Course catalogue for doctoral education

VT19
# Human biology or pathology * General science courses

- **1391** Writing science and information literacy * 2019-04-01 -- 2019-04-12 (English)
- **1544** Vascular Cell Biology 2019-04-08 -- 2019-04-12 (English)
- **1626** Cytokines in inflammation 2019-03-18 -- 2019-03-29 (English)
- **1729** Exercise in the management and prevention of metabolic diseases 2019-06-12 -- 2019-06-18 (English)
- **2212** Human embryonic stem cells 2019-05-13 -- 2019-05-17 (English)
- **2214** Redox regulation, oxidative stress and selenoproteins 2019-06-10 -- 2019-06-14 (English)
- **2362** Positron emission tomography imaging of the CNS 2019-03-18 -- 2019-03-22 (English)
- **2416** Causal Inference for Epidemiological Research 2019-03-11 -- 2019-03-20 (English)
- **2463** Career skills for scientists 2019-01-30 -- 2019-03-15 (English)
- **2520** Interview techniques in health and care research 2019-05-08 -- 2019-06-06 (English)
- **2537** Writing science and information literacy * 2019-01-21 -- 2019-03-15 (English)
- **2571** Psychoneuroimmunology 2019-03-04 -- 2019-03-15 (English)
- **2609** Basic Course in Medical Statistics - a distance course * 2019-02-18 -- 2019-03-08 (English)
- **2609** Basic Course in Medical Statistics - a distance course * 2019-04-29 -- 2019-05-10 (English)
- **2618** Write your research results and get them published * 2019-02-04 -- 2019-02-15 (English)
- **2618** Write your research results and get them published * 2019-05-13 -- 2019-05-24 (English)
- **2618** Write your research results and get them published * 2019-06-10 -- 2019-06-20 (English)
- **2618** Write your research results and get them published * 2019-04-01 -- 2019-04-12 (English)
- **2621** Klinisk forskning och Good Clinical Practice: protokoll, informerat samtycke och ansökan i enlighet med lagar/regler * 2019-01-28 -- 2019-02-01 (Swedish)
- **2644** Human physiology - an overview # 2019-01-28 -- 2019-02-08 (English)
- **2660** Translational Neuroscience of Addiction 2019-05-06 -- 2019-05-17 (English)
- **2664** Introduction to modern test theory and test/survey methodology 2019-02-07 -- 2019-02-28 (English)
- **2666** Methods for statistical analysis: From analysis of variance to multilevel modeling * 2019-04-09 -- 2019-06-04 (English)
- **2673** Introduction to qualitative methods 2019-03-07 -- 2019-04-08 (English)
- **2690** Basic Laboratory Safety * 2019-05-06 -- 2019-05-13 (English)
- **2690** Basic Laboratory Safety * 2019-01-28 -- 2019-02-04 (English)
- **2733** Calcium signaling 2019-06-24 -- 2019-06-28 (English)
- **2740** Health Policy and Management 2019-04-29 -- 2019-05-17 (English)
- **2760** Translational medicine in the field of autoimmunity - an overview 2019-05-06 -- 2019-05-22 (English)
- **2787** Present your research! * 2019-02-18 -- 2019-02-22 (English)
- **2787** Present your research! * 2019-06-24 -- 2019-06-28 (English)
- **2787** Present your research! * 2019-01-28 -- 2019-02-01 (English)
- **2787** Present your research! * 2019-05-06 -- 2019-05-10 (English)
- **2787** Present your research! * 2019-03-25 -- 2019-03-29 (English)
- **2851** Principles of cellular metabolism 2019-03-11 -- 2019-03-22 (English)
- **2858** Longitudinal data analysis - classical and modern statistical methods 2019-04-01 -- 2019-04-12 (English)
- **2870** Microscopy: improve your imaging skills - from sample preparation to image analysis 2019-01-22 -- 2019-02-08 (English)
- **2871** Microscopy: improve your imaging skills 2019-01-22 -- 2019-02-08 (English)
- **2873** Quality assurance of clinical research * 2019-04-08 -- 2019-04-12 (English)
- **2873** Kvalitetssäkring av klinisk forskning * 2019-02-11 -- 2019-02-15 (Swedish)
- **2877** Practical approach to animal models in cardiovascular research 2019-05-06 -- 2019-05-10 (English)
- **2912** Manuscript writing in English * 2019-05-20 -- 2019-05-24 (English)
- **2916** Diabetes and cardiovascular diseases 2019-03-14 -- 2019-04-04 (English)
- **2919** Research on personalized/precision cancer medicine (PCM) 2019-03-11 -- 2019-03-15 (English)
- **2948** Principles of nucleic acid structure 2019-05-13 -- 2019-05-24 (English)
- **2953** Statistics with R - from data to publication figure 2019-03-11 -- 2019-03-29 (English)
- **2957** Neural Control of Inflammation: An introduction to Bioelectronic Medicine 2019-05-13 -- 2019-05-17 (English)
- **2958** Introduction to R 2019-04-01 -- 2019-04-05 (English)
- **2959** Fundamentals of statistical modeling 2019-05-20 -- 2019-05-24 (English)
- **2963** Open science and reproducible research 2019-02-25 -- 2019-03-08 (English)
- **2964** Medicinsk forskningsetik * 2019-02-04 -- 2019-02-08 (Swedish)
- **2964** Medical research ethics * 2019-03-04 -- 2019-03-08 (English)
- **2964** Medical research ethics * 2019-04-08 -- 2019-04-12 (English)
- **2964** Medical research ethics * 2019-05-06 -- 2019-05-10 (English)
- **2996** Anaesthesia, analgesia and surgery (mice and rats) 2019-05-20 -- 2019-05-24 (English)
- **3023** Microbiota, metabolism and immunity in the development and treatment of malignancies 2019-06-10 -- 2019-06-14 (English)
- **3027** Bioinformatics analysis of gene regulation in omics data and its applications to medical problems * 2019-03-13 -- 2019-03-27 (English)
- **3028** Grundkurs i SPSS 2019-03-11 -- 2019-03-15 (Swedish)
- **3029** Observation and visual methods in health care sciences research 2019-03-04 -- 2019-04-26 (English)
- **3031** Introduction to teaching * 2019-03-12 -- 2019-04-23 (English)
- **3032** Mixed methods: integration of qualitative and quantitative data within applied health research 2019-04-01 --
2019-05-03 (English)
3036 Mouse necropsy 2019-03-06 -- 2019-03-13 (English)
3037 Exploring entrepreneurial opportunities in research 2019-02-18 -- 2019-04-05 (English)
3042 Biostatistics I: Introduction for epidemiologists * 2019-03-27 -- 2019-04-12 (English)
3043 Biostatistics II: Logistic regression for epidemiologists * 2019-01-30 -- 2019-02-06 (English)
3044 Basic bioinformatics * 2019-04-15 -- 2019-04-23 (English)
3046 Causal inference: emulating a target trial to assess comparative effectiveness 2019-04-15 -- 2019-04-17 (English)
3047 Exploring structural biology 2019-04-01 -- 2019-04-12 (English)
3049 Cellular Signalling 2019-03-25 -- 2019-03-29 (English)
3062 Genomics for Biomedical scientist: Handle your gene expression data. 2019-02-04 -- 2019-02-08 (English)
3073 Philosophy of science and the concept of health * 2019-04-01 -- 2019-04-12 (English)
3078 Epidemiology I: Introduction to epidemiology 2019-02-04 -- 2019-02-13 (English)
3106 The cell biology of aging 2019-05-06 -- 2019-05-08 (English)
3107 CNS injuries and repair 2019-04-01 -- 2019-04-05 (English)
3109 Pathology # 2019-05-13 -- 2019-05-24 (English)
3115 Basic tumor histopathology 2019-02-18 -- 2019-03-01 (English)
3117 Alzheimer's Disease: Clinical Features and Pathogenic Mechanisms 2019-03-11 -- 2019-03-15 (English)
3118 Forskningsetik * 2019-01-15 -- 2019-02-05 (Swedish)
3119 Vetenskapsteori * 2019-02-19 -- 2019-04-16 (Swedish)
3123 Exploring human movement 2019-02-11 -- 2019-02-22 (English)
3125 Health risk assessment: principles and applications 2019-03-18 -- 2019-03-22 (English)
3129 Epidemiology III. Analysis and interpretation of epidemiological data 2019-05-08 -- 2019-05-17 (English)
3131 Application of epidemiological methods in aging research 2019-04-01 -- 2019-04-05 (English)
3134 Basic Course in Medical Statistics * 2019-03-11 -- 2019-03-22 (English)
3134 Basic Course in Medical Statistics * 2019-05-13 -- 2019-05-24 (English)
3136 Biomimetic Systems - Modelling Human Physiology in Infection Biology 2019-01-21 -- 2019-04-15 (English)
3138 Epidemiology II. Design of epidemiological studies 2019-05-27 -- 2019-06-05 (English)
3139 Basic Immunology 2019-02-04 -- 2019-04-05 (English)
3142 Biostatistics III: Survival analysis for epidemiologists * 2019-02-11 -- 2019-02-20 (English)
3143 Introductory course in SAS programming 2019-05-13 -- 2019-05-17 (English)
3144 Computational modelling for cognitive neuroscience and psychiatry research 2019-04-04 -- 2019-05-16 (English)
3145 Pulmonary inflammation 2019-04-08 -- 2019-04-12 (English)
3147 To communicate science in different contexts with focus on oral and visual communication * 2019-02-18 -- 2019-03-05 (English)
3148 Introduction to nanomedicine 2019-04-01 -- 2019-04-05 (English)
3149 Pain mechanisms: From molecules to treatment 2019-06-03 -- 2019-06-07 (English)
3151 Inherited cancer syndromes; Genes predisposing to malignant disease 2019-04-01 -- 2019-04-05 (English)
3153 Clinical methodologies in metabolic research 2019-05-13 -- 2019-05-17 (English)
Title: Writing science and information literacy

Course number: 1391
Credits: 3.0
Date: 2019-04-01 -- 2019-04-12
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.
- the ability 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 and evaluating published science.

Teaching and learning activities: This is a KI CAMPUS course (there is also an 100% online version with course code 2561) with face-to-face teaching including: individual writing and rewriting, lectures, working in pairs and groups, web-based teaching, demonstrations, computer exercises and individual study.

Examination: Writing an academic text and rewriting it based on peer and teacher feedback. There are also three assignments in which participants demonstrate development of their information literacy.

Compulsory elements: All scheduled teaching is compulsory (except where clearly stated otherwise). Absence can usually be compensated for by reading and individual work after consultation with course leaders.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information:

Course responsible:
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Contact person:
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Title: Vascular Cell Biology

Course number: 1544
Credits: 1.5
Date: 2019-04-08 -- 2019-04-12
Language: English
Level: Doctoral level

Purpose of the course: The course provides an overview of the healthy and diseased vessel wall from the cellular and molecular perspective, including vascular development, biomechanics, blood flow and role of lipid metabolism. The course is designed to build up knowledge in the field of cardiovascular biology towards commitment to basic, clinical, and translational research to utilize the most advanced technologies and expertise in the field.

Intended learning outcomes: Learning outcomes of the course are defined on multiple levels: 1. At the basic level doctoral students should be able to account for the various cell types and extracellular matrix components in the vessel wall, and critically review/discuss the potential cellular transdifferentiations in pathological conditions relevant to cardiovascular disease. 2. On the level that combines knowledge and understanding, they should be able to interpret the complex interactions among the different components, biomechanical and systemic influences within the vessel wall, and use it to explain the causality in the development of vascular disease. 3. By conducting experimental projects during the course, students should be able to make a synthesis of the theoretical and practical knowledge and step out of the course framework by understanding how that knowledge could be applicable in their own research projects. 4. Finally, through team work and joint presentations/discussions, students should exhibit strengthened skills for collaborative networking, scientific presentation and communication to peers and to the public.

Contents of the course: The course will provide a theoretical and practical introduction to the basic cell types and extracellular components present in the vascular wall, with special emphasis on smooth muscle cells and endothelial cells. Focus will also be on the signaling and basic biological process of cell activation, migration, proliferation and turnover involved in the vessel wall homeostasis during vascular development (arteriogenesis, angiogenesis), as well as the main vascular pathologies and vascular remodeling during injury and healing reactions. The impact of vessel biomechanics and components from the systemic blood flow on cell plasticity will also be covered.

Teaching and learning activities: The learning methods in this course include both individual and group studies, exemplified through literature reading, journal club discussions and practical workshops related to the intended learning outcomes. Seminars with expert lecturers from KI and externally invited, will initiate and enhance the learning process. A practical laboratory project, where the students will test relevant methods for vascular research (in vitro, in situ and in vivo) and produce their own results, will be integrated. Course leaders will serve as facilitators for discussions, promote networking and collaboration skills during team work and a joint social event.

Examination: All learning outcomes of the course must be reached to pass the course. Every participant will be individually assessed and examination will be based on several formats: i) oral presentations of assigned group work. Time for group work will be designated during the whole course where teams prepare a presentation based on the experimental project they have designed and results they produced during lab work, supervised by the seminar leaders. ii) participation during journal club discussion among teams (evaluation of methods, results, discussion, etc.) facilitated by the course organizers iii) individual answers to a short questionnaire based on course lectures and literature

Compulsory elements: The course is work-intensive. Full presence is required during the whole course, particularly during group work, practical experimental tasks and examination. Necessary absence will be regulated with the course leaders and a written report will be required for compensation.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information:

Course responsible:
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Contact person:
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Title: Cytokines in inflammation

Course number: 1626
Credits: 3.0
Date: 2019-03-18 -- 2019-03-29
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna
Specific entry requirements: Basic knowledge in immunology corresponding to course 2302 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: Learning the function of cytokines in immunologic networks and the measurement of cytokine responses
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.
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: Practical sessions are compulsory, unless stated that they are not. Absence from compulsory practical sessions cannot be compensated for, but absence from one theoretical session can be compensated for in subsequent course sessions.
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: This is not a basic course of immunology. Location: KI campus Solna. Time: 09.00-16.00 all days. Course content includes lectures and research seminars from invited experts and KI experts, and local staff are also involved in practical work. The course is given jointly by the doctoral programmes Allergy, immunology and inflammation (Aii) and Cardiovascular Research. See: https://ki.se/en/staff/doctoral-programmes.

Course responsible:
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Title: Exercise in the management and prevention of metabolic diseases

Course number: 1790
Credits: 3.0
Date: 2019-06-12 -- 2019-06-18
Language: English
Level: Doctoral level
Responsible KI department: Department of Molecular Medicine and Surgery
Specific entry requirements: None

Purpose of the course: This course will enable doctoral students to acquire the necessary knowledge to integrate clinical and basic research knowledge and understanding, competence and skills, judgement and approach in the field of exercise physiology to prevent and treat metabolic disease.

Intended learning outcomes: Participants will be able: to explain the health-related benefits of exercise from a physiological perspective, to integrate basic knowledge of exercise with current research topics, and to design a research proposal to evaluate the efficacy of a specific exercise program to combat metabolic disease.

Contents of the course: The aim of this course is to address the role of exercise in the prevention and treatment of diseases associated with an ever-growing sedentary population. Interactive lectures will focus on the metabolic, physiological and molecular responses to exercise in health and disease. A current understanding of the underlying molecular and cellular events that govern the acute and chronic exercise response will be provided. Topics include strategies for exercise prescription in various clinical situations including diabetes, obesity, musculoskeletal disorders and aging.

Teaching and learning activities: This course will be composed of interactive seminars, lectures, laboratory practicals, group work, group presentations, discussion, and reflection.

Examination: Students will be assessed on the following: an oral group presentation (10 min) and contribution to the discussions in connection to this, an individual written summary of the specific project researched by the group, and contribution to a course "Abstract Book".

Compulsory elements: Laboratory practicals and group work are compulsory. Students that are not able to attend a part of the course must do a self-study and write an essay on the topic(s) that was missed.

Number of students: 15 - 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) date for registration as a doctoral student (priority given to earlier registration date). Master students and postdoctoral fellows will be also be accepted if there are seats available.

More information: The course will be held from 9.00-17.00 on Wednesday June 12 until Friday June 14 and continue on Monday June 17 until Tuesday June 18. The course will take place at Karolinska Institutet, Solna campus, and the GIH (Swedish School of Sport and Health Sciences). A combined schedule featuring lectures, practical work, and group activities ensures an in depth learning experience for students.

Course responsible:
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Ulrika Widegren
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Title: Human embryonic stem cells

Course number: 2212
Credits: 1.5
Date: 2019-05-13 -- 2019-05-17
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.


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: The course will be held at Karolinska Institutet, Department of Biosciences and Nutrition, NEO- Huddinge.

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Title: Redox regulation, oxidative stress and selenoproteins

Course number: 2214
Credits: 3.0
Date: 2019-06-10 -- 2019-06-14
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

Note: At this occasion the course will be held at the Redox Biology Center (RBC) in Lincoln, NE, USA, thus necessitating travel to the course during the weekend of June 8-9 and return to Sweden during the weekend of June 15-16. Travel support will be given to the home institution with a flat rate of SEK 8,000 per doctoral student joining from Karolinska Institutet.

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: Note: At this occasion the course will be held at the Redox Biology Center (RBC) in Lincoln, NE, USA, thus necessitating travel to the course during the weekend of June 8-9 and return to Sweden during the weekend of June 15-16. Travel support will be given to the home institution with a flat rate of SEK 8,000 per doctoral student joining from Karolinska Institutet. The given number of students in this international course entails all students from all sites. From Karolinska Institutet a maximum number of eight (8) students can be accepted to the course.

Course responsible:
Elias Arnér
Title: Positron emission tomography imaging of the CNS

Course number: 2362
Credits: 1.5
Date: 2019-03-18 -- 2019-03-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Clinical Neuroscience
Specific entry requirements:

Purpose of the course: The course is aimed at understanding the principles of PET, the methodology used for neuroreceptor imaging and quantification, as well as to get insight in important research ongoing in the field and in the clinical applications of PET.

Intended learning outcomes: On completion of the course the students will be able to explain the basic outcome measures obtained from PET studies, to describe the methodology used for neuroreceptor quantification and to generate ideas on how PET can be applied to a clinical research question or hypothesis.

Contents of the course: This course will cover the basic principles of positron emission tomography, development of radioligands and CNS drugs, and quantification of neurotransmitter systems. At an applied level, the course will focus on selected imaging biomarkers to study the pathophysiology and treatment of major CNS disorders such as schizophrenia, depression, attention-deficit hyperactivity disorder and neurodegenerative disorders such as Alzheimer’s and Parkinson’s disease. Specific attention will be given to new approaches for diagnostic purposes.

Teaching and learning activities: The course will include lectures in the morning and seminars or discussions with the students in the afternoon. Two “hands-on” sessions on the analysis of PET data will be also organized. Visits of the PET-lab, the autoradiography lab and the small animal microPET facility will be organised.

Examination: Assessment with written exam in addition to assessment of the contribution of the student to seminars, "hands-on session", and group discussions. The written exam consists of an essay describing the application of PET in a CNS-research area. The topic will be chosen by the student. Review of the literature is allowed.

Compulsory elements: The participation in the lectures, seminars and the group discussions and the exam is compulsory. Special reasons of absence can be discussed with the course organizers. The compensation for the absence from any part will be done in the form of a written assignment.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course is held the whole week 2019-03-18 - 2019-03-22, between 09:00-16:00. The bulk of the course will be at the Psychiatry building Karolinska Hospital, Solna, R5:02. Two afternoons will be held in computer rooms at KI campus, Solna. The course is aimed for PhD students but also PostDoc’s and undergraduate students are welcome if there are positions available.

Course responsible:
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Katarina Varnäs
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Title : Causal Inference for Epidemiological Research

Course number : 2416
Credits : 1.5
Date : 2019-03-11 -- 2019-03-20
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 Marginal Structural Models to analyze longitudinal 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. The (causal) methods can be used under less restrictive conditions than the traditional statistical methods. For example, causal methods allow one to estimate the causal effect of a time-varying exposure in the presence of time-dependent confounders that lie on the causal pathway between exposure and outcome.

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 motivation), 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 and motivation for attending, as well as an account of previous courses taken.

More information : Course dates are March 11, 13, 15, 18 and 20. The course is extended over 2 weeks (but still 5 full course days) in order to promote reflection and reinforce learning.

Course responsible :
Yudi Pawitan
Department of Medical Epidemiology and Biostatistics

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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: 2019-01-30 -- 2019-03-15
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

Purpose of the course: This course prepares PhD students for life after dissertation. You start to explore your transferable skills and how to communicate them. You learn a lot about yourself and the many career paths there are for PhDs. The course also gives you the opportunity to expand your contacts and network. This course gives you the possibility to explore your interests, talents and skills. Course participants also get the opportunity to apply for a one month financed internship at a company or organisation within life sciences.

Intended learning outcomes: After the course the participants should be able to discuss options in academic and nonacademic settings. The participants should be able to identify transferable skills achieved during doctoral training and be able to explain the value of these skills within as well as outside academia. They will also be able to understand careers in different organizations in the private and public sector. They should also be able to apply what they have learned in the course to communicate their skills in different situations.

Contents of the course: The course includes an introductory reflection of the career options available for PhDs and researchers. This will be followed by sessions where academic and non-academic career paths and entrepreneurial options are presented and discussed. The course covers postdoc planning, interview training and networking exercises. In addition, the course includes the process and steps in a job application procedure and how to use communication skills in various contexts.

Teaching and learning activities: The course will be highly interactive and will consist of lectures, discussions, individual projects and student presentations.

Examination: The participants will be examined through oral group presentations and an individual written project.

Compulsory elements: It is compulsory to attend all the lectures and workshops (except where clearly stated otherwise). Absence from compulsory parts will be compensated for according to instructions of the course director with an additional individual project.

Number of students: 30 - 40

Selection of students: Selection will be based on 1) PhD students who are in their third or fourth year of the doctoral education 2) written motivation letter

More information: The course will be given on Wednesdays between 13.00 and 17.00 on the first four occasions (30/1, 6/2, 13/2 and 20/2). The company mingle with the opportunity to apply for an internship will take place week 10. Examinations days divided into 3 occasions will take place March 13, 14 and 15. The course schedule will be published in December.

Course responsible:
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Contact person:
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Kerstin Beckenius
Universitetsförvaltningen
08-524 861 32
kerstin.beckenius@ki.se
Title: Interview techniques in health and care research

Course number: 2520
Credits: 4.0
Date: 2019-05-08 -- 2019-06-06
Language: English
Level: Doctoral level
Responsible KI department: Department of Clinical Neuroscience

Specific entry requirements:

Purpose of the course: The course aims to provide course participants with a broad understanding for a research interview; i.e. planning and conducting a research interview within a research program. In addition, the participants will be enabled to gain an increased understanding and a professional attitude of the researcher as an instrument for data collection which can be applied and potentially enhance the quality of data in future research interviews.

Intended learning outcomes: After the course the student is expected to be able to (a) Identify and understand the content of a research interview. (b) Demonstrate and master necessary interview tools in order to, (c) Independently, analyze and adapt this knowledge and practical skills in order to compose a research interview; i.e. planning, designing, carrying out and critically evaluating the interview. (d) Communicate and give feedback to other students’ research interviews.

Contents of the course: a. different perspectives and knowledge for conducting interviews b. the role of empathy in interview communication c. the researcher’s role as an instrument in data collection d. intersubjectivity, biases and ethical considerations of research interviewing e. how to plan an interview guide f. how to formulate questions g. how to conduct an interview with respect for culture and vulnerable groups

Teaching and learning activities: The course will be offered part-time, usually full Days from 9 a.m. to 4 p.m., 1-2 days weekly including lectures, video demonstrations covering various interviews and interview techniques, interview technique training seminars in small groups, supervision seminars (interview guides) with literature discussions and self-monitored studies and practice. Since interview training is a process - which requires testing in vivo, improvements, reflection between training - the course covers approximately a 5-week period.

Examination: Examination will consist of an interview guide and of an individually taped documentation of an interview with a research subject in the own research field presented in the course group. In addition, the course participant will critically analyze a fellow student’s video-taped interview. The presentation will furthermore be within a theoretical frame of reference including the course literature, discussing interviews, interview techniques, potential biases challenging the quality of the interview responses. The reason behind choosing this kind of examination is that it has been proven to give earlier interview student-groups valuable learning experiences which immediately can be applied in the respective research area.

Compulsory elements: The education will be compulsory scheduled all through the course. If the student is unable to be present he/she has to consult the course leader/examiner for adequate opportunities to recover missed hours (usually in the form of written assignments, except for practical training and examination with the video-taped interviews).

Number of students: 10 - 14

Selection of students: Selection of students: First priority of students are those students registered in the Doctoral School in Health Care Sciences (FiV) who are occupied with doctorate projects to which the course have high relevance.

More information: The course will be held on Wednesdays and Thursdays 9 a.m. to 4 p.m. at Karolinska Institutet, Campus Flemingsberg; Alfred Nobels Allé 23. The course language will be English. The course will contain demonstrations, practical training etc. emphasizing own active participation. Note that: (a) the course dates are compulsory; (b) each student is expected to have access to research subject(s) for their own videotaped examination interview.

Course responsible:
Gunnel Backenroth
Department of Clinical Neuroscience

Gunnel.Backenroth@ki.se

Contact person:
-
Title: High throughput functional genomic technologies in biomedical research

Course number: 2537
Credits: 1.5
Date: 2019-04-01 -- 2019-04-05
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 give participants an introduction to high-throughput genomic technologies. Additionally, the participants will be able to understand which high-throughput technology to apply in order to answer a specific scientific question.

Intended learning outcomes: After the course the students should be familiar with high-throughput genomic technologies, including high throughput sequencing and various microarray platforms for gene expression profiling, genome wide DNA-binding and human genetics applications and know how these could be applied in biomedical research including in their own projects.

Contents of the course: Technological platforms such as high throughput sequencing and microarray based platforms such as those provided by Affymetrix, and Illumina. Applications of these platforms for gene expression profiling, global DNA-binding, methylation and human genetic studies. Analysis of data from the above platforms and applications.

Teaching and learning activities: Lectures, seminars, demonstrations and data analysis.

Examination: The students, will in groups of three students, select a paper of a relevant topic for the course. The course leaders will help them with this if necessary. The paper should be presented for the whole group of students, 15 min per group, with specific focus on the technologies used. The students should be able to discuss with the other participants and the examiner(s): Were the technologies appropriate for the study? Could they have used alternative technologies? Advantages and disadvantages. This seminar will take 2-3 hours.

Compulsory elements: The students have to take active part in all activities. An alternative time for demonstrations and data analysis will be provided, if possible, if they are absolutely unable to attend. If it is not possible to provide an alternative time, this part will need to be taken at the next course occasion. Other absence can be compensated for by an additional task in agreement with the course organizers.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will take place at campus Flemingsberg, at NEO, Blickagång 16 Huddinge.

Course responsible:
Patrick Muller
Department of Biosciences and Nutrition
Patrick.Muller@ki.se

Contact person:
Patrick Muller
Institutionen för biovetenskaper och näringslära
Patrick.Muller@ki.se
Title: Writing science and information literacy

Course number: 2561
Credits: 3.0
Date: 2019-01-21 -- 2019-03-15
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 100% ONLINE course (there is also a KI Campus version with course code 1391) will be held using the learning management system Ping Pong. Content will be learnt with various learning objects and learning practiced by exercises. Formative feedback will be given 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) date for registration as a doctoral student (priority given to earlier registration date)

More information:

Course responsible:
David Herron
Karolinska Institutet University Library
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Berzelius 7B

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Stockholm

Contact person:
Katarina Amcoff
Karolinska Institutet universitetsbibliotek
08-524 840 47
katarina.amcoff@ki.se
Purpose of the course: Psychoneuroimmunology is the study of the functional and bi-directional 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 cross-disciplinary 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 a suitable design for research in psychoneuroimmunology.

Contents of the course: - Overview of the essential concepts and the research in the different areas of psychoneuroimmunology. - Description of the adaptive and pathological consequences of immune activation on brain functions and behaviour, including fatigue, pain, mood regulation, social behaviour and neuropsychiatric symptoms. - Description of modulation of the immune system by brain inputs, such as during stress. - Opportunity to understand how behaviours can be pro-actively regulated to improve overall defence against microbes.

Teaching and learning activities: Lectures 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). The doctoral student has access to supervision in the preparation of the written examination. The course will include time to prepare the written and oral presentations of research projects on specific psychoneuroimmunology topics. The oral presentations will take place during a seminar in the end of the course.

Examination: The examinations will be done in a mandatory seminar, with oral as well as written contributions from each participant. The examination has two main parts: 1) Written presentation with a review of a selected topic of psychoneuroimmunology, as agreed upon with the course leader. 2) Written (2-3 pages) and oral presentation of a study that is well motivated in background of the current state of knowledge/lack of knowledge in psychoneuroimmunology.

Compulsory elements: Examination seminar, with both oral and written contributions from each participant. 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) date for registration as a doctoral student (priority given to earlier registration date).

More information: Lectures will take place every day, from 09:00 to 16:00. Study days for the final examination will be free of lectures (one day the first week, two days the second week). Lunch: 12:00-13:00 (not included in course). Fika in the afternoon around 14:00-14:30 (included). Lectures from international (Professor Manfred Schedlowski, Essen, Germany; Dr Neil Harrison, Brighton, UK; Dr Jan-Pieter Konsman, Bordeaux, France; Dr Bianka Karshikoff, Stanford University, CA, USA) and national (Professor Mats Lekander, Dr Julie Lasselin, Dr Anna Andreasson, Dr John Axelsson) experts in Psychoneuroimmunology will be held. <br> The course is given jointly by the doctoral programmes Allergy, immunology and inflammation (Aii) and Neuroscience. See: https://ki.se/en/staff/dococtoral-programmes.

Course responsable:
Julie Lasselin
Department of Clinical Neuroscience
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Contact person:
Mats Lekander
Institutionen för klinisk neurovetenskap
Mats.Lekander@ki.se
Title: Basic Course in Medical Statistics - a distance course

Course number: 2609
Credits: 3.0
Date: 2019-02-18 -- 2019-03-08
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, non-parametric 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: 40 - 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 at KI Campus Solna: February 18th (not mandatory) and March 8th (mandatory).

Course responsible:
Mesfin Tessma
Department of Learning, Informatics, Management and Ethics

Mesfin.Tessma@ki.se

Contact person:
Margareta Krook-Brandt
Institutionen för lärande, informatik, management och etik

Margareta.Krook-Brandt@ki.se
Title : Basic Course in Medical Statistics - a distance course

Course number : 2609
Credits : 3.0
Date : 2019-04-29 -- 2019-05-10
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 : 40 - 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 at KI Campus Solna: April 29th (not mandatory) and May 10th (mandatory).

Course responsible :
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Contact person :
Margareta Krook-Brandt
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Margareta.Krook-Brandt@ki.se
Title: Write your research results and get them published

Course number: 2618
Credits: 3.0
Date: 2019-02-04 -- 2019-02-15
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 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: Welcome to apply for PhD course Write your research results and get them published! The course focuses on scientific writing (manuscript, abstract and poster) and you will be writing about your own research (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, but 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. Please address ALL questions to: anna.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
Anna.Hildenbrand.Wachtmeister@ki.se
Title : Write your research results and get them published

Course number : 2618
Credits : 3.0
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 : Welcome to apply for PhD course Write your research results and get them published! The course focuses on scientific writing (manuscript, abstract and poster) and you will be writing about your own research (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 of experience in scientific writing is required to attend the course, but 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. Please address ALL questions to: anna.wachtmeister@ki.se or phone: 0707890607

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

Course number : 2618
Credits : 3.0
Date : 2019-06-10 -- 2019-06-20
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)
- 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.
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 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) date for registration as a doctoral student (priority given to LATER registration date).

More information : Welcome to apply for PhD course "Write your research results and get them published"! The course focuses on scientific writing (manuscript, abstract and poster) and you will be writing about your own research (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, but 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. Please address ALL questions to: anna.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
Anna.Hildenbrand.Wachtmeister@ki.se
Title: Write your research results and get them published

Course number: 2618
Credits: 3.0
Date: 2019-04-01 -- 2019-04-12
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. Database 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 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) date for registration as a doctoral student (priority given to LATER registration date).

More information: Welcome to apply for PhD course Write your research results and get them published! The course focuses on scientific writing (manuscript, abstract and poster) and you will be writing about your own research (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, but 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. Please address ALL questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsable:
Anna Hildenbrand Wachtmeister
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070-789 06 07
Anna.Hildenbrand.Wachtmeister@ki.se

Contact person:
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
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Anna.Hildenbrand.Wachtmeister@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:** 2019-01-28 -- 2019-02-01  
**Language:** Swedish  
**Level:** Forskarnivå  

**Responsible KI department:** Department of Clinical Sciences, Danderyd Hospital  
**Specific entry requirements:**  

**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.


**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 inlämnning 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) datum för doktorandregistrering (där tidigare registreringsdatum har förtur)  

Title: Human physiology - an overview

Course number: 2644
Credits: 3.0
Date: 2019-01-28 -- 2019-02-08
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: 20 - 24

Selection of students: Selection is based on 1) the date of admission to doctoral education 2) the relevance of the syllabus to the doctoral projects of the applicants.

More information: The course is given day-time. A few days are devoted to self-studies and home assignments.

Course responsible:
Jessica Norrbom
Department of Physiology and Pharmacology
Jessica.Norrbom@ki.se

Contact person:
Carl J Sundberg
Institutionen för fysiologi och farmakologi
0852486886
Carl.J.Sundberg@ki.se

von Eulers väg 8

17177
Stockholm
Title : Translational Neuroscience of Addiction

Course number : 2660
Credits : 2.0
Date : 2019-05-06 -- 2019-05-17
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements : Registered doctoral student with basic knowledge in psychiatry/psychology
Purpose of the course : Addiction ranks high in the global burden of diseases and is the most common co-morbid diagnosis not only within psychiatry but also among a range of somatic diagnostics and hence an important subject area for any student doing research within psychiatry, psychology and in general medicine. The course intends for the student to gain Familiarity with terminologies, challenges in the field, research methods utilised and update knowledge on current treatment, all of which are relevant skills to gain to understand the disease of addiction and skills which can be applied to understand and study other psychiatric disorders.

Intended learning outcomes : At the end of the course, the students will have mastered, the following intended learning outcomes: a) The principles of neurobiology of addiction b) The ethology of addiction from a psychosocial and biomedical perspective. c) The mechanism of action of legal and illegal drugs on the brain and behaviour d) Identify and critically discuss the different pre-clinical and clinical models of addiction e) Knowledge on current and evidence based pharmacological and psychological treatments in addiction.

Contents of the course : A translational neuroscience of addiction will cover the aetiology and mechanisms underlying addiction from a psychological and medical perspective. To cover the broad perspective, the course will also utilise a broad range of research methods i.e., from epidemiology to randomised controlled trials to understand the complex disease of addiction. Keeping neurobiology as a focus, the course will also cover the mechanism underlying risk factors in developing addiction and those informing recovery and treatment.

Teaching and learning activities : The students will achieve the intended learning outcomes of this course via a combination of lectures, discussing research articles, group debate on 1-2 topics, designing a study and a final examination. There will also be a visit to the human experimental laboratory at the clinic. The goal of the laboratory visit is to learn how drug related behaviours are studied in a laboratory setting. Students will then have the opportunity to design and write a short "human laboratory study" project proposal, relevant to the field and critically evaluate the methods proposed and outcome measures.

Examination : A written exam on the last day of the course, the written description of the experimental study and the contribution to the debate will collectively assess if the students have mastered the intended learning outcomes of the course.

Compulsory elements : Attendance to lectures and all forms of group work, including the laboratory session are mandatory. The final examination will be in-class and is compulsory. In the event of absence, there will be an assigned essay that would need to be handed in. Details of essays will be provided at the course.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information : The course will be held at Norra stationsgatan 69, 6th floor from 8:30-16:00. The teachers will be experts from KI, national experts from other universities in Sweden and 1-2 international experts (the U.S and Netherlands).

Course responsible :
Nitya Jayaram
Department of Clinical Neuroscience
072-2483092
Nitya.Jayaram@ki.se

Contact person : -
Title: Introduction to modern test theory and test/survey methodology

Course number: 2664
Credits: 4.0
Date: 2019-02-07 -- 2019-02-28
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 pedagogical 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: If more students apply than available positions, a selection will be made. The selection will be based on: 1) the relevance of the course for the individual PhD project (based upon motivation) and 2) date for PhD registration. PhD students in the Research school for Health care sciences (Forskarskolan i Vårdvetenskap) are also prioritized. The course language will be English unless all students are comfortable in Swedish.

More information: The course dates are as follows: 7/2, 8/2, 14/2, 15/2, 21/2, and 28/2 2019. All days between 9 AM to 4 PM. Group and individual work will be scheduled on other times during this period. All course meetings will be held at Alfred Nobels Alle 23 Campus Syd Huddinge.

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

Contact person:
Title: Methods for statistical analysis: From analysis of variance to multilevel modeling

Course number: 2666
Credits: 4.0
Date: 2019-04-09 -- 2019-06-04
Language: English
Level: Doctoral level

Responsible KI department: Department of Clinical Neuroscience
Specific entry requirements: Documented knowledge about basic statistics
Purpose of the course: To give graduate students an opportunity to learn to use a number of statistical methods.

Intended learning outcomes: After the course the participants should be able to conduct the following statistical analyses: (1) Analysis of variance; (2) Multiple regression analysis; (3) Risk- and Odds-ratios; (4) Logistic regression; (5) Cox regression; (6) Factor analysis; (7) Structural Equation Modeling; (8) Multilevel Modeling

Contents of the course: The above mentioned methods for statistical analysis.

Teaching and learning activities: The course contains lectures and computer exercises. The lectures will cover the theoretical material and contain relevant examples. In the computer exercises the methods of analysis will be used on given data. SPSS (or, on request, R) will be used in the computer exercises. No support for SAS will be available.

Examination: The participants will conduct the analyses that are included in the course and present and interpret the results from these analyses in an individual examination report.

Compulsory elements: No compulsory elements.

Number of students: 8 - 23

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: Recorded lectures (these are always available, so if you prefer to watch them at some other time, that is just fine): tue 23/4; mon 6/5; mon 13/5; mon 20/5; mon 27/5; mon 3/6. Workshops with SPSS: tue 9/4; thu 2/5; tue 7/5; tue 14/5; tue 21/5; tue 28/5; tue 4/6. On the days with workshops I will be available in the afternoon if you want help with the analyzes included in the examination.

Course responsible:
Kimmo Sorjonen
Department of Clinical Neuroscience
Kimmo.Sorjonen@ki.se

Contact person: -
Title: Introduction to qualitative methods

Course number: 2673  
Credits: 4.0  
Date: 2019-03-07 -- 2019-04-08  
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 that the participants acquire basic knowledge about qualitative research methods. Hereby the course provides a good foundation for method selection and further development of knowledge of specific qualitative methods. The course is suitable for PhD students who plan to use qualitative methods in their thesis such as well as those who do not have qualitative studies in their research plan.

Intended learning outcomes: When completing the course the student should be able to: - Understand the underpinning principles for decisions regarding choice of research methods in general, and in qualitative data collection and data analysis specifically. - Be able to reason scientifically about trustworthiness, credibility and validity in qualitative research. - Understand what characterizes qualitative data and the research questions qualitative methods can answer. - Have basic knowledge about different methods of data collection and analysis in relationship to qualitative data and about the relevance of qualitative methods in health care sciences. - Formulate a research question, related to his/her own research area, which can be answered with qualitative methods.

Contents of the course: - Scientific and philosophical grounds for qualitative research. - Methods for qualitative data collection and analysis that are commonly used in health care sciences. - Credibility and validity in qualitative research.

Teaching and learning activities: The course uses various teaching methods such as lectures, seminars, group work, individual work, peer-learning and self-study work.

Examination: The course is formative examined through active participation in seminars, and summative examined through an individual written report and examination of a fellow student’s report.

Compulsory elements: Participation in all seminars is mandatory. Absence from seminars is compensated by a written review on a topic related to the seminar content.

Number of students: 10 - 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 earlier registration date)

More information: The course will take place at Alfred Nobels Allé 23 in Flemingsberg. Course days are: March 7-8, March 14-15, March 19, March 26 and April 8.  
If all participants speak Swedish, the course can be given in Swedish.

Course responsible:
Lena Rosenberg  
Department of Neurobiology, Care Sciences and Society  
Lena.Rosenberg@ki.se

Contact person:
Miriam Entesarian Matsson  
Institutionen för neurobiologi, vårdvetenskap och samhälle  
Miriam.Entesarian@ki.se
Title: Basic Laboratory Safety

Course number: 2690
Credits: 1.8
Date: 2019-05-06 -- 2019-05-13
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 give the students 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: It is recommended to take the course in the beginning of the doctoral education.

Course responsible:
Maria Johansson
Department of Microbiology, Tumor and Cell Biology
Maria.Johansson@ki.se

Contact person:
Annika Carlsson
Institutionen för mikrobiologi, tumör- och cellbiologi
annika.carlsson@ki.se
Title: Basic Laboratory Safety

Course number: 2690
Credits: 1.8
Date: 2019-01-28 -- 2019-02-04
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 give the students 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: It is recommended to take the course in the beginning of the doctoral education.

Course responsible:
Maria Johansson
Department of Microbiology, Tumor and Cell Biology
Maria.Johansson@ki.se

Contact person:
Annika Carlsson
Institutionen för mikrobiologi, tumör- och cellbiologi
annika.carlsson@ki.se
Title : Calcium signaling

Course number : 2733
Credits : 1.5
Date : 2019-06-24 -- 2019-06-28
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Science and Education, Södersjukhuset
Specific entry requirements :

Purpose of the course : The aim of this course is to enable the students to get an insight in the fundamental mechanisms of the regulation of cellular Ca2+ homeostasis, the generation and the decoding of Ca2+ signaling, the principles of the methods for measuring Ca2+ concentrations in different cellular compartments, and the general roles of Ca2+ signals in mediating cellular functions.

Intended learning outcomes : After the course the students should be able to: 1. Critically analyze and interpret how the different constituents of the Ca2+ signaling tool-kit participate in the generation and decoding of Ca2+ signals, and in maintaining Ca2+ homeostasis. 2. Choose appropriate methods for studying different aspects of Ca2+ signaling 3. Critically analyze the existing literature on Ca2+ signaling, generate new ideas and put forward new hypotheses. 4. Design new studies on Ca2+ signaling in the context that is relevant to the research areas of the students themselves

Contents of the course : 1. Phospholipase C and inositol 1,4,5 trisphosphate-mediated signaling. 2. Identity and roles of the molecular players involved in Ca2+ and phospholipid-mediated signaling. 3. Preparation of Ca2+ buffers. 4. Principles of methods used in the study of calcium and phospholipid signaling including fluorescent techniques, electrophysiology and imaging techniques. 5. Regulation of ion channels involved in Ca2+ signaling including voltage sensitive channels, Transient Receptor Potential channels, store- operated channels and intracellular Ca2+ channels. 6. Roles of Ca2+ and phospholipid mediated signaling in cellular processes including in secretion and apoptosis. 7. Mechanism of generation and decoding of Ca2+ signals. 8. Spatial and temporal aspects of Ca2+ signaling. 9. How to pick research problems in the areas of Ca2+ and phospholipid signaling and how to approach the problems.

Teaching and learning activities : This course will follow the principles of active learning including the seven steps problem-based-learning (PBL), and flipped classrooms. Emphasis will be on self-directed learning through problem-solving in small groups rather than on cathedral lectures. Generous small-group interactive "lecture sessions" by resource personnel with ample time for questions and answers will be provided. Participants will work on selected problems designed to be starting points, in groups of about ten participants, under supervision of trained facilitators who will be available during all of the sessions. Participants will be provided with an outline of the objectives, areas expected to cover, and reprints of selected learning materials.

Examination : Each student must submit a research proposal in the area of Ca2+ signalling where they will critically analyze the existing literature, identify the gaps in the existing knowledge, put forward a new hypothesis, and choose appropriate methods to test the hypothesis. They will use conventional headings like: specific aims, background, methods, significance, and references. The proposal should be at least one A4 page long, but no longer than three pages.

Compulsory elements : Attendance in all the sessions is obligatory. In case of absence, the participant will have to submit written reports specified by the course-supervisor, to compensate for the absence.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information : The course will be given at the Department of Clinical Science and Education, Södersjukhuset, everyday from Monday to Friday, from 09:00 to about 16:00.

Course responsable :
Shahidul Islam
Department of Clinical Science and Education, Södersjukhuset
086163950
Shahidul.Islam@ki.se

Contact person :
Title: Health Policy and Management

Course number: 2740
Credits: 4.5
Date: 2019-04-29 -- 2019-05-17
Language: English
Level: Doctoral level
Responsible KI department: Department of Public Health Sciences

Specific entry requirements:

Purpose of the course: The course aims to review scientific approaches to the formulation of health policies implementation and the management of health services.

Intended learning outcomes: After the course the students will be able to: - Identify health policy processes and actors; - Describe functions of health systems building blocks; - Describe the scientific philosophies and assumptions that underpin Health Policy and Systems Research (HPSR); - Describe "system thinking" applied to public health and health systems; - Describe leadership and management perspectives, including monitoring performance of health services organisations; - Share understanding of HPSR in different contexts; - Develop, present and critique a concept note relating their own research to the field of Health Policy and Management; and - Critically appraise other concept notes within Health Policy and Management.

Contents of the course: The content focuses on the following themes: - Health Policies and Systems in Context - Systems thinking in Health Policy and Management - Introduction to HPSR including health policy analysis - Change Management Research - Evidence Informed Policy

Teaching and learning activities: Interactive educational methods including lectures and question-answer, small group and large group discussion including case scenarios, peer education and individual activities (project assignments), seminars. Combining students with different cultural and professional background and at different stages in their research careers presented both challenges and opportunities that the course organisers are well aware of and utilise during the course.

Examination: The examination consists of verbal and written presentations of individual assignments with participants paired into presenters and commentators. Participants will develop and submit their written assignments beginning of last week. These will be assessed by faculty. Fulfillment of group work and successful presentation of individual assignments and comments are prerequisites. The oral examination consists of presentation of own assignment as well as discussing a fellow course participants proposal. Grading consist of written assignment (50%), presentation (30%) and comments (20%).

Compulsory elements: Active participation in seminars and group work. The course director assesses if, and in that case how, absence can be compensated.

Number of students: 12 - 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:

Course responsible:
Claudia Hanson
Department of Public Health Sciences
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Contact person:
Vibeke Sparring
Institutionen för lärande, informatik, management och etik
+46852486324
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Title: Translational medicine in the field of autoimmunity - an overview

Course number: 2760
Credits: 3.0
Date: 2019-05-06 -- 2019-05-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna
Specific entry requirements: Basic knowledge in immunology is required.

Purpose of the course: The purpose of the course is for the student to be able to put her/his immunology knowledge into the context of human autoimmune disease and treatment. The student should get a deeper understanding of the immunological similarities and differences in different autoimmune diseases and how clinical and translational research is conducted. The student should also be able to get a patient perspective on autoimmune disease and research.

Intended learning outcomes: The students should be able to understand and explain how basic immunology concepts such as molecular pathways, cytokine expression, and cellular interactions are important in the context of human autoimmune disease. The students should be able to formulate research questions in relation to a clinical and patient perspective. The students should be able to discuss differences and similarities between different autoimmune diseases as well as patient heterogeneity and different clinical phases of diseases.

Contents of the course: The course will be given in two blocks, of three days each. The course will cover basic immunology with focus on aspects of central importance in autoimmune disorders, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), multiple sclerosis (MS), skin autoimmunity, juvenile idiopathic arthritis, and diabetes. The students will get introduced to a number of chronic autoimmune diseases which will be described from bedside to laboratory. A descriptive overview of the clinical and molecular basics will be followed by a face to face patient-interaction where the patients will give their pictures of how it is to live with an autoimmune disorder, and describe into what extent their daily life has been affected since diagnosis. In addition, other perspective of autoimmune diseases will be covered, eg genetic- and environmental factors and aspects of how clinical trials and registries may be utilized to extend the knowledge regarding these chronic disorders.

Teaching and learning activities: The course will feature multiple lectures, interactive discussions with patients, tutorial-style discussions in groups and student oral presentations of scientific articles related to the course subject. The course is a full-time three plus three days course with compulsorily reading of selected articles.

Examination: The course examination will include an oral presentation of a selected topic regarding cellular or molecular aspects related to autoimmune diseases. The presentations will be in groups of two to four students, and both insights to the disease area as well as the presentation skills will be subjected to critical review, in-person feedback and individual assessment.

Compulsory elements: The three plus three days and the seminars are mandatory, including the pre-work of discussing scientific journal articles with the assigned mentor and preparing the presentation. Absence can be compensated by an individually written report.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: Lectures and seminars will be held May 6-8 (Monday to Wednesday) and May 20-22 (Monday to Wednesday).

Course responsible:
Karin Lundberg
Department of Medicine, Solna
Karin.Lundberg@ki.se

Contact person:
Caroline Grönwall
Institutionen för medicin, Solna
caroline.gronwall@ki.se
Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2019-02-18 -- 2019-02-22
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 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 - 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 earlier registration date)

More information: Welcome to apply for the doctoral course Present your research! 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. The course is highly interactive with a lot of exercises and together we will take your presentations to the next level. We will also deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and make a great effort to create an environment, where the students feel safe to practice and try new presentation approaches. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.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
070-789 06 07
Anna.Hildenbrand.Wachtmeister@ki.se
Title : Present your research!

Course number : 2787  
Credits : 1.5  
Date : 2019-06-24 -- 2019-06-28  
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 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) date for registration as a doctoral student (priority given to earlier registration date)

More information : Welcome to apply for the doctoral course Present your research! 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. The course is highly interactive with a lot of exercises and together we will take your presentations to the next level. We will also deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and make a great effort to create an environment, where the students feel safe to practice and try new presentation approaches. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.wachtmeister@ki.se or phone: 0707890607

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

Course number: 2787
Credits: 1.5
Date: 2019-01-28 -- 2019-02-01
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 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: Welcome to apply for the doctoral course Present your research! 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. The course is highly interactive with a lot of exercises and together we will take your presentations to the next level. We will also deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and make a great effort to create an environment, where the students feel safe to practice and try new presentation approaches. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible:
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Contact person:
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Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2019-05-06 -- 2019-05-10
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 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: Welcome to apply for the doctoral course Present your research! 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. The course is highly interactive with a lot of exercises and together we will take your presentations to the next level. We will also deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and make a great effort to create an environment, where the students feel safe to practice and try new presentation approaches. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible:
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Contact person:
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Institutionen för kvinnors och barns hälsa
070-789 06 07
Anna.Hildenbrand.Wachtmeister@ki.se
Title : Present your research!

Course number : 2787
Credits : 1.5
Date : 2019-03-25 -- 2019-03-29
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 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) date for registration as a doctoral student (priority given to earlier registration date)

More information : Welcome to apply for the doctoral course Present your research! 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. The course is highly interactive with a lot of exercises and together we will take your presentations to the next level. We will also deal with nervousness and a variety of other challenges you might be facing when presenting. The teachers focus on the individual students and make a great effort to create an environment, where the students feel safe to practice and try new presentation approaches. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible :
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Contact person :
Anna Hildenbrand Wachtmeister
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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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will run at 50% speed, distributed over two weeks. The course includes own study time (video lectures) and five half-day seminars.
Title: Longitudinal data analysis - classical and modern statistical methods

Course number: 2858
Credits: 3.0
Date: 2019-04-01 -- 2019-04-12
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 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 6. Present and interpret the results of 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 full days per week for two weeks (week 14 & 15) at KI Campus Solna. Course dates are: April 1-2, 4-5, 8-9 and 11-12.

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

Contact person:
Margareta Krook-Brandt
Institutionen för lärande, informatik, management och etik
Margareta.Krook-Brandt@ki.se
Title: Microscopy: improve your imaging skills - from sample preparation to image analysis

Course number: 2870
Credits: 6.0
Date: 2019-01-22 -- 2019-02-08
Language: English
Level: Doctoral level
Responsible KI department: Department of Biosciences and Nutrition

Specific entry requirements: Participants must have used a microscope to acquire digital images of fluorescently labelled samples during the past 1 year and be able to prepare their own samples at own department at the start of the course.

Purpose of the course: The aim for this course is to improve the microscopy skills of students and researchers who have already used a microscope to acquire digital images of fluorescent samples and want to improve their skills.

Intended learning outcomes: At the end of the course, the participants will be able to: 1- Describe the difference between wide field and confocal 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 confocal or a wide field 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, light sheet, 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- Run a simple image analysis on freeware (ImageJ/FIJI, Cell Profiler) and describe the imaging requirements for automated image analysis 12- Critically comment on their peers' imaging settings and troubleshoot their images

Contents of the course: The course is NOT aimed at training people to use the LCI unit 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 or confocal microscope, images that exactly match their samples and answer their scientific questions in a reliable way. The participants will learn the theory and many practical tricks about the parameters and hardware used in wide field and confocal imaging, images that exactly match their samples and answer their scientific questions in a reliable way. The participants will learn the theory and many practical tricks about the parameters and hardware used in wide field and confocal imaging, images that exactly match their samples and answer their scientific questions in a reliable way. The participants will learn the theory and many practical tricks about the parameters and hardware used in wide field and confocal imaging, images that exactly match their samples and answer their scientific questions in a reliable way.

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 in each workshop 3. The written examination at the end of the course. The student has to 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: 10 - 16

Selection of students: The participants will be selected based on the usefulness of the course to their research project. The students must have been acquiring images on a microscope in the past 1 year. Their microscopy research project, as well as their previous microscopy experience must be described in writing in the application.

More information: The detailed program can be found on the LCI website (https://ki.se/en/bionut/welcome-to-the-lici-facility) under Learning microscopy. Presence at the course is mandatory 3 days/week during 3 consecutive weeks, from 09:00 to 17:00. The course counts for 4 weeks because some time before, during and after these 3 weeks is used in preparing samples and for 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 the assignments and for the final examination (on 08/02).

Course responsible:
Sylvie Le Guyader
Department of Biosciences and Nutrition
Title: Microscopy: improve your imaging skills

Course number: 2871
Credits: 4.5
Date: 2019-01-22 -- 2019-02-08
Language: English
Level: Doctoral level
Responsible KI department: Department of Biosciences and Nutrition

Specific entry requirements: The participants to this course must have used a microscope to acquire digital images of fluorescently labelled samples within the past 1 year.

Purpose of the course: The aim for this course is to improve the microscopy skills of students and researchers who have already used a microscope to acquire digital images of fluorescent samples and want to improve their skills.

Intended learning outcomes: At the end of the course, the participants will be able to:
1. Describe the difference between wide field and confocal microscopes as well as the different types of confocal microscopes
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
4. Explain the theory behind settings the following parameters on a confocal or a wide field 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
5. Explain which applications require a hardware or a software autofocus, a spectral detector, a resonance scanner, light sheet or two-photon microscopy or super resolution
6. Explain the advantages in using the automation of a microscope system to collect multidimensional data
7. Explain how to deal with images before publication in scientific journals
8. Run a simple image analysis on freeware (ImageJ/FIJI, Cell Profiler) and describe the imaging requirements for automated image analysis

Contents of the course: The students will learn the theory about the parameters and hardware used in in wide field and confocal imaging, how to identify and avoid imaging artefacts, deal with the challenges of imaging fluorescent volumes, as well as how to handle scientific images for publication. They will also learn about more advanced techniques.

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

Examination: The final mark (pass or fail) will depend on the results of:
1. The weekly assignments
2. The skills shown in each workshop
3. The written examination at the end of the course. The student has to 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: 8 - 40

Selection of students: The participants will be selected based on the usefulness of the course to their research project. The students must have been acquiring images on a microscope in the past 1 year. Their microscopy research project, as well as their previous microscopy experience must be described in writing in the application.

More information: The detailed program can be found on the LCI website (https://ki.se/en/bionut/welcome-to-the-ici-facility) under Learning microscopy. Presence at the course is mandatory 3 days per week during 3 consecutive weeks, mostly (with exceptions) from 10:00 to 15:00 (see detailed program). The rest of the time is used in preparing assignments. The course counts for 4 weeks because some time before, during and after these 3 weeks is used for 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 the assignments and for the final examination (on 08/02).

Course responsible:
Sylvie Le Guyader
Department of Biosciences and Nutrition

Sylvie.Le.Guyader@ki.se

Contact person:
Title: Quality assurance of clinical research

Course number: 2873
Credits: 1.5
Date: 2019-04-08 -- 2019-04-12
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 interventional 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 all moments in a clinical research process can be recreated in a secured way
- Understand the meaning of the Helsinki Declaration and Good Clinical Practice so that research subjects autonomy and integrity always remain the first priority
- Knowledge on Swedish, European and international legislations, on which projects that need to be applied for and to which authority, and how such applications are done

Skills and abilities
- Able to decide what different responsibilities the investigator, study team members and sponsor has in the clinical trial
- Able to summarise a project proposal into a synopsis and based on that make a risk-benefit analysis of the project
- Able to use simple statistical tools to judge a project proposal's scientific validity

Judgement and approach
- Able to judge project proposals from the patient perspective including a scientific and sound ethical approach
- Able to 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 how clinical trials are undertaken, and how development of new treatments, in particular medicinal products, are done, and how safety reporting to authorities is done. The following laws, regulations and sources are discussed: Act on integrity of personal data, 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:
The course is based on e-learning. There are two tracks, in part parallel. One track is based on group work around cases that are presented to the course. The other track is based on individual studies of GCP regulations. Both tracks include study material and tutor support. The pedagogy is based on flipped classroom meaning that instructions and learning resources will be made available early to support the individual learning and group works. Cases and their solutions will be presented and discussed under teachers supervision. Q&A will be provided. The GCP studies will be supported by MC self tests. Webinars may be provided, pending the need from the course.

Examination:
In addition to an approved group work there will be an individual multiple choice examination.

Compulsory elements:
Each student must participate in a group work. Each student must show activity on the course's home page with at least five questions, presentation and/or comments on others postings. Absence or lack of online activity can after the examiner's assessment be compensated by an individually written essay.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information:
The course starts with a F2F lecture.
Title : Kvalitetssäkring av klinisk forskning

Course number : 2873
Credits : 1.5
Date : 2019-02-11 -- 2019-02-15
Language : Swedish
Level : Forskarnivå
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 - Förstå innebörden av Helsingforsdeklarationen och Good Clinical Practice så att att forskningspersoners autonomi och integritet alltid sätts i första rummet - Ha kännedom om nationell, europeisk och internationell lagstiftning, vilka projekt som kräver ansökan till olika myndigheter och hur detta går till - Färdighet och förmåga - Ha förmåga att avgöra vilka olika ansvar som prövare, medarbetare och sponsor har i en klinisk prövning - Ha förmåga att sammanfatta ett projektförlag i en synopsis och utifrån detta göra en riskanalys över ett projekt - Visa färdighet i att använda enklare statistiska metoder för att avgöra ett projektets vetenskapliga validitet - Värderingsförmåga och förhållningssätt - Kunna värdera forskningsprojektförlag utifrån patientens perspektiv med ett etiskt och vetenskapligt förhållningssätt - Visa förmåga att värdera information från olika källor framförallt databaser på internet

Contents of the course : Kursen ger kunskaper om forskningsetik och hur ansökan till olika myndigheter görs, kunskap om kliniska prövningar, utveckling av nya behandlingar och då särskilt läkemedel, säkerhetsrapportering till myndigheter, personuppgiftslagen, etik-prövningslagen, biobankslagen och patientdatalagen, arkivering, internationella register över kliniska prövningar, riskanalys och viss statistik


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

Compulsory elements : Varje student måste delta i godkänt grupparbete. Varje student måste visa aktivitet på kursens hemsida i form av minst fem frågor, presentationer och/eller kommentarer på andras inlägg. Frånvaro eller brist på online aktivitet kan efter examinators bedömning kompenseras med en individuellt skriven uppsats.

Number of students : 20 - 25

Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förtur)

More information : Kursen ges med en introduktionsföreläsning första dagen (halvdag). Därefter sker allt arbete i KIs digitala lärplattformar.

Course responsable :
Pierre Lafolie
Department of Medicine, Solna
08-51779647
Pierre.Lafolie@ki.se

Klinisk farmakologi
L7:05 Solna
171 76
Stockholm

Contact person :
Mari Liljefors
Institutionen för medicin, Solna

mari.liljefors@ki.se
Title: Practical approach to animal models in cardiovascular research

Course number: 2877
Credits: 1.5
Date: 2019-05-06 -- 2019-05-10
Language: English
Level: Doctoral level

Responsible KI department: Department of Medicine, Solna

Specific entry requirements: Laboratory animal science course equivalent to a FELASA B or FELASA C level (Directive Function A, D - EU Directive 2010/63 art. 23-26). Researchers with education in laboratory animal science from countries other than Sweden need to pass the Swedish legislation, ethics and animal use course before they will be granted access to animal facilities at Karolinska Institutet.

Purpose of the course: The purpose of the course is to enable doctoral students to obtain practical experience in models of cardiovascular research as well as to discuss with fellow students and experts in the field the theory of the models and ethical aspects of translation research.

Intended learning outcomes: At the end of the course the participant should be able to: - Know how to develop, and maintain breeding programs for genetically manipulated mice in the most optimal fashion - Show an understanding on how to maintain experimental mice in order to investigate cardiovascular diseases and obtain maximal data from each experiment - Show an understanding of the main functional cardiovascular disease models and how to use them - Understand the benefits and limitations of the cardiovascular disease models that are used - Be able to practically perform common mouse models for cardiovascular disease

Contents of the course: The course is aimed at students who are starting or have just started to use animal models in cardiovascular research. It is designed for students who have done a basic animal course such as FELASA B or C. The course will give theoretical knowledge about how to create genetically manipulated mice, as well as breeding and maintaining mice for optimal use. Furthermore, an incite to other animal models will be given such as pigs and rats. There is also a practical component where students will get hands-on-experience in the most common models used.

Teaching and learning activities: The course is partly theoretical, partly practical, where lectures/group discussions and laboratory demonstrations are integrated. Time is also allocated for discussing of laboratory results and lectures.

Examination: All the learning outcomes of the course have to be reached to pass the course. The final grade (pass or fail) will be based on: - summative assessment of the contributions during the discussions that are part of the course - individual presentation at a seminar where different aspects of an animal model will be discussed, i.e. disease aspect to be investigated, which model would suit best, and how are the results analyzed and interpreted

Compulsory elements: Practical sessions are compulsory. Absence from practical sessions cannot be compensated for, but absence from one theoretical session can be compensated for in subsequent sessions.

Number of students: 8 - 10

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: We aim for this course to be interactive and to some extent custom made. If you have a particular model you are interested in - we will try and get expertise in that model. However, this takes time so please notify me directly at alexandra.backlund@ki.se Students must have completed FELASA B and have been approved into a KI animal house facility. Students will not be able to visit other animal houses other than AKM L5 and L8 during this week.
Title: Manuscript writing in English

Course number: 2912
Credits: 1.5
Date: 2019-05-20 -- 2019-05-24
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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will be given at the Department of Clinical Science and Education, Södersjukhuset, everyday from Monday to Friday, from 09:00 to about 16:00.

Course responsible:
Shahidul Islam
Department of Clinical Science and Education, Södersjukhuset
086163950
Shahidul.Islam@ki.se

Contact person: -
Title: Diabetes and cardiovascular diseases

Course number: 2916
Credits: 0.6
Date: 2019-03-14 -- 2019-04-04
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna
Specific entry requirements: Undergraduate study in medicine or biomedicine

Purpose of the course: To provide an overview of diabetes epidemiology, pathophysiology and treatment options in a cardiovascular perspective.

Intended learning outcomes: The participants should after the course 1. be able to show a good insight into the pathophysiological mechanisms linking diabetes to cardiovascular disease 2. understand the prognostic influence of diabetes on cardiovascular diseases 3. show an insight in preventive measures for diabetes and cardiovascular disease 4. know how to detect and treat diabetes from a cardiovascular perspective 5. be aware of gaps in knowledge in the relation between diabetes and cardiovascular disease


Teaching and learning activities: Lectures/Seminars. Debates about clinical issues. Group work. Presentation of and discussion about assigned group work.

Examination: In collaboration with other course participants, to prepare and present a written synopsis of a study protocol on topics given by the faculty members.

Compulsory elements: The course participants should attend all course lectures and sessions of group work and presentations/discussions. The participants who have missed some of the sessions will be assigned additional reading and essay work to compensate for 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will have three half-day lectures and the group work during week 13. The lecture dates will be: Day 1: March 14, 2019, 13.00-16.00 Day 2: March 21, 2019, 13.00-16.00 Day 3: April 4, 2019, 13.00-16.00 Course venue: Norrbacka S2:02 (Clinical research unit, Heart and Vascular Theme), Karolinska University Hospital-Solna

Course responsible:
Linda Mellbin
Department of Medicine, Solna
Linda.Mellbin@ki.se

Contact person:
Lars Rydén
Institutionen för medicin, Solna
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Nailin Li
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Clinical Pharmacology Unit
Karolinska University Hospital-Solna
17176
Stockholm
Title: Research on personalized/precision cancer medicine (PCM)

Course number: 2919
Credits: 1.5
Date: 2019-03-11 -- 2019-03-15
Language: English
Level: Doctoral level
Responsible KI department: Department of Microbiology, Tumor and Cell Biology

Specific entry requirements:

Purpose of the course: The course will provide to the students the basic principles of personalized cancer medicine (PCM). It will focus on the need to combine new diagnostic tools such as omics, molecular pathology and imaging for tailor-made treatment to stratified or even individual patients. The need for development of multidisciplinary teams - to manage translational research - and core infrastructures will be emphasized. Participants will also learn about early clinical trials and biomarker discovery.

Intended learning outcomes: After completion of the course the student will be able to: - Define the principle of PCM - Define the concept of molecular diagnostics - Understand the place of HTP-omics methods in future cancer diagnostics - Understand the role of modern imaging in PCM - Describe the concept of early clinical trials - Discuss the development of new and useful biomarkers - Identify the technical tools and platforms that are required to develop such a multidisciplinary and target treatment for cancer patients

Contents of the course: There will be lectures on molecular diagnostics, High-ThroughPut (HTP) omics, the SciLife platforms, modern imaging in clinical diagnostics, bioinformatics of PCM, early clinical trials and biobanking. Project work in small teams will focus on identification of new targets for treatment and biomarker discovery.

Teaching and learning activities: The course will include a series of learning activities, including introductory and comprehensive lectures/seminars, project work in groups, thematic discussions and student’s presentations.

Examination: The course assignment will consist of individual presentations of the solution to a research issue, based on the course topics and project work. One or two students will be appointed as reviewer(s) for each presentation to provide peer feedback for the presenter, in line with concept of formative assignment. The course organizers will lead the examination and be responsible for summative individual assessment.

Compulsory elements: Attendance to all the activities of the course are mandatory. Absence from mandatory parts of the course will have to be compensated by other relevant activities after discussion with the course leaders.

Number of students: 15 - 30

Selection of students: Selection will be based on the relevance of this course for your doctoral project, secondly on the date for your registration. All student from the clinical reserach school NatiOn will partcipate and be given priority as this course is included as part of their program. The remaining 12 slots or so will be distributed to other applicants.

More information: This course is full-time. The venue will be at Biomedicum KI Campus and partly at NKS. Starts every day at 9, finishes at 16. Lectures, literature seminars and excercises in group on relevant problems.

Course responsible:
Ingemar Ernberg
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+46852486262
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Box 280, Karolinska Institutet
17177
Stockholm

Contact person:
Title: Principles of nucleic acid structure

Course number: 2948
Credits: 3.0
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 provide participants a good and up-to-date knowledge of DNA and RNA structural biology, to stimulate the curiosity and to inspire their own research in the field such as RNA/DNA biology, biotechnology and DNA/RNA therapeutics. To deeply understand how molecules work, detailed knowledge of their structures is necessary. The course aims also to help to practice key academic skills, such as learning from scientific presentations and literature, providing constructive criticism and presenting scientific data in oral/written form.

Intended learning outcomes: After the course, the students should be familiar with the principles regulating DNA/RNA structures and with the techniques used to provide DNA/RNA structural information. Furthermore, the students should have acquired the capacity to visualize three DNA/RNA dimensional structure and to identify the relation between structure and function.

Contents of the course: A general introduction to nucleic acids nomenclature. Structural and conformational features of nucleotides. Physical properties. Hydrogen bonding and base stacking. Water and nucleic acid. Metal ion and nucleic acid. Secondary and tertiary structures of DNA and RNA and techniques to determine structures and dynamics of DNA and RNA systems (such as x-ray crystallography, NMR, theoretical approaches and so on) General consideration on protein-nucleic acid interactions, DNA super-helix, higher order nucleic acid structure. Last advances in DNA/RNA structural field.

Teaching and learning activities: The course consists of lectures, computer tutorial, short presentations by the students and seminars from national and international experts. The participants are involved in-class (individual and group) activities. The students should integrate each lectures hour with homework.

Examination: Written exam, graphical and oral presentation on a selected topic.
Compulsory elements: The compulsory parts of the course are the lectures, computer tutorial and the seminars. Absence will be compensated with extra assignments. The students will get some key questions on the corresponding lecture topic, and the answers should be submit in written form for review and approval.

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) date for registration as a doctoral student (priority given to earlier registration date).

More information: The course starts with some individual activities. Lectures and tutorial will be held from Monday to Friday, from 9:00 to 16:00 at Flemingsberg campus during week 20 (13/5-17/5). Individual and small group activities, oral presentation and written exam will be held during week 21.

Course responsible:
Alessandra Villa
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Hälsovägen 5
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141 83
Huddingen

Contact person:
-
Title: Statistics with R - from data to publication figure

Course number: 2953
Credits: 3.0
Date: 2019-03-11 -- 2019-03-29
Language: English
Level: Doctoral level
Responsible KI department: Department of Laboratory Medicine
Specific entry requirements: none

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. Campus lectures and computer work using your own computer. Individual project work. 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: 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course starts with an introduction, followed by time to do the online components with a voluntary workshop session during week two. Week three focuses on your own project, from data to figure, interspersed with lectures and workshops. The course concludes with a presentation day. The physical parts of the course are held at the KI Campus Flemingsberg.

Course responsible:
Johan Boström
Department of Laboratory Medicine

johan.bostrom@ki.se

Contact person:
Eric Rullman
Institutionen för laboratoriemedicin

Eric.Rullman@ki.se

Maria Westerstahl
Institutionen för laboratoriemedicin

Maria.Westerstahl@ki.se
Title: Neural Control of Inflammation: An introduction to Bioelectronic Medicine

Course number: 2957
Credits: 1.5
Date: 2019-05-13 -- 2019-05-17
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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course is full time, working hours, Mon-Fri of the course week. This course occasion will not include participation in an international conference on Bioelectronic Medicine.

Course responsible:
Peder Olofsson
Department of Medicine, Solna

Peder.Olofsson@ki.se

Contact person:
Title: Introduction to R

Course number: 2958
Credits: 1.5
Date: 2019-04-01 -- 2019-04-05
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 stand-alone 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: Course days will be organized around a common theme, with concepts and background covered in the mornings via presentations, demos, in-class exercises and discussions, and practical application via individual and small-group lab exercises in the afternoons. Formative assessment will be integrated via in-class 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, with required prerequisite knowledge, 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 (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.

More information:

Course responsible:
Alexander Ploner
Department of Medical Epidemiology and Biostatistics
0852482329
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Contact person:
Gunilla Nilsson Roos
Institutionen för medicinsk epidemiologi och biostatistik
08-524 822 93
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Title: Fundamentals of statistical modeling

Course number: 2959
Credits: 1.5
Date: 2019-05-20 -- 2019-05-24
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 "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, with required prerequisite knowledge, 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 (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information: The individual examination will be performed as a takehome examination.

Course responsible:
Matteo Bottai
The institute of Environmental Medicine
08-524 870 24
matteo.bottai@ki.se

Contact person:
Johanna Bergman
Institutet för miljömedicin

johanna.bergsman@ki.se

Nobels väg 13

17177 Stockholm
Title: Open science and reproducible research

Course number: 2963
Credits: 3.0
Date: 2019-02-25 -- 2019-03-08
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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will be held at Campus Solna. Materials from when the course was given in the spring of 2018 are available here: https://osf.io/9qsfr/. The course is given jointly by the doctoral programmes in Neuroscience and Cell biology and genetics. See: http://ki.se/medarbetare/forskarutbildningsprogram.

Course responsible:
Gustav Nilsonne
Department of Clinical Neuroscience

Gustav.Nilsonne@ki.se

Contact person: -
Title : Medicinsk forskningsetik

Course number : 2964  
Credits : 1.5  
Date : 2019­02­04 -- 2019­02­08  
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 forskarens egen hederlighet - 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 problemstillstånd - 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 Helsingsforsaklarens direktiv - God vetenskaplig sed och avvikelse från god sed i forskningen, exempelvis frågor kring fabrikering, 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.

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.

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 förtur), 2) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering).

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

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

Contact person :
Annelie Jonsson  
Institutionen för lärande, informatik, management och etik  
annele.jonsson@ki.se
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 honesty - 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.

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.

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.
Title: Medical research ethics

Course number: 2964  
Credits: 1.5  
Date: 2019-04-08 -- 2019-04-12  
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 honesty - 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.

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.

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

Gert.Helgesson@ki.se

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**: 2019-05-06 -- 2019-05-10  
**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 honesty - 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 Rs. - 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.  

**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.  

**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.  

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

**Contact person**  
Annelie Jonsson  
Institutionen för lärande, informatik, management och etik  
annelie.jonsson@ki.se
Title : Anaesthesia, analgesia and surgery (mice and rats)

Course number : 2996
Credits : 1.5
Date : 2019-05-20 -- 2019-05-24
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 endorsed by Swedish legislation L150 (SJVFS 2017:40). 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 data 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, specifically in 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 anaesthetize 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 use of euthanizing mice and rats will also be covered.

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, seminar lectures, discussions, interactive sessions and practical components. In addition to three e-learning modules on laboratory animal welfare, laboratory animal anaesthesia, and laboratory animal euthanasia, nine face-to-face seminar lectures will be given: - Introduction to anaesthesia - basic principles and definitions, anaesthesia and the 3Rs (replacement, reduction and refinement), selection of anaesthetics. - Preparation for anaesthesia, inhalational anaesthesia. - Injectable anaesthetics. - Monitoring anaesthesia and intra-operative care. - Long term anaesthesia and use of ventilators and neuromuscular blocking drugs. - Post-operative care - fluids, nutrition and nursing care. - Pain assessment and pain alleviation. - Surgery and aseptic techniques (1). - Surgery and aseptic techniques (2). The seminars incorporate video material and lecture notes will be provided. The course also includes problem solving sessions, which 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. Interactive problem based sessions will be included to facilitate discussions. Interactive sessions will be used throughout the seminars to encourage participation and engagement by the students. Laboratory practical sessions (5-6 hours) on anaesthesia and surgical skills are interspersed with the seminars and interactive sessions.

Examination : Practical skills are assessed during the laboratory session using direct observation of practical skills, and a short answer/multiple choice question final written 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 face-to-face sessions and active student participation are compulsory 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 : 8 - 16
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 : An e-learning module and home study of pre-reading material must be completed prior the face-to-face teaching that will be held between Tuesday and Friday. A final written examination will take place on Friday. Location: Learning Lab, Comparative Medicine, KI, Campus Solna.
Course responsible:
Rafael Frias
Comparative medicine
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Contact person:
Title: Microbiota, metabolism and immunity in the development and treatment of malignancies

Course number: 3023
Credits: 1.5
Date: 2019-06-10 -- 2019-06-14
Language: English
Level: Doctoral level
Responsible KI department: Department of Microbiology, Tumor and Cell Biology
Specific entry requirements:

Purpose of the course: The microbiota has emerged as an important arbitrator of health and disease. The impact of the microbiota on intestinal malignancies has gained much attraction. This course intends to impart knowledge and introduce analytical tools to critically assess current ideas and evidence underpinning the role of the microbiota in cancer development and their effects on therapeutic regimes.

Intended learning outcomes: At the end of the course the student is expected to:
- Understand various ways to study the microbiota in health and disease
- To assess what tools are available to study the function of the microbiota in cancer
- Have basic knowledge about cancer pathology, especially gastrointestinal malignancies
- To explore the molecular mechanisms underlying the impact of the microbiota on cancer development
- To understand how the microbiota may be a determinant in influencing treatment strategies

Contents of the course: Cancer susceptibility is sometimes defined as gene-environment interaction. A critical component of our immediate environment is the commensal microbiota, which have a major impact on metabolism and immunity, two facets of physiology that impact on cancer. This course aims to convey current ideas and an understanding of the tools necessary to assess the slew of reports that link the microbiota to cancer development and treatment. The modules/lectures will explore how high throughput studies have been applied to assess this link, paying particular attention to the strength of the evidence and and limitations of the analyses. Apart from lectures on metagenomics and metabonomics, students will be introduced to basic diagnostic cancer histopathology and molecular diagnostics, as well as to breakthroughs in exploratory translational research. A final goal is that the students shall be able to critically assess the research published on this subject and formulate the necessary criteria to test their assumptions. This can be in the form of a defined research project.

Teaching and learning activities: The course will be organized as a series of lectures coupled with defined discussion topics, led by selected lectures. All students are to participate in the scheduled group discussions with invited experts/lecturers. Students are also very much encouraged and expected to engage in critical dialectic constructive discussions throughout the course ("Filip och Fredrik pedagogic"). The students will be provided before the starting of the course with material that they should read in advance and that will be used as base for the lectures and discussions.

Examination: To pass the course the students must show that they have reached the learning outcomes of the course. This will be assessed formatively during the group discussions with the lecturers where students will be divided in group of 2-3, and by an individual assessment based on writing a microbiota-cancer project related to their own research interests.

Compulsory elements: Attendance to the lectures, scheduled discussions and seminars is compulsory. In special cases, with limited absence, the student can compensate with a written report upon discussion with the course organisers.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information:

Course responsible:
Velmurugesan Arulampalam
Department of Microbiology, Tumor and Cell Biology
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Theorellsväg 3
17177
Stockholm

Contact person: -
Title: Bioinformatics analysis of gene regulation in omics data and its applications to medical problems

Course number: 3027  
Credits: 3.0  
Date: 2019-03-13 -- 2019-03-27  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Biosciences and Nutrition  
Specific entry requirements:  
Purpose of the course: To increase the understanding of the basic principles of bioinformatics and to gain practical skills in bioinformatics analysis of genomic sequencing data.  
Intended learning outcomes: After the completed course, the participants will be able to understand the principles and perform basic bioinformatics analysis of genomics sequencing data. The participants will be able to plan experimental designs and to critically evaluate the appropriateness of the different sequencing based omics methods and technologies for genome-wide gene regulation studies.  
Contents of the course: Principles of gene regulation in non-disease cases and dysregulation in diseases at individual locus level as well as on genome-wide level. Principles of sequencing based genomics technologies and corresponding bioinformatics data analysis. Concrete bioinformatics data analysis by the students of selected published projects.  
Teaching and learning activities: The course consists of preparatory work, lectures, discussion, seminars and hands-on bioinformatics analysis.  
Examination: The students will be examined for all learning outcomes by their performance in (a) submitted replies to tasks given for course week 1, (b) discussions and quizzes during the course week 2, and (c) individual presentations at the last course day of their bioinformatics analysis results conducted during course week 2.  
Compulsory elements: The preparation is done in the first course week without the need to be present on-site. Week 2 consists of tasks, lectures, discussions, seminars and hands-on practicals. Both parts are compulsory. Absence has to be compensated for according to the instructions from the course leader.  
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) date for registration as a doctoral student (priority given to earlier registration date)  
More information: The course is given in collaboration with the RIKEN Center for Integrated Medical Sciences (RIKEN IMS, http://www.ims.riken.jp/english/). The course faculty consists of invited speakers from the RIKEN IMS and from Karolinska Institutet. Please note that second week of the course, March 20 to 27, 2018, will be given at RIKEN in Yokohama, Japan. The course organizers do not provide any financial support for the trip to or accommodation in Japan. The organizers can help with finding accommodation in Japan close to RIKEN. There is a limited number of travel grants available for the course (10000 Swedish crowns including INDI). If you wish to apply for such a grant support for this course, include a motivation for this in your course application. Grant applications will be judged on the basis of the motivation in case there are more applications than available grants.  

Course responsible:  
Carsten Daub  
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Contact person:  
Matti Nikkola  
Institutionen för cell- och molekylärobiologi  
Matti.Nikkola@ki.se
Title : Grundkurs i SPSS

Course number : 3028
Credits : 1.5
Date : 2019-03-11 -- 2019-03-15
Language : Swedish
Level : Forskarnivå

Responsible KI department : Department of Clinical Sciences, Danderyd Hospital
Specific entry requirements :

Purpose of the course : Kursen kommer att ge dig solida grundkunskaper i statistikprogrammet SPSS, du lär dig bl a hur man lagrar upp och strukturerar ett dataset, och hur man kan importera material från andra applikationer till statistikprogrammet SPSS och att tvätta data så att dessa blir i analyserbart skick. En av de viktigaste delarna i analysen är att beskriva det datamaterial som har samlats in samt att hur man dokumenterar sina steg med hjälp av syntax. Vi går grundligt igenom olika procedurer för att "lära känna" olika typer av variabler. Detta inkluderar även omkodning av variabler, skapa nya variabler från befintliga och selektera ut individer som uppfyller vissa givna villkor.

Intended learning outcomes : Efter kursen skall doktoranden: - Ha grundläggande kunskaper om statistikprogrammet SPSS för att skapa strukturerade datafiler, modifiera data, samt skapa grafer och tabeller med hjälp av programmets menysystem. - Självständigt kunna skapa en datafil utifrån ett protokoll/enkät och mata in data. - Självständigt kunna definiera, sortera, modifiera och selektera data för enklare situationer. - Ha kunskap om de vanligaste syntax kommandona för att hantera statistiska data i SPSS. - Självständigt kunna skapa och modifiera enklare syntax för att bearbeta data i SPSS. - Ha ett förhållningssätt till datahantering som visar på grundläggande förståelse för vikten av dokumentation m.h.a. syntax. - Räkna med datamöjliga realvärden och hantera textvariable. - Självständigt kunna skapa grafer och avancerade tabeller och göra enklare redigeringar. - Kunna utföra enklare analyser och tester. - Ha en grundläggande insikt om olika typer av fel som kan uppstå vid datahantering.

Contents of the course : Olika procedurer för att lära känna olika typer av variabler. Detta inkluderar även omkodning av variabler, skapa nya variabler från befintliga och selektera ut individer som uppfyller vissa givna villkor, samt att med hjälp av syntax utföra grundläggande variabelkommandon. Den beskrivande analysen omfattar både produktion av olika tabeller såväl som val av diagram. Du lär dig vilka typer av tabeller och diagram som är lämpliga beroende på de variabler du studerar. För att erhålla så presentationsförmåga rapporter som möjligt lär vi oss även att redigera resultatet av analysen. Åndamålet är att hjälpa dig att effektivisera ditt arbete, dokumentera dina analyser med hjälp av syntax och snabbt komma igång med SPSS

Teaching and learning activities : Denna kurs som sträcker sig över 5 dagar (2 dagar workshop + en övningsuppgift med avslutande seminarium).

Examination : Examination av kursen består av en hemuppgift som redovisas skriftligt. Doktoranden får självständigt arbeta med ett datamaterial under kursens gång som innehåller vanliga typer av problem med datahantering före en statistisk analys är möjlig. Varje doktorand lämnar enskilt in en lösning som dokumentation hur problemen har löstes som diskuterats via en peer-review. Egen tillgång till SPSS är nödvändig för att göra examinationen

Compulsory elements : Vid frånvaro från datorövningarna får doktoranden göra kompletterande övningsuppgift/-er. Vid frånvaro från redovisning och genomgång av uppgift får doktoranden göra kompletterande övningsuppgift/-er.

Number of students : 10 - 15
Selection of students : Urvalet baseras på datum för doktorandregistrering (där tidigare registreringsdatum har förtur).


Course responsible :
Fredrik Johansson
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Contact person : -
Title: Observation and visual methods in health care sciences research

Course number: 3029
Credits: 4.5
Date: 2019-03-04 -- 2019-04-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Neurobiology, Care Sciences and Society

Specific entry requirements:

Purpose of the course: To develop knowledge about the methodological underpinnings of visual and observation methods, which are utilized within health care sciences research.

Intended learning outcomes: Based on theoretically relevant tools, upon completion of the course the student is expected to be able to: - analyse and explain the rationale for methodological approaches using participant observation, photographic data generation, and video observations. - critically compare different visual methodological approaches in relation to research questions. - demonstrate practical skills with theoretically grounded arguments for the choices made in data gathering and analysis related to different visual methods. - demonstrate critical reasoning about ethical issues concerning the collection of, and working with, visual data in healthcare sciences.

Contents of the course: Engaging the visual senses in healthcare science research can be done in many ways. Visual methods are here used to include ethnographic observations as well as photographic and video observations. The visual evokes elements of human consciousness that can serve as a compliment to words, when words are insufficient or at times not at all accessible. The course content includes studies of theoretical underpinnings of methodological and ethical issues related to visual methods. Students will work with participant observation, photography, and video as methods while exploring these techniques in different methodological paradigms. Students will also explore different analysis with data in the course or from their own research projects.

Teaching and learning activities: This course is designed to have short trigger lectures alternated with active experiential learning tasks, workshops, seminars, and individual assignments/project work. The course requires active involvement of the student through participation in the various types of learning activities.

Examination: The examination will consist of an individual oral presentation followed by a questions and answers session and an individual short written report. Results will be assessed as Pass/not pass.

Compulsory elements: All learning activities except the lectures are mandatory. Absence can only be compensated for in agreement with the course organizer.

Number of students: 10 - 18

Selection of students: Selection will be based on 1) admitted as doctoral student in doctoral program for healthcare sciences at Karolinska Institutet, 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), and 3) date for registration as a doctoral student (priority given to earlier registration date).

More information: The course will be held in three course blocks and will utilise both campus and online venues. All campus learning activities will be at Campus Flemingsberg (detailed room numbers will be distributed with a schedule upon acceptance to course). Block 1: March 4-6, 2019 (Mon-Wed); Block 2: April 10-12, 2019 (Wed-Fri); Block 3: 24-26, 2019 (Wed-Fri).

Course responsible:
Eric Asaba
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Contact person: -
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 as well as strategies for coping with stress.

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 that 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 to be present at scheduled meetings and, where appropriate, be prepared for them. The course is scheduled 12 March, 21 March and 23 April at KI Campus Solna. In addition, time for reading and auscultation must be planned by the course participants. The course is given in English.

Course responsible:
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Contact person:
Karin Wrangö
Institutionen för lärande, informatik, management och etik
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Title: Mixed methods: integration of qualitative and quantitative data within applied health research

Course number: 3032
Credits: 3.0
Date: 2019-04-01 -- 2019-05-03
Language: English
Level: Doctoral level
Responsibility KI Department: Department of Public Health Sciences
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 weakness 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). 2. Apply different mixed-methods research designs to a health problem. 3. Write a mixed-methods research protocol. 4. Report the results of a mixed-method study. 5. Use mixed-methods to design and evaluate interventions studies. 6. 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 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 - 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:

Course responsible:
Mariano Salazar
Department of Public Health Sciences

mariano.salazar@ki.se

Contact person:
Title: Mouse necropsy

Course number: 3036
Credits: 1.0
Date: 2019-03-06 -- 2019-03-13
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 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 assessments will be carried out by direct observation of skills and documentation of actions taken by learners during their training laboratory session. A short multiple choice question final written 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: 5 - 10

Selection of students: 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 criterion will be used based on the date for registration as a doctoral student (priority given to earlier registration date).

More information: Face-to-face teaching will be held on March 6 and 13, 2019 between approx. 9am and 5pm.
Location: Learning Lab, Comparative Medicine. Instructors of this course are Dr. Björn Rozell, DDS, PhD, DVM, Professor, and Rafael Frias, DVM, MSc, PhD, Assoc. Professor. This course is also recognized by the LAS E&T unit, Comparative Medicine, as a Continued Professional Development (CPD) activity in Laboratory Animal Science (LAS) for those working with mice as an experimental model.

Course responsable:
Rafael Frias  
Comparative medicine  
085246660  
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Contact person:
Title: Exploring entrepreneurial opportunities in research

Course number: 3037
Credits: 4.5
Date: 2019-02-18 -- 2019-04-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

Purpose of the course: This course lays the foundation for the awareness of the potential of innovation and entrepreneurship. It will enhance your career opportunities inside and outside academia. The course will facilitate the discovery and identification of intellectual assets in the daily work. You will increase the awareness of the potential of innovation and entrepreneurship, by identifying opportunities for entrepreneurship in connection to research. 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, - discover and identify intellectual assets in their own research project, - explore the potential of different intellectual assets, - communicate a value proposition describing the need, approach, benefit and competition for identified intellectual assets, - assess their new skills and reflect on possible future effects, from ones individual perspective. - use design tools to gain an understanding for the user experience to develop solutions to user needs, - transform ideas into prototypes of products, services or processes, - use business tools such as business modelling to develop a potential business idea stemming from research, - assess their new skills and reflect on the possible future effects, from an organisational perspective. - identify and test the potential of a developed business idea, whether in an economic or social context, - package a business idea into a complete business plan, - communicate ("pitch") the business plan to people within the start-up world, such as potential investors, - assess their new skills and reflect on the possible future effects, from a societal perspective.

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 road map 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) date for registration as a doctoral student (priority given to earlier registration date)

More information: Course days are Mondays, Wednesdays and Fridays, 9 in total. 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

Course responsible:
Samer Yammine
Department of Learning, Informatics, Management and Ethics

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Contact person:
Title: Biostatistics I: Introduction for epidemiologists

Course number: 3042
Credits: 3.0
Date: 2019-03-27 -- 2019-04-12
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 used in epidemiology and public health.

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 descriptive statistics for an epidemiological study. - explain the difference between hypothesis testing and interval estimation and the relation between p-values and confidence intervals. - suggest an appropriate statistical test for a comparison of two groups, perform the hypothesis test using standard statistical software, and interpret the results. - estimate and interpret three alternative measures of association between binary exposures and binary outcomes and discuss the relative merits of each measure for a given research question. - explain the concept of confounding in epidemiological studies and demonstrate how to control/adjust for confounding using stratified analysis. - explain the basis of the linear regression model, fit a linear regression model using standard statistical software, assess the fit of the model, and interpret the results.

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; contingency tables; graphical representations; notions of probability; probability models (distributions); principles of statistical inference; parameter estimation (mean, proportion (prevalence), incidence and ratios); concepts of confidence intervals and hypothesis tests; and a general introduction to correlation and linear regression models.

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 on the two written examinations. The course is divided into two parts, and each part will be examined separately. To pass the course, the student must pass both parts. 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: The individual written examinations (summative assessments) are 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 motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). 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 Stata software is strongly recommended.

More information: The course is extended over time in order to promote reflection and reinforce learning. The course will be held the dates March 27-April 2 (week 1) and April 8-April 12 (week 2).

Course responsible:
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Contact person:
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Title: Biostatistics II: Logistic regression for epidemiologists

Course number: 3043
Credits: 2.0
Date: 2019-01-30 -- 2019-02-06
Language: English
Level: Doctoral level
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: This course focuses on the application of linear and logistic regression in the analysis of epidemiological studies.

Intended learning outcomes: After successfully completing this course you as a student are expected to be able to: - choose a suitable regression model for assessing a specific research hypothesis using data collected from an epidemiological study, fit the model using standard statistical software, evaluate the fit of the model, and interpret the results. - explain the concept of confounding in epidemiological studies and demonstrate how to control/adjust for confounding using statistical models. - apply and interpret appropriate statistical models for studying effect modification. - 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 linear and logistic regression in the analysis of epidemiological studies. Topics covered include a brief introduction to models for continuous data and a more complete coverage of binary outcome data, univariable and multivariable models, interpretation of parameters for continuous and categorical predictors, flexible modeling of quantitative predictors, confounding and interaction, model fitting and model diagnostics.

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

Examination: To pass the course, the student has to show that the learning outcomes have been achieved. The course grade is based on the individual written examination (summative assessment). The focus of the examination 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 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 at 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 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 motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). Submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, and an account of previous courses taken.

More information: The course is extended over time in order to promote reflection and reinforce learning. The course will be given the following dates: January 30, 31 and February 1, 4, 5, 6. The individual examination will be performed as a takehome examination. Prerequisite knowledge in epidemiology and biostatistics equivalent to "Epidemiology I: Introduction to epidemiology" and "Biostatistics I: Introduction for epidemiologists" or corresponding courses. Prior knowledge in Stata software is strongly recommended.

Course responsible:
Rino Bellocco
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Contact person:
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Title: Basic bioinformatics

Course number: 3044
Credits: 2.0
Date: 2019-04-15 -- 2019-04-23
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna
Specific entry requirements: Basic knowledge in molecular biology from undergraduate level.
Purpose of the course: The purpose of this course is to equip the students that work mainly in wet lab, with several bioinformatic tools commonly used in molecular biology and genetics.
Intended learning outcomes: By the end of the course the participants should be able to: - use the command line interface (a text-based means of interacting with a computer), - download from omics databases - know how to apply the basic principles for analyzing high-throughput sequencing data analysis and genome-wide association studies. - know how to perform logistic, linear regression and clustering analysis in python. - have the foundations to perform by themselves the taught data analysis techniques.
Contents of the course: High-throughput sequencing data analysis (RNA-seq and ChIP-seq), genome-wide association studies, genome browsers, plotting methods, logistic, linear regression and clustering in python.
Teaching and learning activities: The course consists primarily of hands-on computer exercises, and a limited number of lectures.
Examination: An individual project consisting of a practical exercise and a final seminar discussing each other’s projects in small groups in line with the intended learning outcomes of the course.
Compulsory elements: Practical sessions are compulsory, unless stated they are not. Absence has to be compensated for in agreement with the course organizer. The examination is compulsory.
Number of students: 10 - 25
Selection of students: Wet lab students without prior bioinformatics experience are given priority (use the motivation text field to specify), and secondarily date for registration as a doctoral student (priority given to earlier registration date).
More information:

Course responsible:
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Karolinska University Hospital - CMM L8:05
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Title: Causal inference: emulating a target trial to assess comparative effectiveness

Course number: 3046
Credits: 1.5
Date: 2019-04-15 -- 2019-04-17
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 and group sessions. Before the course, the student is required to study the course literature.

Examination: A written individual examination will be carried out after the course. The examination will require the evaluation of a published article on comparative effectiveness or safety. 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, with required prerequisite knowledge, 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 (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.


Course responsible:
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Contact person:
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Nobels väg 13
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Title: Understanding and fighting disease using structural biology

Course number: 3047
Credits: 3.0
Date: 2019-04-01 -- 2019-04-12
Language: English
Level: Doctoral level
Responsible KI department: Department of Biosciences and Nutrition
Specific entry requirements: BSc-level course in biochemistry and molecular biology

Purpose of the course: The course will first introduce X-ray crystallography, electron microscopy (EM) and nuclear magnetic resonance (NMR) spectroscopy, the three main methodologies used to experimentally determine the three-dimensional (3D) structure of biological macromolecules. Doctoral candidates will then analyze how point mutations can cause diseases at the molecular level and gain a basic understanding of how knowledge of the 3D structure of proteins can inform the drug design process.

Intended learning outcomes: By following this course, doctoral candidates will learn how the 3D structure of proteins is determined, and how this information can be used to both understand human disease at the molecular level and facilitate the rational development of novel therapeutics. In particular, Ph.D. candidates will be able to understand the most important biochemical and biophysical properties of proteins and, based on this knowledge, learn to choose and apply protocols for expressing and purifying proteins for structural studies. Following the practicals, the candidates will also be able to bioinformatically analyze protein sequences and structures in order to predict their characteristics and functions. At the end of the X-ray crystallography module, Ph.D. candidates will be able to read a protein crystallization diagram; list different crystallization techniques; understand the basics of X-ray diffraction; describe the data collection and processing procedures; explain the phase problem and its solution by experimental phasing or molecular replacement; understand the process of structure refinement; and validate crystal structures downloaded from the Protein Data Bank (PDB). The electron microscopy module of the course will provide an introduction to the basics of EM. This knowledge will provide a foundation for understanding the technique and its applications. At the end of the module, the candidates will be able to understand the basics concepts of EM and its differences from other structure determination techniques; list the advantages and limitations of EM for structure determination; describe the overall functioning and instrumentation of an electron microscope; explain the interaction of electrons with the sample and the process of image formation; understand the principles of 3D reconstruction from projection images; compare the process of model building in EM with other structure determination techniques. The NMR lecture will provide a basic overview of the technique as well as discuss the differences between NMR-derived models and those obtained by the other techniques. Thus, at the end of the lecture, the PhD candidates will be able to list the advantages and limitations of all methods presented and compare protein structures obtained through these different approaches. After the last lecture, the doctoral candidates will be able to understand recent examples describing how human mutations can cause diseases by affecting the structure of proteins and their ability to perform their biological function. They will also have gained a basic knowledge of how lead compounds/drugs bind to their molecular targets, and how structural biology can be of high medical relevance by allowing to optimize the affinity and specificity of this interaction.

Contents of the course: Theoretical: The lectures will open with an introduction to protein structure and function (1), followed by a presentation of protein expression and purification strategies (2). Then the theoretical background needed for understanding X-ray crystallography (3), EM (4) and NMR (5) will be given. At the end, we will go through examples of how gene mutations can lead to diseases and explain how knowledge of molecular structures can contribute to drug discovery (6). Practical: The Ph.D. candidates will work through six projects during the two weeks: (1) analysis of protein structure elements and properties using the molecular visualization program PyMOL; (2) protein purification; (3) protein structure determination by X-ray crystallography; (4) protein structure determination by EM; (5) comparison of protein structures obtained by X-ray crystallography, EM and NMR using PyMOL; (6) analysis of structure-function relationship for a selection of medically relevant proteins.

Teaching and learning activities: Lectures, laboratory work, presentation and discussion of current biomedically relevant research in the field of structural biology.

Examination: Reports from practical exercises and journal club-like presentations of scientific articles describing protein structure of biomedical interest. ILOs will be assessed both theoretically and through practical exercises. Each ILO will be tested through questionnaires that have to be submitted in electronic form at the end of each day. To ensure that each student gets every ILO, each teacher will take care of a maximum of 7 students; moreover, every ILO will be repeated on the day following the corresponding practical exercises and questionnaires, as well as when the students give their final presentations.

Compulsory elements: Lectures, laboratory work and seminar presentations are compulsory. If a Ph.D. candidate misses a practical exercise or the seminar presentations, they will be given a chance to complete it at another occasion set by the organizers.

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: The course will be given from Monday to Friday, 9 am to 5 pm. The address for the theoretical part is: NEO, Karolinska Institutet Campus Flemingsberg, Hålsövägen 7C, 14157 Huddinge. The address for the computer part is: KTH, Kungliga Tekniska Högskolan, Hälsövägen 11C, 14152 Huddinge. The course is arranged in collaboration between the doctoral programmes in Neuroscience and Development and Regeneration,
see https://ki.se/en/staff/doctoral-programmes.

**Course responsible:**
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**Contact person:**
Eileen Dietzel  
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Title: Cellular Signalling

Course number: 3049
Credits: 1.5
Date: 2019-03-25 -- 2019-03-29
Language: English
Level: Doctoral level
Responsible KI department: Department for Clinical Science, Intervention and Technology

Specific entry requirements:

Purpose of the course: The purpose of the course is to give a broad view of various signalling pathways and enable to identify common themes on protein-protein and protein-lipid interactions. The students shall learn on how signal transduction occurs through a highly regulated cascade of events in side cells. The student should identify and reflect the knowledge (general methodology and theoretical concepts) gained with the benefit for own research.

Intended learning outcomes: After the course, the student: - should be able to show adequate knowledge on current common methods and techniques, in the field of signal transduction. - should be able to hold a journal club presentation in the field of signal transduction. - should be able to apply some of the conceptual knowledge in his/her own research project(s).

Contents of the course: The course brings up current aspects in cellular signalling and the developments in understanding the function of the different signalling pathways in various cell model systems. The course will cover major aspects of protein and lipid kinases, heterotrimeric G-proteins, small GTPases, cytokine and growth hormone receptors, secondary messengers, transcriptional regulation and signal transduction in cell specific responses to stimuli. In the context of the functional genomic era, the course will cover the molecular basis of certain diseases related to the abrogation of signalling pathways.

Teaching and learning activities: Lectures, presentations and individual discussions with all participants. Students are encouraged to take up additional new topics with the course leader and lecturers. Discussions about resources to retrieve additional information about a particular issue within the field of signal transduction.

Examination: Oral Presentation is compulsory and it is essential to be an active participants in the discussions. It has to be shown that all the intended learning outcomes of the course are achieved.

Compulsory elements: All lectures and activity moments are compulsory, missing lectures must be compensated by written résumé, while activity moments should be taken again in the next course occasion.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will take place at Campus Flemingsberg.

Course responsible:
Anna Witasp
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Contact person:
Hannes Olauson
Institutionen för klinisk vetenskap, intervention och teknik
Hannes.Olauson@ki.se
Title: Genomics for Biomedical scientist: Handle your gene expression data.

Course number: 3062
Credits: 1.5
Date: 2019-02-04 -- 2019-02-08
Language: English
Level: Doctoral level
Responsible KI department: Department of Microbiology, Tumor and Cell Biology

Specific entry requirements:
Purpose of the course: The biomedical field has experienced a revolution thanks to the development of the massive parallel sequencing technologies. Now we can obtain the complete genetic information of a patient in a few days and with a limited cost. However, there is a gap between the application of classical molecular biology tools and the full use of the current genomic and computational approaches. The course will give students an introduction to genomics of gene regulation, with special emphasis on how genomic tools can be applied to the student's research. The students will be made aware of ethical aspects in relation to the technical progress.

Intended learning outcomes: At the end of the course the student should be able to:
- Understand the crosstalk across the different levels of gene expression regulation, with special emphasis on chromatin organization, polymerase activity and RNA biology.
- Know the principles of high-throughput technologies applied to the study of gene expression, their advantages and limitations.
- Get a deeper understanding about chromatin states dynamics and gene regulation, and how deregulation of such states contributes to human diseases.
- Design genome-wide experiments for studying the transcriptome and chromatin state, and to critically evaluate results obtained with those approaches.
- Use common bioinformatics tools to analyze ChIP-Seq and RNA-Seq experiments.
- Make use of public available genome-wide databases and publications to complement their own research.

Contents of the course: The course covers the use of genome-wide approaches for the study of gene expression regulation and how these approaches have become key for biomedical research. Particular attention will be paid to the understanding of advantages and limitations of those approaches, and applications to the study of human disease. The course will include both lectures and hands-on data analysis session, and provide the students tools to successfully navigate through the jungle of public available genome-wide datasets.

Teaching and learning activities: The learning activities used in the course include lectures, research seminars, group discussions, problem-based learning activities and research article presentations by the students. The students will be able to use gene expression data analysis software during the course. Students will present in learning groups a recent publication in form of a journal club as well as design and develop a research project in which they apply what they have learned into their own ongoing research. Students will also be encouraged to actively participate in the course. There will be substantial time for discussions after the lectures and research seminars.

Examination: The students will be examined for all learning outcomes. The examination is based on:
- The student participation and discussions during the course.
- The performance during the bioinformatic hands-on sessions.
- The student individual presentations during the last day of the course.

Compulsory elements: The seminars, lectures, group discussions and journal club presentations are compulsory. Absence cannot be compensated for.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course most likely takes place at the SciLifeLab in Solna (alternatively at the Biomedicum in Solna).

Course responsible:
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Contact person:
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Claudia Kutter
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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: 15 - 20

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 given over two weeks time, with 1,5 credits for the whole course.

Course responsible:
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Contact person:
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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:
- discuss the contribution of epidemiology to science and give examples of the advancements in the field,
- reason about classification of exposure, outcome and covariates in epidemiological studies,
- 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, with a specific focus on cohort studies,
- 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.

Intended learning outcomes are classified according to Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 1956, extended by Anderson and Krathwohl, 2001).

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 motivation), 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 February 4, 6, 8, 11 and 13. The course is extended over two weeks, but still five full course days, in order to promote reflection and reinforce learning. The individual examination (i.e. the summative assessment) will be performed as a takehome examination after the course.

Course responsible:
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Contact person:
Amanda Aronsson
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Title: The cell biology of aging

Course number: 3106
Credits: 1.0
Date: 2019-05-06 -- 2019-05-08
Language: English
Level: Doctoral level
Responsible KI department: Department of Cell and Molecular Biology
Specific entry requirements:

Purpose of the course: To increase the understanding of the cellular processes and mechanisms involved in aging processes.

Intended learning outcomes: Upon completion of the course, the doctoral students can describe important concepts and molecular and cellular processes involved in aging. They can describe differences between normal and pathological processes in relation with age-related diseases. They can describe and critically evaluate different methods and approaches in the study of aging processes at the cellular level.


Teaching and learning activities: Lectures, discussions, pre-course project work in teams, poster presentations and discussions.

Examination: The students are examined with individual and group presentations on the course themes.

Compulsory elements: Participation in the pre-course project work, group discussions and presentations is mandatory. Compensation is according to the instructions of the course director.

Number of students: 8 - 10

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 doctoral course is a short course jointly organized by King's College London (KCL) and Karolinska Institutet (KI). The course takes place at Biomedicum, Karolinska Institutet. The course faculty will be from both King's College London and Karolinska Institutet. The course participants from the two universities will be matched to create teams which are required to jointly complete pre-course project for the course assessment before the on-site three day course in Stockholm. This course is part of a series of courses and workshops that will be organized jointly by KCL and KI.

Course responsible:
Matti Nikkola
Department of Cell and Molecular Biology

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Contact person:
Title: CNS injuries and repair

Course number: 3107
Credits: 2.0
Date: 2019-04-01 -- 2019-04-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Cell and Molecular Biology
Specific entry requirements:

Purpose of the course: To increase the understanding of the cellular mechanisms following lesions to the central nervous system and potential therapies.

Intended learning outcomes: Upon completion of the course, the doctoral students can describe molecular and cellular mechanisms of injury response and the limitations of endogenous repair. The participants can relate injury responses to their potential use for therapy. The participants can discuss and critically evaluate different repair strategies for central nervous system lesions.

Contents of the course: Molecular and cellular mechanisms of injury response, following lesions to the central nervous system. Scientific approaches taken in the study of injury responses. Potential approaches for therapy.

Teaching and learning activities: Interactive lectures of international experts in the field of central nervous system repair, small group discussions, pre-course project work in teams, poster presentations and discussions.

Examination: Students are examined on the outcomes of the course based on the pre-course project work in teams, individual poster presentations and active participation in discussions. Each group of students will receive a specific central nervous system lesion topic (medical problem) and relevant literature before the start of the course. Using this specific lesion as example, the students will use literature to evaluate the known endogenous repair mechanisms and their limitations. The students will present the specific medical problems, approaches how to study central nervous system repair as well as potential approaches for therapy. This presentation will be in form of a scientific poster of which each student will present a specific part. All poster presentations will be held as scientific discussion with the entire group.

Compulsory elements: Participation in the pre-course project work, group discussions and presentations is mandatory. Compensation is according to the instructions of the course director.

Number of students: 12 - 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: This course is organized at the Biomedicum, Karolinska Institutet Solna campus, room B0313. One day of the course, Wednesday April 3 is organized as an international research symposium at the Nobel Forum. The course is supported by the Ming Wai Lau Centre for Reparative Medicine.

Course responsible:
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von Eulers väg 1
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Stockholm
Title: Pathology

Course number: 3109
Credits: 3.0
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: 16 - 30

Selection of students: 1) Documented knowledge in areas such as human tissue biology, cell biology or physiology (this kind of knowledge is a prerequisite to be able to benefit from the course). Those who already have studied pathology earlier (for example medical doctors) are not prioritized. 2) Date of admission to doctoral studies (those who have been admitted longest time ago have priority).

More information: The course has previously been given as 2044.

Course responsible:
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Contact person:
Title: Basic tumor histopathology

Course number: 3115  
Credits: 1.5  
Date: 2019-02-18 -- 2019-03-01  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Microbiology, Tumor and Cell Biology  
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 KI Box.

Examination: The students will get different case studies including digital images from tumors tissues and their clinical history via the KI Box 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 Board of 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: 10 - 17

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 has previously been given as no 2166.

Course responsible:  
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Contact person:  
Loránd Kis  
Institutionen för onkologi-patologi

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Title: Alzheimer's Disease: Clinical Features and Pathogenic Mechanisms

Course number: 3117
Credits: 1.5
Date: 2019-03-11 -- 2019-03-15
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 - 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: Schedule: Mon-Fri approx. 9-16. <br> This course has previously been given as 1584.

Course responsible:
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Contact person:
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Maria Ankarcrona
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Title : Forskningsetik

Course number : 3118
Credits : 1.5
Date : 2019-01-15 -- 2019-02-05
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.


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 dilemma i eget eller aktuellt forskningsområde, iii) ett skriftligt PM där synpunkter från opponent på den muntliga presentationen inarbetsat, och iv) opponering på annan students presentation av etiska dilemma i forskningen. Godkänd kurs innebär att det framgår att erforderliga kunskaper, färdigheter och förhållningssätt har uppnåtts genom aktivt deltagande i seminarier och godkänd muntlig och skriftlig presentation av examinationsuppgiften samt opponering på annan students presentation av etiskt dilemma.

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 : 15 - 20

Selection of students : Kursen ges en eftermiddag per vecka (tisdagar kl.13:00-17:15) under totalt fyra veckor på Karolinska Universitetssjukhuset, Huddinge (B31/K32). Kursen innehåller föreläsningar, seminarier, gruppövningar samt studenters muntliga och skriftliga presentationer. Mellan kurstillfällena finns det material att läsa enligt ett schema som ges till de antagna.

More information : Kursen har tidigare getts som 2132.

Course responsible :
Sigridur Kalman
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Contact person :
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**Title : Vetenskapsteori**

**Course number :** 3119  
**Credits :** 4.5  
**Date :** 2019-02-19 -- 2019-04-16  
**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 diskurser som bildar basen för vetenskaplig metod och kritik.

**Intended learning outcomes :** Efter kursen skall doctoranden ha kunskaper om  
1. Vetenskapsteoretiska teorier, principer och grundläggande begrepp  
2. Analysera och beskriva forskning i vetenskapsteoretiska termer  
3. Delta i vetenskapsteoretiskt diskurs om forskning och argumentera för styrkor och svagheter med olika vetenskapsteoretiska ingångar till en frågeställning  
Efter kursen skall doctorandens förhållningssätt till vetenskaplig diskurs vara  
1. Grundad i respekt för den roll som dialogen och debatten har i utvecklandet av vetenskap  
2. Byggt på insikt av att vetenskaplig diskurs kräver respektfull attityd till andra forskare, forskningsområden och samhälle

**Contents of the course :** En introduktion till vetenskapsteori och en förståelse för olika slag av vetenskapligt kunskapssökande. En grundläggande orientering om vetenskapsteoretiska frågor ges. Följande teman behandlas: begreppet kunskap, vetenskap - pseudovetenskap, hypoteser - hypotesprövning, orsaker - förklaringar, vetenskapliga värderingar - samhälle.

**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 opposition på den muntliga presentationen inarbetats  
iv) opponering på annan students presentation av etiskt dilemma.

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

**Number of students :** 15 - 20

**Selection of students :** Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förort)

**More information :** Kursen ges en eftermiddag per vecka (tisdagar kl.13:30-17:15) under total nio veckor på Karolinska Universitetssjukhuset Huddinge (PM1, B31/K33). Kursen innehåller föreläsningar med extern föreläsaren, seminarier, gruppövning samt studenter muntliga och skriftliga presentationer. Mellan kurstillfällena finns det material att läsa enligt en schema som ges till de antagna.  

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Title: Exploring human movement

Course number: 3123
Credits: 3.0
Date: 2019-02-11 -- 2019-02-22
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 that the participants gain the theoretical knowledge and practical experience needed to use common computerized methods for the study of human movement.

Intended learning outcomes: At the end of the course, the students should be able to:
* formulate clear research questions in the field of movement science and be able to set up adequate experiments for them. * in groups, conduct a scientific experiment in the movement laboratory. * analyse kinematic, kinetic and EMG data. * clearly present the results in oral and written form (including graphs). * evaluate their results by comparing them with the literature.

Contents of the course:
* Working in the lab with computerised movement analysis systems: - Kalibrering, datainsamling och analys - Signal processing of movement trajectories from reflecting markers, of Electromyography (EMG) and force plate data. * Biomechanics * Motor control * Muscle physiology * Training in experimental skills * Training in presentation skills

Teaching and learning activities: This course has three parts. The first part is a theoretical part, in which the students learn the basics of movement science by means of lectures, group work literature studies and individual work (3 days). The second part is laboratory work in which the students learn a) the principals of computerised movement analysis systems with calibration, marker placement, EMG, and forceplate measurements; b) learn to formulate a movement scientific research question (PM); and c) learn to accomplish an laboratory experiment - group work (5 days). The last part is the presentation part, in which the students present their laboratory results in both a written rapport and in zig-zaw group seminars (2 days).

Examination: The teachers give their judgement on the oral presentations and the written laboratory report. Moreover, student peer assessment on the oral presentations.

Compulsory elements: This course has three compulsory parts: 1. Oral presentation of the movement scientific research question (PM-presentation). 2. Active participation in the laboratory experiment. 3. Active participation in the zig-zaw group seminars. Absence at these compulsory parts, the students have to compensate this with: 1. A written presentation of the movement scientific research question (PM). 2. Participate in an other laboratory experiment. 3. A written summary of a number of laboratory reports, including reflecting comments.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: During these two weeks, we have three days of lectures and practic work and the students will work on their own project with their own data. We will have lectures at our movement laboratory (Core Facility) at NVS, Alfred Nobels Alle 23 in Flemingsberg. This course has previously been given as 2194.

Course responsible:
Wim Grooten
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Contact person:
Title: Health risk assessment: principles and applications

Course number: 3125
Credits: 1.5
Date: 2019-03-18 -- 2019-03-22
Language: English
Level: Doctoral level
Responsible KI department: The institute of Environmental Medicine
Specific entry requirements:

Purpose of the course: The purpose of this course is to build knowledge and understanding of the scientific method to assess risks to humans of exposure to different types of chemicals.

Intended learning outcomes: Upon completion of the course, the student should be able to:  
- describe the basic concepts and principles of health risk assessment of chemical substances  
- explain how different types of data from in vivo/animal, epidemiological and in vitro studies as well as exposure data are used in risk assessment  
- assess the relevance and reliability of data used in risk assessment  
- derive health based guidance values such as Acceptable Daily Intake (ADI) based on the data  
- reflect on the role of health risk assessment in regulatory decision making

Contents of the course: Health risk assessment of chemicals is the scientific method to assess the risk to humans of exposure to different types of chemical substances, such as pharmaceuticals, environmental pollutants, chemicals in cosmetics, clothing or other everyday products and pesticide residues, food additives and other substances in food. The course starts off with introducing the concepts in risk assessment, e.g. aims of risk assessment, role of risk assessment in risk analysis (risk assessment, risk management, risk communication), different steps in risk assessment (hazard identification, hazard characterisation, exposure assessment, risk characterisation). It moves on to the different types of data from in vivo/animal, epidemiological and in vitro studies as well as exposure data that are used in risk assessment. Thereafter it is discussed how the relevance and reliability of the data is assessed, and how different types of evidence are integrated (for example from animal and epidemiological studies). The principles on how to derive health-based guidance values such as Acceptable Daily Intake (ADI) and to derive Margins of Safety values based on the data are exercised. The course then moves on to provide examples of the role of risk assessment in regulatory decision making. Case studies of different types of risk assessments exemplify how research connects to risk assessment activities. The participants will also discuss how their own research can contribute to risk assessments.

Teaching and learning activities: Teaching and learning activities include lectures, exercises and group assignments.

Examination: Examination is in the form of a written assignment and/or oral presentation.

Compulsory elements: Participation in the exercises and group assignments is compulsory. Absence can be compensated with an individual task.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course has previously been given with no 1561.

Course responsible:  
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Contact person:  
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Institutet för miljömedicin

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Nobels väg 13

17177 Stockholm
Title: Epidemiology III. Analysis and interpretation of epidemiological data

Course number: 3129
Credits: 1.5
Date: 2019-05-08 -- 2019-05-17
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, with required prerequisite knowledge, 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 (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.

More information: Course dates are May 8, 10, 13, 15 and 17. The individual examination will be performed as a takehome examination, and will be distributed the last day of the course. <br>This course has previously been given as 1684.

Course responsible:
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Contact person:
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Nobels väg 13
17177
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Title: Application of epidemiological methods in aging research

Course number: 3131
Credits: 1.5
Date: 2019-04-01 -- 2019-04-05
Language: English
Level: Doctoral level

Responsible KI department: Department of Neurobiology, Care Sciences and Society

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, in-class quizzes, critical assessment of selected studies, and on-line literature searches.

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, with required prerequisite knowledge, 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 (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and 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/doctoral-programmes. The course was previously given as course number 1639.

Course responsible:
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Debora Rizzuto
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Debora.Rizzuto@ki.se
Title : Basic Course in Medical Statistics

Course number : 3134
Credits : 3.0
Date : 2019-03-11 -- 2019-03-22
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 : 40 - 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 at KI Campus Solna are: March 11, 12, 14, 18, 20, 22.

Course responsible :
Mesfin Tessma
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Contact person :
Margareta Krook-Brandt
Institutionen för lärande, informatik, management och etik
Margareta.Krook-Brandt@ki.se
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: 40 - 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 at KI Campus Solna are: May 13, 14, 16, 20, 22, 24.

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: 2019-01-21 -- 2019-04-15
Language: English

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: The course will be run with weekly lectures with each lecture lasting 2-3h. Final dates will be released when available.
Contact person:
Title : Epidemiology II. Design of epidemiological studies

Course number : 3138
Credits : 1.5
Date : 2019-05-27 -- 2019-06-05
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, with required prerequisite knowledge, 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 (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.

More information : Course dates are May 27, 28, 29 and June 3 and 5. The course is extended over time, but is still 5 full course days in order to promote reflection and reinforce learning. The individual examination will be performed as a takehome examination. <br>This course has previously been given as 1622.

Course responsible :
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Contact person :
Johanna Bergman
Institutet för miljömedicin

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17177
Stockholm
Title: Basic Immunology

Course number: 3139
Credits: 3.0
Date: 2019-02-04 -- 2019-04-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:

Purpose of the course: The student will learn basic concepts in immunology and meet the Immunology faculty at Karolinska Institutet. This course is a good starting point for more advanced courses in immunology.

Intended learning outcomes: To understand basic principles of innate and adaptive immunity and how different components of the immune system cooperate. To be able to relate, compare and understand experimental aspects of immune-related disease in a clinical perspective. To adapt knowledge gained of the function of the immune system by being able to analyze and discuss an immunological/clinical case (group project). To present the group project and discuss the results as well as work in pairs with clinical cases.

Contents of the course: The course is separated into two parts. In part 1 we discuss basic immunological mechanisms within the innate and adaptive immune response. In part 2 we apply the knowledge in clinical settings such as defense against infection, autoimmune and allergic disease or transplantation. Part 1: Introduction An overview of the immune system T cells B cells Antigen-presenting cells Innate vs adaptive immune responses Methods to study immune reactions. Part 2: Immune defence against bacterial and viral infections Primary immunodeficiencies Autoimmune disease Allergy Vaccination Clinical Immunology Transplantation Tumour Immunology Questions and discussions Presentation of projects.

Teaching and learning activities: The course is given fulltime during a total of six days separated into two parts. The teaching is mainly in lecture/seminar form but also includes individual and/or group assignments that require studies between the two course parts. Course literature ( Abbas) and cases are handed out at the course start. An immunological quiz is connected to the different chapters in the book so that the student will be able to digest the relatively big material. The course is designed so that clinically active doctors will be better able to combine it with work in the clinic (Mondays and Fridays contain no scheduled course work). 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 teaching of the applied immunology in part 2 starts. Considering the substantial literature requirement plus the cases and project work, we estimate that an extra 32h of study is needed, which is not included in the schedule.

Examination: Web-based exam on the course content. Oral presentations of small-group project work. At this occasion special attention is given to that all students are actively participating. The clinical cases are examined by written reports.

Compulsory elements: There will be no formal examination. The students will require 95% attendance/participation in lectures and other course activities to pass the course.

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: The course is separated into two parts. In part 1 (lectures on 4-6 Feb 19 + independent course work 7-8 Feb 19) we discuss basic immunological mechanisms within the innate and adaptive immune response. In part 2 (lectures on 1-3 Apr 19, independent course work 4-5 Apr 19) we apply the knowledge in clinical settings such as defense against infection, autoimmune and allergic disease or transplantation. All lectures will be held at Center for Molecular Medicine (CMM) lecture hall (L8:00): February 4 - 9:00-17:00 February 5 - 9:30-17:00 February 6 - 9:00-17:00 February 7 - 9:00-17:00 February 8 - 9:00-17:00 February 9 - 9:00-17:00 April 1 - 9:00-17:00 April 2 - 9:30-17:00 April 3 - 9:00-17:00 April 4 - 9:00-17:00 April 5 - 9:00-17:00 April 6 - 9:00-17:00 April 7 - 9:00-17:00 April 8 - 9:00-17:00 April 9 - 9:00-17:00 The course evaluation below refers to the same course but given previously with a different course number (3038).

Course responsible:
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Contact person:
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Title : Biostatistics III: Survival analysis for epidemiologists

Course number : 3142
Credits : 1.5
Date : 2019-02-11 -- 2019-02-20
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics

Specific entry requirements : The course assumes that students possess basic knowledge of Stata prior to the start of the course. An introduction to Stata can be found on the course webpage (www.biostat3.net). The course was previously given as course number 1685.

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: 1. 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. 2. Explain the similarities and differences between Cox regression and Poisson regression. 3. 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. 4. Discuss the concept of confounding in epidemiological studies and control/adjust for confounding using statistical models. 5. Apply and interpret appropriate statistical models for studying effect modification and be able to reparameterise a statistical model to estimate appropriate contrasts. 6. 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 and a passing grade must be obtained for each section in order to obtain a passing grade for the course. 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, with required prerequisite knowledge, will be selected based on 1) the relevance of the syllabus for the applicant's doctoral project (according to written motivation), and 2) date for registration as doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.

More information : The course will be held February 11, 13, 15, 18, 20. The course is extended over two weeks (but still five course days) to promote reflection and active learning. 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 test (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). The course was previously given as course number 1685.

Course responsible : Mark Clements
Department of Medical Epidemiology and Biostatistics
Title : Introductory course in SAS programming

Course number : 3143  
Credits : 1.5  
Date : 2019-05-13 -- 2019-05-17  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Public Health Sciences  
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 motivation), 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 held at Karolinska Institutet Campus Solna. Fulltime in supervised computer lab with a mixture of interactive lectures and exercises. Every morning a quiz, recapitulating the previous days' lectures. Basic computer skills are required. <br> The course has previously been given as 1447.

Course responsible :  
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Contact person :  
Amanda Aronsson  
Institutionen för folkhälsovetenskap

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Title : Computational modelling for cognitive neuroscience and psychiatry research

Course number : 3144
Credits : 1.5
Date : 2019-04-04 -- 2019-05-16
Language : English
Level : Doctoral level

Responsible KI department : Department of Neurobiology, Care Sciences and Society
Specific entry requirements : Background in medicine, biomedicine, biology, psychology, cognitive science, medical imaging, computational biology or similar. Previous experience with statistical analysis (regression, general linear model) and the R software.

Purpose of the course : The purpose of the course is to introduce doctoral students to computational techniques for modelling and analysing behavioural data for cognitive neuroscience and psychiatry research, providing them with practical experience applying these techniques.

Intended learning outcomes : After successful course completion, the students will be acquainted with several key computational models and have enough understanding to enable them to 1) critically interpret the results of the studies in the field and 2) adapt the models to new experimental paradigms for their own research. The students will be able to implement and estimate the models with the R package rstan.

Contents of the course : Bayesian modelling; introduction to reinforcement learning; classical models for decision-making tasks (drift diffusion model, intertemporal choice, two-armed bandit). Applications: psychosis, addiction, depression, anxiety.

Teaching and learning activities : Lectures. Hands-on sessions with practical exercises.

Examination : Examination consists of a practical assignment where students will define a problem in cognitive neuroscience or psychiatry and describe how to study it with the approaches explained in the course (theoretical framework, experiments, modelling and analysis, expected outcomes). The assignments will be presented in front of the other students in the last session.

Compulsory elements : Attending the lectures and hands-on sessions is mandatory. Absence from a lecture may be compensated by writing an essay on the corresponding topic. The final examination is compulsory (both report and presentation).

Number of students : 8 - 16
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 : Course dates and times: April 4, 11, 25 and May 2 (9:00-16:00); May 9 and 16 (9:00-12:00).
This course is new but builds on a previous course with number 3045, the course evaluation of which can be seen below.

Course responsible :
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Contact person :
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Rita Almeida
Institutionen för neurovetenskap

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Title: Pulmonary inflammation

Course number: 3145  
Credits: 1.5  
Date: 2019-04-08 -- 2019-04-12  
Language: English  
Level: Doctoral level  
Responsible KI department: The institute of Environmental Medicine  
Specific entry requirements: Basic immunology knowledge is required.

Purpose of the course: The aim of the course is to get basic knowledge of important pulmonary diseases in terms of clinic and research. To develop this knowledge, the student should be able to formulate the questions that the student need for understanding the disease and the questions that is needed to be answered by future research. Optimally, the student should be able to create designs for experimental protocols that answer important questions.

Intended learning outcomes: After the course the student should be able to show an understanding of the most important principles of lung physiology and mechanisms behind the respiratory impairment in asthma, chronic obstructive pulmonary disease (COPD), interstitial lung diseases and animal models used in respiratory research. The student should also be able to discuss the methods used for the diagnostics of the different lung diseases. Furthermore, the student should be acquainted with the research front-line in each of the lung diseases and the different models used in the research as well as be able to understand and evaluate scientific papers regarding lung diseases.

Contents of the course: The principles and challenges of important inflammatory diseases of the lungs from a translational perspective, that is from clinical practice to experimental research. The course will be interactive between both the participants and the lecturers. The course is focused on the following topics: asthma, chronic obstructive pulmonary disease (COPD), interstitial lung diseases and animal models used in respiratory research. Lectures cover epidemiology, symptoms and differential diagnosis, diagnostic methods, pathogenic mechanisms, treatment (existing, future). Demonstrations cover methods that are used for diagnostic and/or research purposes: e.g. inhalation provocation, allergy diagnosis, spirometry, peak expiratory flow (PEF) measurements, chest Xray, computer tomography, other imaging methods, bronchoscopy/broncholaveolar lavage, flow cytometry etc. For all the diseases specific lectures will cover how the research in each field has evolved, were the front-line is today.

Teaching and learning activities: The course, given during one week, comprises five days of scheduled studies that include review, group case work and preparation for the web-based examination. The general format is as follows: Each day starts with a case presentation and discussion in groups, when the group consisting of students with different backgrounds have a short brainstorming how to solve the case with regard to cause of disease, diagnostics, treatments and research. This is followed by lectures before lunch. After lunch there will be demonstrations and further lectures, and the day concludes with group discussions about the cases. In addition, each group is assigned one case that they will study more in depth in a group to discuss before they present it to the whole class for open discussion on the last day. The case work may include studying aspects of the disease not covered by the lectures/demonstrations, suggesting novel treatments and how they could be evaluated, identify areas where more research into mechanisms is needed and propose hypotheses and how these can be tested in a patient or animal model setting.

Examination: Web-based written examination. Oral presentations of small-group project work. At this occasion special attention is given to that all students are actively contributing.

Compulsory elements: All parts are compulsory. In case of absence, a written report that covers the part that was will be requested.

Number of students: 8 - 20

Selection of students: The course will be held 9.00-17.00 from Monday to Friday. The first three and a half days consist of lectures and group discussions. During the last days group work together with presentations will take place. The course will end with a web examination.

More information:

Course responsible:  
Mikael Adner  
The institute of Environmental Medicine

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Contact person:  
-
Title: To communicate science in different contexts with focus on oral and visual communication

Course number: 3147
Credits: 3.0
Date: 2019-02-18 -- 2019-03-05
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 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 two 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: 20 - 30

Selection of students: The selection for this basic general science course will be based on your admission date to doctoral education (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: This is a two-week course which requires time for independent work outside of scheduled class time. Scheduled class room sessions are on the following dates: 18-19 February, 25-26 February and 4-5 March. The course is given in ENGLISH. Former course number was 2144.

Course responsible:
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Contact person:
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Title: Introduction to nanomedicine

Course number: 3148
Credits: 1.5
Date: 2019-04-01 -- 2019-04-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Microbiology, Tumor and Cell Biology
Specific entry requirements:

Purpose of the course: The purpose of this course is to expose students to the interdisciplinary research of nanotechnology and its great potential in medicine not only against cancer but also against infections and antimicrobial resistance. Throughout the course, the basic principles and historical development of bionanotechnology (materials and devices) will be described and specific examples from current state-of-the-art research will be presented aiming to motivate students to employ such diagnostic and therapeutic nano-tools in their own research. Furthermore, the course aims to further train students in important academic skills such as effective communication by performing oral presentations and contributing to constructive criticism.

Intended learning outcomes: After the completed course, the students will be able to:  
- Describe on a professional level the advantages and challenges of nanoscale materials in medicine  
- Be up to date with current developments in nanomedicine  
- Understand the various in vitro and in vivo nano-based diagnostic tools  
- Understand the different categories of smart nanostructured multifunctional materials and devices and their employment in nanomedicine.  
- Be able to suggest the employment of novel diagnostic and therapeutic nano-tools in their own research  
- Perform extensive literature research using relevant databases (Web of Science, PubMed)  
- Practice important academic skills such as effective communication and presentation of research

Contents of the course: The course will cover the basic principles of nanomedicine as a field starting from the first nano-agent used in the 70's (liposomes) and expanding till today with sophisticated nano-diagnostic agents as well as multi-functional smart nano-drugs. Specific emphasis will be placed in the current state-of-the-art examples of how nanoscale materials may be utilised not only against cancer but also against infections and antimicrobial resistance. Additionally, we will place special attention to potential adverse toxicological outcomes as well as the regulatory framework surrounding nanomedicine.

Teaching and learning activities: The course will consist of lectures on each of the intended learning outcomes, including on how to perform comprehensive literature research and tips on effective communication of research, both as a report as well as oral presentation. At least one internationally-recognized expert will give a guest lecture covering one of the above topics. Visits to nanomaterial-relevant laboratories in KI, as well as microbiology research will be arranged and conducted. Each student will choose a mini-project that will be a literature research project of a topic relevant to nanomedicine. General lectures and demonstrations of how to perform extensive literature research in databases such as Web of Science and how to compile a final report and scientific presentation are included. At the end of the course, each student will give an oral presentation of the mini-project with peer based feedback.

Examination: The examination will consist of two parts: 1. The written assignment of the chosen mini-project (literature research of a nanomedicine-infection topic), and 2. The oral presentation of the mini-project with both peer-based and course master feedback.

Compulsory elements: Attendance at the lectures and oral presentations are compulsory. Absence from these can be compensated by extra assignment(s), however depending on the number of missed compulsory teaching activities, the possibility of compensating these will decided in agreement with the course master.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information:

Course responsible:
Georgios Sotiriou
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Contact person:
Title : Pain mechanisms: From molecules to treatment

Course number : 3149
Credits : 1.5
Date : 2019-06-03 -- 2019-06-07
Language : English
Level : Doctoral level
Responsible KI department : Department of Physiology and Pharmacology
Specific entry requirements : -

Purpose of the course : The purpose of the course is to give doctoral students an insight to pain mechanisms and pain biology, the impact of pain on human health and quality of life as well as to discuss the available treatment options and ongoing research aiming for pain relief. The participants will have the opportunity to learn and discuss the application of cutting edge technologies, animal models and clinical treatments for chronic pain from the leading pain experts.

Intended learning outcomes : At the end of the course the students should be able to: - Identify the major anatomical structures associated with pain transmission from the peripheral through the central nervous system. - Identify the fundamental biological structural components and pathways of pain signaling from a cellular perspective. - Describe systems and molecular mechanisms that either facilitate or inhibit pain transmission in peripheral or central nervous system. - Describe current knowledge on sex-based differences in pain signaling or perception in animals and man. - Categorize the diversity of common pain conditions in patients. - Contrast preclinical and clinical models of pain transmission and analgesia. - Summarize the current pharmacological approaches used for pain management. - Discuss the several non-pharmacological, complementary and alternative techniques that are applied for pain management.


Teaching and learning activities : Lectures, seminars, round table discussions, laboratory demonstrations, clinical demonstrations.

Examination : The examination for all students will consist of some multiple choice questions from each teacher. In addition, essays and/or project presentations and discussions for all students will be included.

Compulsory elements : -

Number of students : 10 - 10
Selection of students : Priority during the selection will be given: 1) based on motivation letter, 2) to students that have passed half-time review.

More information : The course will take place at University of Minnesota, Twin Cities Campus, Molecular & Cellular Biology (MCB) Building, classroom 3-120, 420 Washington Ave SE, Minneapolis, MN, USA. There is a limited number of travel grants available for KI doctoral students participating in the course. If you wish to apply for such a support please include a motivation for this in your course application.

Course responsible :
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Contact person :
Eva Kosek
Institutionen för klinisk neurovetenskap
Eva.Kosek@ki.se

Vinko Palada
Institutionen för fysiologi och farmakologi
Title: Inherited cancer syndromes; Genes predisposing to malignant disease

Course number: 3151  
Credits: 1.5  
Date: 2019-04-01 -- 2019-04-05  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Molecular Medicine and Surgery  
Specific entry requirements:

Purpose of the course: Hereditary cancer are associated with germline mutations that lead to increased vulnerability for an individual to develop cancers. These include germline mutations in tumour suppressor genes, oncogenes and genes encoding for proteins in cell cycle control and DNA repair and that cause overall genomic instability and increased risk in developing cancers. The underlying genetic cause can in some cases be utilised in targeted therapy. The purpose of this course is to bring the students to an advanced level in the fast-developing field of hereditary cancer syndromes, and to provide knowledge that can be applied both for basic, pre-clinical and clinical research.

Intended learning outcomes: After the course, the students should have knowledge on both more common and rare hereditary cancer syndromes and the genetic mechanisms behind them. The students will have gained skills in drawing and interpreting pedigrees, judging the impact of different cancer diagnoses on the clinical and research diagnostic process and be able to evaluate the evidence for genetic testing for these syndromes as well as for the impact of prevention programs and therapeutic options for hereditary cancer syndromes. The students should be able to critically judge basic research in the above topics for hereditary cancer syndromes as well as their clinical implementation. Students should be able to identify areas for future research as well as suggest appropriate methods to address these issues.

Contents of the course: The course will present the latest research into both rare and more common hereditary cancer syndromes including hereditary colorectal cancer, familial melanoma, hereditary breast cancer syndromes, Li-Fraumeni syndrome and other rare forms of inherited cancer.

Teaching and learning activities: The course will contain lectures, a seminar on pedigree interpretation and genetic counselling and a workshop on the use of next generation sequencing in research on hereditary cancer syndromes. There will be time for individual work in the afternoons.

Examination: The course assessment will consist of a written exam and an oral individual presentation followed by a discussion.

Compulsory elements: The course seminar as well as the examination are compulsory.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information: Preliminary course hours: 8:30-16:30. Location: Karolinska University Hospital Solna, L2:U1, room 1 <br> This course has previously been given as 2110.

Course responsible:
Emma Tham  
Department of Molecular Medicine and Surgery

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Contact person:
Emma Tham  
Institutionen för molekylär medicin och kirurgi

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Title : Clinical methodologies in metabolic research

Course number : 3153
Credits : 1.5
Date : 2019-05-13 -- 2019-05-17
Language : English
Level : Doctoral level

Purpose of the course : This course will enable the doctoral student to acquire and integrate knowledge of clinical and basic methodologies used in human metabolic research. It will promote understanding, competence, skills, judgement and approach in the field of obesity and diabetes mellitus and will facilitate student’s development as future scientist, public health specialist and/or clinician in this field.

Intended learning outcomes : After the course, students will have acquired a basic understanding of commonly used techniques in clinical and experimental metabolic research and an insight in how to combine analyses of clinical metabolic measurements with data obtained in molecular and cell culture-based methodologies.

Contents of the course : The course is based on clinical metabolic studies in human subjects and in vitro studies of human cell metabolism. Students will receive a theoretical introduction to methodologies used in clinical and experimental metabolic research. In addition, they will get demonstrations of common clinical metabolic techniques including clamps, fat/muscle/liver biopsies, determination of body composition (by bioimpedance and DEXA) and arterial stiffness, continuous blood pressure and glucose monitoring, clinical questionnaires as well as assessments of physical activity and sleep quality. Some of the (non-invasive) methods will be practiced by the participants themselves. Students will also be introduced to and perform commonly used experimental techniques, such as gene expression analyses in clinical samples as well as metabolic measurements in cell cultures, e.g. insulin-stimulated glucose uptake and determination of lipid accumulation. Primary human cells will be used as a cell model. Students will be shown how clinical metabolic measures can be linked to results obtained in vitro and vice-versa.

Teaching and learning activities : Lectures, group discussions, practical exercises, demonstrations, laboratory sessions.

Examination : Oral examination where students should describe how they could combine two of the methods they have learned during the week.

Compulsory elements : Practical exercises, demonstrations and laboratory sessions are compulsory and the absence must be compensated by written assays.

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) date for registration as a doctoral student (priority given to earlier registration date)

More information : The course will take place at Karolinska Hospital Huddinge C2:94 and NEO.

Course responsible :
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Contact person :
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