will be able to demonstrate:
- Understanding of how to write an original scientific article and submit it for publication.
- The ability to write other types of texts required for a scientific career.
- The ability to give, take and make use of constructive criticism.
- The ability to search and manage the medical sciences literature in a structured way.
- The ability to use resources which facilitate choosing a journal to publish your research.
- And be able to describe aspects of post-publication evaluation and processing of the medical sciences literature.

Contents of the course: Basics of scientific writing, Searching the literature, Writing an original scientific paper, Supporting the text, Managing the literature, Scientific writing in other contexts, Choosing a journal, The publication process, Evaluating published science.

Teaching and learning activities: This DISTANCE course will take place in the learning platform Canvas. Content will be learnt with various learning objects and learning practiced by exercises. Formative feedback will be implemented by teachers/peer/self-assessment. Scientific writing, literature management and other IT-related skills will be developed in the context of scientific communication.

Examination: The intended learning outcomes are assessed in the summative examination. Participants will write and rewrite a grant application and popular science summary based on teacher and peer feedback. Participants will also complete a number of assignments which demonstrate their ability to use relevant IT resources in a context of scientific writing and communication.

Compulsory elements: There will be a number of obligatory assignments and assessments to be completed.
Number of students: 20 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information:

Course responsible:
Gabriella Ekman
Karolinska Institutet University Library

gabriella.ekman@ki.se

Contact person:
Katarina Amcoff
Karolinska Institutet universitetsbibliotek
08-524 840 47
katarina.amcoff@ki.se
**Title:** Basic Course in Medical Statistics - a distance course

**Course number:** 2609  
**Credits:** 3.0  
**Date:** 2021-02-22 -- 2021-03-08  
**Language:** English  
**Level:** Doctoral level  
**Responsible KI department:** Department of Learning, Informatics, Management and Ethics  

**Specific entry requirements:**

**Purpose of the course:** The aim of the course is to introduce the basic statistical methods and the fundamental principles of statistical inference and to offer basic skills that involve hands on data analysis using statistical software.

**Intended learning outcomes:** The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.

**Contents of the course:** Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.

**Teaching and learning activities:** The course is a hybrid course mixing online studies with face-to-face in-class final seminars. The course activities are video lectures, self-study, self-assessment exercises, individual computer based exercises, and statistical software demonstration videos in Statistica and SPSS. The first and last day of the course will be face-to-face with an introduction the first day and seminars and group discussions the last day.

**Examination:** Correct answers on the individual computer based exercises. The doctoral students will have to demonstrate their ability to recognize, critically examine and discuss the statistics presented in the medical articles during the seminars.

**Compulsory elements:** Attendance is mandatory for the seminars on the last day of the course. If the student is absent, he or she will have priority for admission to the seminars the next time the course is offered. If a student joins the course when physically located in another country it is the student's responsibility to contact the course director in advance to agree on an individual supplementary task to compensate for the absence.

**Number of students:** 35 - 45

**Selection of students:** Date for registration as a doctoral student (priority given to earlier registration date). Please make sure that you have entered the correct registration date for doctoral education in your personal profile.

**More information:** Course dates via Zoom: 22th of February (mandatory) and 8th Mars (mandatory).

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**Course responsible:**
Mesfin Tessma  
Department of Learning, Informatics, Management and Ethics  
Mesfin.Tessma@ki.se

**Contact person:**
Karin Wrangö  
Institutionen för lärande, informatik, management och etik  
karin.wrango@ki.se
Title: Write your research results and get them published

Course number: 2618
Credits: 3.0
Date: 2021-01-25 -- 2021-02-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None.

Purpose of the course: The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course.


Teaching and learning activities: Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feedback to their colleagues.

Examination: 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feedback on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group).

Compulsory elements: Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments.

Number of students: 18 - 22

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to later start date).

More information: This course is given in different formats: in-class or online daytime and in-class or online evenings (please see the respective course occasions for details). All lectures (including the online-format) will be in real-time and according to schedule, but there will be recorded lectures available to make up for absence. This course occasion will take place daytime and evenings in-class and online (please state your choice in the application). The course focuses on scientific writing (manuscript, abstract and poster) and you may use your own research for the assignments (but there is no requirement to bring data of your own in order to benefit from the course) to maximize the learning experience and also to make actual progress in your studies. The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The popular science part is covering the skills you need in order to successfully write a popular science paper, including popular science writing, poster presentation, cover letter writing, and abstract writing. The popular science part is also helpful for oral presentations. No prior knowledge or experience in scientific writing is required to attend the course, and you will benefit equally from the course if you have published your research before. The course will be given in a venue in central Stockholm and online on Zoom. Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607.

Course responsible:
Anna Hildenbrand Wachtmeister
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070-789 06 07
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Contact person:
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Lalit Kumar
Institutionen för kvinnors och barns hälsa
Lalit.Kumar@ki.se
Title: Write your research results and get them published

Course number: 2618
Credits: 3.0
Date: 2021-03-08 -- 2021-03-19
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None.
Purpose of the course: The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g., PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course

Contents of the course: THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer's comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication

Teaching and learning activities: Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the PhD students will be members of in-class review groups, giving feedback to their colleagues.

Examination: 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feedback on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)

Compulsory elements: Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments

Number of students: 18 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to later start date)

More information: This course is given in different formats: in-class or online daytime and in-class or online evenings (please see the respective course occasions for details). All lectures (including the online-format) will be in real-time and according to schedule, but there will be recorded lectures available to make up for absence. This course occasion will take place daytime in-class and online (please state your choice in the application). The course focuses on scientific writing (manuscript, abstract and poster) and you may use your own research for the assignments (but there is no requirement to bring data of your own in order to benefit from the course) to maximize the learning experience and also to make actual progress in your studies. The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The popular science part is covering the skills you need in order to successfully write a popular science summary for e.g. a project plan or to apply for grants and is also helpful for oral presentations. No prior knowledge or experience in scientific writing is required to attend the course, and you will benefit equally from the course if you have published your research before. The course will be given in a venue in central Stockholm and online on Zoom.

Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Anna Hildenbrand Wachtmeister
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Contact person:
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Lalit Kumar
Institutionen för kvinnors och barns hälsa
Lalit.Kumar@ki.se
Title: Write your research results and get them published

Course number: 2618
Credits: 3.0
Date: 2021-05-31 -- 2021-06-11
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None.

Purpose of the course: The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer’s comments - Write a cover letter - Reflect on own development as a writer of different texts during the course

Contents of the course: THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and formats. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer’s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication

Teaching and learning activities: Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feedback to their colleagues.

Examination: 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feedback on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)

Compulsory elements: Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments

Number of students: 18 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to later start date)

More information: This course is given in different formats, both daytime and evenings, in-class and online (please see the respective course occasions for details). All lectures (including the online-format) will be in real-time and according to schedule, but there will be recorded lectures available to make up for absence.

This course occasion will take place daytime in-class AND online (please state your choice in the application). The course focuses on scientific writing (manuscript, abstract and poster) and you may use your own research for the assignments (but there is no requirement to bring data of your own in order to benefit from the course) to maximize the learning experience and also to make actual progress in your studies. The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The popular science part is covering the skills you need in order to successfully write a popular science summary for e.g. a project plan or to apply for grants and is also helpful for oral presentations. No prior knowledge or experience in scientific writing is required to attend the course, and you will benefit equally from the course if you have published your research before. The course will be given in a venue in central Stockholm and online on Zoom.

Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Anna Hildenbrand Wachtmeister
Department of Women's and children's health
070-789 06 07
Anna.Hildenbrand.Wachtmeister@ki.se

Contact person:
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
Title: Write your research results and get them published

Course number: 2618
Credits: 3.0
Date: 2021-04-26 -- 2021-05-07
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None.

Purpose of the course: The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course

Contents of the course: THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer’s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication

Teaching and learning activities: Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feedback to their colleagues.

Examination: 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feed back on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)

Compulsory elements: Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments

Number of students: 18 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to later start date)

More information: This course is given in different formats: in-class or online daytime and in-class or online evenings (please see the respective course occasions for details). All lectures (including the online-format) will be in real-time and according to schedule, but there will be recorded lectures available to make up for absence. This course occasion will take place daytime in-class and online (please state your choice in the application). The course focuses on scientific writing (manuscript, abstract and poster) and you may use your own research for the assignments (but there is no requirement to bring data of your own in order to benefit from the course) to maximize the learning experience and also to make actual progress in your studies. The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The popular science part is covering the skills you need in order to successfully write a popular science summary for e.g. a project plan or to apply for grants and is also helpful for oral presentations. No prior knowledge or experience in scientific writing is required to attend the course, and you will benefit equally from the course if you have published your research before. The course will be given in a venue in central Stockholm and online on Zoom.

Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Anna Hildenbrand Wachtmeister
Department of Women's and children's health
070-789 06 07
Anna.Hildenbrand.Wachtmeister@ki.se

Contact person:
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
070-789 06 07
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Lalit Kumar
Institutionen för kvinnors och barns hälsa
Lalit.Kumar@ki.se
Title : Write your research results and get them published

Course number : 2618
Credits : 3.0
Date : 2021-04-13 -- 2021-06-22
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None.

Purpose of the course : The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.

Intended learning outcomes : AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course

Contents of the course : THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer’s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication

Teaching and learning activities : Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feed-back to their colleagues.

Examination : 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feedback on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)

Compulsory elements : Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments

Number of students : 18 - 22
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to LATER registration date).

More information : This course is given in different formats: in-class or online daytime and in-class or online evenings (please see the respective course occasions for details). All lectures (including the online-format) will be in real-time and according to schedule, but there will be recorded lectures available to make up for absence. <br>This course occasion will take place on Tuesday evenings online. The focus is on scientific writing (manuscript, abstract and poster) and you may use your own research for the assignments (but there is no requirement to bring data of your own in order to benefit from the course) to maximize the learning experience and also to make actual progress in your studies. The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The popular science part is covering the skills you need in order to successfully write a popular science summary for e.g. a project plan or to apply for grants and is also helpful for oral presentations. No prior knowledge or experience in scientific writing is required to attend the course, and you will benefit equally from the course if you have published your research before. The course will be given online on Zoom. <br>Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsable :
Anna Hildenbrand Wachtmeister
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070-789 06 07
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Contact person :
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Institutionen för kvinnors och barns hälsa
Lalit Kumar  
Institutionen för kvinnors och barns hälsa  
Lalit.Kumar@ki.se
Title: Klinisk forskning och Good Clinical Practice: protokoll, informerat samtycke och ansökan i enlighet med lagar/regler

Course number: 2621
Credits: 1.5
Date: 2021-02-01 -- 2021-02-05
Language: Swedish
Level: Forskarnivå

Responsibility: Department of Clinical Sciences, Danderyd Hospital

Purpose of the course: Kursen ger god kunskap om det regelverk som gäller vid klinisk forskning (registerforskning och kliniska prövningar). Detta är nödvändig kunskap för alla som bedriver klinisk forskning.

Intended learning outcomes:


Contents of the course:


Teaching and learning activities:

- Föreläsningar, diskussioner och seminarier samt examinationsuppgift (studiesynopsis, etikansökan och patientinformation).

Examination:

- Doktorandens examinationsuppgift kommer att bedömas och diskuteras i seminarieform.

Compulsory elements:

- Närvaro vid undervisning/seminarier samt inlämning av examinationsuppgift (studiesynopsis, etikansökan och patientinformation). Vid frånvaro från schemalagda aktiviteter måste deltagaren genom kompletterade extra inlämningsuppgift kunna styrka motsvarande inhämtning av kunskap.

Number of students: 10 - 30

Selection of students:

- Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier

More information:

- Kursen består av föreläsningar och arbete i seminarieform på Danderyds sjukhus 2021-02-01--05. Examinationsuppgiften (studiesynopsis, etikansökan och patientinformation) genomförs 2021-02-02--04 och lämnas därefter in för individuell bedömning och återkoppling. Examinationsuppgiften kommer också att diskuteras och bedömas i seminarieform.

Course responsible:

Thomas Kahan
Department of Clinical Sciences, Danderyd Hospital
08 123 568 61
Thomas.Kahan@ki.se

Contact person:

Nina Ringart
Institutionen för kliniska vetenskaper, Danderyds sjukhus
08-123 564 12
nina.ringart@ki.se
Title: Human physiology - an overview

Course number: 2644
Credits: 3.0
Date: 2021-01-25 -- 2021-02-05
Language: English
Level: Doctoral level

Responsible KI department: Department of Physiology and Pharmacology

Specific entry requirements:

Purpose of the course: KI is a medical university with research and education in medicine and health. All PhD students have to obtain basic knowledge regarding the human body in health and disease in case they lack basic higher education knowledge in the field of medicine. The aim of the course is to give PhD students without a medical background a basic overview and introduction to human physiology. The students will gain a basic understanding of how the human organ systems function and interact under normal conditions. The content covered in this course will be useful for further studies where knowledge about human biology is of value.

Intended learning outcomes: After completing the course, the student will gain a basic understanding of how the human organ systems function and interact under normal conditions. The content covered in this course will be useful for further studies where knowledge about human biology is of value. More specifically, the student will be able to:
- Demonstrate knowledge and understanding of basic functions and interactions between organ systems in the human body.
- Demonstrate a critical and scientific approach to literature sources for the different course tasks.

Contents of the course:
- Overview of cellular and integrative physiology
- Basic anatomy
- Biochemistry and cell biology
- Nervous system
- Endocrinology
- Digestive system
- Cardiovascular physiology
- Renal physiology
- Respiration
- Basic immunology

Teaching and learning activities: Different learning methods such as problem based learning, lectures and a hands-on human lab session will be used. Full time during two consecutive weeks.

Examination: To pass the course, the student must demonstrate that the learning outcomes have been achieved. Oral and written examinations are used for student assessment.

Compulsory elements: Examinations and the hands-on human lab are required. Students that are absent during the quiz or the lab must perform a make-up quiz/lab. Students that are absent from the exam or do not obtain a passing grade in the first examination will be offered a second examination.

Number of students: 15 - 20

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Depending on the situation the course will either be held at KI Campus Solna (Biomedicum) or through Zoom and Canvas.

Course responsible:
Jessica Norrbom
Department of Physiology and Pharmacology

Jessica.Norrbom@ki.se

Contact person:
-
Title: Grounded theory in health research

Course number: 2654
Credits: 3.0
Date: 2021-05-03 -- 2021-05-18
Language: English
Level: Doctoral level
Responsible KI department: Department of Clinical Science and Education, Södersjukhuset

Specific entry requirements:
Purpose of the course: The purpose of the course is to give doctoral students a basic knowledge, understanding and skills necessary to design and implement a Grounded Theory study, in addition to evaluation of the results of Grounded Theory studies. The course aim is also to give participants an introductory opportunity to produce their own, original, grounded theory research using the right approach.

Intended learning outcomes: At the end of the course the participants should: 1. Be able to describe the experience of a classroom climate that incorporates principles of respect, mutuality, cooperation, collaboration, and teamwork. 2. Be able to demonstrate understanding of philosophical and practical underpinnings of grounded theory. 3. Be able to express understanding of the essential characteristics of grounded theory and exploration methodology. 4. Be able to apply knowledge of grounded theory in discussing rationales for design of grounded theory study. 5. Be able to understand and assess the applicability of a grounded theory methodology for a particular research problem. 6. Be able to critically comment/evaluate strength and weakness of studies (published papers) using grounded theory methodology. 7. Be able to implicate grounded theory research findings for practice and future research. 8. Be able to design grounded theory research proposals including: Title, Background, Research question, Study goal and objectives, Methodology and reasons to choose grounded theory methodology, Study population, Study sample (participants), Sampling method, Sample size, Inclusion and exclusion criteria, Data gathering technique/s, Data analysis method, Limitation, Ethical consideration, Trustworthiness/Credibility (validity & reliability)

Contents of the course: The course will provide practical, hands-on experience in using grounded theory research. Students will gain a knowledge and understanding of main features and the basic characteristics of grounded theory, the applicability of grounded theory for particular research problems, including those of their own original grounded theory research projects; and how to critically appraise appropriateness of grounded theory. The teachers will share their experience of grounded theory research method, the application of grounded theory in their respective fields and provide advice and consultation on the advanced use of cutting-edge grounded theory. The course will start with a deep discussion about what grounded theory is, the aim of grounded theory and when to use grounded theory. Then teachers will continue with key characteristics of grounded theory research, the applicability of grounded theory for particular research problems, how to conduct a grounded theory study; and evaluation of rigor in this approach. Students will learn to evaluate and make comments on published grounded theory studies in terms of methodology, data gathering, quality of gathered data, data analysis approach, display of result, study limitation and ethical considerations. Finally implications of grounded theory findings for practice and future research will be discussed and students will learn to design a grounded theory research proposal in their respective fields.

Teaching and learning activities: The learning activities of the course are a mix of lectures, discussions, individual and group activities; interviews, seminars, field observations and individual and group presentations.

Examination: The course assessment will include formative and summative assessments. The formative assessment (50%) will be made through Peer learning Activity, critic a grounded theory paper, individual and group presentations, while the summative assessment (50%) will be through a written examination, and individual qualitative data gathering and analysis and finally a written grounded theory proposal in their respective fields. In this way, the students are examined with both group-wise and individual presentations.

Compulsory elements: Active participation in the class discussions, individual and group assignments (individual and group data gathering by interviews and field observations and data analysis), written assignment (a complete grounded theory proposal) and student presentations are mandatory. Compensation according to the instructions of the course director, which means absentees less than 2 lectures is acceptable and should be compensated by individual projects related to absenteec's session.

Number of students: 15 – 25

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will be held at the Department och Clinical Science and Education at Södersjukhuset in Stockholm. Lectures will be held 3 days/week and other days will be group/own work.

Course responsible: Hamid Khankeh
Department of Clinical Science and Education, Södersjukhuset

hamid.khankeh@ki.se

Sjukhusbacken 10
118 83

https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Stockholm

Contact person:
Malin Holm Blomquist
Institutionen för klinisk forskning och utbildning, Södersjukhuset

malin.holm.blomquist@ki.se
Title: Introduction to modern test theory and test/survey methodology

Course number: 2664
Credits: 4.0
Date: 2021-01-21 -- 2021-02-11
Language: English
Level: Doctoral level
Responsible KI department: Department of Neurobiology, Care Sciences and Society

Specific entry requirements:

Purpose of the course: The aim of the course is to deepen the students’ knowledge in systematic methods for quantitative data gathering and their applications within health care sciences. The focus of the offered teaching modules is to provide the participants with a deeper understanding of the concepts and principles that are used as a basis for choices in data gathering and analysis.

Intended learning outcomes: The student will after completion of the course:
- Be able to analyse, judge and choose appropriate methods for quantitative data gathering using clinical tests/surveys
- Be able to analyse, judge and choose appropriate methods for analysis and interpretation of data from clinical tests/surveys
- Be able to critically reflect and discuss issues in relation to data gathering and analysis using clinical tests/surveys (e.g., theoretical concepts and operationalization, construction of tests, aspects of validity, implementation)
- Be able to analyse and discuss questions in relation to the use of clinical tests/surveys in clinical health care sciences.

Contents of the course: The content of the course is primarily based on aspects related to systematic quantitative data gathering processes. The course introduces:
- The measurement process and the different aspects included in this process
- Modern test theory and current definitions of concepts
- Different quantitative data gathering methods
- Approaches for construction, application, analysis, and evaluation of clinical tests/questionnaires

The course content is individually adjusted for examining a specific aspect of data gathering processes (a clinical test/questionnaire/survey) that is chosen by the student and related to his/her own research project. This aspect is presented by the student during the first day of the course and will guide the individual learning processes.

Teaching and learning activities: The pedagogic framing of the course is centred around the student's own research project. The contents of the course are introduced in lectures and clinical applications. The students are then applying the processes/methods learned in workshops and group work with supervision. The outcomes are then presented and discussed in seminar forms. The student is finally applying the course content on an individually chosen aspect of quantitative data gathering processes in his/her own research project.

Examination: The examination consists of a written paper based on the individually chosen aspect of quantitative data gathering processes in the student's own research project. The quality of the paper is judged according to the learning outcomes in relation to specific given criteria in the course. The paper is also presented in a seminar.

Compulsory elements: Seminars are mandatory. A student will be able to compensate absence with written assignments.

Number of students: 10 - 20
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course dates are as follows: January 21-22, January 27-28, February 4 and February 11.
Suggested group work: January 25-26
The course language will be in English unless all students feel comfortable in Swedish.

Course responsible:
Anders Kottorp
Department of Neurobiology, Care Sciences and Society
0703656701
Anders.Kottorp@ki.se

Contact person:
Title : Multi-Disciplinary Perspectives on Active Ageing Research

Course number : 2688
Credits : 4.5
Date : 2021-02-08 -- 2021-04-30
Language : English
Level : Doctoral level
Responsible KI department : Department of Neurobiology, Care Sciences and Society
Specific entry requirements :
Purpose of the course : The purpose of the course is to enable the students to develop an in-depth knowledge of theoretical and methodological challenges in ageing research and to analyse research questions within a framework of different ageing theories with a multi-disciplinary perspective.

Intended learning outcomes : The students shall be able to: Theorize on complexity of research directed towards older people, and reflect on methodological challenges in ageing research Analyse research on ageing from a multi-disciplinary perspective within the framework of different ageing theories Critically judge and hypothesize on research questions within the field of ageing from different disciplinary viewpoints

Contents of the course : To reach the intended learning outcomes, the course will be built on the research projects of the students involved. Definitions and concepts relevant for the focus of those projects will be penetrated to make students aware of their own frame of reference and of the theory that forms a base for their research design. The course will include an overview of current ageing research issues within different professional and scientific domains in health, covering health promotion, prevention of disease and disability, rehabilitation and preservation of function. A focus on a persons resources for developing an active life, and their possible implications in research will be analysed.

Teaching and learning activities : The course will be digital. Recorded and live lectures (Zoom), seminars, group work, study of and group discussions on scientific literature and individual work based on each student's research project.

Examination : The students will be examined with a written assignment related to the student's research project. The paper will be presented and discussed at a pre-seminar. The paper shall include an ageing theory on the student's research project and reflections of strengths and weaknesses. The paper should include an attempt to apply a multi-disciplinary approach on the project.

Compulsory elements : Active participation in the seminars, which are mandatory. Absence from a seminar must be compensated by means of a written task, suggested by the course leader.

Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : The course will run for around eleven weeks, from week 6 until week 17, at the following dates: February 8-9, 18 and 27, March 8, April 12 (pre examination seminar). Deadline for final written examination admission is April 30.

Course responsible :
Elisabeth Rydwik
Department of Neurobiology, Care Sciences and Society
elisabeth.rydwik@ki.se

Contact person :
Elisabeth Rydwik
Institutionen för neurobiologi, vårdvetenskap och samhälle
elisabeth.rydwik@ki.se
Title : Basic Laboratory Safety

Course number : 2690
Credits : 1.8
Date : 2021-02-01 -- 2021-02-08
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biology
Specific entry requirements : Experience of and/or education in laboratory work

Purpose of the course : The purpose of the course is to enable the students to obtain an understanding of risks and of principles in safety measures in the medical science laboratory, as well as a consciousness about general and individual responsibilities for the planning and execution of applicable safety measures. The purpose is also to develop skills in performing risk analyses and writing up risk assessments.

Intended learning outcomes : After successfully completing this course you as a student should be able to evaluate the risks associated with experiments in the laboratory. The hazards could originate from chemicals, microbiological agents, cell cultures and human blood/tissues. You should also be able to identify the needs for suitable personal protective equipment, routines for waste management and transport. In addition, you should be familiar with the regulatory framework that governs these topics, the basic needs of a safe laboratory, and be able to identify the chain of responsibilities.

Contents of the course : The course aims at giving theoretical and practical knowledge on chemical and biological aspects of laboratory safety. Topics will deal with writing risk assessments, chemical health risks including allergy, cancer and flammable agents, handling and storage of dangerous chemicals, handling of microorganisms and cell cultures including human blood and tissue samples, laboratory acquired infections, bio-safety measures including personal protection devices, ventilated workplaces, genetically modified microorganisms, bio-security and dual use, transport of dangerous goods and waste management.

Teaching and learning activities : The information will be given as lectures, group discussions, practical sessions, web-tutorials and computer sessions during a total of six days.

Examination : The examination is based on an individual written examination, a risk assessment and the active participation and contributions in a group presentation. One needs to pass each of these three assessments in order to pass the course.

Compulsory elements : Presence during some of the course activities, marked in the schedule, is compulsory. Students cannot compensate for absence during compulsory activities, but are referred to coming courses for these activities.

Number of students : 30 - 40
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information :

Course responsible :
Maria Johansson
Department of Microbiology, Tumor and Cell Biology

Maria.Johansson@ki.se

Contact person :
Christina Johansson
Institutionen för mikrobiologi, tumör- och cellbiologi

christina.johansson.1@ki.se
Title : Basic Laboratory Safety

Course number : 2690
Credits : 1.8
Date : 2021-05-03 -- 2021-05-10
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biology
Specific entry requirements : Experience of and/or education in laboratory work

Purpose of the course : The purpose of the course is to enable the students to obtain an understanding of risks and of principles in safety measures in the medical science laboratory, as well as a consciousness about general and individual responsibilities for the planning and execution of applicable safety measures. The purpose is also to develop skills in performing risk analyses and writing up risk assessments.

Intended learning outcomes : After successfully completing this course you as a student should be able to evaluate the risks associated with experiments in the laboratory. The hazards could originate from chemicals, microbiological agents, cell cultures and human blood/tissues. You should also be able to identify the needs for suitable personal protective equipment, routines for waste management and transport. In addition, you should be familiar with the regulatory framework that governs these topics, the basic needs of a safe laboratory, and be able to identify the chain of responsibilities.

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Teaching and learning activities : The information will be given as lectures, group discussions, practical sessions, web-tutorials and computer sessions during a total of six days.

Examination : The examination is based on an individual written examination, a risk assessment and the active participation and contributions in a group presentation. One needs to pass each of these three assessments in order to pass the course.

Compulsory elements : Presence during some of the course activities, marked in the schedule, is compulsory. Students cannot compensate for absence during compulsory activities, but are referred to coming courses for these activities.

Number of students : 30 - 40
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information :

Course responsible :
Maria Johansson
Department of Microbiology, Tumor and Cell Biology

Maria.Johansson@ki.se

Contact person :
Christina Johansson
Institutionen för mikrobiologi, tumör- och cellbiologi

christina.johansson.1@ki.se
Title : Basic Inflammation

Course number : 2705
Credits : 3.0
Date : 2021-03-22 -- 2021-04-16
Language : English
Level : Doctoral level

Responsible KI department : Department of Medicine, Solna

Specific entry requirements : Documented knowledge about basic concepts of innate and adaptive immunity (e.g. immunology course during undergraduate education)

Purpose of the course : This course will give a general and broad overview knowledge in the field of inflammation. Ability to think critically will be encouraged during discussions and group work.

Intended learning outcomes : After the course, the participant will be able to: understand cellular and molecular events those underlie the initiation, progression and resolution of inflammation; to describe the principal cell types involved in inflammatory responses and their interactions, the regulation of inflammation by inflammatory mediators, and the mechanisms of resolution and tissue repair; to understand the interplay between acute and chronic inflammation in the context of chronic inflammatory diseases and describe anti-inflammatory treatment strategies.

Contents of the course : The course provides the current concept of inflammation and consists of two parts. Part 1 will cover the basic mechanisms and mediators of inflammation (host defence peptides, coagulation, complement, alarmins, lipid mediators, the acute phase proteins, inflammatory cells), non-resolving inflammation, resolution of inflammation. Part 2 will discuss the common and specific features of inflammatory diseases (sepsis, chronic inflammatory diseases), animal models of inflammation, role of genetic and environmental factors, anti-inflammatory treatment. At the end of the course the students will present projects and write web-based exam.

Teaching and learning activities : Lectures, journal clubs, small-group work with a project, discussions and the project presentation, studying the course literature. The course is full-time for six days separated into two parts and also includes the non-scheduled time (32h) between the parts for the project work including meetings with mentors and the course literature studies.

Examination : Presentation of the project selected from assigned topics based on the course seminars. Critical evaluation and discussion of the other participants' presentations.

Compulsory elements : The participants must attend the seminars, critical reviews of papers and the oral exam (presentation). Absence has to be compensated for by assignments in agreement with the course leader within 4 weeks from the absence.

Number of students : 10 - 30

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).


Course responsible :
Cecilia Aulin
Department of Medicine, Solna

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Contact person :
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Institutionen för medicin, Solna

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Title: Intermediate Medical Statistics: Regression models

Course number: 2738
Credits: 3.0
Date: 2021-04-12 -- 2021-04-23
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics
Specific entry requirements: Basic Medical Statistics (or equivalent)

Purpose of the course: The aim of the course is to introduce intermediate statistical methods and to facilitate acquisition of skills that involve hands-on data analysis using statistical software.

Intended learning outcomes: After successfully completing this course students are expected to be able to: Understand the basic theory behind the statistical methods introduced in the course and to evaluate their applicability and limitations. Choose a suitable statistical model for assessing a specific research hypothesis using data from a medical science study, evaluate the fit of the model, and interpret the results. Apply the methods discussed in the course on real data.

Contents of the course: The course is an introduction to more advanced statistical methods and requires that the student is familiar with the statistical concepts of descriptive and inferential statistics, and has some basic knowledge of linear regression. The course covers intermediate regression analysis, one-way and two-way analysis of variance, repeated measures ANOVA, logistic regression, and introduction to survival analysis. Concepts examined in this course include dummy variables, confounding variables, interaction between variables, influential observations and model selection.

Teaching and learning activities: The course consists of lectures, group discussions and assignments solved individually and in groups. Some group discussions and exercises are compulsory.

Examination: Assessment of the intended learning outcomes by a passing grade on the computer based exercises, and active participation in the final seminar and article presentations.

Compulsory elements: Computer based exercises, seminars, article presentations and some lectures are mandatory. The course leader assesses whether and if so, how absence can be compensated.

Number of students: 18 - 20

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

More information: The course will consist of three or four scheduled whole days per week for two weeks. Course dates are: April 12, 13, 15, 16, 19, 20, 23.

Course responsible:
Mesfin Tessma
Department of Learning, Informatics, Management and Ethics
Mesfin.Tessma@ki.se

Contact person:
Karin Wrangö
Institutionen för lärande, informatik, management och etik
karin.wrango@ki.se
Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2021-01-18 -- 2021-01-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None

Purpose of the course: The purpose of the course is to enable doctoral students to obtain knowledge and practical experience in presenting own research orally; adapted to different presentation formats, target groups, supporting media and situations, as well as to reflect on the development of own presentation skills.

Intended learning outcomes: After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rhetoric. 4. Have gained knowledge on how to interact with the audience.

Contents of the course: The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation

Teaching and learning activities: Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.

Examination: Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch

Compulsory elements: Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students' presentations e. Reflecting on own learning and development during the course

Number of students: 18 - 22

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Please note that this course is given in different formats (daytime/evenings/in-class/on-line) and see each course occasion for details. The course focuses on research presentations in different contexts. You will practice presenting your own research results (or something else of your choice from your research area) as well as other topics in order to approach presentation skills from different angles. This is highly interactive course with a multitude of exercises and together we will take your presentations to the next level. The focus is on developing each student's authentic and personal style of presenting, rather than a "one-size-fits-all" template. Furthermore, we will deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and to create an environment, where the students feel safe to practice and try new presentation approaches. This course occasion will be given evenings online and in-class combined. The in class students will meet in a venue in central Stockholm. Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Kristina Gemzell Danielsson
Department of Women's and children's health
0851772128
Kristina.Gemzell@ki.se

Contact person:
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa

https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title : Present your research!

Course number : 2787
Credits : 1.5
Date : 2021-03-01 -- 2021-03-05
Language : English
Level : Doctoral level
Responsible KI department : Department of Women’s and children’s health
Specific entry requirements : None
Purpose of the course : The purpose of the course is to enable doctoral students to obtain knowledge and practical experience in presenting own research orally; adapted to different presentation formats, target groups, supporting media and situations, as well as to reflect on the development of own presentation skills.

Intended learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an adequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rhetoric. 4. Have gained knowledge on how to interact with the audience.

Contents of the course : The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience’s attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student’s choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation

Teaching and learning activities : Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.

Examination : Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator Pitch

Compulsory elements : Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students’ presentations e. Reflecting on own learning and development during the course

Number of students : 18 - 20

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : Please note that this course is given in different formats (daytime/evenings/in-class/on-line) and see each course occasion for details. <BR> The course focuses on research presentations in different contexts. You will practice presenting your own research results (or something else of your choice from your research area) as well as other topics in order to approach presentation skills from different angles. This is highly interactive course with a multitude of exercises and together we will take your presentations to the next level. The focus is on developing each student’s authentic and personal style of presenting, rather than a “one-size-fits-all” template. Furthermore, we will deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and to create an environment, where the students feel safe to practice and try new presentation approaches. <BR> This course occasion will be given daytime, in-class in a venue in central Stockholm with additional seats available online. <BR> Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible :
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Contact person :
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2021-06-14 -- 2021-06-18
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children’s health
Specific entry requirements: None

Purpose of the course: The purpose of the course is to enable doctoral students to obtain knowledge and practical experience in presenting own research orally; adapted to different presentation formats, target groups, supporting media and situations, as well as to reflect on the development of own presentation skills.

Intended learning outcomes: After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an adequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rhetorical. 4. Have gained knowledge on how to interact with the audience.

Contents of the course: The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation

Teaching and learning activities: Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.

Examination: Formative assessment during active participation in all parts of the course Summative assessment of: a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator Pitch

Compulsory elements: Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feedback on the other students' presentations e. Reflecting on own learning and development during the course

Number of students: 18 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Please note that this course is given in different formats (daytime/evenings/in-class/on-line) and see each course occasion for details. The course focuses on research presentations in different contexts. You will practice your own research presentation (or something else of your choice from your research area) as well as other topics in order to approach presentation skills from different angles. This is highly interactive course with a multitude of training and together we will take your presentations to the next level. The focus is on developing each student's authentic and personal style of presenting, rather than a "one-size-fits-all" template. Furthermore, we will deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and to create an environment, where the students feel safe to practice and try new presentation approaches.

Course occasion will be given daytime, in-class in a venue in central Stockholm. Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Kristina Gemzell Danielsson
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0851772128
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Contact person:
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
Title : Present your research!

Course number : 2787
Credits : 1.5
Date : 2021-05-17 -- 2021-05-21
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None
Purpose of the course : The purpose of the course is to enable doctoral students to obtain knowledge and practical experience in presenting own research orally; adapted to different presentation formats, target groups, supporting media and situations, as well as to reflect on the development of own presentation skills.
Intended learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an adequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rhetoric. 4. Have gained knowledge on how to interact with the audience.

Contents of the course : The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influence the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentation j. Deal with nervousness and stay focused on your presentation

Teaching and learning activities : Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.

Examination : Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch

Compulsory elements : Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students' presentations e. Reflecting on own learning and development during the course

Number of students : 18 - 22
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : Please note that this course is given in different formats (daytime/evenings/in-class/on-line) and see each course occasion for details.  

You will practice presenting your own research results (or something else of your choice from your research area) as well as other topics in order to approach presentation skills from different angles. This is highly interactive course with a multitude of exercises and together we will take your presentations to the next level. The focus is on developing each student’s authentic and personal style of presenting, rather than a “one-size-fits-all” template.

Furthermore, we will deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and to create an environment, where the students feel safe to practice and try new presentation approaches.  

This course occasion will be given daytime, in-class in a venue in central Stockholm. Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible :
Kristina Gemzell Danielsson
Department of Women's and children's health
0851772128
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Contact person :
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2021-04-15 -- 2021-06-24
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None

Purpose of the course: The purpose of the course is to enable doctoral students to obtain knowledge and practical experience in presenting own research orally; adapted to different presentation formats, target groups, supporting media and situations, as well as to reflect on the development of own presentation skills.

Intended learning outcomes: After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequeate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rhetoric. 4. Have gained knowledge on how to interact with the audience.

Contents of the course: The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation

Teaching and learning activities: Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.

Examination: Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch

Compulsory elements: Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator pitch d. Giving feedback on the other students' presentations reflecting on own learning and development during the course

Number of students: 18 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Please note that this course is given in different formats (daytime/evenings/in-class/on-line), please see each course occasion for details. This course occasion will be given on eight Thursday evenings, online during the time period. <BR> The course focuses on research presentations in different contexts. You will practice presenting your own research results (or something else of your choice from your research area) as well as other topics in order to approach presentation skills from different angles. This is highly interactive course with a multitude of exercises and together we will take your presentations to the next level. The focus is on developing each student's authentic and personal style of presenting, rather than a "one-size-fits-all" template. Furthermore, we will deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and to create an environment, where the students feel safe to practice and try new presentation approaches. <BR> Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Kristina Gemzell Danielsson
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Contact person:
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
070-789 06 07
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Title: Principles of cellular metabolism

Course number: 2851
Credits: 1.5
Date: 2021-03-01 -- 2021-03-12
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:

Purpose of the course: The course is intended to give a solid theoretical foundation for studying cellular metabolism from a physical, quantitative perspective, enabling the student to critically approach literature in the field, and serving as a preparation for more specialized courses.

Intended learning outcomes: After completing the course, the student should understand the principles underlying the organization of metabolic pathways in human cells; be able to critically evaluate literature and data on cellular metabolism; understand current methods for measuring cellular metabolism; and have a solid foundation to enable deeper study of metabolism independently.

Contents of the course: The fundamental organization of cellular metabolism; physical constraints on metabolism; important building blocks of metabolic pathways and their properties; major metabolites in human cells; carbohydrate metabolism; amino acid metabolism; nucleotide metabolism; lipid metabolism (briefly); principles of enzyme catalysis and bioenergetics of metabolic pathways; genomic organization of enzymes; properties of metabolic networks; metabolic fluxes and flux balance analysis; catabolism during nutrient starvation; anabolism in proliferating cells; methods for measuring metabolism, in particular isotope tracing; experimental considerations when studying metabolism in cell systems.

Teaching and learning activities: The course will utilize a problem-based learning model with "flipped classroom" techniques, interactive seminars, problem-solving in groups, oral presentations, and individual assignments. Computer labs are included to study metabolic networks and metabolic flux analysis.

Examination: Knowledge is assessed by performance in connection to seminars (comments, questions, answers), performance on computer labs, and an individual home assignment (problem solving / essay) with a short individual oral presentation.

Compulsory elements: Presence on seminars and computer labs is mandatory. Absence must be compensated for by a written resume.

Number of students: 15 - 20
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: This course runs at half speed and consists of both self study, seminars and exercises. About 5-6 half days on campus are planned.

Course responsible:
Roland Nilsson
Department of Medicine, Solna
roland.nilsson@ki.se

Contact person:
Title: Longitudinal Data Analysis - Classical and Modern Statistical Methods

Course number: 2858
Credits: 3.0
Date: 2021-05-17 -- 2021-05-28
Language: English
Level: Doctoral level

Responsible KI department: Department of Learning, Informatics, Management and Ethics
Specific entry requirements: Knowledge about regression models.

Purpose of the course: The aim of the course is to introduce statistical models and methods for the analysis of longitudinal data and to develop statistical skills of analyzing dependent data.

Intended learning outcomes: After successful completion of the course the student will be able to:
1. Understand the underlying characteristics of longitudinal data
2. Identify appropriate tests for longitudinal studies
3. Manage longitudinal datasets and prepare these for statistical analysis using statistical software program SPSS
4. Apply both simple and complex statistical methods of longitudinal data
5. Use SPSS to perform the above mentioned statistical analysis

Contents of the course: The main focus will be on frequently used statistical methods and how these should be used to provide more insight concerning research questions in longitudinal studies. Thus the course covers both classical and modern methods to analyze longitudinal data. Topics include Univariate repeated measures analysis of variance, Multivariate repeated measures analysis of variance, Drawbacks and limitations of classical methods; General linear models for longitudinal data; Linear mixed effects models. The underlying mathematical theory will not be stressed, and the main focus will be on concepts and applications.

Teaching and learning activities: Teaching methods include lectures, computer based exercise and seminars. Participants will have access to materials from a number of studies and are given the opportunity to use the statistical software program, SPSS during practice sessions. In addition, you will have seminars, group discussion and presentations.

Examination: Assessment of attainment of the intended learning outcomes by a passing grade on the computer based exercises, and the performance during the final seminar.

Compulsory elements: Computer based exercises, seminars, presentations and some lectures are mandatory. The course leader assesses whether and if so, how absence can be compensated.

Number of students: 18 - 20
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

More information: The course will consist of four scheduled whole days per week for two weeks. Course dates: May 17-18, 20-21, 24-25 and 27-28.

Course responsible:
Mesfin Tessma
Department of Learning, Informatics, Management and Ethics
Mesfin.Tessma@ki.se

Contact person:
Elisabeth Löfgren
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Karin Wrangö
Institutionen för lärande, informatik, management och etik
karin.wrango@ki.se
Title: Biomedical Ecology - The microbiota in health and disease

Course number: 2861  
Credits: 1.5  
Date: 2021-04-19 -- 2021-04-23  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Microbiology, Tumor and Cell Biology

Specific entry requirements:

Purpose of the course: To support the acquisition of a broad knowledge and systematic understanding of the composition and function of the microbiota during the life cycle, how it might be influenced by diet and disease, and of host-microbe cross-talk. To introduce tools and methodologies that will enable the participants of the course to study the microbiota.

Intended learning outcomes: After finishing the course the student should be able to show an in-depth and up-to-date specialist knowledge about: - the composition and function of the microbiota and its cross-talk with the host, - the establishment of the microbiota during different stages of life, and its impact on the development and function of the immune system and host tissues, - the role of how an altered microbial function and/or dysbiosis might occur in connection with different diseases/disturbances. The student should be able to show familiarity with, and insight in: - methods to study the microbiota as well as basic data analyses and interpretation, - the microbiota as the largest metabolic organ in the body and its physiological and pathophysiological role in health and disease, - the role of the host-microbiota cross-talk in health and disease.

Contents of the course: The course will cover the aspects of the composition and function of the microbiota from birth, during life and the ageing period, how it might be influenced by diet and disease, and host-microbe crosstalk. Sequencing techniques and principles for basic bioinformatics data analyses will be introduced and compared to biochemical methods. Novel findings will be discussed by lecturers in the research front-line on the translational topics of microbiota in relation to human diseases. The course is suitable for clinical and pre-clinical doctoral students and researchers for which the microbiota is of significance.

Teaching and learning activities: The course combines lectures, student workshops, and practical laboratory work as follows: - lectures by well established front-line researchers in their respective fields, - laboratory sessions covering analysis of the students' own intestinal E. coli microbiota, - workshops/combined with focused literature studies within defined areas which will be summarized in terms of student seminars, - peer learning using the competence of the lecturers and course attendees.

Examination: Summative examination includes laboratory work and student presentations that are evaluated by the respective tutor at the specific course module and written examination of the course content.

Compulsory elements: Laboratory work and student seminars. Participants that are absent from the laboratory part and seminars will have to present a written paper on the subject and in agreement with the indications of the course director.

Number of students: 8 - 24

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: This course contains mandatory lectures and laboratory exercises on each course day, and the students are therefore expected to be present during each course day.

Course responsible:
Juan Du  
Department of Microbiology, Tumor and Cell Biology  
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Contact person:  
Juan Du  
Institutionen för mikrobiologi, tumör- och cellbiologi  
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Emma Fransson  
Institutionen för mikrobiologi, tumör- och cellbiologi  
emma.fransson@ki.se
Title: Microscopy: Improve Your Imaging Skills - From Sample Preparation to Image Analysis

Course number: 2870
Credits: 6.0
Date: 2021-01-26 -- 2021-02-12
Language: English
Level: Doctoral level

Responsible KI department: Department of Biosciences and Nutrition

Specific entry requirements:

Purpose of the course: The aim for this course is to improve the microscopy skills of students and researchers who have already and recently used a microscope to acquire digital images of fluorescent samples and want to improve their skills. This is not a course for researchers who have not yet started to use microscopy.

Intended learning outcomes: At the end of the course, the participants will be able to: 1- Describe the difference between wide field, confocal and light sheet microscopes as well as the different types of confocal microscopes and choose which system is most suited to their experiments 2- Pick the best combination of fluorophores for their experiment by matching their spectra with the microscope light source and filters, identify and eliminate bleed-through and cross-excitation problems 3- Explain objective specifications and limitations and choose the appropriate objective for their own experiments 4- Describe how to fix, mount and handle their sample in a way that is optimal for imaging 5- Find their sample and the area of interest without bleaching it 6- Adjust the condenser for proper DIC imaging (Koehlering) 7- Explain how to set the following parameters on a wide field, a confocal or a light sheet system to best match the requirements of their sample and reliably answer their scientific question: resolution, pixel size, averaging, scan speed, illumination power, detector gain and offset, camera readout rate, exposure time and camera binning 8- Explain which applications require a hardware or a software autofocus, a spectral detector, a resonance scanner, two-photon or super resolution microscopy 9- Explain the advantages in using the automation of a microscope system to collect multidimensional data 10- Explain how to deal with images before publication in scientific journals 11- Describe the imaging requirements for automated image analysis 12- Run an image analysis pipeline on freeware (ImageJ/FIJI, Cell Profiler) designed for their own images and scientific question.

Contents of the course: The course is NOT aimed at training people to use the LCI facility microscopes. The focus is instead on providing the students with enough theoretical and practical knowledge so that, when they go back to their lab, they are able to properly use the hardware available there and so that they fully understand each parameter they need to set in the software. The aim is to provide them with the tools to acquire on ANY wide field, confocal or light sheet microscope, images that exactly match their samples and answer their scientific questions in a reliable way. The participants will learn theory and practice about the parameters and hardware used in wide field, confocal and light sheet imaging, how to identify and avoid imaging artefacts, deal with the challenges of imaging fluorescent volumes, get started with automated image analysis, as well as how to handle scientific images for publication. They will also hear many practical tricks about fixation, mounting and handling of their sample in a way that is optimal for imaging and they will learn about more advanced microscopy techniques. Through the workshop where we will image their own sample, they will get tons of personalized tips on how to improve the preparation and imaging of their own sample. They will also get help to build a pipeline to analyse their images.

Teaching and learning activities: Lectures, videos, workshops, peer review, image troubleshooting in groups, project presentations.

Examination: The final mark (pass or fail) will depend on the results of: 1. The weekly assignments 2. The skills shown at each workshop 3. The written examination at the end of the course. The student must show that all intended learning outcomes of the course have been reached.

Compulsory elements: Attendance to all sessions is compulsory. Any absence must be reported to the course leader in advance by e-mail. Absence from any part of the course (lectures, laboratory sessions, discussion sessions and exam) is generally not accepted but could in exceptional cases be compensated by a written additional assignment to ensure the learning outcomes of the day have been reached. If it is not possible to compensate, the student will be given a chance to complete the course by attending the missing sessions the following year.

Number of students: 12 - 16

Selection of students: All students must have an active microscopy project where they acquire images of fluorescently labelled samples. They will need to bring their samples to one workshop and submit new images during the course. The selection will be made based on the usefulness of the course to the research project, judged from the application. The application must describe the student’s microscopy project and past microscopy experience, as well as some images of the sample (sent to sylvie.le.guyader@ki.se).

More information: The detailed program of the course can be found on the LCI website (https://ki.se/en/bionut/welcome-to-the-lci-facility). Presence at the course is mandatory 3 days/week (Tue-Thu) during 3 consecutive weeks, from 09:00 to 17:00 as well as for the examination (Friday of 3rd week). The course counts for 4 weeks because some time before, during and after these 3 weeks is used in preparing samples and completing assignments. The venue is the Live Cell Imaging facility at KI Flemingsberg campus in the Neo building. The students will get marks for each workshop, for each assignment and for the final examination. COVID-19 information: We are aiming at running lectures, discussions and workshops online. In cases when this is not possible, lectures and discussions will be held in a large room (capacity: 80 persons) in such a way that distancing is achieved. For workshops that cannot be held online and must be run in a small space near the microscopes,
students and teachers will be requested to wear a face mask.

Course responsible:
Sylvie Le Guyader
Department of Biosciences and Nutrition
Sylvie.Le.Guyader@ki.se

Contact person:
-
Title: Kvalitetssäkring av klinisk forskning

Course number: 2873
Credits: 1.5
Date: 2021-02-22 -- 2021-02-26
Language: Swedish
Level: Forsknivå
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:


Intended learning outcomes: Kunskap och förståelse: - Ha kunskap om hur man dokumenterar data så att samtliga moment i en klinisk forskningsprocess kan återskapas på ett tillförlitligt sätt och valida data genereras - Förstå innebörden av Helsingforsdeklarationen och Good Clinical Practice så att åtgärder för att skydda forskningspersoners säkerhet vidtas - Ha kännedom om national, europeisk och internationell lagstiftning, vilka vetenskapliga projekt som kräver ansökan till olika myndigheter och hur detta går till - Färdighet och förmåga: - Ha förmåga att avgöra vilka olika ansvår som forskaren, medarbetare och sponsor har i en klinisk prövning - Ha förmåga att sammanfatta ett projektförslag och göra en riskanalyser - Visa färdighet i att använda enkla statistiska metoder för att avgöra ett projektets vetenskapliga validitet - Värderingsförmåga och förhållningssätt: - Förhålla sig till forskningsprojekten utifrån patientens perspektiv med ett etiskt och vetenskapligt förhållningssätt - Visa förmåga att värdera information från olika källor framförrallt databaser på internet

Contents of the course: Kursen ger kunskaper om forskningsettik och hur ansökan till olika myndigheter görs, kunskap om kvalitetsprinciper för att vid klinisk forskning, utveckling av nya behandlingar med läkemedel, medicinsk teknik, nya laborativa och diagnostiska metoder, kvalitetssäkring av epidemiologisk och registerbaserad forskning, säkerhetsrapportering till myndigheter, GDPR, etikprövningslagen, biobankslagen och patientdatalagen, arkivering, internationella register och kliniska prövningar, riskanalys och viss statistik


Examination: Utöver ett godkänt grupparbete kommer det att ges en individuell examination med kortsvarsfrågor.


Number of students: 20 - 25
Selection of students: Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier


Course responsible:
Pierre Lafolie
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
171 76
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Contact person:
Mari Liljefors
Institutionen för medicin, Solna

mari.liljefors@ki.se
Title: Quality Assurance of Clinical Research

Course number: 2873
Credits: 1.5
Date: 2021-03-22 -- 2021-03-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:

Purpose of the course: This course provides the participant with the knowledge needed to secure the quality in clinical research. It gives an understanding of what is required to act safely and in accordance with local and national legislation, ethical guidelines and international treaty's when involved in clinical research. The course is useful for those working with translational or clinical laboratory research. It is valuable for researchers working with patient quality registries, other types of health registries and in epidemiology. It gives great value to researchers concerned with intervention studies including medicinal products, surgical treatments or pharmaceutical treatments. Beyond the competence you will get, you can also take a test for an internationally recognized certificate in ICH-GCP (International Conference of Harmonisation - Good Clinical Practice). Regardless of your research area, you will after this course understand how to protect patient's safety, and how to create trustful data.

Intended learning outcomes: Knowledge and understanding: Knowledge on how to document data so that all moments in a clinical research process can be re-created in a secured way and valid data generated. Understand the meaning of the Helsinki Declaration and Good Clinical Practice so that research subjects safety always remain the first priority. Knowledge in Swedish, European and international legislations, where a project needs to be applied and to which authority, and how such applications are done. Skills and abilities: Able to differentiate the responsibilities between the investigator, study team members and sponsor in the clinical trial. Able to summarise a project proposal into a risk analysis of the project. Able to use simple statistical tools to judge a project proposal's scientific validity. Judgement and approach: Relate to project proposals from the patient perspective including a scientific and sound ethical approach. Able to judge and critically evaluate information from different internet database sources.

Contents of the course: The course provides insights into research ethics, and how applications to different authorities are done. It presents principles in clinical research and how development of new treatments like medicinal products and medical devices are done. It also explains how safety reporting to authorities is done. It covers laboratory and diagnostic research, and quality assurance in epidemiological and registry-based research. The following laws, regulations and sources are discussed: Act on integrity of personal data (GDPR), Act on ethical review of research projects, Act on biobanking, Act on patient data in health care, Act on archiving, and international registry's on clinical research. Risk-analysis and some statistics are discussed.

Teaching and learning activities: This is a blended course that starts with a mandatory face-to-face (F2F) meeting followed by digital training modules. There are two main tracks that run in parallel. The first track is a group work. The second track is based on individual reading of international guidelines in clinical research. The pedagogy is based on the flipped classroom model with readings proposed initially by the faculty, followed by individual and group-based discussions on problems and cases. Proposals for solution are discussed with faculty support. Reading and learning is supported by self-tests. After the first day with a mandatory F2F the rest of the course is provided by internet. There is a mandatory webinar during the course week.

Examination: In addition to an approved group work there will be an individual examination with short reply questions.

Compulsory elements: There is a face-to-face meeting the first day that is mandatory. Each student must participate in a group work. Each student must show activity on the course's home page with a personal introduction, and at least two questions, presentation and/or comments on other students’ postings on each of the nine lectures. Absence or lack of online activity can after the examiner's assessment be compensated by an individually written essay. Webinars are mandatory. To be able to take the final exam all preceding moments must be approved and cleared.

Number of students: 20 - 25

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: NB! This course is demanding with several tasks and deadlines. You are recommended to give the course your full attention during the week. There are also mandatory webinars Monday 9-13, and Wednesday 15-16.30. Due to the pandemic some further information may be communicated.

Course responsible:
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**Contact person:**
Mari Liljefors
Institutionen för medicin, Solna

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Title : Manuscript writing in English

Course number : 2912
Credits : 1.5
Date : 2021-05-17 -- 2021-05-21
Language : English
Level : Doctoral level

Responsible KI department : Department of Clinical Science and Education, Södersjukhuset
Specific entry requirements :

Purpose of the course : The purpose of this course is to increase the competence and efficiency of the doctoral students in academic writing with a focus on writing scientific manuscripts. The ability to publish in high quality scientific journals is crucial for a successful completion of the doctoral education and pursuing a career that requires a PhD. Participation in this course is thus likely to benefit the students in both short- and long-term perspective.

Intended learning outcomes : After completing the course the students should be able to: (1) prepare for writing a manuscript and choose an approach to write the manuscript, (2) compose the first draft consisting of the standard structures, (3) choose and use tables, figures, graphs, photographs, and schematic diagrams appropriately, (4) revise the first (and subsequent) drafts for clarity, brevity, coherence and readability, (5) improve choices of words, and styles of sentence constructions, (6) write grammatically correct texts, punctuations, numbers as numbers, and numbers as words, (7) submit a manuscript, address the comments from the referees, and resubmit the manuscript.

Contents of the course : The process approach of writing; literature review; plagiarism, ethical issues, permissions, and authorship issues; choice of journals; how to write the different parts e.g. introduction, materials and methods, results, discussion, conclusion, acknowledgement, references, abstract, and title of a manuscript; tables, figures, graphs; statistics; tense, spelling and grammar; readability, clarity and brevity; abbreviations and acronyms; numbers as numbers, and numbers as words; choice of words, active and passive voices; which and that; subject verb agreement, correct placement of modifiers, punctuations, capitalizations; submission format, common mistakes in grammar and choice of words; how to reply to the comments of the referees, revise and resubmit; practical tips; how to overcome writers’ block.

Teaching and learning activities : We shall use the concepts of active learning, flipped classroom, deliberate practice, and formative and summative assessments as the main methods for teaching and learning in this course. Instead of traditional lectures, there will be small-group interactive learning sessions, interspersed with probing questions, tasks, group-works, and individual studies. Students will solve problems and perform writing tasks that are constructed by the teachers, with well-defined learning objectives. Students will receive accurate and immediate feedback from the peers and the teacher to facilitate learning. During the course, students will write part of their own manuscript under the supervision of the teacher.

Examination : Participants will write part of their own manuscript (approximately 2000 words) where they will incorporate the newly acquired knowledge from the course.

Compulsory elements : Presence in all of the scheduled sessions and participation in the writing tasks are obligatory. Absence should be compensated for in accordance with the indications of the course director.

Number of students : 10 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : The course will be given at the Department of Clinical Science and Education, Södersjukhuset, Monday to Friday, from 09:00 to about 16:00. Some parts of the course will be run as "flipped classroom", where participants will receive learning materials for preparation at home for the classroom sessions. A more detailed schedule will be presented in good time before the course start.

Course responsible :
Shahidul Islam
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086163950
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Contact person : -
Title : Statistics with R - from Data to Publication Figure

Course number : 2953
Credits : 3.0
Date : 2021-03-08 -- 2021-03-26
Language : English
Level : Doctoral level
Responsible KI department : Department of Laboratory Medicine

Specific entry requirements :
Purpose of the course : Do you need to turn data into a publication figure? We offer tools and confidence for the student to independently select a statistical method for research questions in their field. The course is practical and includes implementing a basic statistical analysis in R, the leading statistical programming language in bioinformatics and medical science. Furthermore, we give a brief introduction to visualization in R, with a focus on R/ggplot2. Students can bring data from their own research project, or work on data from the course.

Intended learning outcomes : By the end of the course the student should be able to: *download and install the latest versions of R and Rstudio. *know where to look for help when working in R. *know how to import data into R. *use R for basic analysis and presentation of data in their field. *select statistical method and motivate the choice using a structured approach. *communicate efficiently with a statistician about their choice of statistical method.

Contents of the course : Basics of R. Download, install, import data, basic analysis, how to get help. Visualization of data. Learn to speak statistics. A structured approach to selecting statistical method and communicating with a statistician. Practice how to go from data to publication figure using data from your project or more or less friendly data offered by the course.

Teaching and learning activities : Distance learning with online lectures, quizzes and interaction with other students. Lectures at campus or online via ZOOM. Individual project work using your own computer. Digital poster presentation of individual work.

Examination : Poster presentation and peer review.

Compulsory elements : Online quizzes and tasks. Participation during Poster Presentation day.

Number of students : 15 - 25

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : The first two weeks of the course are online-based consisting of a general introduction to programming in R, followed with a voluntary workshop. Week three focuses on your own project, from data to figure, interspersed with lectures and workshops. The course concludes with a presentation day. The third week of the course is held at the KI Campus Flemingsberg or online via ZOOM.

Course responsible :
Alen Lovric
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Contact person :
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Eric Rullman
Institutionen för laboratoriemedicin
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Title: Neural Control of Inflammation: An introduction to Bioelectronic Medicine

Course number: 2957
Credits: 1.5
Date: 2021-04-19 -- 2021-04-23
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:
Purpose of the course: The purpose of this course is to give doctoral students insights into the neural control of homeostasis, particularly the regulation of inflammation, and how engineering, neuroscience, immunology and clinical medicine can come together to find new ways to treat disease.

Intended learning outcomes: After the course, the doctoral student will be able to define prototypical neural circuits that regulate homeostasis explain the role of inflammation in the pathogenesis of and recovery from autoimmune diseases, cardiovascular diseases and infection identify the components of the "inflammatory reflex" discuss regulatory mechanisms for cytokine release classify different interfaces with the nervous system and the immune system contrast advantages and drawbacks with major treatment approaches for inflammatory diseases describe molecular sensors for danger in the immune system and the nervous system define bioelectronic medicine and explain its potential role in clinical medicine summarize challenges in engineering and medicine for development of bioelectronic medicine technology

Contents of the course: Neural control of organ systems will be discussed in molecular, cellular and clinical perspectives. Special attention will be given to the mechanisms that detect and regulate inflammation. The neurophysiology of vagus nerve stimulation and other treatments that involve interfacing with the nervous system will be reviewed. Progress in neural interfacing and device development within the emerging field of Bioelectronic Medicine will be discussed.

Teaching and learning activities: Lectures, a student project group and a student presentation.
Examination: Project presentation and written examination.
Compulsory elements: Lectures, project group participation, active participation in presentation and passing the examination is compulsory for "PASS". Limited absence from lectures can be compensated for after individual discussion with the course organizers.

Number of students: 8 - 40
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Full time, Monday to Friday. Karolinska Solna. This course is given jointly by the doctoral programmes Allergy, immunology and inflammation (Aii) and Cardiovascular research (CVR). See: https://staff.ki.se/doctoral-programmes

Course responsible:
Peder Olofsson
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Contact person:
Laura Tarnawski
Institutionen för medicin, Solna
laura.tarnawski@ki.se
Title : Introduction to R

Course number : 2958
Credits : 1.5
Date : 2021-04-12 -- 2021-04-21
Language : English
Level : Doctoral level

Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements : Biostatistics I: Introduction for epidemiologists or corresponding courses.
Purpose of the course : The purpose of this course is to introduce students to using the R statistical software to perform basic to intermediate statistical data analysis in a replicable manner.

Intended learning outcomes : After successfully completing this course, students are expected to be able to: - explain basic concepts of the R language and environment, the online- and offline sources of documentation for R, and basic concepts of data management and workflow in a standard statistical analysis, - run a standard statistical analysis interactively within the R environment, - formalize and document such a standard analysis as a standalone R script, - produce graphical representations, as part of reporting their analysis, - interpret their scripts for potential simplifications via functional implementation, - find, install and compare extension packages for unfamiliar statistical applications.

Contents of the course : The course will cover the basic elements of a standard statistical workflow: reading data into R; pre-processing and quality assessment of data via numerical and graphical methods; descriptive statistics via summary measures, tabulations and graphics; basic statistical inference in terms of significance testing and confidence intervals; specification, fitting & diagnosis of regression models; exporting and reporting results from the previous steps. The course includes an introduction to the Rstudio integrated development environment to provide a common framework for interactive and scripted analysis. The extensibility of the R system will be demonstrated by example.

Teaching and learning activities : Theoretical concepts and background will be covered via presentations, demonstrations, live exercises and discussions. Students will practice the application of these ideas in individual and small-group lab exercises with support from qualified teaching assistants. Formative assessment will be integrated via quizzes and lab reviews.

Examination : Students will perform an open-book examination based on practical application of the concepts presented during the course to realistic data sets and problems. Students who do not pass the examination will be offered a second examination within two months from the end of the course (excluding academic holidays).

Compulsory elements : The individual examination (summative assessment) is compulsory.

Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information : The course is extended over time in order to promote reflection and reinforce learning. Course dates are April 12, 14, 16, 19 and 21.

Course responsible :
Alexander Ploner
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Contact person :
Gunilla Nilsson Roos
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Title : Fundamentals of statistical modeling

Course number : 2959
Credits : 1.5
Date : 2021-05-10 -- 2021-05-18
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Courses "Epidemiology I: Introduction to epidemiology", "Epidemiology II: Design of epidemiological studies", "Biostatistics I: Introduction for epidemiologists", "Biostatistics II: Logistic regression for epidemiologists" and "Biostatistics III: Survival analysis for epidemiologists" or corresponding courses.

Purpose of the course : The purpose of this advanced course is to provide an introduction to the tools of statistical modeling.

Intended learning outcomes : After successfully completing this course the students should be able to do the following independently of others: - explain the concepts of marginal and conditional distributions, - illustrate the relationship between cumulative distribution, probability mass/density, quantile, sparsity, cumulative hazard, and hazard functions, - propose possible models for the above functions both marginally and conditionally on covariates, - identify suitable models to answer scientific research questions and motivate the choice, - estimate the parameters of the above functions, and - use standard statistical software, evaluate the fit of the model, and critically interpret the results.

Contents of the course : The students are introduced to a general framework for data analyses that hinges on creating statistical models. The course focuses on the intricacies and potentials of modeling in a number of examples and real-data applications. The range of the covered examples is broad, and some examples are worked out in greater details than others. The course will enable students to gain an advanced knowledge of (1) random variables, (2) joint and conditional probability distributions, (3) modeling tools, (4) interpretation of statistical models, (5) relations between known methods, (6) estimation tools, (7) computer programming. The students will improve the level of knowledge of the foundations for data analysis, statistical practice, and use of statistical software. They will also be prepared to pursue more advanced studies in statistics. The focus of the course is on analysis of real data and interpretation.

Teaching and learning activities : The course activities are based on lectures and computer exercises, exercises not requiring statistical software, and literature review. We will provide laptop computers to all participants, but participants are welcome to bring their laptops if they prefer.

Examination : Individual written examination based on practical application of the course content, where the student has to show that all the intended learning outcomes have been achieved. Students who do not pass the examination will be offered a second examination within two months from the end of the course.

Compulsory elements : The individual examination (summative assessment) is compulsory.

Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information : The course is extended over time in order to promote reflection and reinforce learning. Course dates are May 10, 11, 12, 17, and 18.

Course responsible :
Matteo Bottai
The institute of Environmental Medicine
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Contact person :
Johanna Bergman
Institutet för miljömedicin
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17177
Stockholm
Title: Open science and reproducible research

Course number: 2963  
Credits: 3.0  
Date: 2021-03-08 -- 2021-03-19  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Clinical Neuroscience  
Specific entry requirements:  
Purpose of the course: The purpose of the course is to provide an overview of current challenges in reproducibility and to provide tools and skills for students wishing to practice science openly.  
Intended learning outcomes: After the course, students should be able to: - Analyse reproducibility problems in science, including the impact of analysis flexibility and questionable research practices, and identify practices contributing to improved reproducibility - Account for principles of replication research - Preregister research protocols and assess others' preregistered research protocols - Openly publish scientific works including data and code, and find and make use of scientific works, including data and code, published by others.  
Contents of the course: - The ""reproducibility crisis"" in biomedical sciences: what is it? - Research fraud and questionable research practices - Impact of bias due to analysis flexibility - Observed statistical power and implications for inference - Comprehensive methods reporting and field-specific guidelines - Preregistration of protocols - Replication research - Open access publishing - Open materials, open data, and open code - Introduction to principles of data re-use in secondary analyses and meta-analyses  
Teaching and learning activities: The course will contain lectures, seminars, workshops, and a final assignment. The purpose of the lectures is to introduce the concepts covered by the course and to situate them in context. The seminars will cover the course literature, which the students will be expected to critically appraise. Computer-assisted workshops will be used as interactive learning activities to cover some parts of the course, e.g. statistical power.  
Examination: Examination consists of an assignment where students will be able to choose a topic related to the course content, and write a short report. For example, they may compare a preregistered protocol to the published scientific paper, or they may attempt to replicate results from a published paper using openly published data. This assignment will be presented before the class and students will give comments on each others' presentations.  
Compulsory elements: Participation in the seminars and labs is mandatory. Absence from a seminar may be compensated by writing a short reflection paper on the literature for that seminar. Participation in the final assignment presentation session is also mandatory.  
Number of students: 8 - 20  
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)  
More information:  

Course responsible:  
Gustav Nilssonne  
Department of Clinical Neuroscience  
Gustav.Nilssonne@ki.se  

Contact person:  

Title: Medicinsk forskningsetik

Course number: 2964
Credits: 1.5
Date: 2021-01-25 -- 2021-01-29
Language: Swedish
Level: Forskarnivå

Responsible KI department: Department of Learning, Informatics, Management and Ethics
Specific entry requirements:

Purpose of the course: Syftet med kursen är att den forskarstuderande: - ska få förståelse för centrala forskningsetiska teorier, principer och riktlinjer och därmed få möjlighet att reflektera över etiska aspekter av den egna forskningen - ska få förståelse för vad som är god vetenskap samt var gränserna går för vad som är etiskt oacceptabel forskning både vad gäller forskning på människor och djur, samt vad som gäller för forskarens egna akademiska integritet - utvecklar ett forskningsetiskt förhållningssätt inom sin egen forskning, gentemot andras forskning och det omgivande samhället

Intended learning outcomes: Den forskarstuderande ska efter avslutad kurs kunna: - redogöra för forskningsetiska teorier, principer och, i viss mån, riktlinjer - kunna redogöra för vanliga forskningsetiska problemsituationer - identifiera, analysera och diskutera forskningsetiska problem och konflikter - genomföra en forskningsetisk argumentation för eller emot ett förfarande

Contents of the course: - Centrala forskningsetiska principer, teorier och argument - Centrala vetenskapsteoretiska begrepp och positioner, och dess relevans för forskningsetik - Forskning på människor, innefattande det informerade samtycket och dess komponenter - Försöksdjursetik, innefattande argument för och emot att använda djur för forskningsändamål, samt de 3 R:en - Etikprövningar och forskningsetiska riktlinjer, såsom Helsingforsdeklarationen - God vetenskaplig sed och avvikelser från god sed i forskningen, exempelvis frågor kring fabricering, förvanskning och plagiering, samt hantering av vetenskapligt författarskap - Intressekonflikter i samband med forskning, såsom jäv och sponsring

Teaching and learning activities: Föreläsningar, grupparbeten och plenumdiskussioner. Undervisningen sker på campus, men kan i förekommande fall ske digitalt.

Examination: Deltagaren genomför en skriftlig forskningsetisk reflektion företrädesvis angående det egna forskningsprojektet. Ett fåtal studenter ges möjlighet att muntligt redovisa en forskningsetisk reflektion, i relation till samtliga lärandemål, angående sin forskning för samtliga deltagare. Vid enbart digital undervisning examineras studenterna endast skriftligt.

Compulsory elements: Gruppdiskussioner och plenumdiskussioner är obligatoriska. Vid frånvaro kan studenten i viss utsträckning kompensera detta genom att lämna in skrivna svar angående de fall som diskuterats.

Number of students: 30 - 35
Selection of students: Urvalet baseras på 1) datum för doktorandregistrering (där tidigare registreringsdatum har förts), 2) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering).

More information: Denna kurs innehåller obligatoriska moment under varje kursdag och studenterna förväntas därfrån närvara samtliga kursdagar.

Course responsible:
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Department of Learning, Informatics, Management and Ethics
Gert.Helgesson@ki.se

Contact person:
Annemie Jonsson
Institutionen för lärande, informatik, management och ethik
annelie.jonsson@ki.se
Title: Medical Research Ethics

Course number: 2964
Credits: 1.5
Date: 2021-02-22 -- 2021-02-26
Language: English
Level: Doctoral level

Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

Purpose of the course: The objective of this course is for the doctoral student to: - understand central research ethical theories, principles and guidelines, to gain the possibility to reflect over ethical aspects of his or her own research - understand what is good research and the boundaries for what is ethically unacceptable research with regards to humans and animals, and to the researcher's own academic integrity - develop a research ethical approach within his or her own research, to others' research and to society

Intended learning outcomes: After having completed the course, the doctoral student should be able to: - give an account of research ethical theories, principles, and, to some extent, guidelines - account for common problems that arise in the area of research ethics - identify, analyze, and discuss research ethical issues and conflicts - conduct a research ethical argumentation for or against a matter

Contents of the course: - Central research ethical principles, theories and arguments - Central philosophy of science - concepts and positions, and its relevance to research ethics - Research on humans, including informed consent and its components - Animal research ethics, including arguments for and against using animals for research purposes, and the three R's. - Ethical reviews and research ethical guidelines, such as the Helsinki Declaration - Good research practice and deviations from good research practice within research, for example issues concerning fabricated data, fraud and plagiarism, and handling of authorship in scientific writing - Conflicts of interest in research, such as bias and sponsorship

Teaching and learning activities: Lectures, group work and general discussions. The course takes place on campus, but can be arranged digitally.

Examination: The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group. When the course is arranged digitally, the students' examination will be in written form only.

Compulsory elements: Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.

Number of students: 30 - 35

Selection of students: Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation).

More information: This course contains mandatory elements on each course day, and the students are therefore expected to be present during each course day.

Course responsible:
Gert Helgesson
Department of Learning, Informatics, Management and Ethics
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Contact person:
Annelie Jonsson
Institutionen för lärande, informatik, management och etik
annelie.jonsson@ki.se
Title : Medical Research Ethics

Course number : 2964
Credits : 1.5
Date : 2021-03-22 -- 2021-03-26
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : The objective of this course is for the doctoral student to: - understand central research ethical theories, principles and guidelines, to gain the possibility to reflect over ethical aspects of his or her own research - understand what is good research and the boundaries for what is ethically unacceptable research with regards to humans and animals, and to the researcher’s own academic integrity - develop a research ethical approach within his or her own research, to others’ research and to society
Intended learning outcomes : After having completed the course, the doctoral student should be able to: - give an account of research ethical theories, principles, and, to some extent, guidelines - account for common problems that arise in the area of research ethics - identify, analyze, and discuss research ethical issues and conflicts - conduct a research ethical argumentation for or against a matter
Contents of the course : - Central research ethical principles, theories and arguments - Central philosophy of science - concepts and positions, and its relevance to research ethics - Research on humans, including informed consent and its components - Animal research ethics, including arguments for and against using animals for research purposes, and the three R's. - Ethical reviews and research ethical guidelines, such as the Helsinki Declaration - Good research practice and deviations from good research practice within research, for example issues concerning fabricated data, fraud and plagiarism, and handling of authorship in scientific writing - Conflicts of interest in research, such as bias and sponsorship
Teaching and learning activities : Lectures, group work and general discussions. The course takes place on campus, but can be arranged digitally.
Examination : The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group. When the course is arranged digitally, the students’ examination will be in written form only.
Compulsory elements : Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.
Number of students : 30 - 35
Selection of students : Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation).
More information : This course contains mandatory elements on each course day, and the students are therefore expected to be present during each course day.

Course responsible :
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Contact person :
Annelie Jonsson
Institutionen för lärande, informatik, management och etik
annelie.jonsson@ki.se
Title: Medical Research Ethics

Course number: 2964
Credits: 1.5
Date: 2021-04-26 -- 2021-04-30
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics
Specific entry requirements:

Purpose of the course: The objective of this course is for the doctoral student to: - understand central research ethical theories, principles and guidelines, to gain the possibility to reflect over ethical aspects of his or her own research - understand what is good research and the boundaries for what is ethically unacceptable research with regards to humans and animals, and to the researcher's own academic integrity - develop a research ethical approach within his or her own research, to others' research and to society

Intended learning outcomes: After having completed the course, the doctoral student should be able to: - give an account of research ethical theories, principles, and, to some extent, guidelines - account for common problems that arise in the area of research ethics - identify, analyze, and discuss research ethical issues and conflicts - conduct a research ethical argumentation for or against a matter

Contents of the course: - Central research ethical principles, theories and arguments - Central philosophy of science - concepts and positions, and its relevance to research ethics - Research on humans, including informed consent and its components - Animal research ethics, including arguments for and against using animals for research purposes, and the three R's. - Ethical reviews and research ethical guidelines, such as the Helsinki Declaration - Good research practice and deviations from good research practice within research, for example issues concerning fabricated data, fraud and plagiarism, and handling of authorship in scientific writing - Conflicts of interest in research, such as bias and sponsorship

Teaching and learning activities: Lectures, group work and general discussions. The course takes place on campus, but can be arranged digitally.

Examination: The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group. When the course is arranged digitally, the students' examination will be in written form only.

Compulsory elements: Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.

Number of students: 30 - 35

Selection of students: Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation).

More information: This course contains mandatory elements on each course day, and the students are therefore expected to be present during each course day.

Course responsible:
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annelie.jonsson@ki.se
Title : Medical Research Ethics

Course number : 2964
Credits : 1.5
Date : 2021-05-17 -- 2021-05-21
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics

Specific entry requirements :
Purpose of the course : The objective of this course is for the doctoral student to:
- understand central research ethical theories, principles and guidelines, to gain the possibility to reflect over ethical aspects of his or her own research
- understand what is good research and the boundaries for what is ethically unacceptable research with regards to humans and animals, and to the researcher's own academic integrity
- develop a research ethical approach within his or her own research, to others' research and to society

Intended learning outcomes : After having completed the course, the doctoral student should be able to:
- give an account of research ethical theories, principles, and, to some extent, guidelines
- account for common problems that arise in the area of research ethics
- identify, analyze, and discuss research ethical issues and conflicts
- conduct a research ethical argumentation for or against a matter

Contents of the course :
- Central research ethical principles, theories and arguments
- Central philosophy of science - concepts and positions, and its relevance to research ethics
- Research on humans, including informed consent and its components
- Animal research ethics, including arguments for and against using animals for research purposes, and the three R's.
- Ethical reviews and research ethical guidelines, such as the Helsinki Declaration
- Good research practice and deviations from good research practice within research, for example issues concerning fabricated data, fraud and plagiarism, and handling of authorship in scientific writing
- Conflicts of interest in research, such as bias and sponsorship

Teaching and learning activities : Lectures, group work and general discussions. The course takes place on campus, but can be arranged digitally.

Examination : The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group. When the course is arranged digitally, the students' examination will be in written form only.

Compulsory elements : Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.

Number of students : 30 - 35
Selection of students : Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation).

More information : This course contains mandatory elements on each course day, and the students are therefore expected to be present during each course day.

Course responsible :
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Contact person :
Annelie Jonsson
Institutionen för lärande, informatik, management och etik

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Title: Introduction to R - Data Management, Analysis and Graphical Presentation

Course number: 2971
Credits: 2.5
Date: 2021-01-19 -- 2021-02-24
Language: English
Level: Doctoral level

Responsible KI department: Department of Laboratory Medicine
Specific entry requirements: Basic statistical knowledge (e.g. taken "Basic course in medical statistics" or similar course)

Purpose of the course: To increase the doctoral student's skills in data analysis and data presentation.

Intended learning outcomes: After attending the course, the student will be able to use R for data management, statistical analysis and graphical data presentation. The student will be able to install new functions in R.

Contents of the course: R is a powerful software/programming language for data analysis and graphical presentation. R is free-of-charge, and in most cases a useful alternative to commercial statistical software. The programming language is completely text-based, making it challenging compared to software with a graphical user interface. However, it offers greater flexibility, better control over analyses and an automatic documentation of performed analyses. The course focuses on structure and basic functions of the R programming language. A selection of functions for data management, statistical analysis and graphics is presented. The methods included are commonly used methods in clinical medical science (e.g. t-test, ANOVA, chi2-test, regression and survival analysis, box, line scatter, and bar plots). The course focuses mainly on how the various methods are applied in R and not their theoretical background, underlying assumptions or the theoretical interpretation of the results.

Teaching and learning activities: Online video lectures, web-based seminars and web-based practical exercises (individual and group assignments), peer assessment of other students' solutions. The examination takes place on KI campus.

Examination: Written examination.

Compulsory elements: The practical exercises and the peer assessments of these are compulsory. Students unable to complete the exercises in time due to e.g. illness can get an extension of the deadline.

Number of students: 15 - 20

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course is web-based, with course dates 19/1 (self-studies), 20/1, 22/1, 29/1, 5/2, 12/2, 19/2. The examination is in Huddinge 24/2. Between these course dates, there will be deadlines for mandatory home assignments. Laptop required for programming exercises and examination.

Course responsible:
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Contact person:
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Marine.Andersson@ki.se
Title: Anaesthesia, Analgesia and Surgery (mice and rats)

Course number: 2996
Credits: 1.5
Date: 2021-05-17 -- 2021-05-21
Language: English
Level: Doctoral level
Responsible KI department: Comparative medicine

Specific entry requirements: Students need to complete the "Function A" laboratory animal science course (to carry out scientific procedures on animals), or must have completed an equivalent course.

Purpose of the course: The course is designed to meet the learning outcomes specified by the education and training recommendations supplied as an annex to EU Directive 2010/63/EU, which has been recently endorsed by the Swedish legislation L150 (SJVFS 2019:9). Modules included are EU5-6, and EU20-22. Education and training in anaesthesia, analgesia and surgery is both essential, and a legal requirement, for all those who need to undertake such procedures on laboratory animals. Applying appropriate anaesthetic, analgesic and surgical techniques to in vivo studies enhances outcomes from research studies, reduces experimental variability, and is perceived as ethically acceptable.

Intended learning outcomes: After completion of this course, the students should be able to meet the defined learning outcomes as set out in the EU Education and Training Framework, with emphasis on modules 20, 21 and 22. Each module requires both theoretical knowledge, and acquisition and demonstration of practical skills. The list of suggested learning outcomes by such guidelines is comprehensive, but in summary, participants will acquire the knowledge and skills to anaesthetise animals safely and humanely, assess and alleviate post-surgical pain, and be able to conduct surgical procedures competently, using appropriate aseptic technique. Recognition of pain, suffering and distress, and appropriate methods of euthanasia of mice and rats (EU modules 5-6) will also be included.

Contents of the course: The course provides guidance and information to individuals who, during their research work with animals, will need to apply sedation or anaesthesia and who will undertake surgical or other painful procedures. It includes details of methods of assessing, preventing and alleviating animal pain. The use of appropriate killing methods of rodents will also be included. The course will include training in the most recently developed behavioural measures of pain, including use of grimace scales. Monitoring of animals during anaesthesia and coping with problems and emergencies are explained and demonstrated. Potential interactions between anaesthetic and analgesic agents and specific research protocols are also explained and discussed. Training is given in the principles of pre-operative animal assessment and care, preparations for surgery, aseptic technique and the principles of successful surgery. The course provides information about possible complications, post-operative care and monitoring along with details of the healing process. It also covers more practical elements for example the demonstration of commonly used instruments and provides an opportunity for trainees to practice some of the practical aspects of basic surgical technique, such as methods of suturing, using appropriate non-animal models.

Teaching and learning activities: The course will adopt a blended learning approach that combines e-learning, webinars, discussions, interactive sessions and practical components. Lecture notes and video materials to introduce practical skills will be provided as well. Discussion and problem solving webinar sessions will be provided, which will encourage students to reflect on the application of the course content in their own research area, and encourages them to discuss and explain their work with other participants. The problem-based sessions will facilitate discussions. Laboratory practical sessions (5-6 hours) on anaesthesia and surgical skills will be provided.

Examination: Practical skills are formatively assessed during the laboratory sessions using direct observation of practical skills. A short answer/multiple choice question final examination is held following conclusion of the course. A pass/fail criteria will be used as a global rate for this course.

Compulsory elements: All components must be completed and active student participation in the discussion and problem solving sessions is required if the student is to be provided with certification of the successful completion of the course. Missed parts of the course as a consequence of a well-justified absence will need to be compensated after agreement with the course director e.g. with a written assignment or in future course editions.

Number of students: 5 - 15

Selection of students: Selection will be based on the relevance of the course syllabus for the applicant’s doctoral project (need to use anaesthetic or surgical techniques in rodent models), which will be according to written motivation. If necessary, additional selection criterion will be used based on the date for registration as a doctoral student (priority given to earlier registration date).

More information: The e-learning materials will be made available to students one week before the scheduled live webinar sessions. This will enable students to complete them in advance of the discussions sessions, or alternatively they can complete the content during the scheduled course dates. This added flexibility should enable them to integrate course participation with their other work commitments. The live webinar components of the course will be held from Monday to Friday between approx. 9am and 5pm, using Zoom and other interactive web-based software (Padlet and Mentimeter) to facilitate interaction and discussion.

Course responsible:
Rafael Frias
Comparative medicine
085246660
Title: Translational Paediatric Oncology in the Era of Immunotherapy and Omics

Course number: 3022
Credits: 1.5
Date: 2021-03-08 -- 2021-03-12
Language: English
Level: Doctoral level

Responsible KI department: Department of Women's and children's health

Specific entry requirements:

Purpose of the course:  - To enable to obtain a comprehensive overview of the different domains within childhood cancer research and to understand the historical milestones forming the paradigms that have led to a cure of 8 out of 10 children with cancer  - To give an insight into the current limitations and problems of childhood cancer treatment  - To enable to get an understanding of how new methodologies in molecular biology increase our knowledge about tumourigenesis and tumour evolution.  - To provide an opportunity to hypothesise and develop ideas about how to cure the remaining 2 out of 10 children with cancer.

Intended learning outcomes: At the end of the course the students should be able to:  - Summarize the basic epidemiological data, tumor biology and genetics, novel therapy modalities like targeted therapies and immunotherapy, including side effects, late effects and follow up within the field of paediatric oncology.  - Discuss the ethical issues around childhood cancer research.  - Describe and understand the principles of treatment, existing therapies, new targeted therapies and personalized medicine.  - Explain and theorize about the link between cancer cell biology, tumor microenvironment, immunology, genetics, and drug treatments - current and development of new drugs.  - Understand and discuss the current experimental methodology applied to paediatric oncology research such as in vivo, in vitro and in silico models.  - Critical comment on research findings regarding paediatric oncology research.

Contents of the course: Introduction to research on paediatric oncology for PhD students and junior postdocs, with research projects in this specific area or in an adjacent area. The students will be presented with and will discuss problems, possibilities, and research models that are specific for the research area of paediatric oncology. The course will provide a general introduction to the field and focus on distinct, but interconnected topics specific for paediatric oncology, namely ethics, epidemiology, tumour biology and genetics, existing and novel targeted drug treatments as well as immunotherapy, and side effects, late effects and follow up. The last day will be dedicated to a symposium with invited lecturers that are renowned expert in their fields.

Teaching and learning activities: Lectures, seminars, group exercises with supervised discussions. To promote active discussion and participation, each student will prepare a poster and a short oral presentation on their current or intended research before the course and submit a short abstract on this no later than two weeks before the course start. The course will include a one-day mini research symposium.

Examination: To pass the course the students must show that they have reached the learning outcomes of the course. Each student should prepare and present a scientific poster and an oral presentation on a current or intended childhood cancer research project, and answer to critical questions from the course leaders and course participants. Each participant in the course needs to be able not only to answer questions in a satisfactory way but also to raise relevant questions and to be able to discuss in line with the intended learning outcomes of the course.

Compulsory elements: All course activities are compulsory. Absence can be compensated for by other activities in agreement with the course leaders.

Number of students: 12 - 28

Selection of students: Priority will be given to students that previous applied for the course, further selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: Monday to Thursday full days are scheduled with lectures and seminars. The course concludes with a research symposium on Friday with several known experts in the field. The course will be located at KI Solna. If it is not possible to have the course on campus it will be given online.

Course responsible: Malin Wickström
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Shanie Saghaian-Hedengren
Institutionen för kvinnors och barns hälsa
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Title: Advanced cancer biology

Course number: 3024
Credits: 3.0
Date: 2021-01-12 -- 2021-06-08
Language: English
Level: Doctoral level

Responsible KI department: Department of Microbiology, Tumor and Cell Biology
Specific entry requirements: Basic course in tumour biology and oncology.

Purpose of the course: The course aims to provide advanced, cutting edge pre-clinical and clinical knowledge in the field of cancer biology.

Intended learning outcomes: At the end of the course the students should: - Have acquired an updated overview of the cutting edge research activities within the fields of cell- and tumor biology. - Be able to show analytical and critical thinking when discussion advanced problems in cell- and tumor biology, beyond what is found in text books, and evaluate the relevance of the topics presented in the context of their own research activities and PhD studies. - Be able to discuss important aspects of tumor biology, including apoptosis, cell cycle, cancer stem cells, differentiation, virus and bacteria-associated cancer, tumor immunology and effects of chronic inflammation in carcinogenesis, cancer genetics and epigenetics, transcriptomics, proteomics and metabolomics of cancer, tumor microenvironment, angiogenesis, metastasis, tumor heterogeneity and development of new treatments as well as key issues in clinical cancer research.

Contents of the course: The lecturers will give a comprehensive and pedagogical overview of the research area as well as an in-depth discussion of their own research, related, but not limited, to the following topics: apoptosis, cell cycle, cancer stem cells, differentiation, virus and bacteria-associated cancer, tumor immunology and effects of chronic inflammation in carcinogenesis, cancer genetics and epigenetics, transcriptomics, proteomics and metabolomics of cancer, tumor microenvironment, angiogenesis, metastasis, tumor heterogeneity and development of new treatments as well as key issues in clinical cancer research.

Teaching and learning activities: The course will consist of about 20 lectures, with approximately 45 minutes per lecture, at least once a week during one semester. Each lecture will be followed by an open discussion between the students and the invited speaker led by one of the course organizers: this format will provide time for highlighting key issues within the specific topic and will enhance the possibility for the students to expand their networking activities due to direct contact with experts in the field. To increase the learning process and to stimulate the reflection on the course topic, the students will be required to study the most recent literature, still not present in the text books within the presented fields, prior to each seminar. Throughout the course period, the course organisers will have regular meetings with the students to follow up the learning process of each individual participant as well as to receive feedback from the students.

Examination: The students have to show that the intended learning outcomes of the course are reached. This will be individually assessed during the participation in the informal discussions after the seminars and on the basis of an individual written assessment, in form of a project description where one or more topics presented during the course should be integrated within the student own research project (Max one and half A4 page, stating: the objective of the project, a brief description of the research plan, and the significance). The project description should be handed in maximum three weeks after the completion of the course to the organizers.

Compulsory elements: Attending the lectures and the written essay are compulsory. Missed seminars can be compensated by other activities after discussion with the course leader.

Number of students: 8 - 25

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: The course is organized to contain approximately 20 lectures of 45 min plus 15 min discussion, held once per week during the semester by invited national and international prominent researchers. All lectures are held at the Biomedicum, Solnavägen 9, in seminar rooms at the 3rd (entrance) floor, KI Solna Campus Tuesdays at 1 pm, unless else stated. During the COVID-19 pandemic the lectures have been given on line.

Course responsible:
Lars-Gunnar Larsson
Department of Microbiology, Tumor and Cell Biology
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Contact person:
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Institutionen för mikrobiologi, tumör- och cellbiologi
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Title: Mixed methods: integration of qualitative and quantitative data within applied health research

Course number: 3032
Credits: 3.0
Date: 2021-03-29 -- 2021-04-30
Language: English
Level: Doctoral level

Responsible KI department: Department of Global Public Health
Specific entry requirements: Students must be familiar with the basics of qualitative and quantitative research before joining the course.

Purpose of the course: Health research problems are complex phenomena with multiple dimensions which are difficult to assess using quantitative or qualitative methodologies alone. Mixed-methods research is a methodology that combines both qualitative and quantitative research allowing the researcher a more comprehensive understanding of the issue under study. Mixed-methods pragmatic research designs provide strengths that offset the weaknesses of both quantitative and qualitative studies. This course will provide Ph.D students with the theoretical tools and practical experience to design, conduct and report mixed-methods studies in health research.

Intended learning outcomes: At the end of the course the students will: 1. Design a mixed-methods research question(s). 3. Apply different mixed-methods research designs to a health problem. 4. Write a mixed-methods research protocol. 5. Report the results of a mixed-method study. 6. Use mixed-methods to design and evaluate interventions studies. 7. Evaluate the quality of scientific manuscripts using mixed-methods designs.


Teaching and learning activities: The course will start by discussing the quantitative and qualitative research designs and how both research paradigms can be combined to strengthen each other. The course will combine face-to-face lectures, online practical assignments/discussions, self-study and oral presentations. Face-to-face lectures and other activities will be conducted once a week for a period of five weeks. Once a week lectures will allow the students to reflect on the given material and to apply this new knowledge to the practical assignments. Practical assignments will be discussed with the group and feedback will be given.

Examination: Course assignments and take home examination. Both will be graded as fail or pass. In order to pass the course, the student need to pass the assignments and the take home examination. The course assignments will guide the students through the steps needed to design a mixed-methods protocol. Take home examination. The aim of the examination is to test the students on what they have learned over the duration of the course and how well they can apply it. The take home examination will consist on open ended questions where the students will appraise the quality of published mixed-methods studies and the structure of mixed-methods protocols among other topics. The take home exam will have to be submitted through the KI online learning platform one week after the end of the course.

Compulsory elements: Participation in the online practical assignments and discussion will be mandatory.

Number of students: 8 - 15

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Our course is a two-week courses spreaded over five weeks. We will have live Zoom lectures one day per week (March 29th, April. 6th, 12th and 19th) except the last week when we will dedicate two days for course project presentation and feedback (April 26-27). Note that these are preliminary dates. There is a pre-course assignment that need to be submitted before the course starts. The purpose of this assignment is for you to re-visit the basics of qualitative and quantitative research. The detailed schedule and the instructions for the pre-course assignment will be available one month before the course starts.

Course responsible:
Mariano Salazar
Department of Global Public Health
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Contact person:
Title : Mouse Necropsy

Course number : 3036
Credits : 1.0
Date : 2021-02-11 -- 2021-02-18
Language : English
Level : Doctoral level
Responsible KI department : Comparative medicine
Specific entry requirements : Students need to have completed a laboratory animal science course on how to carry out scientific procedures on mice i.e. EU Function A or equivalent course.

Purpose of the course : This two-day course will provide the students with the theoretical background of performing mouse necropsies, including procedures and methods to preserve organs and tissues for further morphological analysis. The course will primarily be practical. This should ultimately enable the students to perform complete mouse necropsies in a standardized and reproducible way.

Intended learning outcomes : After completion of this course, the participants of the course should 1) know how to carry out a necropsy in a mouse according to good veterinary and scientific practice, 2) understand the requirements needed to perform organ sampling through a standardized necropsy protocol. The practical learning outcomes based on a supervised training of mouse necropsies will provide the students with a basic knowledge to describe organ changes, how to document these and preserve the organs in such a way that further analysis can be performed on tissues that show a minimum of autolysis, thus providing optimal conditions for extracting useful information from mice.

Contents of the course : This course will provide a basic foundation to individuals who, perform research using experimental mouse models, and have to conduct a post-mortem examination to analyze morphological changes either due to experimental manipulation or due to introduced genetic changes. The course will provide a theoretical background to standardized mouse necropsies, sampling of organs, alternative ways of preserving these for further morphological analyses, as well as trimming of the organs and preparing these for sectioning for later evaluation using microscopy. A basic description of terms used to describe gross changes will be provided both in lectures and through recommended literature. The main part of the course will be devoted to practical necropsy training, where the participants will be actively supervised during the training.

Teaching and learning activities : The course will be based on pre-reading material on basic mouse anatomy and necropsy techniques, lectures/webinars on mouse necropsy, sample collection, tissue handling and fixation, practical demonstrations and individual practical training on such issues. Since the ultimate aim is to provide course participants with enough practical training to enable them to perform independent necropsies and tissue sampling this two day course will be split into 1+1 days with an intermittent period for personal training and reflection. In this way, participants will be given an intensive instruction and training during the first day, with a follow up providing feedback on an individual basis and more supervised training during the second day, which will follow after one week.

Examination : Practical formative assessments will be carried out by direct observation of skills and documentation of actions taken by learners during their training laboratory session. A short answer/multiple choice question final examination will also be held at the end of the course. A pass/fail criteria will be used as a global rate for this course.

Compulsory elements : All mouse necropsy sessions and active student participation are compulsory. Missed parts of the course as a consequence of a well-justified absence will need to be compensated after agreement with the course director e.g. with written assignment or in future course editions.

Number of students : 6 - 8

Selection of students : Students need to have completed a laboratory animal science course on how to carry out scientific procedures on mice i.e. Function A or equivalent course. Selection will be based on the relevance of the course syllabus for the applicant's doctoral project (i.e. use of mouse models), which will be according to written motivation. If necessary, additional selection criterium will be used based on the date for registration as a doctoral student (priority given to earlier registration date).

More information : Both face-to-face teaching (or live webinars) and hands-on exercises will be held on Feb 11 and 18, 2021 between approx. 9am and 5pm. Location: Learning Lab, Nobels väg 16, 3rd floor, Comparative Medicine (Solna).

Course responsible :
Rafael Frias
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Contact person :
Title: Exploring Entrepreneurial Opportunities in Research

Course number: 3037
Credits: 4.5
Date: 2021-02-15 -- 2021-04-23
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics
Specific entry requirements:

Purpose of the course: This course will enhance your career opportunities inside and outside academia by facilitating and teaching discovery and identification of intellectual assets in the daily work of a researcher/PhD student, and how to apply it today and in the future. As a participant, identifying opportunities for entrepreneurship in connection to research will increase the awareness of the potential of innovation and entrepreneurship and its practical application and help you to expand the impact of your work. In order to develop a business idea - whether in an economic or social context, you need to apply a number of business concepts. Relevant business tools will be introduced in order to develop a business idea stemming from research. The final step when exploring opportunities of entrepreneurship is to communicate and test your business idea on the market. For that purpose you will learn how to package an already developed business idea for introduction into the start-up world.

Intended learning outcomes: After the course, a doctoral student shall be able to; - demonstrate an understanding of the opportunities of innovation and entrepreneurship for utilisation of research and how to apply entrepreneurial tools in the research context - assess their new skills and reflect on possible future effects, from ones individual, organisational & societal perspective - use design tools to gain an understanding for the user experience to develop solutions to user needs - use business tools such as business modelling to develop a potential business idea stemming from research, - communicate (“pitch”) the business plan to people within the start-up world, such as potential investors

Contents of the course: "Exploring entrepreneurial opportunities in research" is a course divided into three modules. The first module begins with an introduction to entrepreneurship, what it is and how it can be used in the doctoral education. The doctoral students are then given a number of practical tools to identify intellectual assets within daily work to use in a minor innovation projects based on their own research. The second module begins with an introduction to prototyping using the design thinking approach. The doctoral students are then given a number of business tools to develop a business opportunity, stemming from their research, into a business model. The last module begins with an introduction to product roadmaps followed by a comprehensive business plan. The doctoral students are then given a number of practical business tools to write and test a complete business plan of the developed idea.

Teaching and learning activities: Each of the three modules includes three mandatory days on KI Campus and two days for own work. The course days are usually Monday, Wednesday and Friday. The modules are separated with 2 week intervals. This course lays the foundation for development of an already identified business idea. It begins with an introduction to prototyping using the design thinking approach. The doctoral students are then given a number of business tools to develop a business opportunity, stemming from their research, into a business model. With the individual assignments the doctoral students are given the opportunity to take a closer look at the actual benefits of the new knowledge and put it into a larger context, with value for their own research and society. Learning activities consist of seminars and workshops as well as group and individual work.

Examination: The doctoral student is examined individually, on a written report, the design of a poster, the development of a prototype, business model and completion of a business plan.

Compulsory elements: Attendance is mandatory for all participants. The course director assesses if and in that case how absence can be compensated.

Number of students: 10 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: This course will expand your career possibilities inside and outside academia by facilitating the identification and evaluation of entrepreneurial opportunities. Value creation tools will be introduced and used in order to assess, communicate and develop identified opportunities. You will learn how to manage a process from identification and evaluation of entrepreneurial opportunities. Value creation tools will be introduced in order to develop a business idea stemming from research. The final step when exploring opportunities of entrepreneurship is to communicate and test your business idea on the market. For that purpose you will learn how to package an already developed business idea for introduction into the start-up world.

Course responsible:
Samer Yammine
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Contact person:
-
Title: Epidemiology I: Introduction to epidemiology

Course number: 3041
Credits: 1.5
Date: 2021-01-13 -- 2021-01-22
Language: English
Level: Doctoral level

Responsible KI department: Department of Medical Epidemiology and Biostatistics

Specific entry requirements:

Purpose of the course: The aim of the course is to give an introduction to epidemiological theory and practice.

Intended learning outcomes: After successfully completing this course students are expected to be able to:
- give examples of the contribution of epidemiology to science and discuss the importance of epidemiology as a research discipline.
- estimate and in a general way interpret measures of disease occurrence and measures of association, and describe how a specific measure is governed by the study design.
- explain strengths and weaknesses of common epidemiological study designs.
- identify and explain possible sources of bias in epidemiological studies.
- describe theoretical models for causation and discuss the principles of causal mechanisms.
- apply knowledge of epidemiological concepts when critically reviewing scientific literature.

Contents of the course: The course gives an introduction to epidemiological theory and practice. It comprises basic principles regarding design, interpretation, and analysis of epidemiological studies. It introduces the concept of causation, concepts related to measures of disease occurrence and measures of association, common designs for epidemiological studies (with main focus on cohort studies), and the role of bias.

Teaching and learning activities: The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts. Different strategies for teaching and learning will be used, such as lectures, group discussions and various forms of group exercises on selected topics.

Examination: To pass the course, the student has to show that the learning outcomes have been achieved. Assessments methods used are group assignments (formative assessments) along with an individual examination (summative assessment). The examination is viewed as contributing to the development of knowledge, rather than as a test of knowledge. Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.

Compulsory elements: The individual examination (summative assessment) is compulsory.

Number of students: 8 - 25

Selection of students: Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information: Course dates are January 13, 15, 18, 20 and 22. The course is extended over time, but is still five full course days in order to promote reflection and reinforce learning.

Course responsible:
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Biostatistics I: Introduction for Epidemiologists

Course number: 3042
Credits: 3.0
Date: 2021-04-07 -- 2021-04-27
Language: English
Level: Doctoral level
Responsible KI department: The institute of Environmental Medicine
Specific entry requirements:

Purpose of the course: The aim is to introduce classical statistical concepts and methods with emphasis on methods for continuous outcome data.

Intended learning outcomes: After successfully completing this course, students should be able to: - define the concept of probability, laws of probability, and make simple probability calculations, - suggest a statistical distribution to describe a naturally occurring phenomenon and evaluate the appropriateness of the distribution given real data, - present appropriate tabular and graphical descriptions of study data, - explain the difference between hypothesis testing and interval estimation and the relation between p-values and confidence intervals for the mean, - explain the necessary assumptions for inference under various tests for continuous data, - fit and interpret the coefficients of linear regression, with or without adjustment, with or without an interaction, - explain and apply non-parametric tests for differences in distribution, - explain the concepts of confounding and effect modification, describe the difference between them and use models correctly to account for them.

Contents of the course: The course introduces classical statistical concepts and methods with emphasis on methods used in epidemiology and public health. Topics covered include: the importance of statistical thinking; types of data (nominal, binary, discrete and continuous variables); data summary measures; graphical representations; notions of probability; probability models (distributions); principles of statistical inference for the mean via the central limit theorem, concepts of confidence intervals and hypothesis tests; and an introduction to linear regression.

Teaching and learning activities: Lectures, exercises focusing on analysis of real data using statistical software, exercises not requiring statistical software, group discussions, literature review.

Examination: To pass the course, the student has to show that the intended learning outcomes have been fulfilled. The course grade is based on the individual written examination. Students who fail will be offered a re-examination within two months of the final day of the course. Students who fail the re-exam will be given top priority for admission the next time the course is offered. If the course is not offered during the following two academic terms then another re-examination will be scheduled within 12 months of the final day of the course.

Compulsory elements:

Number of students: 8 - 25
Selection of students: Eligible doctoral students are prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken. Prior knowledge in any software, e.g. Stata, R or SAS is strongly recommended.

More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are April 7, 8, 9, 12 and 13 (week 1) and April 21, 22, 23, 26 and 27 (week 2).

Course responsible:
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Contact person:
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Biostatistics II: Logistic Regression for Epidemiologists

Course number: 3043
Credits: 2.0
Date: 2021-01-25 -- 2021-02-02
Language: English

Responsible KI department: Department of Medical Epidemiology and Biostatistics
Specific entry requirements: Knowledge in epidemiology and biostatistics equivalent to ""Epidemiology I: Introduction to epidemiology"" and ""Biostatistics I: Introduction for epidemiologists"" or corresponding courses

Purpose of the course: The aim is to introduce statistical methods for categorical outcome data.

Intended learning outcomes: After successfully completing this course you as a student are expected to be able to:
- estimate and explain the difference between absolute and relative effect measures, including but not limited to odds ratio, risk ratio, and risk difference,
- perform tests for multiple category outcome data,
- fit and interpret the results of the logistic regression model,
- apply and interpret appropriate statistical models for studying effect modification and confounding,
- critically evaluate the methodological aspects (design and analysis) of a scientific article reporting an epidemiological study.

Contents of the course: This course focuses on the application of methods for binary data and in particular logistic regression in the analysis of epidemiological studies. Topics covered include a brief introduction two-by-two tables and methods for estimating relative effect measures. Then moving on to univariable and multivariable models for binary outcomes to estimate relative and absolute effect measures, with the interpretation of parameters categorical predictors, flexible modeling of quantitative predictors, confounding and interaction, model fitting and model diagnostics.

Teaching and learning activities: Lectures, exercises focusing on analysis of real data using statistical softwares, exercises not requiring statistical software, group discussions, literature review.

Examination: To pass the course, the student has to show that the intended learning outcomes have been achieved. The course grade is based on the individual written examination (summative assessment). Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered. If the course is not offered during the following two academic terms, then a third examination will be scheduled within 12 months of the final day of the course.

Compulsory elements:

Number of students: 8 - 25
Selection of students: Eligible doctoral students are prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken. Prior knowledge in any software, e.g. Stata, R or SAS is strongly recommended.

More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are January 25, 26, 28, 29 and February 1 and 2.

Course responsible:
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Contact person:
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Title : Causal Inference: emulating a Target Trial to Assess Comparative Effectiveness

Course number : 3046
Credits : 1.5
Date : 2021-03-22 -- 2021-03-24
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Courses "Epidemiology I: Introduction to epidemiology", "Epidemiology II: Design of epidemiological studies", "Biostatistics I: Introduction for epidemiologists", "Biostatistics II: Logistic regression for epidemiologists" and either "Causal inference for epidemiological research" (course 2416) or "Causal Inference from observational data" (course 2462) or corresponding courses.
Purpose of the course : This course focuses on a general framework for the assessment of comparative effectiveness and safety research, which can be applied to both observational data and randomized trials.
Intended learning outcomes : After successful completion of this course, the student should be able to: - Formulate sufficiently well-defined causal questions for comparative effectiveness research - Specify the protocol of the target trial - Design analyses of observational data that emulate the protocol of the target trial - Identify key assumptions for a correct emulation of the target trial - Decide when g-methods are required for data analysis - Critique observational studies and randomized trials for comparative effectiveness research
Contents of the course : The course introduces students to a general framework for the assessment of comparative effectiveness and safety research. The framework, which can be applied to both observational data and randomized trials with imperfect adherence to the protocol, relies on the specification of a (hypothetical) target trial. The course explores key challenges for comparative effectiveness research and critically reviews methods proposed to overcome those challenges. The methods are presented in the context of several case studies for cancer, cardiovascular, renal, and infectious diseases.
Teaching and learning activities : Lectures, group sessions and self-studies of the course literature.
Examination : A written individual take-home examination will be carried out after the course. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course.
Compulsory elements : The individual written examination (summative assessment).
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

Course responsible :
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Contact person :
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
**Title : Immunogenicity: Immune responses against biological drugs**

**Course number :** 3067  
**Credits :** 1.5  
**Date :** 2021-05-24 -- 2021-05-28  
**Language :** English  
**Level :** Doctoral level  
**Responsible KI department :** Department of Clinical Neuroscience  
**Specific entry requirements :**

**Purpose of the course :** Understanding of central terms and definitions in the field of immunogenicity, used in research and in clinical applications. To become familiar with the identified molecular and cellular immunological processes that trigger and increase the risk for developing anti-drug antibodies (ADA). Understanding of how immunogenicity needs to be taken into consideration all the way from choosing your biological target of treatment, to drug development, approval, clinical routine and individualized therapy and health care practice.

**Intended learning outcomes :** At the end of the course the student should be able to:  
- Understand what determines the immunogenicity of drugs and why they differ in this respect.  
- Give examples of different methods of how to measure drug level and ADA.  
- Understand the algorithms needed in clinical practice and what consequences ADA might have for treatment decision, safety and efficacy.  
- Integrate this knowledge in your own research project or a disease and treatment of choice.

**Contents of the course :** The course will give you an orientation of the clinical research fields where treatment with biopharmaceuticals are important and how the immune system can react against different biopharmaceuticals. It will include the diseases MS, RA, IBD, and SLE and biopharmaceuticals like IFNbeta, natalizumab, rituximab, TNF-blockers as well as the biosimilars for these. A range of immunoassay methodologies that can be used to measure drug levels and ADA will be presented and the clinical relevance of the test results discussed. The course will also give insights on the type of research being done to identify risk factors for ADA, and optimisation of drug design, production and administration to minimize the risk. Ways to improve treatment regiments adopted to results of drug level and ADA, as well how to monitor and store data in clinical routine will be discussed.

**Teaching and learning activities :** Lectures, individual essays, peer-review and oral presentation.

**Examination :** Essay, peer-review and oral presentation.

**Compulsory elements :** Lectures, essay, peer-review and oral presentation. Absence from lectures can be compensated for by writing an additional essay on the subject missed.

**Number of students :** 10 - 50

**Selection of students :** Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

**More information :** Depending on the pandemic situation, the course will be at CMM or online or both. This course is given jointly by the doctoral programmes Allergy, immunology and inflamation (Aii) and Neuroscience (Neuro).  
See: https://staff.ki.se/doctoral-programmes

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**Course responsible :**  
Anna Fogdell-Hahn  
Department of Clinical Neuroscience

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CMM

Solna

**Contact person :** -
Title: Philosophy of science and the concept of health

Course number: 3073
Credits: 1.5
Date: 2021-03-15 -- 2021-03-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Purpose of the course: The course aim is that the doctoral student develops a theory of science approach by enabling the doctoral student to understand, employ, reflect upon and critically assess concepts and ideas of theories of science as well as their implications for in particular medical scientific practice. A further aim is to enable the doctoral student to understand, reflect upon and critically assess views on and implications of definitions of health and disease.

Intended learning outcomes: Upon completion of the course, the doctoral student should be able to:
- understand central concepts and problems of the theory of science, in particular those of relevance for the medical sciences
- identify, analyse and critically assess scientific problems, approaches and arguments from a theory of science perspective, in particular in the field of medical sciences

Contents of the course: The course contains the following parts:
1. Theory of knowledge
   Concepts such as knowledge, truth, and science, as well as the relations between them, are discussed and problematised. Verification/falsification, logical positivism, falsificationism and demarcation are other concepts and theoretical strands to be treated.
2. Theory of science
   Central concepts, theories and themes within this area are paradigm, the clinical-medical paradigm, the placebo effect, scientific anomalies, and the nature of and view on knowledge within the medical sciences (e.g. randomised clinical trials). The difference and relation between science and values are also dealt with.
3. Science, pseudo-science and scientific argumentation
   Demarcation in practice, the difference between science and pseudo-science, and argumentation within the sciences (in particular within the medical sciences) are in focus.
4. The concept of health
   The concept of health is critically assessed, for example based on notions of objectivity/subjectivity. The consequences of using different types of definitions of health are analysed. Furthermore, the concept of disease is discussed, e.g. in relation to normality.

Teaching and learning activities: The course is given online. The teaching and learning activities used are web lectures, written examination, individual writing exercises, an individual written assignment, and reading of course literature and other distributed materials.

Examination: Course examination consists of three parts:
- Written examination
- Individual writing exercises
- One written individual assignment

Compulsory elements: All parts of the course examination are mandatory.

Number of students: 10 - 15

Selection of students: Selection will be based on the written motivation explaining why the course would benefit the doctoral studies.

More information: The course is web-based and arranged over two weeks time.

Course responsible:
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Contact person:
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Title: Cancer Cell Metabolism

Course number: 3076
Credits: 1.5
Date: 2021-05-24 -- 2021-05-28
Language: English
Level: Doctoral level

Responsible KI department: Department of Microbiology, Tumor and Cell Biology
Specific entry requirements: Basic knowledge in Tumor Cell Biology

Purpose of the course: The course provides an introduction to cancer cell metabolism. Focus is on the roles of oncogenic signaling and tumor microenvironment as drivers of tumor development and progression. Therapeutic and diagnostic perspectives exploiting the altered cancer metabolism are discussed.

Intended learning outcomes: After the course, the student should be able to: - describe and explain the role of altered cellular metabolism in cancer development and cancer progression; - reflect upon the interaction between oncogenic signaling and tumor metabolism; - discuss how tumor metabolism may be exploited in anticancer therapies and diagnosis/prognosis.

Contents of the course: Overview about cell metabolism The major metabolic pathways The mitochondrion Signalling pathways and metabolic control Cancer cell metabolism Methods to study cell metabolism Targeting metabolism for cancer treatment

Teaching and learning activities: The course consists of lectures with invited national and international scientists with focus on Cancer cell Metabolism. The students will actively talk to the scientists in the "Meet the Scientists" format and discuss the topics during beehive discussions. The course is given full-time during 1 week. The teaching is mainly in lecture/seminar form and also includes project work. This project is presented orally on the last day of the course. The project work requires studies of a specific topic in Cancer Cell Metabolism.

Examination: Examination is divided into two parts: Firstly, during active participation in the "Meet the scientists" seminar and in connection with the beehive group discussion. Secondly, the students will be given an assignment to be presented on the last day of the course. This assignment is a short project proposal within one topic chosen from a list of 10. The proposal will contain an overview of the field which motivates a specific research question identified by the student/s and a brief work plan that explains how the question/hypothesis can be solved/investigated.

Compulsory elements: Attendance at lectures is strongly advised. Participation in the beehive and "Meet the scientists" session is mandatory. To compensate for absence due to e.g. illness the student may be required to write a report and/or discuss the missed subject with the course leaders.

Number of students: 10 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course will take place in the Biomedicum building, in Campus Solna, with lectures in the mornings and other practical activities in the afternoon. All the teaching will be in English. The course contents will include, but will not be limited to, general introduction to cancer cell metabolism, metabolic tracing, metabolomics and other techniques to study metabolism, cancer cells in a broader physiological context, tumor acidosis, mitochondria and its interactions with other organelles, hypoxia, etc. We will have lecturers from in and outside KI, including an international invited speaker.

Course responsible:
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Contact person:
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**Title : Pathology**

**Course number :** 3109  
**Credits :** 3.0  
**Date :** 2021-05-03 -- 2021-05-14  
**Language :** English  
**Level :** Doctoral level  
**Responsible KI department :** Department of Laboratory Medicine  

**Specific entry requirements :**

**Purpose of the course :** The aim of the course is to enable doctoral students lacking basic higher education knowledge in medicine to understand basic pathological events, such as tissue injury, repair and inflammation and their relation to the development of diseases, and how these alterations are coupled to the microstructure of pathological tissues.

**Intended learning outcomes :** After the course the student should 1) understand the mechanisms behind basic pathological events; 2) be able to identify selected pathological tissues at light microscopical level and describe the components/cells and their functions; 3) be able to search for and combine information regarding a selected group of diseases, followed by an oral presentation and discussion.

**Contents of the course :** The course is divided into two parts. One part illustrates cell injury, adaptation, tissue repair, inflammation, cancer development and classification. Methods in molecular pathology are discussed. During the other part of the course a selected group of diseases are studied both during digital microscopy practices and as a written and an oral presentation. How basic pathological responses to inflammation or injury might be the first steps on a multi-step path to malignancy is also discussed.

**Teaching and learning activities :** This is a full time course with lectures, demonstrations, microscopy exercises and a project work.

**Examination :** Written examination and project work.

**Compulsory elements :** Demonstration/microscopy, pathology "tour" and project work are compulsory. Absence is compensated with a written report.

**Number of students :** 7 - 25  
**Selection of students :** Date of registration as PhD student at Karolinska Institutet (students who have registered earlier have priority)

**More information :**

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**Course responsible :**  
Jonas Fuxe  
Department of Medical Biochemistry and Biophysics  
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**Contact person :**
Title: Alzheimer's Disease: Clinical Features and Pathogenic Mechanisms

Course number: 3117  
Credits: 1.5  
Date: 2021-03-15 -- 2021-03-19  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Neurobiology, Care Sciences and Society  
Specific entry requirements: 

Purpose of the course: The purpose of the course is to give doctoral students a broad knowledge of Alzheimer's disease, covering cellular mechanisms as well as clinical features and diagnosis. Experts in the field are invited to give the lectures securing communication of up-to-date knowledge about the disease. Students will also get the opportunity to obtain deeper knowledge on specific sub-topics during the planned group assignments.

Intended learning outcomes: After the course the student will have acquired up-to-date knowledge of different aspects of Alzheimer's disease from clinical symptoms and diagnosis to molecular mechanisms and future perspectives.

Contents of the course: This course provides up-to-date knowledge of different aspects of Alzheimer's disease (AD) from clinical symptoms and diagnosis to molecular mechanisms and future therapeutics.

Teaching and learning activities: The pedagogic framing is based on lectures by invited Swedish and international scientist that will cover the topics of clinical signs and symptoms, diagnosis, pathology, epidemiology, genetics, molecular mechanisms, animals models, therapeutic strategies. Group work, preparation of seminars and presentation of group work.

Examination: Group examination of the topics by an examiner.

Compulsory elements: Both lectures and group work are compulsory. Absence from any of these should be compensated for by essay(s) on the topic(s) missed, in agreement with the course director.

Number of students: 10 - 25

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Course schedule: 9.00-15.30

Course responsible: Per Nilsson  
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Contact person: Anna Matton  
Institutionen för neurobiologi, vårdvetenskap och samhälle  
anna.matton@ki.se
Title: Forskningsetik

Course number: 3118
Credits: 1.5
Date: 2021-01-12 -- 2021-02-02
Language: Swedish
Level: Forskarnivå

Responsible KI department: Department for Clinical Science, Intervention and Technology

Specific entry requirements:

Purpose of the course: Få en inblick i och förståelse av centrala forskningsetiska teorier, principer och riktlinjer och därmed få möjlighet att reflektera över etiska aspekter av den egna och andras forskning.

Intended learning outcomes: Den forskarstuderande ska efter att ha gått kursen kunna:

1. Redogöra för forskningsetiska teorier, principer och till viss del riktlinjer.
2. Visa kunskap angående vanliga forskningsetiska problemsituationer och de etiska verkygen som kan användas för att hantera forskningsetiska konflikter.
3. Förhållningssätt: Den forskarstuderande ska efter att ha gått kursen kunna: 1. Utvecklat ett forskningsetiskt förhållningssätt till andra forskarstuderande, handledare och seniора forskare, 2. Förståelse för hur ett etiskt förhållningssätt uppfattas hos allmänheten
4. Förståelse för vilken roll forskarens egen hederlighet och integritet har.

Contents of the course: Att ge en introduktion till etiken i samband med forskning och en orientering om dess tillämpning på problem inom det vetenskapliga området. Kursen behandlar bl.a. följande teman: centrala etiska principer, teorier och argument, forskningsetik/forskaretik, grundläggande värderingar och normer för god sed i forskningen, innehåll i och värdet av regelverk såsom Helsingforsdeklarationen dess funktion, tillämpning, möjligheter och begränsningar, etikprövningar, avvikelser från värderingar, forskningsfusk och vetenskaplig oredlighet.

Teaching and learning activities: Föreläsningar (ca 6t), gruppövningar, seminarier (ca 8t) och muntlig och skriftlig presentation.

Examination: Vi bedömer att lärandemålen för kursen är uppnådda genom examination som består av fyra delkomponenter:

i) formativ bedömning i samband med aktivt deltagande i seminarier, ii) en muntlig presentation av etiska dilemman i eget eller aktuellt forskningsområde, iii) ett skriftligt PM där synpunkter från opponent på den muntliga presentationen inarbetats, och iv) opponerande på annan students presentation av etiska dilemman.

Compulsory elements: Obligatoriskt är att delta vid introduktionstillfället och vid seminarier. Vid frånvaro kan detta kompenseras med utökat PM skrivande och muntlig presentation för kursen eller kursgivare.

Number of students: 10 - 20

Selection of students: Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier.


Course responsible:
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Contact person:
Nicoletta Raic
Institutionen för klinisk vetenskap, intervention och teknik
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Title: Vetenskapsteori

Course number: 3119
Credits: 4.5
Date: 2021-02-16 -- 2021-04-13
Language: Swedish
Level: Forskarnivå

Responsible KI department: Department for Clinical Science, Intervention and Technology
Specific entry requirements:

Purpose of the course: Få en kunskap om, färdighet i och förståelse för grundläggande vetenskapsteoretiska teorier, principer och diskursor som bildar basen för vetenskaplig metod och kritik.


Teaching and learning activities: Föreläsningar (ca 12 t), gruppövningar, seminarier (ca 14 t) och muntlig och skriftlig presentation.

Examination: Vi bedömer att lärandemålen för kursen är uppnådda genom examination som består av fyra delkomponenter: i) formativ bedömning i samband med aktivt deltagande i seminarier ii) en muntlig presentation av vetenskapsteoretiska aspekter i eget alternativt andra (centrala) forskningsfrågor inom den egna disciplinen iii) ett skriftligt PM där synpunkter från opponent på den muntliga presentationen inarbetats iv) opponering på annan students presentation av vetenskapsteoretiska aspekter samt opponering på annan students presentation av ett etiskt dilemma.

Compulsory elements: Obligatoriskt är att delta vid introduktionstillfället och vid seminarier. Vid frånvaro kan detta kompenseras med utökad PM skrivande muntlig och skriftlig presentation.

Number of students: 10 - 15

Selection of students: Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier

More information: Kursen ges en eftermiddag per vecka (tisdagar kl.13:30-17:15) under totalt nio veckor på Karolinska Universitetssjukhuset, Huddinge (B31/K32). Kursen innehåller föreläsningar med extern föreläsaren, seminarier, gruppövningar samt students muntliga och skriftliga presentationer. Mellan kurstillfällena finns det material att läsa enligt ett schema som ges till de antagna.

Course responsible:
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Contact person:
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Epidemiology III. Analysis and interpretation of epidemiological data

Course number: 3129
Credits: 1.5
Date: 2021-05-20 -- 2021-05-27
Language: English
Level: Doctoral level
Responsible KI department: The institute of Environmental Medicine
Specific entry requirements: Knowledge equivalent to "Epidemiology I: Introduction to epidemiology", "Epidemiology II: Design of epidemiological studies", "Biostatistics I: Introduction for epidemiologists" or corresponding courses.
Purpose of the course: The purpose of the course is to familiarise the student with principles for epidemiological data analysis and critical interpretation of study results.
Intended learning outcomes: After successfully completing this course you as a student are expected to be able to: - analyse and interpret interactions between causes, - reason about principles of causal inference, - evaluate methodological aspects when critically reviewing individual epidemiological studies, - apply good practices for quantitative bias analysis to epidemiological data, and - demonstrate how to communicate areas of expertise to the public and to those not familiar with your research area.
Contents of the course: The course focuses on issues related to causal inference, principles of epidemiological data analysis, and interpretation of epidemiological concepts and principles of relevance when critically reviewing individual epidemiological studies.
Teaching and learning activities: Lectures, group discussions and various forms of group exercises on selected topics, will be used. The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts.
Examination: To pass the course, the student has to show that all the intended learning outcomes have been achieved. Assessments methods used are group assignments (formative assessments) along with a written individual take-home examination. The examination is viewed as contributing to the development of knowledge, rather than as a test of knowledge. Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.
Compulsory elements: Individual examination task (summative assessment).
Number of students: 8 - 25
Selection of students: Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.
More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are May 20, 21, 25, 26 and 27. The individual examination will be performed as a take home examination.

Course responsible:
Anita Berglund
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Contact person:
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Nobels väg 13
17177 Stockholm
Title: Application of Epidemiological Methods in Aging Research

Course number: 3131
Credits: 1.5
Date: 2021-04-26 -- 2021-04-30
Language: English
Level: Doctoral level

Specific entry requirements: Knowledge equivalent to "Epidemiology I: Introduction to epidemiology", "Biostatistics I: Introduction for epidemiologists" or corresponding courses.

Purpose of the course: The aim of the course is to critically review epidemiological methods with applications to aging research. An increasing share of the population in our countries lives to very advanced age. This calls for a better understanding of the ageing process, identifying possible preventive and treatment strategies to ensure that these extra years of life gained through increased longevity are spent in good health. Geriatric epidemiology approaches these challenges by studying the health and functional status of older populations throughout the entire life span.

Intended learning outcomes: After completion of the course, you as a student should be able to: (1) Discuss the pros and cons of different analytic approaches used in geriatric epidemiology, and the possible sources of bias linked to each of these approaches. (2) Reason about the challenges in the definition, measurement and clinical assessment of chronic diseases and multimorbidity. (3) Explain the main methods to measure physical function, as well as its contribution to the multidimensional health assessment in older people. (4) Depict the clinical aspects as well as risk and protective factors for dementia and cognitive decline from a life course perspective. (5) Describe the main determinants of healthy aging and longevity, with a special focus on biological and genetic markers of human aging.

Contents of the course: This one-week course will cover the basics of geriatric epidemiology and the critical appraisal of different study designs used in the field. It will also describe the fundamental dimensions of health in older age (chronic physical and mental diseases, physical function and frailty, and cognitive function) and the challenges linked to their measurement and assessment. Last, the main determinants of aging and longevity will be introduced from the perspective of their applicability in research and clinical practice. Each theoretical session will be followed by practical sessions related to methodological challenges in each corresponding area. The practical sessions will take place in the afternoons.

Teaching and learning activities: The course is built on brief state-of-art lectures followed by different activities where doctoral students will be asked to put into practice and critically reflect upon the acquired knowledge. The proactive participation of the student will be pursued through group discussions, individual presentations, in-class quizzes, and the critical assessment of selected studies.

Examination: To pass the course, the student has to show that the learning outcomes have been achieved. Assessments methods used are group assignments (formative assessments) along with an individual home examination (summative assessment). Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course.

Compulsory elements: The individual examination (summative assessment) is compulsory.

Number of students: 8 - 25

Selection of students: Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information: The course is arranged in collaboration between the Epidemiology and Neuroscience Programmes, see https://ki.se/en/staff/doctoralprogrammes.

Course responsible:
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Cardiovascular Research - an overview of the process of atherosclerosis

Course number: 3133
Credits: 1.5
Date: 2021-05-03 -- 2021-05-07
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:

Purpose of the course: Atherosclerosis will be discussed from the molecular, cellular, genetic, clinical and epidemiological viewpoints. Therefore, participants with a medical background will have the possibility to be more exposed to experimental work and, conversely, participants with a non-medical background will be enabled to obtain good knowledge of distinct clinical manifestations of atherosclerosis. This will be useful for, among others, bioinformaticians in the field. In addition, the course gives the participants the possibility to network with other students in the cardiovascular field.

Intended learning outcomes: The participant should be able to: 1. Relate risk factors with the pathology of atherosclerosis 2. Discuss the development of the atherosclerotic lesion on cellular and molecular level 3. Motivate the use of different models (in vitro-, epidemiological, animal model) to study atherosclerosis and apply them to a given project.

Contents of the course: Atherosclerosis will be discussed from the molecular, cellular, genetic, clinical and epidemiological viewpoints. Topics to be covered include discussions of the roles of the following in atherosclerosis: lipids and lipoproteins; oxLDL; thrombosis; plaque stability; inflammation; innate and adaptive immunity; proteinases; blood pressure; and diabetes/insulin resistance. Examples of in vitro and animal models as well as clinical studies will be discussed.

Teaching and learning activities: Lectures, project group, presentation by participants.

Examination: To pass the course, the participant has to: 1) Give a presentation in a seminar and to be able to discuss the different aspects of atherosclerosis with the course leader and the other participants. 2) To be able to discuss the other participants' presentations. 3) Pass a written exam recapitulating the course's content.

Compulsory elements: Examination is compulsory to pass the course.

Number of students: 8 - 30
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information:

Course responsible:
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Basic Course in Medical Statistics

Course number: 3134
Credits: 3.0
Date: 2021-03-15 -- 2021-03-26
Language: English
Level: Doctoral level

Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

Purpose of the course: The aim of the course is to introduce the basic statistical methods and the fundamental principles of statistical inference and to offer basic skills that involve hands on data analysis using statistical software.

Intended learning outcomes: The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.

Contents of the course: Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.

Teaching and learning activities: This course is a Team-Based Learning (TBL) course. TBL is a specific form of learning method that integrates individual assessment and group work with immediate feedback. Focus will be on solving statistical problems in a team setting. This two weeks course consists of online preparation through video lectures and exercises, and several TBL sessions (in class meeting). The time in between TBL sessions will be spent reading the course material, and preparing for the assessment and group application exercises.

Examination: Individual and group readiness assurance tests, as well as application exercises.

Compulsory elements: In class attendance during TBL sessions are mandatory for passing grade. If a student misses one of the five TBL sessions a supplementary exercise will be given. If the student misses more than one TBL session it is recommended that the student takes the course at another occasion (since absence also affects the other members of the team).

Number of students: 35 - 45

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

More information: This course is a TBL-course, former course number was 1383. TBL, Team-Based Learning, is a special form of learning that integrates individual work, group work and immediate feedback. Focus will be on solving statistical problems in group/team setting. The course will consist of 2-3 full days per week for two weeks. Course dates via Zoom are: Mars 15, 16, 18, 22, 24, 26.

Course responsible:
Mesfin Tessma
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Mesfin.Tessma@ki.se

Contact person:
Karin Wrangö
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karin.wrango@ki.se
Title : Basic Course in Medical Statistics

Course number : 3134
Credits : 3.0
Date : 2021-04-26 -- 2021-05-07
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : The aim of the course is to introduce the basic statistical methods and the fundamental principles of statistical inference and to offer basic skills that involve hands on data analysis using statistical software.

Intended learning outcomes : The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.

Contents of the course : Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.

Teaching and learning activities : This course is a Team-Based Learning (TBL) course. TBL is a specific form of learning method that integrates individual assessment and group work with immediate feedback. Focus will be on solving statistical problems in a team setting. This two weeks course consists of online preparation through video lectures and exercises, and several TBL sessions (in class meeting). The time in between TBL sessions will be spent reading the course material, and preparing for the assessment and group application exercises.

Examination : Individual and group readiness assurance tests, as well as application exercises.
Compulsory elements : In class attendance during TBL sessions are mandatory for passing grade. If a student misses one of the five TBL sessions a supplementary exercise will be given. If the student misses more than one TBL session it is recommended that the student takes the course at another occasion (since absence also affects the other members of the team).

Number of students : 35 - 45
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

More information : This course is a TBL-course, former course number was 1383. TBL, Team-Based Learning, is a special form of learning that integrates individual work, group work and immediate feedback. Focus will be on solving statistical problems in group/team setting. The course will consist of 2-3 full days per week for two weeks. Course dates via Zoom are: April 26, 27, 29 and May 3, 5, 7.

Course responsible :
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Contact person :
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Title: Biomimetic Systems - Modelling Human Physiology in Infection Biology

Course number: 3136
Credits: 2.0
Date: 2021-03-09 -- 2021-06-15
Language: English
Level: Doctoral level
Responsible KI department: Department of Neuroscience

Specific entry requirements:

Purpose of the course: This course consists of advanced level studies at the interface of engineering and Infection Biology, focusing on the science of mimicking and modelling human physiology. The course aims to introduce students to the cutting edge of technological advances and how these advances can be applied to address biological questions with a focus on Infection. It will cover the needs and challenges in mimicking human physiology in experimental science and introduce methods to address this including humanised animal models, in vitro systems such as micro-physiological systems including organs on a chip as well as analytical methods, actuators and sensors in conjunction to these systems. The course content is tuned for M.Sc. and PhD students with an interest in the interface between bioengineering, material science, biotechnology and medical science, cell physics and particularly Infection biology and Tissue Microbiology.

Intended learning outcomes: After completing the course, the student should be able to: - Reflect over the need for and limitations of systems mimicking and predicting human physiology - Understand the differences in vitro models including Organ Chips, Organoid cultures, other 3D cell cultures and conventional cell cultures. - Understand the basic principles in extrapolations of in vitro data to human in vivo physiology - Analyze and reflect over the use of biomimetic systems in drug development and clinical settings - Analyze and discuss the scientific literature in biomimetic systems - Analyze and reflect over the sustainability aspects of Biomimetic systems, in particular the aspects of environmental and societal impact of both the current status of the studies and future dissemination of the technology

Contents of the course: - Introduction to human physiology and pathophysiology of infection. What can Tissue Microbiology teach us about infection in vivo? Why we should build biomimetic systems that mimic the human physiology? - Introduction to in vitro systems: Overview of in vitro system, what are their benefits and limitations - Microfluidic/Diagnostic systems: Introduction to microfluidics, flow, fabrication, materials - Organs on a chip: Introduction to tissue engineering, tissue under flow, organ-organ interaction. - Organoids: What are organoids? Fabrication, benefits and limitations - 2D vs. 3D: Cell properties in 2D vs. 3D. microenvironment, cell mechanics, limitation, overview of different 2 and 3D models. - Artificial organs: Introduction to artificial organs, requirements, engineering and creating artificial organs, 3D printing, scaffolds. - In vitro metrics Assessing the in vitro samples, readouts, clinical relevance - Sensors Scaling sensors to cellular readouts, type of transducers, fabrication, limitations. Conducting polymers as sensors - Applications to basic research and drug development How biomimetic systems can be applied in drug development. The drug development process, limitations of the process, what is the strength and limitations of the biomimetic systems in drug development. - In vitro in vivo extrapolation (IVIVE) Cellularity, scaling microsystems to human scale, translation of the system to clinical data. ""Bench-to-bedside", the steps from in vitro cell culture through to clinic - Summarizing lecture and outlook

Teaching and learning activities: The course will consist of ~12 lectures given by experts on the topics, combined with seminars where the student will present and discuss their project works. The lecture and seminar series will be shared between KTH, Karolinska Institute and Tel Aviv University as web conferences. The participants of the course will be divided in groups with at least two participants from each university. The groups will be given a topic for in-depth studies of relevant scientific literature. This project work will be presented as a seminar and a written review. The course will span 12 weeks

Examination: - A prepared group lecture on assigned topic 40% - A personal written review on the topic 40% - A multiple-choice exam 20%

Compulsory elements: - Each student will have to prepare a seminar (as part of a group) preferably mixed groups between the universities - Each student will have to prepare a review on the topic he chooses (as part of a group) preferably mixed groups between the universities. - absences may be compensated by complementary written assignments to the missed topics but it is compulsory to attend at least 80% of the lecturers to pass the course.

Number of students: 10 - 30
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Course will run Tuesday afternoons, 12 occasions. All lectures will be held online, in combination with students from KTH and Tel Aviv University.

Course responsible:
Keira Melican
Department of Neuroscience
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Title: Epidemiology II. Design of epidemiological studies

Course number: 3138
Credits: 1.5
Date: 2021-06-02 -- 2021-06-11
Language: English
Level: Doctoral level
Responsible KI department: The institute of Environmental Medicine
Specific entry requirements: Knowledge in epidemiology equivalent to "Epidemiology I: Introduction to epidemiology" or corresponding courses.

Purpose of the course: The course focuses on key considerations in designing and critically interpreting different types of case-control studies, as well as matching in cohort and case-control studies.

Intended learning outcomes: After successfully completing this course you as a student are expected to be able to: - in a self-directed manner, formulate the principles of different types of common epidemiological study designs. - mainly independently, explain how a specific measure of disease occurrence and measure of association is governed by the study design. - in a self-directed manner, explain and discuss epidemiological concepts, including accuracy, in the context of different epidemiological study designs. - draw conclusions from epidemiological scientific papers and to review and criticize these regarding study design, results and accuracy. Learning outcomes are classified according to Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation.

Contents of the course: The course focuses on issues related to study design with emphasis on case-control methodology and different types of sampling strategies, study base, study efficiency, matching in epidemiological studies, induction time, interpretation of epidemiological evidence.

Teaching and learning activities: Lectures, group discussions and various forms of group exercises on selected topics, will be used. The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts.

Examination: To pass the course, the student has to show that the learning outcomes have been achieved. Assessments methods used are group tasks (formative assessments) along with a written individual task (summative assessment). The examination is viewed as a contributing to the development of knowledge, rather than as a test of knowledge. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.

Compulsory elements: The individual examination.

Number of students: 8 - 25
Selection of students: Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are June 2, 4, 7, 9 and 11.

Course responsible:
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Title: Basic Immunology

Course number: 3139
Credits: 3.0
Date: 2021-01-18 -- 2021-02-12
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements: A clear interest in Immunobiology. Basic understanding of cell and molecular biology (as an example - you should roughly remember what 'translation', 'G1 phase', 'splicing', or 'endocytosis' all are off the top of your head (without necessity for molecular details)).

Purpose of the course: The student will 1) learn basic concepts in Immunology, 2) get an overview of the various immune cell types and their function and development, and 3) meet the Immunology faculty of Karolinska Institutet. This course is a good starting point for more advanced/thematically focused courses in Immunology. While no prior knowledge in immunology is required, basic immunology concepts will be discussed in depth and detail. Therefore, the course is also valuable for students who wish to broaden and deepen their general immunological knowledge.

Intended learning outcomes: - To describe basic principles of innate and adaptive immunity and how different components of the immune system cooperate - To describe how altered functions of the immune system components can lead to a variety of diseases - To explain the importance of a selection of high-end research papers, and a selection of experimental technologies for advancing the field of immunology - To create an experimental plan to address an outstanding question in the field of immunology - To reflect on how your newly gained knowledge of the immune system may influence your current work, or how it inspired you to address new questions.

Contents of the course: This is a full-time course, which consists of 2 parts. In part 1 we discuss basic immunological concepts underlying innate and adaptive immune responses. In part 2 we revisit and discuss these concepts in the context of disease. More specifically, in part 1 we will discuss development and function of key cell types mediating immune responses, pathogen recognition by cells of the innate immune system, generation of antigen receptor repertoires, principles of self/non-self discrimination and immunological tolerance, and mechanisms of humoral and cellular immune responses. In part 2 this knowledge will be applied to more clinical contexts such as defense against infection, autoimmune diseases, allergic diseases, tumors, or transplantation.

Teaching and learning activities: Lectures: The majority of the course consists of lectures by KI faculty, specialized in the particular topic they lecture on. International speaker + related preparatory assignment: Towards the end of each course part, we aim to have a seminar by a very renowned international speaker. The purpose of these seminars is to 1) give the course participants the opportunity to get inspired by cutting-edge research at international top level, to 2) deepen the students' knowledge in two different areas of immunology, and to 3) provide examples of different experimental approaches and how their application may lead to answering outstanding questions in immunology. The speakers have been asked to start with a more general introduction of their field of research, and then present some of the past and ongoing work in their lab. To facilitate the students' understanding of these seminars, we will prepare for the seminars with an assignment, which will be discussed just prior to the international seminar. The seminars themselves are open for the whole KI/KS immunology community.

Assignments: In addition to the assignment related to the international speaker, the course will include individual and group assignments requiring additional work during teaching-free period has small individual assignments and an extensive group assignment – the latter spanning the teaching-free period. Daily round-up: We will conclude most days with a group discussion session during which the students have the possibility to ask questions regarding the topics of the day.

Examination: In order to pass the course, the students are required to: 1) attend at least 95% of all scheduled activities, 2) actively participate in lectures and group activities, and 3) submit all assignments at a sufficient quality level. A single missed day of the course can be tolerated, but the student will be asked to work on an additional individual assignment based on the topic(s) of this day.

Compulsory elements: Lecture attendance and submission of all course assignments is compulsory.

Number of students: 12 - 30

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

More information: This is a full-time course, which consists of 2 parts. In part 1 we discuss basic immunological concepts underlying innate and adaptive immune responses. In part 2 we revisit and discuss these concepts in the context of disease. If epidemiological situation permits the lectures will take place in Center for Molecular Medicine (CMM) lecture hall (L8:00)(Solna campus). Additional lectures by international speakers and work on group assignments will be held in other locations (to be announced). If lectures in the classroom are not possible by KI regulations they will be held through zoom or similar software. Part 1 will take four full days and one half-day: Jan 18 (Mon) - 9:00-17:00; Jan 19 (Tue) - 9:00-17:00; Jan 20 (Wed) - 13:00-17:00 [half day]; Jan 21 (Thu) 9:00-17:00; Jan 22 (Fri) - 9:00-17:00. The second part will follow after a teaching-free period of two weeks and will

https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
take three full days and one half-day: Feb 9 (Tue) - 9:00-17:00; Feb 10 (Wed) - 9:00-17:00; Feb 11 (Thu) - 9:00-17:00; Feb 12 (Fri) - 9:00-12:00 [half day]. The purpose of dividing the course into two parts is that the participants should have time to thoroughly study the literature from part 1 (fundamental immunological mechanisms) before learning more applied immunology in part 2. Considering the substantial literature requirement plus work on the assignments, we estimate that an extra 2.5 days of self-studying is needed during the teaching free period.

Course responsible:
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Carmen Gerlach
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Title: Biostatistics III: Survival analysis for epidemiologists

Course number: 3142
Credits: 1.5
Date: 2021-02-08 -- 2021-02-17
Language: English
Level: Doctoral level

Responsible KI department: Department of Medical Epidemiology and Biostatistics
Specific entry requirements: Epidemiology I: Introduction to epidemiology, Biostatistics I: Introduction for epidemiologists and Biostatistics II: Logistic regression for epidemiologists or equivalent courses, and practical experience applying statistical models.

Purpose of the course: This course focuses on the application of survival analysis methods to epidemiological studies. The statistical software Stata will be used in the course.

Intended learning outcomes: After successfully completing this course students should be able to: - propose a suitable statistical model for assessing a specific research hypothesis using data from a cohort study, fit the model using standard statistical software, evaluate the fit of the model, and interpret the results. - explain the similarities and differences between Cox regression and Poisson regression. - discuss the concept of timescales in statistical models for time-to-event data, control for different timescales using standard statistical software, and argue for an appropriate timescale for a given research hypothesis. - discuss the concept of confounding in epidemiological studies and control/adjust for confounding using statistical models. - apply and interpret appropriate statistical models for studying effect modification and be able to reparameterise a statistical model to estimate appropriate contrasts. - critically evaluate the methodological aspects (design and analysis) of a scientific article reporting a cohort study.

Contents of the course: This course introduces statistical methods for survival analysis with emphasis on the application of such methods to the analysis of epidemiological cohort studies. Topics covered include methods for estimating survival (life table and Kaplan-Meier methods), comparing survival between subgroups (log-rank test), and modelling survival (primarily Poisson regression and the Cox proportional hazards model). The course addresses the concept of 'time' as a potential confounder or effect modifier and approaches to defining 'time' (e.g., time since entry, attained age, calendar time). The course will emphasise the basic concepts of statistical modelling in epidemiology, such as controlling for confounding and assessing effect modification.

Teaching and learning activities: Lectures, exercises focusing on analysis of real data using statistical software, exercises not requiring statistical software, group discussions, literature review.

Examination: The course grade is based solely on a written examination. The examination will contain two sections. Students who do not obtain a passing grade on both sections and wish to take the examination again must retake the entire examination (i.e., both sections) even if they previously obtained a passing grade on one of the two sections. The focus of the exam will be on understanding concepts and their application to analysis of epidemiological studies rather than mathematical detail. Students who do not obtain a passing grade in the first examination will be offered a second examination within 2 months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered. If the course is not offered during the following two academic terms then a third examination will be scheduled within 12 months of the final day of the course.

Compulsory elements: The individual examination (summative assessment).

Number of students: 8 - 25
Selection of students: Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are February 8, 10, 12, 15 and 17. Participants are expected to have prerequisite knowledge equivalent to the learning outcomes of the courses Epidemiology I, Biostatistics I and Biostatistics II. We have provided a self-assessment text (http://biostat3.net/download/self-assessment.pdf) for you to confirm that you understand the central concepts. We advise all potential applicants to take the test prior to applying for Biostatistics III. If you attempt the test under examination conditions (i.e. without referring to the answers), we would recommend.<br>
1. If you score 70% or more then you possess the required prerequisite knowledge<br>2. If you score 40% to 70% you should revise the areas where you lost marks<br>3. If you score less than 40% you should, at a minimum, undertake an extensive review of central concepts in statistical modelling and possibly consider studying intermediate-level courses (e.g., Biostatistics II) before taking Biostatistics III. The statistical software Stata will be used throughout the course. Participants are expected to possess basic knowledge of Stata prior to the start of the course. An introduction to Stata can be downloaded from the course webpage (www.biostat3.net).

Course responsible:
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Title : Introductory course in SAS programming

Course number : 3143  
Credits : 1.5  
Date : 2021-05-03 -- 2021-05-07  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Global Public Health  
Specific entry requirements :  

Purpose of the course : The aim is to introduce fundamental SAS programming language for use in database handling and preparation for analyses. Further, the aim is to introduce the student on how to use statistical procedures in SAS, with focus on descriptive statistics.  

Intended learning outcomes : After successfully completing this course you as a student are expected to be able to: - apply the SAS system when importing and exporting data. - manipulate data using SAS labels and formats. - manipulate data using SAS functions and programming statements. - perform descriptive statistics using adequate SAS procedures.  

Contents of the course : The course is designed to give fundamental insights in the SAS system and basic skills in the SAS programming language. The course embraces commands for definition, description, modification, selection and analysing of data, and covers: - Introduction to the SAS Windows - SAS data sets, creating, importing and exporting data - Data handling, programming statements and SAS functions - SAS procedures for descriptive statistics  

Teaching and learning activities : Full-time in supervised computer lab with a mixture of interactive lectures and exercises. Every morning a quiz, recapitulating the previous days' lectures.  

Examination : To pass the course, the student has to show that the learning outcomes have been achieved. The course will end with an examination consisting of both an individually written and individually computerized exam where the covered commands are used. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.  

Compulsory elements : Only the examination is compulsory.  
Number of students : 8 - 20  
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.  

More information : Full time in supervised computer lab with a mixture of interactive lectures and exercises. Every morning a quiz, recapitulating the previous day's lectures. Basic computer skills are required.  

Course responsible :  
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Contact person :  
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Title: To Communicate Science in Different Contexts with Focus on Oral and Visual Communication

Course number: 3147  
Credits: 3.0  
Date: 2021-03-01 -- 2021-03-16  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Learning, Informatics, Management and Ethics  
Specific entry requirements:

Purpose of the course: The course aims are to orally and visually present one's own research that has been adapted to different target groups and to reflect on one's own as well as one's peers' presentation skills and abilities.

Intended learning outcomes: After the course the student is expected to be able to: 1. Orally present one's own research adapted to different target groups. 2. Understand how visuals and media can support research and presentation to different target groups. 3. Be able to critique and reflect on presentation skills and the ability to adapt to different target groups.

Contents of the course: During the course each participant will be given the opportunity to develop practical and theoretical knowledge in: - Communication, perception and learning - Presentation techniques - Rhetoric - Use of different media (such as posters, infographics, projection media, whiteboard)

Teaching and learning activities: The course design is based on reflective practice and includes self-directed learning, lectures, and literature seminar to process theoretical knowledge, and practical training in presentation skills. Each course participant will perform three oral presentations, one with an infographic, and receive feedback on content, presentation skills, and adaptation towards target group.

Examination: The assessment consists of three different tasks: 1. Reflective statement based in experience, feedback, and research/literature within communication and learning. 2. Oral presentation in a popular scientific context supported by PowerPoint or similar. 3. A final scientific infographic in digital form revised based upon feedback from peers. To pass the course the participant needs to show evidence that they reached the learning outcomes by fulfillment of the assessment criteria.

Compulsory elements: Compulsory sessions are: 1. Oral presentation in a popular science context (video recorded) 2. Oral presentation with infographic in a scientific context and observe and give feedback to an oral presentation and infographic made by a peer. Absence from the compulsory sessions or assessment seminar can be compensated through supplementary activity.

Number of students: 18 - 20

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: This course prepares PhD students for science communication in different contexts. You will explore different communication concepts, presentation designs, and work on visual and presentation techniques. You will reflect on your presentation skills and abilities to communicate science, given contextual and disciplinary differences. The course is equivalent to two-weeks full-time studies. Scheduled class room sessions are on the following dates: 1-2, 8-9, 15 and 16 March 2021. The course is given in English.

Course responsible:  
Anna Birgersdotter  
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Contact person: -
Title: Introduction to Teaching and Learning in Higher Education

Course number: 3181  
Credits: 1.5  
Date: 2021-03-16 -- 2021-04-13  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

Purpose of the course: The purpose of this course is to introduce a variety of teaching and learning methods, and to stimulate a reflective approach to teaching in order to enhance students' meaningful learning and active involvement.

Intended learning outcomes: At the end of the course we expect you to: - Be able to explain general aspects of how to facilitate student learning in different teaching situations - Be able to reflect upon own teaching experiences and use educational concepts in a discussion about teaching and learning

Contents of the course: During the course we will discuss and elaborate on practical issues regarding teaching and learning in laboratory, seminars and lectures. We will discuss and work with ways to challenge students and what to do to facilitate their learning. Course participants will observe (auscultate) teaching and reflect upon their experiences. We will touch upon the role of the teacher and KI teaching policies.

Teaching and learning activities: The course is designed to promote active learning and a variety of teaching and learning strategies will be used during the course. Examples are lectures, small group discussion, peer teaching, group work, literature studies, auscultation of teaching and reflection in groups.

Examination: To satisfactorily complete this course you must demonstrate that you have reached the learning outcomes by orally presenting your reflections of literature studies and auscultation of teaching.

Compulsory elements: The assessment seminar the last day of the course is mandatory. If absent, the student need to present his/her knowledge at a separate occasion.

Number of students: 15 - 30  
Selection of students: Priority will be given to doctoral students who have just started or soon will be involved in teaching and have no teacher training.

More information: The course is based on theories of experiential learning, a reflective approach and learning through active participation and collaboration. In order to learn as much as possible from the course, it is important that you are prepared and present at all scheduled sessions. The scheduled sessions will take place on 16 March, 23 March, 30 March and 13 April. All these sessions are half-days (9.00am-12.00pm). In addition, time for reading, reflecting, writing and auscultation must be planned by the course participants.

Course responsible:  
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Contact person:  
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Institutionen för lärande, informatik, management och etik

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Title : The Vasculature in Health and Disease - Mechanisms, Models and Targets

Course number : 3184  
Credits : 1.5  
Date : 2021-05-24 -- 2021-05-28  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Medical Biochemistry and Biophysics

Specific entry requirements :

Purpose of the course : To educate course participants in the mechanisms that control vascular morphogenesis and function in development, physiology and various pathologies. To stimulate understanding of how developmental aspects/models can be applied to understand human disease. To give the participants a clear view on the advantages and potential drawbacks with transgenic technologies in the study of vascular biology. To present recent conceptual advances in the field as well as future challenges and promises. Altogether this will provide insight on the relation between defective function at the single cell level and systemic alteration.

Intended learning outcomes : After completing the course, the doctoral student should: - Be able to discuss central concepts in vascular biology related to blood/lymph vessel formation and function. - Be able to discuss vascular mechanisms in cardiovascular disease, including stroke, and their risk factors. - Be able to discuss the principles of common methods used in vascular biology research and evaluate the advantages and disadvantages of using these techniques.

Contents of the course : This course will cover: - Basic and molecular principles of how blood/lymph vessels develop, are remodeled and are functionally integrated with the surrounding tissue. - The role of blood/lymph vessels in various pathological conditions with emphasis on cardiovascular disease. - Special focus on the development and function of the blood-brain barrier (BBB) and the CNS vasculature and related pathologies, such as stroke, vascular malformations and Alzheimer. - Discussion on recent targeting strategies in cardiovascular-related disease. - Scientific methods and experimental model systems that are commonly used to study vascular mechanisms in normal and pathological conditions.

Teaching and learning activities : The theoretical part of the course includes lectures, group discussions and project work presentations. The practical part of the course includes demonstrations of common vascular model systems (e.g. retina preparations) and advanced imaging technologies (in vivo live imaging using two-photon confocal microscopy).

Examination : To pass the course, a participant has to show that all the intended learning outcomes have been reached including an understanding of scientific perspectives of basic vascular biology research. This will be assessed during: - active participation in the discussions during the course - presentation of their project work

Compulsory elements : Project work presentations are mandatory. In the case of motivated absence during presentations a written report covering the topic of the group presentation has to be submitted to the course leaders who will evaluate the work and either approve, or in the case of insufficient quality, ask for revision.

Number of students : 10 - 25

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information :

Course responsible :  
Lars Jakobsson  
Department of Medical Biochemistry and Biophysics

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Contact person :  
Linda Fredriksson  
Institutionen för medicinsk biokemi och biofysik

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Title: Function B - to Design Procedures and Projects Involving Research Animals

Course number: 3214
Credits: 3.0
Date: 2021-03-09 -- 2021-03-31
Language: English
Level: Doctoral level

Responsible KI department: Comparative medicine
Specific entry requirements: Previous education in laboratory animal science to carry out scientific procedures on animals (i.e. Function A).

Purpose of the course: The course provides education to doctoral students who will be involved in the design of scientific procedures involving research animals as part of their research. This course also provides education in laboratory animal science to doctoral students who are not necessarily involved with studies using animals but will need to be able to analyze scientific literature and/or data that have been generated from animal studies.

Intended learning outcomes: After completion of this course, students should be able to meet the defined learning outcomes as set out in the EU Education and Training guidelines, specifically for modules 7, 9, 10-11. The list of suggested learning outcomes by the EU guidelines is comprehensive, but in summary, participants will acquire the knowledge to design and evaluate procedures involving research animals. At the end of the course participants should be able to: • Describe appropriate methods of handling and restrain, and appropriate techniques needed to carry out or plan minimally invasive procedures without anesthesia. [EU 7] • Demonstrate a broader and deeper level of understanding of legal requirements and responsibilities, ethics, animal welfare, and the 3Rs in relation to animal research. [EU 9] • Recognize principles of good experimental design of animal studies. [EU 10] • Relate principles of good scientific practice in research using animals. [EU 11]

Contents of the course: This course follows the latest EU guidelines for the education and training of persons designing procedures and projects using animals, i.e. Function B, as stated in the EU Directive 2010/63 and the Swedish legislation (SJVFS 2017:40) on the protection of animals used for scientific purposes. In particular, this course will cover the Function B-specific modules established in the European Union guidelines such as modules EU 7 (Minimally invasive procedures without anesthesia for rodents and lagomorphs), EU 9 (Ethics, animal welfare, and the 3Rs – level 2), EU 10 (Design of procedures and projects – level 1), and EU 11 (Design of procedures and projects – level 2). The course contents are based on the EU Education and Training Framework and include: • Procedures on animals. • Regulations affecting animal research. • Ethics, animal welfare and the 3Rs. • Experimental design and statistical analysis of animal studies. • Good scientific practice in animal research.

Teaching and learning activities: Face-to-face seminar lectures, e-learning, individual work (home study), group work, student’s presentations, in-class discussions and interactions.

Examination: A final exam containing short answer questions and/or multiple choice questions will be used to assess theoretical knowledge. Feedback will also be given to student’s presentations.

Compulsory elements: All parts of the course and active participation is compulsory. Missed parts must be compensated. In order to participate in the final exam, at least 70% of the lectures must have been attended. Missed parts must be compensated for in agreement with the course leader.

Number of students: 6 - 12

Selection of students: Previous education in laboratory animal science to carry out scientific procedures on animals (i.e. Function A or equivalent). This course is primarily aimed at experienced senior researchers, but postdocs and doctoral students at the last stage of their studies will be accepted. Preference will be given to doctoral students working with animal models in the last stage of their projects.

More information: Teaching days will be held in 8 separate days between approx. 9 am and 5 pm. The course includes international, national and local experts in the field of laboratory animal science. This course is FELASA-accredited and follows the specific learning outcomes for Function B modules in accordance with the EC Education and Training Framework, recently endorsed by the new Swedish L150 (SJVFS 2019:9).

Course responsible:
Rafael Frias
Comparative medicine
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Contact person:
-
Title: Basic Electron Microscopy for Cell Biologists

Course number: 3219
Credits: 1.5
Date: 2021-05-03 -- 2021-05-07
Language: English
Level: Doctoral level
Responsible KI department: Department of Cell and Molecular Biology

Purpose of the course: The students take this course in order to learn about the ways electron microscopy methods are used in the study of biological problems, and to gain knowledge in the theoretical basis of electron microscopy and some practical starting skills in electron microscopy methods.

Intended learning outcomes: After the completed course, the students understand and can explain the theoretical basis of electron microscopy techniques, and explain how different kinds of biological research problems are studied using electron microscopy techniques. The students have basic knowledge on the application of different preparation methods, and can critically analyse and relate them to cell biological research questions. The students have basic (novice level) practical knowledge on the different practical preparation techniques.

Contents of the course: The course introduces students to electron microscopy and the kind of biological problems such as different biological functions and structures that are studied using electron microscopy. The course includes training in basic methods used to do research on biological material such as subcellular structures. The course includes theoretical lectures, discussions and practical sessions on specimen preparation for conventional and cryo-transmission electron microscopy. Most important tissue processing methods for electron microscopy: fixation, dehydration, resin embedding, sectioning, negative staining of ultrathin sections. There are demonstrations on preparative methods in electron microscopy. Some Cryo-EM techniques will be demonstrated.

Teaching and learning activities: The learning and teaching activities include talks (lectures), discussions, laboratory activities and demonstrations.

Examination: The outcomes are examined through an individual quiz with multiple choice questions, and a short individual written report/reflection on how the participants can employ EM techniques in their own research.

Compulsory elements: The practical laboratories and demonstrations are obligatory. Absence from obligatory moments is regulated by instructions of the course leader.

Number of students: 8 - 12

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course will be held on the Karolinska Institutet's Solna campus. Lectures and final exam will be held in Biomedicum while practicals and demonstrations will be held in the KI 3D-EM facility (Nobels v. 12E). Designated time is 9:00 to 17:00 Monday to Friday including time for individual studies and group work. Assembly on the first day is in Biomedicum B0317 at 0900. The days typically consist of lectures before lunch and practicals/demonstrations in the afternoons. Practical and demonstrations will include vitrification, cryo-confocal imaging for object identification, cryo-FIB-SEM preparation methods for transmission electron microscopy, cryo-volume imaging using FIB-SEM and cryo-transmission electron microscopy.

Course responsible:
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https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title : Basic Human Neuroscience

Course number : 3220
Credits : 10.0
Date : 2021-02-11 -- 2021-03-31
Language : English
Level : Doctoral level
Responsible KI department : Department of Neuroscience
Specific entry requirements :

Purpose of the course : The purpose of this course is to provide students without a previous education in biomedicine/medicine knowledge in basic human neuroscience equivalent to that of the medical programme. It will satisfy the requirement for a course providing a grounding in human biology/physiology and/or pathology.

Intended learning outcomes : After the course, the doctoral student shall have obtained a thorough knowledge about the human nervous system that includes the following: 1) Macro- and microscopic organization and development of the nervous system; 2) Cellular neurobiology including signaling in the nervous system; 3) Structure and function of sensory systems underlying vision, somatosensation and pain, hearing and balance, smell and taste; 4) Structure and function of motor systems underlying the planning, initiation and regulation of movements. 5) Higher central nervous system functions including neuropsychology and regulation of behavior.

Contents of the course : The course will follow the curriculum of the Neuroscience course for medical students. The content consists of lectures, seminars and practicals that provide knowledge and understanding of nervous system organization and development, cellular neurobiology, sensory and motor functions, and higher nervous system functions.

Teaching and learning activities : Lectures, laboratory practicals, oral exam seminars, and neuroanatomy and neurohistology workshops.

Examination : Three formative oral exam seminars, one formative practical test in neuroanatomy, and a final summative written exam.

Compulsory elements : The three oral exam seminars, the practical test in neuroanatomy and the final exam.

Number of students : 1 - 8

Selection of students : Doctoral students that work in a neuroscience-related project but lack a basic education in biomedicine/medicine will get priority. The start date of doctoral studies will also be considered.

More information : The course is given in parallel with the neuroscience course in the medical programme. All teaching activities will take place in Solna Campus. To obtain a detailed schedule send an e-mail to lennart.brodin@ki.se. The course will meet the requirement for a course providing the grounding in human biology/physiology and/or pathology, but cannot be counted as a project specific course.

Course responsible :
Lennart Brodin
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Contact person : 
Title: Translational Molecular Brain Imaging in Neurodegenerative Disorders

Course number: 3231
Credits: 1.5
Date: 2021-03-22 -- 2021-03-26
Language: English
Level: Doctoral level

Responsible KI department: Department of Neurobiology, Care Sciences and Society
Specific entry requirements: No

Purpose of the course: The aim of the course is to provide theoretical and practical knowledge about molecular brain imaging techniques applied to neurodegenerative diseases. The course has a translational perspective, incorporating techniques used to visualize brain pathology in vivo by positron emission tomography (PET), and in vitro by autoradiography in post-mortem brain tissues.

Intended learning outcomes: At the end of the course the students should be able to demonstrate the ability to: 1) Understand the main brain pathophysiological features of neurodegenerative diseases. 2) Obtain an overview of the latest research findings regarding the evolution of brain pathophysiological changes across different stages of neurodegenerative diseases in relation to cognition, clinical presentation and fluid biomarkers, with a special focus on Alzheimer's disease. 3) Understand how to process, analyze and interpret data from key in vivo and in vitro molecular imaging techniques. 4) Understand how to perform translational research on the relationships between in vivo and in vitro brain pathophysiological findings in neurodegenerative diseases. 5) Apply the knowledge from this course to their own research work.

Contents of the course: This course will focus on experimental techniques used in translational molecular brain imaging of neurodegenerative diseases. It will first give the theoretical background for PET/microPET imaging, autoradiography and binding assay, and how they are used to quantify brain pathophysiological processes in neurodegenerative diseases. Then, the course will provide practical knowledge about how the in vivo and in vitro images are collected, processed and analyzed. The in vivo workshops will include practical exercises using brain imaging software for the analysis of PET images in humans, microPET images in transgenic mice, and demonstrations of brain MRI techniques as related to the analysis of PET images. For the in vitro aspect, the students will have demonstrations of radioligand binding assay and autoradiography on human brain tissue used to characterize the binding properties of the PET tracers in order to correlate these with other pathological changes in the brain.

Teaching and learning activities: The course is one week full-time and it will be organized as an integration of lectures, practical demonstrations and workshops.

Examination: All the intended learning outcomes will be assessed by a combination of written examination, written reports for the practical workshops, and oral presentation.

Compulsory elements: All parts of the course are mandatory. Absence from any of these will be compensated for by extra individual assignments provided by the course organizers.

Number of students: 8 - 25

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course will be held Monday to Friday from 9:00 to 16:00. Final course evaluation will be based on an individual written report related to the practical workshops, and the report will be due approximately one week after the last day of the course.

Course responsible:
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Laetitia Lemoine
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Title: Developing and Evaluating Complex Interventions: Effective implementation

Course number: 3232
Credits: 3.0
Date: 2021-05-20 -- 2021-06-04
Language: English
Level: Doctoral level
Responsible KI department: Department of Neurobiology, Care Sciences and Society
Specific entry requirements: No specific entry requirements.

Purpose of the course: The aim of this course is to introduce the theory and practice of developing and evaluating complex interventions, or interventions in complex systems to facilitate effective implementation. This will include different implementation research methods used for developing new interventions, how to develop an intervention 'logic model', and examples how to work with policy-makers, health professionals and the public to co-produce interventions. It will also provide a working knowledge of the key implementation frameworks and methodologies currently used to evaluate complex interventions, including feasibility studies, process evaluations and a range of outcome evaluation designs.

Intended learning outcomes: After the course, the participants should be able to:

- Critically compare the strengths and limitations of different methodologies for intervention development and implementation
- Identify appropriate methods for co-producing interventions involving policy makers, practitioners and the public
- Understand the value of feasibility studies prior to effectiveness evaluation and considerations for using these to decide if and how to proceed to full evaluation
- Understand a range of different approaches for effective implementation that is evaluating complex interventions, in terms of process and outcomes, and the types of interventions they are suited to

Contents of the course: The course will address the central aspects of complex intervention development and evaluation, including:

- The intervention development process, including frameworks for intervention development and the role of existing evidence in intervention development
- Issues to think about when planning a feasibility study and consideration of progression from feasibility testing to effectiveness testing
- An introduction to Randomised Controlled Trials (RCT), challenges and limitations of large-scale RCTs and how they can sometimes be addressed
- Evaluation options when randomisation isn't possible, including examples of natural experimental methods for evaluating policy interventions
- Understanding intervention process, including key issues to think about when planning a process evaluation

Teaching and learning activities: The course will include a mix of web-based and in-person taught sessions, and group work activities in which knowledge from the taught sessions can be applied to real-life examples of the participants’ work. Taught sessions include various examples of studies that have been carried out from a public health perspective, while group work activities will support students in applying their methodological principles to other health research contexts.

Examination: Examination will involve an oral presentation and a written assignment. The oral presentation will focus on the development of an intervention logic model and its rationale. The written assignment will then focus on developing a plan for evaluating this hypothetical intervention, including assessment of effectiveness and process.

Compulsory elements: The participants are expected to participate in all course sessions. Absence will be compensated in agreement with the course director.

Number of students: 8 - 20
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: About the international lecturers: Jemma Hawkins and Graham Moore at the Centre for the Development and Evaluation of Complex Interventions for Public Health Improvement (DECIPHer)
https://www.cardiff.ac.uk

Course responsible:
Ann Rudman
Department of Clinical Neuroscience
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Contact person:
Susanne Guidetti
Institutionen för neurobiologi, vårdvetenskap och samhälle

Susanne.Guidetti@ki.se
Title: What is Life? The Future of Biology

Course number: 3234
Credits: 2.5
Date: 2021-02-17 -- 2021-06-09
Language: English
Level: Doctoral level
Responsible KI department: Department of Microbiology, Tumor and Cell Biology

Specific entry requirements:

Purpose of the course: The understanding of life and of fundamental life procedures is to be found in the cross-section between basic physics, chemistry, biochemistry and Darwinian evolution. The problems and questions were formulated already 75 years ago by the Nobel prize winner in physics Erwin Schrödinger with his book "What is life?". During the subsequent decades dramatic advances have been made depending on the discovery of DNA and the unveiling of metabolic processes. However, the fundamental issues about origin of life and the ultimate driving forces remain largely unanswered. This broad introductory course aims at providing an understanding of the fundamental problems of life from a biology point of view, how they can be approached and studied, and how new tools and technologies expands these possibilities. Further, the course will give students an introduction to complex systems (biocomplexity) and network theory.

Intended learning outcomes: After completing the course, the student will be able to:
- Understand the dominating theories for origin of life
- Understand the components of evolutionary theory and its explanatory power
- Know about Schrödinger's historical theory on "What is Life" - Present definitions of Life
- Describe the residing principles for organization of biological systems
- Understand how complex systems and network theory relate to the cell's biology
- Know about self-organizing systems
- Discuss the fundamental role of water in cellular molecular biology
- Know about the role of computer simulations in modern biology
- Know about the role of quantum physics and thermodynamics in molecular and cellular biology
- Discuss how genetic information can be converted to mechanical or electric force in biological systems

Contents of the course:
- Definitions of Life
- Origin of life, residing theories
- The components of Darwins evolutionary theory, and what it can explain
- Prebiotic, chemical evolution
- Fundamental organization of biological systems
- Self organizing systems
- Theories of complex systems and networks, applications to cell biology
- Water in cellular biology
- Quantum physics and thermodynamics in biology
- The use of computer simulations in biological systems

Teaching and learning activities: The teaching activities will be based on lectures and workshops, in which the students will actively interact with teachers and each other. Lectures by leading international invited speakers are mixed with those of local experts. The students receive recordings of all invited lectures for further self-studies at home. Literature studies are followed up by seminars with student presentations and discussions.

Examination: The course assessment is based on two activities 1) student performance during interactive classes and workshops where the student is expected to actively participate in exercises, 2) a written examination with essay questions mostly focused on understanding and discussing problem solutions.

Compulsory elements: Lectures, workshops and the literature study presentation seminars are mandatory. Some activities can be compensated for with an extra written literature study in agreement with the course organiser. The student cannot participate in the final assessment when more than 20% of the activities are missed.

Number of students: 8 - 20

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: Ten mandatory sessions incl lectures, invited speakers (like Stuart Kauffman, Laszlo Barabasi, Peter Csermely, Nick Lane, Jim Al-Kahlili), interactive discussions after lectures, discussions on the course books. On average two sessions per month, afternoons in lecture room at Biomedicum, KI Solna Campus, between 14.30 - 17, usually Wednesdays.

Course responsible:
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Stockholm

Contact person: -
Title : Advanced Scientific Writing

Course number : 5227
Credits : 1.5
Date : 2021-04-19 -- 2021-04-23
Language : English
Level : Doctoral level

Responsible KI department : Department of Women's and children's health
Specific entry requirements : Knowledge corresponding to basic doctoral courses in scientific writing at KI and some experience of scientific writing.

Purpose of the course : This is an advanced course in scientific writing, specifically designed for post docs and PhD students in the later part of their education. The aim is to improve the participants’ ability to write, revise and review original scientific articles.

Intended learning outcomes : After passing the course, the participant will: - have a better understanding of how to write an original scientific article, including use of the proper structure and language - be aware of and, thereby, able to avoid the common mistakes involved in writing scientific articles - have the ability to offer constructive criticism regarding these matters to other scientists (e.g., co-workers, as peer reviewers for journals) - be able to assess constructive criticism of their manuscripts from other scientists and revise accordingly

Contents of the course : This is an advanced course in scientific writing that requires prior knowledge and experience in writing research articles. The participant will be writing and revising manuscripts based on their own research (written, at least in part, before the course begins) as well as peer reviewing the manuscripts of other course participants. The teachers will focus on giving feedback in great detail on the scientific articles of the students and also guiding the revision of the manuscripts after the review sessions.

Teaching and learning activities : Lectures, individual writing and revising of manuscript, individual and group peer reviewing of the manuscripts of other course participants, group discussions including feedback from the teachers.

Examination : Writing and rewriting a manuscript based on the comments and feedback from the other course participants and teachers, thoughtful peer reviewing of the manuscripts of other course participants, active participation in group exercises.

Compulsory elements : All scheduled teaching, unless stated otherwise or the participant informs the teachers in advance of an acceptable reason for not being present. Absence can be compensated for by individual work specified by the teachers or in connection with the next time the course is taught.

Number of students : 8 - 12

Selection of students : Selection will be based on 1) personal motivation including prior experience of scientific writing 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 3) start date of doctoral studies (priority given to earlier start date)

More information : This is an advanced course on scientific writing for Post Docs and PhD students in the later part of their education. Focus will be on writing and revising a manuscript based on your own research results with a lot of individual coaching. In order to participate in the course, a requirement is to have a manuscript draft to work on and basic knowledge in scientific writing. The course will take place in a venue in central Stockholm.

Course responsible :
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Contact person : -
Title: Oral Presentation of Own Research

Course number: 5231
Credits: 1.5
Date: 2021-05-24 -- 2021-05-28
Language: English
Level: Doctoral level

Responsible KI department: Department of Women's and children's health

Specific entry requirements: Having research results to present outside the research group.

Purpose of the course: The purpose of the course is to build skills and increase the participant’s confidence in presenting own research results.

Intended learning outcomes: After passing the course, the participant will:
- be able to structure and build compelling presentations based on own research results
- have skills in how to consistently deliver in an engaging manner
- be capable of building instant rapport and get an audience on their side every time
- understand the best use of voice, body language and posture
- be able to make their mark and be remembered
- understand how to deal with challenges during presentations, e.g. hostile audience members, difficult questions, technology problems, nervousness and blacking out
- have knowledge of a broad variety of presentations styles in order to find their own
- be able to use supportive media
- be able to design presentation slides that support the message

Contents of the course: This is an advanced course in presentation skills requiring prior experience of presenting your research specifically targeting post docs and PhD students in the later part of their education. The course is highly personalized, tailored to the specific needs of the individual participants. A variety of techniques will be presented and tried out to enable the participants to develop in their own way to become more professional at presenting, yet remaining authentic. The course includes:
- presentation structure
- presentation techniques
- dealing with the audience
- overcoming challenges, e.g. hostile audience members, questions, nervousness, technology issues
- body language, voice and presence on stage
- filming of an elevator pitch, which the participants get to keep after the course to use e.g. on a webpage
- how to design successful power point presentation slides
- how to use supporting media

Teaching and learning activities: Lectures, group work, exercises, filming.

Examination: Presentations and participating in exercises during the course.

Compulsory elements: All scheduled teaching and group work is compulsory. Absence can be compensated for during individual assignments or during the next course occasion.

Number of students: 8 - 12

Selection of students: Selection will be based on 1) Personal motivation including previous experience and/or relevant courses on the topic 2) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 3) start date of doctoral studies (priority given to earlier start date)

More information: Welcome to apply for PhD course 5231 Oral presentation of your own research! This is a presentation techniques course for PhD students, who have some previous experience of presenting their research results and want to further improve their skills. Focus will be on presenting your own results in different formats and individual coaching. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.hildenbrand.wachtmeister@ki.se or phone: 0707890607

Course responsible:
Anna Hildenbrand Wachtmeister
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Contact person:
-
### Title: Behavioral Analysis in Rodents: Classic and Novel Approaches

**Course number:** 5239  
**Credits:** 1.5  
**Date:** 2021-05-03 -- 2021-05-07  
**Language:** English  
**Level:** Doctoral level  
**Responsible KI department:** Department of Neuroscience  

**Specific entry requirements:**

**Purpose of the course:** The course is aimed at students working with or interested in behavioral analyses in rodents. The purpose of the course is (1) to give the students a solid understanding of basic behavioral tests to use for the phenotypic characterization of rodents, with special emphasis on neurodegenerative and psychiatric diseases, and (2) allow the students to acquaint themselves with modern, advanced technical procedures for behavioral analysis.

**Intended learning outcomes:** At the end of the course the participants should be able to (1) know how to choose appropriate rodent behavioral models to best address their specific research question, (2) interpret the results of previous studies, critically evaluate protocols and adapt them to their own research, and (3) understand the advantage offered by recent methodological breakthroughs to the analysis of behavior.

**Contents of the course:** The course will provide the knowledge necessary to apply advanced methodologies to the study of behavioral paradigms utilized for the phenotypic characterization of rodent models of neurodegenerative and psychiatric diseases, as well as for the evaluation of novel drugs. During the course, the students will learn how to analyze classic behavioral paradigms using state-of-the-art approaches including deep learning image analysis, optogenetics end point measurements and automated analysis of multiple behavioral outputs using the IntelliCage system. The course will include a practical part, where students will visit the Animal Behavior Core Facility at KM-B and get hands-on experience on the equipment and the most common protocols used. The students will also learn how to design experiments, interpret and analyze data.

**Teaching and learning activities:** The course is partly theoretical, partly practical, with integrated lectures, laboratory demonstrations and practical sessions. During the practical sessions, the students will be divided in groups, which will be asked to design a behavioral study in a particular rodent model of disease, with data collection and final analysis.

**Examination:** A short answer and multiple-choice examination will be used to evaluate if the students have reached the required knowledge to successfully pass the course.

**Compulsory elements:** All sessions and activities are necessary for the students to successfully complete the course. When absences are justified, missed parts of the course may be compensated in agreement with the course director.

**Number of students:** 8 - 25

**Selection of students:**

**More information:** The course will take place from Monday to Friday from 9:00 to 17:00 in Biomedicum. If not possible, the course will be held online. The course includes lectures on how to apply classical and advanced behavioral technologies to different mouse models of neuropsychiatric (schizophrenia, affective disorders, autism) and neurodegenerative diseases (Parkinson's disease, Alzheimer's Disease, Multiple Sclerosis). Dr Vootele Voikar (University of Helsinki) will teach the principles of Intellicages system, with a theoretical introduction followed by practical demonstration of the equipment in the class room (if possible). Optogenetics approaches combined to behavioral tracking will be also presented. A full day will be dedicated to deep learning image analyses as new tool to quantify complex movements in mice with practical demonstration of the software in the class room. If possible, at the end of the lectures on day 5 the students will be divided in groups of 4-5 and will visit the Animal Behavior Core Facility at KM-B. During the visit the students will have the possibility to get hands-on on equipment and methods showed in the classes. The invited speakers are worldwide recognized experts, both from KI as well as from abroad.

**Course responsible:**
Silvia Maioli  
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**Contact person:**
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Qian Yu  
Institutionen för neurovetenskap  

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Title : Implementation Science – Implementation Leadership in Healthcare and Social Services

Course number : 5249
Credits : 5.0
Date : 2021-02-01 -- 2021-04-18
Language : English
Level : Doctoral level

Responsible KI department : Department of Neurobiology, Care Sciences and Society

Specific entry requirements :

Purpose of the course : The course aims to increase the participant’s personal and scientific leadership capabilities regarding implementation research and enhance the opportunities to build international networks of learning with other course participants, teachers and researchers.

Intended learning outcomes : At the end of the course the student needs to be able to:

• Demonstrate specialized personal and scientific leadership skills to influence implementation, and to support the development of these skills in other participants.
• Evaluate different aspects of contexts (macro, meso and micro level) and their potential to affect implementation research and practice.
• Critically appreciate how to design an effective implementation research project in order to have an impact on practice and policy.
• Demonstrate understanding of the challenges of leading implementation practice in and across health and social services.

Contents of the course : The course covers subjects related to implementation science that are necessary for participants to successfully conduct implementation research and perform implementation practice. This includes the following topics: implementation leadership, macro, meso and micro context prerequisites, implementation strategies, and evaluation.

Teaching and learning activities : Students will work individually and collectively. To enable transnational learning, the course will utilise a Technology Enabled Learning (TEL) strategy. The course will provide lectures, seminars, peer reviews and workshops online. Students are expected to undertake self-directed learning, which include reading, critical analysis and assignments. The student will use an implementation-oriented project as a learning case. All teachers in the course are active researchers in the field of implementation science and collaborative research.

Examination : The student’s knowledge and skills will be assessed in relation to the expected learning outcomes. Examination will involve an oral presentation and a written assignment. The written assignment will focus on developing a plan for an implementation research project, which the student will present and discuss in a seminar.

Compulsory elements : The participants are expected to participate in the teaching and learning activities in the course. Absence will be compensated in agreement with the course director.

Number of students : 10 - 30

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : The course is provided within the EISEN network (European Implementation Science Education Network). More information about the EISEN network, please follow this link
https://prosjekt.hvl.no/eisen/<br>Course days: February 1-2: Introduction to the course, lectures and group work. February 22-23: Lectures, group work and discussions. March 22-23: Lectures, group work and discussions. April 13: Examination seminar. April 18: Final day for submission of examination

Course responsible :
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Contact person :
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Title: Psychoneuroimmunology

Course number: 5252

Credits: 4.5

Date: 2021-03-15 -- 2021-04-01

Language: English

Level: Doctoral level

Responsible KI department: Department of Clinical Neuroscience

Specific entry requirements:

Purpose of the course: Psychoneuroimmunology is the study of the functional and bidirectional relationships between the nervous system, the endocrine system, the immune system and behavior. The main purpose of the course is to provide the student with an overview of present knowledge in this field and to offer an opportunity to apply a crossdisciplinary mechanistic perspective across physiological and pathological conditions. The students are given good opportunities to network and to interact with leading national and international researchers in a quickly developing area. We also wish this course to be an opportunity to interact with other PhD students with overlapping research interests.

Intended learning outcomes: At the end of the course, the doctoral student will be able to: - Describe the essential concepts in psychoneuroimmunology, the basic mechanisms by which the nervous, the endocrine, and the immune system communicate, and why behavior is relevant in this communication. - Critically comment on the literature in the field of psychoneuroimmunology. - Choose an adequate design for research in psychoneuroimmunology.

Contents of the course: An overview of the essential concepts and the research in the different areas of psychoneuroimmunology will be provided. The adaptive and pathological consequences of immune activation on brain functions and behavior, including fatigue, pain, mood regulation, social behavior, and neuropsychiatric symptoms as well as how the immune system is modulated by brain inputs, such as during stress, will be described. In addition, the course will give an opportunity to understand how behaviors can be proactively activated to improve overall defense against microbes. Models/tasks used in psychoneuroimmunology research will also be the subject of a lecture. The course will additionally include journal clubs where specific papers will be discussed, and time to prepare the written and oral presentations of a mock research project.

Teaching and learning activities: - Lectures, which will provide an overview of the essential concepts and the research in the different areas of psychoneuroimmunology for the use of the doctoral student in the preparation of the examination assignment (written and oral presentations). - Journal clubs. - Meet-the-experts session, where the students will have the opportunity to meet and interact with leading national and international researchers in psychoneuroimmunology. - The doctoral student has access to supervision in the preparation of the written examination. - The oral presentations will take place during a seminar in the end of the course.

Examination: The examinations will consist in a written (2-3 pages) and oral presentation of a mock research project that is well motivated in background of the current state of knowledge/lack of knowledge in psychoneuroimmunology. Each student need to show that all intended learning outcomes have been reached in order to pass the course.

Compulsory elements: - Participation in the lectures. Absence of max 25 % can be compensated for by additional tasks in agreement with the course leader. - Written and oral examination - Participation in the examination seminar. In case of absence from the scheduled examination seminar, another occasion for examination can be arranged as agreed upon with the course leader.

Number of students: 8 - 40

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: The course will include lectures, journal clubs, and discussions that will be held between 08:30-17:00 (+/- 1h). Several international lecturers expert in Psychoneuroimmunology will be invited. There will be a "meet-the-PNI-expert" session where the students can meet "face-to-face" with some of the lecturers from the course. The students will have several days dedicated to prepare for the final examination, when the course organizers will also be available. Whether the course will be provided physically or online will depend on the pandemic situation, and of the recommendations from the Public Health Agency and Karolinska Institutet. This course is given jointly by the doctoral programmes Allergy, immunology and inflammation (Aii) and Neuroscience (Neuro). See: https://staff.ki.se/doctoral-programmes. This course has previously been given with course number 2571.

Course responsible:
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Julie Lasselin  
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Title: Human Physiology - distance course

Course number: 5253  
Credits: 3.0  
Date: 2021-04-19 -- 2021-04-30  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Physiology and Pharmacology  
Specific entry requirements:  
Purpose of the course: KI is a medical university with research and education in medicine and health. All PhD students have to obtain basic knowledge regarding the human body in health and disease in case they lack basic higher education knowledge in the field of medicine. The aim of the course is to give PhD students without a medical background a basic overview and introduction to human physiology. The students will gain a basic understanding of how the human organ systems function and interact under normal conditions. The content covered in this course will be useful for further studies where knowledge about human biology is of value and can hopefully add value to the PhD project and beyond.  
Intended learning outcomes: After completing the course, the student will have gained a basic understanding of how the human organ systems function and interact under normal conditions. More specifically, the student will be able to: - Demonstrate knowledge and understanding of basic functions and interactions between organ systems in the human body. - Demonstrate a critical and scientific approach to literature sources for the different course tasks.  
Contents of the course: The course will cover the following areas within human physiology: - Overview of cellular and integrative physiology - Basic anatomy - Biochemistry and cell biology - Nervous system - Endocrinology - Digestive system - Cardiovascular physiology - Renal physiology - Respiration - Basic immunology  
Teaching and learning activities: The course is given as a distance course on the course platform used at KI and through online seminars and lectures. For each area there will be recorded lectures, study questions, quizzes and live occasions. There will also be asynchronous group discussions and seminars.  
Examination: The learning outcomes are examined with a project presentation and a written online test. Students that are absent from the examinations or do not obtain a passing grade in the first examination will be offered a second examination.  
Compulsory elements: The students need to participate in group discussions and send in seminar assignments during the course. If absent or if assignments are not sent in, a new deadline will be issued.  
Number of students: 15 - 20  
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)  
More information: The course will be given through Zoom and Canvas, with both live occasions and own studies in between.

Course responsible:
Jessica Norrbom  
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Jessica.Norrbom@ki.se

Contact person: -
Title: How to Conduct Systematic Reviews and Meta-Analyses

Course number: 5254
Credits: 3.0
Date: 2021-03-08 -- 2021-03-24
Language: English
Level: Doctoral level
Responsible KI department: Department of Clinical Neuroscience
Specific entry requirements: Students need to have basic knowledge of biostatistics (corresponding to KI's Basic Course in Medical Statistics or Biostatistics I) and it is recommended to have basic knowledge in epidemiology (corresponding to Epidemiology I course).

Purpose of the course: Meta-analyses are becoming the gold standard method of reviewing and summarising the scientific literature, and they have contributed greatly to the current body of scientific knowledge. This course aims to introduce the concepts and procedures of systematic reviews and meta-analyses, and will help applicants to get started with their own study.

Intended learning outcomes: At the end of the course the students should be able to: 1) Understand and demonstrate the value, principles and the different concepts related to systematic reviews and meta-analyses, in particular compared to other types of studies (incl. narrative reviews, original research); 2) Identify the strengths, limitations and pitfalls of systematic reviews and meta-analysis; 3) Independently formulate study hypotheses, and plan and generate a study protocol to perform a systematic review and meta-analysis, justifying the selection of the eligible studies and statistical methodology; 4) Apply basic methods of meta-analyses; 5) Critically reflect on other students individual project work and provide feedback in a scientifically constructive way (peer-review); 6) Interpret and critically evaluate scientific studies relevant to the course content.

Contents of the course: The course is designed for PhD students, in particular those who are at an early stage of their research education, and those with an interest in conducting systematic reviews and meta-analysis. The content of the course is as follows: 1) Basic concepts in systematic reviews and meta-analyses, 2) strengths, problems and limitations of systematic reviews and meta-analyses, 3) How to write a study protocol for a systematic review, 4) How to perform a systematic literature search (including a practical seminar organised by Karolinska Institutet library), 5) Data-extraction and quality assessment of included studies, 6) Statistical methods used in meta-analyses and interpretation, 7) Examination. This is a hands-on course, covering theoretical concepts and discussion of strengths, limitations and problems of systematic reviews and meta-analyses. We will also discuss publication guidelines, strategies to identify eligible studies, quality assessment of research papers, how to use Endnote to facilitate the systematic search, Excel for data-management, and different statistical methods and programs.

Teaching and learning activities: Interactive lectures, seminars, individual article review, group discussions, practical sessions (one on systematic literature search, one on statistical methods) and homework tasks will be used. The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts. Therefore, much of the focus of the course is on the individual project where students are required to develop a full study protocol including several important aspects covered in the lectures, peer assessment, article reviews and group discussions. Students will also peer-review each other's projects and this will form the basis for the final examination seminar. Throughout the course, the students will work on an individual project and will have to peer-review the project of another student. Further, students will critically review and discuss relevant scientific articles. There will be several group discussions with other students and experienced teachers, with a focus on peer-assessment (discussing each other's projects), and the lectures are interactive allowing for critical discussions.

Examination: 1) Individual project work: To develop a written comprehensive yet concise study protocol including several important aspects as discussed during the course; 2) Peer-review of other students' projects followed by an oral presentation of their own project and opposition of other students projects during the group examination; 3) Critically review scientific articles relevant to the course content. To pass the course, the student has to show that all intended learning outcomes have been reached.

Compulsory elements: Compulsory attendance includes the scheduled lectures and seminars (i.e. full first week of the course + exam). One is required to come well prepared for each seminar (see reading list). Absence will need to be replaced by individual assignments following discussion with the course coordinator, e.g. article reviews, with written or oral follow-up. Attendance is also compulsory for the examination, which includes discussion of the study protocol of each student + opposition for another student.

Number of students: 18 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). Since a basic understanding of biostatistics is required, and a basic understanding of epidemiology is recommended, please state relevant experience.

More information: The course will start with one intense week (5 full days) of mandatory lectures, discussions and practical sessions (March 8th to March 12th, 2021) - attendance is mandatory for all 5 full days. <br> March 17th (kl. 09-12) there will be an "Open House" to get direct feedback from the supervisors/teachers on your study project (attendance optional). <br> March 24th (kl. 09-13) is the exam day, which is again mandatory. <br> Absence during the mandatory sessions needs to be motivated and will be replaced by a home-assignment after discussion with the course organiser. <br> The course also requires preparation at home before the course starts and during the course. <br> The lectures will be held at KI campus Solna. <br> This course has previously been
given with course number 2790.

Course responsible:
Anna Sidorchuk
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Contact person:
Title: Early Child Development: Extended Interactions Between Neural Networks, Body and Environment

Course number: 5255
Credits: 1.5
Date: 2021-03-22 -- 2021-03-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: Course #3220 Basic Human Neuroscience at KI or corresponding knowledge.

Purpose of the course: This 5-module program (one per day) builds on top of current best research and understanding of neurodevelopment in early childhood as a process that emerges from the interplay between brain networks, body, and environment. As well as the latest advancements in their implications for atypical developmental trajectories, clinical assessment methods, and early intervention strategies. Understanding neurodevelopment in children during the first years of life requires zooming out and considering how brain functions are built and how experience mediates this process. The main purpose of this course is to provide students with the fundamental concepts of early child neurodevelopment as a process that emerge from the interplay between extended brain-body networks into the world. Besides, the course will focus on the importance of early clinical assessment of neurodevelopment, follow-up, and intervention strategies in high-risk children.

Intended learning outcomes: By the end of the course the student should be able to: • Demonstrate critical understanding of how early child neurodevelopment emerges from the interplay between different modes and different time scales of extended brain-body networks into the world. • Apply theory to practice demonstrating advanced reasoning skills in the assessment of how brain functions are built and how experience mediates this process. • Describe how clinical follow-up programs, early interventions, and policies can support children’s development. • Analyze how extended network interactions at one-point influence network interactions at subsequent points and how this knowledge can be translated into educational programs that can improve outcomes in all children.

Contents of the course: This course will cover 5 modules over 5 days; 1) Brain networks development: continuous feedback from the body and the environment; 2) From motor abilities to abstract thinking; 3) Connections between aberrant developmental processes and neurodevelopmental disorders; 4) Early evaluation, follow-up and repair strategies; 5) Future directions: advanced neuroimaging data analytic approaches and integration with biological measures.

Teaching and learning activities: Lectures by invited national and international experts on the field, seminars, work in groups, students’ presentations. There will also be time every day for literature review and preparation for the examination seminar.

Examination: The students should demonstrate their knowledge and critical understanding about the intended learning outcomes stated above in a concluding examination seminar in the end of the last day and in discussions during the course. They should also reflect on the aspects that are relevant for their own research in discussions.

Compulsory elements: All lectures and seminars are compulsory. Absence from a lecture or seminar can be compensated for by a written assignment.

Number of students: 8 - 18

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course will be held on Monday-Friday 8 hours/ day including approximately 2 hours for individual work/preparation

Course responsible:
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Contact person:
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Nelly Padilla
Institutionen för kvinnors och barns hälsa
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Title : Basic tumor histopathology

Course number : 5275
Credits : 1.5
Date : 2021-03-15 -- 2021-03-19
Language : English
Level : Doctoral level

Responsible KI department : Department of Oncology-Pathology
Specific entry requirements :

Purpose of the course : The core of this course is based on microscopic sessions tutored by expert pathologists. This approach gives an opportunity to the participants to learn the morphology/histology of different human cancers and the corresponding normal tissues and to get understanding of the complex histology of human cancers.

Intended learning outcomes : At the end of the course the participants should be able to: - Distinguish normal from malignant cells in tumor tissues and be acquainted with the morphology/histology of the different tumor types, differentiation stage and tumor grade. - Recognize cellular processes in the tumor tissue and its microenvironment like mitosis, cell proliferation, pleomorphism, lineage differentiation, tumor stage, necrosis, apoptosis, neural and vascular invasion, vascularisation. - Understand ethical issues and legislation concerning biobanking and practical issues on tumor handling.


Teaching and learning activities : The first day will include an introductory lecture covering general aspects of tumor morphology/histopathology and grading (approx 6 hrs). In the following days we will review one tumor diagnosis per day organized in 45 min introduction, followed by 2 hrs interactive microscopy sessions using a multi-headed microscope and a digital screen, guided by pathologists expert in each field. Home exercises consisting on digital images of tumors together with the clinical history are given at least twice to the students for training. For distribution of files and examination we use OneDrive.

Examination : The students will get different case studies including digital images from tumors tissues and their clinical history via the OneDrive account of the course. The students will then examine the cases and provide a written description of the relevant observations leading to a correct diagnosis and answers. Images and questions have been provided by each teaching pathologist. When appropriate, anti-plagiarism tools will be used according to the guidelines from the Committee for Doctoral Education at KI.

Compulsory elements : 100% attendance is recommended, due that each session is exclusive and cannot be compensated for later on. The student will be asked to review the issue presented in case of absence in a session.

Number of students : 8 - 30

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : This course was previously given with course number 3115.

Course responsible :
Johan Hartman
Department of Oncology-Pathology
Johan.Hartman@ki.se

Contact person :
Title: Animal Research: Critical, Challenging and Creative Thinking

Course number: 5277
Credits: 1.5
Date: 2021-06-09 -- 2021-06-10
Language: English
Level: Doctoral level
Responsible KI department: Comparative medicine

Specific entry requirements: Previous education in how to plan, conduct, analyze and report scientific research involving the use of animals, animal derived material or animal derived data (ideally Function B or equivalent training, and some practical research experience e.g. Function A or equivalent).

Purpose of the course: This course is designed to support doctoral students, and young researchers to enhance the reproducibility of their research through the development of critical, challenging and creative thinking skills. Participants will be encouraged to review how they plan, conduct, analyze and communicate their research activities, as well as to reflect upon the contribution they make locally, nationally, or internationally within the scientific/academic community, and Society in general. It is intended for individuals whose research involves the use of animals, animal derived material or animal derived data irrespective of whether the work requires licensed approval.

Intended learning outcomes: Participants will acquire the skills to critically review, plan, conduct, disseminate and communicate research involving the use of animals, animal derived materials and/or animal derived data in accordance with contemporary good practice. At the end of the course participants should be able to: • Communicate their research in an open and transparent manner to both scientific and lay audiences, with an informed understanding of the range of societal opinions that exist on this topic and the ethical issues that this type of research gives rise to; • Recognise what responsible, ethical, good practice research conduct means in the context of their individual research project, and why it is important to maximise the impact, quality, reproducibility and reliability of their research data; • Design and plan their experiments using a range of tools and resources that are available to support them to be innovative, think critically, challenge the status quo and implement best practice; • Understand what good animal welfare means and how it impacts upon research quality and reproducibility; • Consider all the factors that impact upon the lifetime experience of animals used in research, and reflect on how the 3Rs can be effectively implemented during the course of their own research project/activities.

Contents of the course: • Session 1: An introduction to animal use in research. This includes the historical context for animal use in research, the range of Societal viewpoints on the use of animals in research and ethical theories unpinning them, and discussion of how and why some research becomes controversial. Following this session participants will write and receive feedback on a non-technical summary of their research project. • Session 2: Animal research integrity. This includes: discussion of the research framework as it relates to the responsible use of animals in bioscience research; expectations regarding openness and transparency and good practices relating to the dissemination of research outputs. Participants will discuss the culture of research and real-life examples of non-compliance, ethical issues and common misconduct issues. • Session 3: Common pitfalls in experimental design, how to identify and avoid them. This includes: topics to help maximise the robustness, reliability and reproducibility of results (how to maximise statistical power, sources of bias, identifying the experimental unit, hypothesis testing); a brief introduction to systematic reviews and meta-analysis; plus tools and resources that are available to support the effective planning and reporting of research involving the use of animals, including the PREPARE and latest ARRIVE 2.0 guidelines. During this session participants will use the latest ARRIVE 2.0 guidelines to assess a research paper, what is/is not reported, and how this impacts the results, conclusions, and study reproducibility. • Session 4: Introduction to animal welfare and the 3Rs in practice. This includes: what is animal welfare and why it is important; factors to consider throughout an animal’s lifetime experience; potential sources of uncontrolled variables and confounding factors; and an introduction to concepts such as the refinement loop and marginal gains. Participants will then write and receive feedback on a draft experimental protocol to apply what they have learnt, identify opportunities to implement the 3Rs and any additional training/mentoring needs they may have.

Teaching and learning activities: Face-to-face seminar lectures, or live online webinar sessions, individual work (home study), group work, class discussions and interactions.

Examination: The students written assignments will be assessed. Written feedback will be given. Each participant will also be offered 1:1 meeting following the course conclusion to discuss the implement of their learning and any additional training or support they may require.

Compulsory elements: All parts of the course and active participation is compulsory. Missed parts must be compensated. In order to complete the course all four sessions must be attended and written activities completed.

Number of students: 8 - 16

Selection of students: Previous education in how to plan, conduct, analyze and report scientific research involving the use of animals, animal derived material or animal derived data (ideally Function B or equivalent training, and some practical research experience e.g. Function A or equivalent). This course is primarily aimed at doctoral research students, but junior postdocs and young researchers will be accepted. Preference will be given to doctoral research students working with animal models for their projects.

More information: Face-to-face lectures (or live webinars) will be held on 2 separate days between approx. 9 am and 5 pm. The course tutors are international experts in the field of laboratory animal science.
**Course responsible:**
Rafael Frias
Comparative medicine
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**Contact person:**
-
Title: Genomic Instability – for better or worse

Course number: 5278
Credits: 1.5
Date: 2021-05-17 -- 2021-05-21
Language: English
Level: Doctoral level
Responsible KI department: Department of Oncology-Pathology
Specific entry requirements:

Purpose of the course: The course aims at providing the students with a comprehensive overview of Genome instability and its role in cancer development and progression. Genome Instability can on one hand be beneficial, creating possibility for natural selection during evolution. On the other hand, it can lead to severe consequences when the level of genomic alterations causes development of Cancer. Mutations and other deviations of DNA can be the consequence of inefficient DNA repair processes or alternatively, through genotoxic stress due to transcription, replication and chromatin modification processes causing DNA repair overload. The students will at the end of the course have become acquainted with the DNA damage response and the different mechanisms involved in sensing, tolerating and repairing DNA damage and how this is exploited in cancer treatment. The student will gain a deeper understanding of how the DNA damage response connects to different cellular responses such as chromatin remodeling and epigenetics, as well as transcription, replication, cell cycle progression and apoptosis. Possibilities for design of anti-cancer treatment both with regards to DNA damaging chemo- and radiotherapy as well as emerging treatments targeting key players in the DNA damage response (targeted therapies) will be discussed and applied to the students own research projects.

Intended learning outcomes: After passing the course, students will:
- have gained a comprehensive overview of genome instability and its role in cancer development and progression - be able to discuss and explain different mechanisms involved in sensing, tolerating and repairing DNA damage and how this is exploited in cancer treatment - understand the mechanism of action of DNA damaging inducing anti-cancer treatments and drugs targeting the DNA damage response - be able to describe and understand state-of-the-art strategies for targeting the DNA damage response in cancer - have gained knowledge about different molecular biology assays to study DNA repair and replication in cells and how this can be applied in their own research - be able to understand and theorize about how the DNA damage response connects to different cellular responses such as chromatin remodeling and epigenetics, as well as transcription, replication, cell cycle progression and apoptosis and apply this knowledge in their own research projects

Contents of the course: The course will cover the topics stated in the learning outcomes.

Teaching and learning activities: The course consists of lectures and seminar by experts in their fields and group exercises such as journal clubs. To promote active learning, lectures and seminars are followed by discussions between the students and the speakers and the students will apply knowledge from the course in their own research projects in the examination.

Examination: To pass the course the students must show that they have reached the learning outcomes of the course. The course assignment will consist of: 1) an individual oral presentation about integrating topics from the course in the students' own research projects in line with the intended learning outcomes of the course. 2) the students are expected to ask questions on each others presentations and be able to discuss and answer questions from fellow students and course leader in line with the intended learning outcomes of the course.

Compulsory elements: Attending the lectures, seminars group exercises and the examination seminar are compulsory. Absence can be compensated by other activities after discussion with the course leader.

Number of students: 8 - 30

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: The students will be provided in advance with relevant literature (review articles, original publications). Teaching material will also be handed out during the course. The course will be given at the Solna campus.

Course responsible:
Nina Gustafsson
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Contact person: -
Title : Coronary Heart Disease: Present and Future Perspectives

Course number : 5281
Credits : 1.5
Date : 2021-03-22 -- 2021-03-26
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna

Specific entry requirements :

Purpose of the course : The course aims to give the student an overview of the state of art of research on ischemic heart diseases and focuses on the areas where implementation is needed to answer relevant research questions.

Intended learning outcomes : The participants should after the course: 1. Have a general knowledge of the epidemiology of ischemic heart disease 2. Understand the pathophysiology of ischemic heart disease 3. Know the cardinal clinical signs of cardiac ischemia 4. Discuss ischemic heart disease in the connection to other common cardiovascular diseases 5. Be able to identify the knowledge gaps in the research field

Contents of the course : We will discuss the factors affecting the risk for coronary heart disease across selected low and high income settings; the cardinal symptoms and the underlying mechanisms; novel and emerging cardiac biomarkers; established and novel preventive measures. Finally we will address the gaps in knowledge in this research field.

Teaching and learning activities : The course will be delivered as a full-time course during five consecutive days. It will consist of lectures, time for own reading of the literature and preparing the course tasks, group works, oral presentations/discussions and a final exam.

Examination : Formative assessment by peers and lecturers during the group works and discussions and summative assessment of the written examination.

Compulsory elements : The course participants should attend all the course lectures and the sessions of group work and presentation/discussion. The participants who have missed some of the sessions will be assigned additional reading and essay work to compensate the absence.

Number of students : 8 - 25

Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : This course has previously been given with course number 2993.

Course responsible :
Bruna Gigante
Department of Medicine, Solna

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Contact person : -

https://kiwas.ki.se/katalog/katalog/pdf?term=VT21
Title: Overview of Molecular Endocrinology

Course number: 5282
Credits: 3.0
Date: 2021-03-15 -- 2021-03-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Laboratory Medicine

Specific entry requirements:
Purpose of the course: The purpose of the course is to provide doctoral and post-doctoral students an in-depth understanding of the cell and molecular mechanisms as well as the fundamental principles of hormone action in tissues in health and disease. To prepare for public speaking in front of a scientific audience, students are required to display their knowledge through a formal presentation on a current research topic in cellular and molecular endocrinology. An additional emphasis will be placed on how state-of-the-art methodologies have been utilised to further our knowledge of endocrine signalling.

Intended learning outcomes: After successfully completing this course, students should have obtained a fundamental knowledge of molecular endocrinology and acquired the following abilities: 1. to explain the molecular mechanisms by which peptide and steroid hormones activate their receptors to provoke their biological effects; 2. to comprehend how the actions of hormones are involved in both health and disease; 3. to construct pathways of the endocrine systems that link control and production of hormones in specific tissues with the actions of these hormones in their respective target organs; 4. to develop an in-depth comprehensive knowledge of endocrinology from a physiological, cellular, and molecular perspective.

Contents of the course: This course will cover a selection of current topics involved in hormone signalling at an organ, tissue, cellular and molecular level from receptor interaction to gene response including receptor structure and function interactions with their hormone, second messengers, transcriptional regulation and autocrine and paracrine feedback signalling pathways. The course will emphasise the critical understanding of how hormones act at the molecular level and why their signalling pathways synergise or antagonise each other under normal and pathological physiological conditions. Fundamental Endocrinology: anatomy and physiology will provide foundational knowledge to complement current topics in endocrinology to exemplify the concepts of the course such as neuroendocrine signalling, metabolic disease, ageing, reproductive determination, exercise medicine and environmental medicine. To develop our in-depth comprehensive knowledge of endocrinology from a physiological, cellular, and molecular perspective the course will additionally cover current methodologies applied in research.

Teaching and learning activities: The course will be distance learning/interactive based in the format of cathedral-style lectures to expose students to fundamental molecular endocrine concepts, current topic seminars to exemplify concepts, and interactive student-led seminars and discussions to allow the students an opportunity to utilise conceptual knowledge.

Examination: Each student will be assigned one team-led presentation to critique both presenters and journal article. The critique will be formulated in a grant style format. The student will be expected to review the specific topic within molecular endocrinology that the article emphasises. Then create a testable question and develop a hypothesis based on the topic. Then develop a methodological approach to prove the hypothesis. The student teams that present the article will be considered experts in that topic and the student will critique their position within the field. (Learning outcomes 1-4).

Compulsory elements: The students are expected to be present for all lectures and seminars. They are expected to actively participate in discussions. Missed sessions may be replaced by written tasks adapted to the situation.

Number of students: 8 - 20

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course was previously given with the number 3174, as shown in the course evaluation below. The course will be distance learning/interactive based in the format of cathedral-style lectures.

Course responsible:
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Amarjit Saini
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Title: Clinical Research in Child and Adolescent Psychiatry: Methods and Practice

Course number: 5287  
Credits: 1.5  
Date: 2021-03-15 -- 2021-03-26  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Clinical Neuroscience  
Specific entry requirements:  

Purpose of the course: To provide broad as well as in-depth knowledge about methodological and practical aspects of clinical psychiatric research focusing on children and adolescents. The course aims to cover a range of methodological factors in clinical trials on youths with psychiatric disorders, including psychiatric assessment and psychological as well as pharmacological treatment. The course also addresses rules and laws relevant to clinical research involving young individuals.

Intended learning outcomes: After completing the course, participants should:  
- Be able to account for ethical issues related to having children and adolescents as research subjects  
- Be able to describe preparatory groundwork for clinical trials in psychiatric research, including development of a study protocol, ethical application and trial registration  
- Have knowledge about study monitoring and study documentation routines in child psychiatric research  
- Be able to account for Good Clinical Practice (GCP)  
- Be able to explain the implications of different forms of control conditions in randomized controlled trials with children and adolescents  
- Know how to register and report adverse events and side effects in studies with children and adolescents  
- Be able to account for relevant considerations in the choice of assessment method (e.g., child-adapted diagnostic interviews) and explain the implications of having multiple informants (children, parents and clinicians) in clinical trials with youths  
- Know the procedures for blind assessments with children and adolescents  
- Be aware of precautions ensuring children's health and safety in research conducted in regular psychiatric care

Contents of the course: During the course participants will:  
- Participate in lectures about ethical and methodological aspects of clinical trials with children and adolescents in psychiatric research  
- Participate in seminars where participants will discuss published papers relating to psychiatric assessments and psychological as well as pharmacological treatments  
- Read scientific articles about methodological considerations in clinical trials with children and adolescents  
- Practice writing ethical applications as well as research information and informed consents for children and adolescents  
- Conduct group presentations where they present their analyses and conclusions about various aspects of conducting research in child psychiatric settings

Teaching and learning activities: Lectures, seminars, group presentations.

Examination: Examination seminar with group presentations and discussions. All students are assessed individually on their ability to present, discuss and reason about clinical research in child and adolescent psychiatric research.

Compulsory elements: Compulsory attendance at lectures and seminars. Absence can be compensated for by written assignments.

Number of students: 8 - 25

Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicants doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

More information: This course runs at half-time pace (50%) over two weeks and will be held at Campus Solna. The schedule with all details will be sent out after admission to the course.

Course responsible:  
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