Course catalogue for doctoral education

HT21
# Human biology or pathology * General science courses

**2291** Clinical achievements of reproductive medicine 2021-09-06 -- 2021-09-10 (English)

**2348** Functional Fluorescence Microscopy Imaging (fFMI) in biomedical research 2021-11-15 -- 2021-11-26 (English)

**2452** Career Skills for Scientists 2021-08-31 -- 2021-10-22 (English)

**2527** Mass spectrometry-based proteomics: When and How. 2021-11-08 -- 2021-11-19 (English)

**2526** Neuropsychopharmacology 2021-11-29 -- 2021-12-03 (English)

**2561** Writing Science and Information Literacy * 2021-11-01 -- 2021-12-10 (English)

**2600** Neurogenetics 2021-09-27 -- 2021-10-01 (English)

**2609** Basic Course in Medical Statistics - a distance course * 2021-09-27 -- 2021-10-08 (English)

**2609** Basic Course in Medical Statistics - a distance course * 2021-12-06 -- 2021-12-17 (English)

**2616** Frontiers in Cognitive Neuroscience 2021-09-20 -- 2021-09-24 (English)

**2618** Write Your Research Results and Get Them Published * 2021-08-23 -- 2021-09-03 (English)

**2618** Write Your Research Results and Get Them Published * 2021-09-09 -- 2021-10-01 (English)

**2618** Write Your Research Results and Get Them Published * 2021-10-25 -- 2021-11-05 (English)

**2618** Write Your Research Results and Get Them Published * 2021-11-29 -- 2021-12-10 (English)

**2618** Write Your Research Results and Get Them Published * 2021-10-21 -- 2021-12-16 (English)

**2624** Brain Circuits 2021-09-13 -- 2021-09-17 (English)

**2629** Neurodegenerative Disorders I - From Molecule to Treatment 2021-10-04 -- 2021-10-08 (English)

**2630** Neurodegenerative Disorders II - Cellular and Molecular Mechanisms 2021-10-11 -- 2021-10-15 (English)

**2644** Human physiology - an overview * 2021-09-20 -- 2021-10-01 (English)

**2664** Introduction to modern test theory and test/survey methodology 2021-09-02 -- 2021-09-21 (English)

**2670** From What to How; Contemporary Narrative Methodology in Health Care Research 2021-09-30 -- 2021-11-23 (English)

**2674** Practical approaches to qualitative research - based on blended learning 2021-08-23 -- 2021-11-12 (English)

**2690** Basic Laboratory Safety * 2021-10-04 -- 2021-10-11 (English)

**2711** Social determinants of health 2021-11-22 -- 2021-12-03 (English)

**2738** Intermediate Medical Statistics: Regression models * 2021-11-08 -- 2021-11-19 (English)

**2760** Translational Medicine in the Field of Autoimmunity - an Overview 2021-11-17 -- 2021-12-03 (English)

**2780** The developing brain 2021-08-30 -- 2021-09-03 (English)

**2787** Present your research! * 2021-08-16 -- 2021-08-20 (English)

**2787** Present your research! * 2021-09-13 -- 2021-09-17 (English)

**2787** Present your research! * 2021-10-18 -- 2021-10-22 (English)

**2787** Present your research! * 2021-11-15 -- 2021-11-19 (English)

**2787** Present your research! * 2021-12-13 -- 2021-12-17 (English)

**2851** Principles of cellular metabolism 2021-09-20 -- 2021-10-01 (English)

**2868** Advanced Course in SAS Programming for Health Care Data 2021-11-29 -- 2021-12-03 (English)

**2873** Kvalitetssäkring av klinik forskning * 2021-09-06 -- 2021-09-10 (Swedish)

**2873** Quality Assurance of Clinical Research * 2021-09-27 -- 2021-10-01 (English)

**2919** Research on personalized/precision cancer medicine (PCM) 2021-10-04 -- 2021-10-08 (English)

**2953** Statistics with R - from Data to Publication Figure 2021-10-18 -- 2021-11-05 (English)

**2964** Medical Research Ethics * 2021-09-20 -- 2021-09-24 (English)

**2964** Medical Research Ethics * 2021-10-25 -- 2021-10-29 (English)

**2964** Medical Research Ethics * 2021-11-22 -- 2021-11-26 (English)

**2971** Introduction to R - Data Management, Analysis and Graphical Presentation 2021-09-24 -- 2021-10-29 (English)

**2972** Basic pharmacoepidemiology in a global context 2021-10-18 -- 2021-10-29 (English)

**2980** Study Design in Clinical Research 2021-11-08 -- 2021-11-25 (English)

**2981** Rare Disease Genomics 2021-10-04 -- 2021-10-08 (English)

**2986** Adverse outcome pathways (AOPs)-principles and applications in toxicology and health risk assessment 2021-10-11 -- 2021-10-15 (English)

**2992** Biostatistics III: Survival analysis for epidemiologists * 2021-11-08 -- 2021-11-17 (English)

**2994** Functional Neuroanatomy 2021-09-06 -- 2021-09-10 (English)

**2995** Systematic reviews and meta-analyses in animal research - an introduction 2021-11-23 -- 2021-11-24 (English)

**2996** Anaesthesia, Analgesia and Surgery (mice and rats) 2021-10-25 -- 2021-10-29 (English)

**3024** Advanced cancer biology 2021-08-31 -- 2021-12-21 (English)

**3028** Grundkurs i SPSS 2021-09-27 -- 2021-10-01 (Swedish)

**3028** Grundkurs i SPSS 2021-11-15 -- 2021-11-19 (Swedish)

**3037** Exploring Entrepreneurial Opportunities in Research 2021-09-13 -- 2021-11-12 (English)

**3049** Cellular Signalling 2021-10-11 -- 2021-10-15 (English)

**3066** Methods for Systematic Review 2021-09-23 -- 2021-12-10 (English)

**3073** Philosophy of science and the concept of health * 2021-11-08 -- 2021-11-19 (English)

**3078** Epidemiology I: Introduction to epidemiology 2021-09-20 -- 2021-09-29 (English)

**3080** Gene Regulation in the Early Human Embryo 2021-09-20 -- 2021-09-24 (English)

**3089** Cryobiology in assisted reproductive technology 2021-11-22 -- 2021-11-26 (English)

**3102** Omics Data Analysis: From Quantitative Data to Biological Information 2021-11-22 -- 2021-12-03 (English)

**3104** The epigenome: a platform for the integration of metabolic and signaling pathways in development and on the path to diseases 2021-10-11 -- 2021-10-15 (English)
3109 Pathology # 2021-10-11 -- 2021-10-22 (English)
3110 Tumor immunology and immune therapy of cancer 2021-11-15 -- 2021-11-19 (English)
3112 Basic course in tumor biology and oncology 2021-09-13 -- 2021-09-24 (English)
3114 Molecular Immunology 2021-10-18 -- 2021-10-29 (English)
3115 Forskningsetik * 2021-08-31 -- 2021-09-21 (Swedish)
3119 Vetenskapsetori * 2021-11-02 -- 2021-11-30 (Swedish)
3120 Flow cytometry: from theory to application 2021-10-04 -- 2021-10-08 (English)
3121 Experimental techniques in study of metabolic and endocrine disorders 2021-11-29 -- 2021-12-03 (English)
3127 Human Cell Culture. Methods and Applications 2021-10-04 -- 2021-10-08 (English)
3134 Basic Course in Medical Statistics * 2021-10-18 -- 2021-10-29 (English)
3137 Psychobiology of Intelligence 2021-10-19 -- 2021-11-18 (English)
3154 Biostatistics I: Introduction for Epidemiologists * 2021-10-04 -- 2021-10-27 (English)
3157 Mechanisms of Gene Regulation in Metabolism 2021-10-14 -- 2021-10-20 (English)
3173 Clinical Trials in Cardiovascular Research 2021-12-16 -- 2021-12-22 (English)
3175 Extracellular Vesicles: Progress Towards Diagnostics and Therapy 2021-10-11 -- 2021-10-15 (English)
3185 Core Concepts in Global Health and Global Burden of Disease 2021-09-13 -- 2021-12-10 (English)
3187 Basic Immunology 2021-09-06 -- 2021-09-24 (English)
3190 Nucleic Acid Chemistry and Therapy 2021-11-12 -- 2021-11-29 (English)
3197 Basic Cardiovascular Pathology 2021-11-22 -- 2021-11-26 (English)
3197 Clinical and experimental neuroimmunology 2021-10-11 -- 2021-10-15 (English)
3201 Teaching and Learning in Higher Education: A Doctoral Course * 2021-09-06 -- 2021-12-03 (English)
3214 Function B - to Design Procedures and Projects Involving Research Animals 2021-08-31 -- 2021-10-06 (English)
3220 Basic Human Neuroscience # 2021-09-23 -- 2021-11-04 (English)
3221 Assessing and Alleviating Pain and Distress in Laboratory Animals 2021-11-09 -- 2021-11-11 (English)
3230 Genomics for Biomedical Scientists: Handle Your Gene Expression Data 2021-09-20 -- 2021-10-01 (English)
3238 Thrombosis and Hemostasis, from Mechanisms to Therapies 2021-11-08 -- 2021-11-19 (English)
3239 Biosykosocialt perspektiv på beroendetillstånd 2021-08-30 -- 2021-09-10 (Swedish)
4215 Clinical and Molecular Bacteriology 2021-11-08 -- 2021-11-12 (English)
5214 Immunometabolism: Implications for Health and Disease 2021-09-13 -- 2021-09-17 (English)
5223 Artificial Intelligence and Machine Learning for Biomedical and Clinical Research 2021-11-22 -- 2021-12-03 (English)
5227 Advanced Scientific Writing * 2021-09-06 -- 2021-09-10 (English)
5231 Oral Presentation of Own Research * 2021-11-08 -- 2021-11-12 (English)
5232 Tumor Microenvironment 2021-11-08 -- 2021-11-12 (English)
5234 Clinical and Molecular Parasitology and Mycology 2021-11-15 -- 2021-11-19 (English)
5237 Human Viral Diseases: Mechanisms and Pathogenesis 2021-11-01 -- 2021-11-05 (English)
5274 Introduktionskurs i kliniska studier: från idé till arkivering * 2021-10-06 -- 2021-11-10 (Swedish)
5294 Health Science and Implementation: Conceptual Foundations 2021-09-13 -- 2021-09-23 (English)
5298 Advanced Causal Inference 2021-09-01 -- 2021-10-27 (English)
5300 Get started with R – Programming Basics, Data Analysis and Visualisation 2021-08-23 -- 2021-09-06 (English)
5301 Methods for Design and Formative Evaluation of eHealth Interventions 2021-11-08 -- 2021-12-03 (English)
5302 Information Literacy, Philosophy of Science and Research Ethics * 2021-10-11 -- 2021-10-22 (English)
5306 Interdisciplinary Impactful Research for the Future 2021-10-04 -- 2021-11-26 (English)
5307 Clinical Trials in Heart Failure Research 2021-09-30 -- 2021-10-05 (English)
5309 Cancer and Cancer Stem Cells 2021-09-27 -- 2021-10-01 (English)
5310 Diabetes and Cardiovascular Disease 2021-12-06 -- 2021-12-10 (English)
5313 Introduction to Artificial Intelligence in Cancer Precision Medicine 2021-10-18 -- 2021-10-22 (English)
5314 Biostatistics II: Logistic Regression for Epidemiologists * 2021-09-20 -- 2021-09-24 (English)
5315 Fundamentals of Stata Language 2021-09-13 -- 2021-09-17 (English)
5316 Fundamentals of using Python in Health Related Research 2021-10-18 -- 2021-10-22 (English)
5318 Sex and Gender Perspectives in Biomedical Research 2021-10-18 -- 2021-10-22 (English)
5319 Migration and Health 2021-09-20 -- 2021-10-01 (English)
5320 Global Mental Health 2021-10-11 -- 2021-10-22 (English)
5321 Health Policy and Management 2021-10-11 -- 2021-10-22 (English)
Title: Clinical achievements of reproductive medicine

Course number: 2291
Credits: 1.5
Date: 2021-09-06 -- 2021-09-10
Language: English
Level: Doctoral level
Responsible KI department: Department for Clinical Science, Intervention and Technology

Purpose of the course: The purpose of the course is to enable doctoral students to obtain a basic understanding of the biological processes involved in human reproduction. Experts in the field will provide with a fresh overview of clinical and pre-clinical research aiming at development of novel treatment possibilities but also discussing their current limitations.

Intended learning outcomes: The learning outcomes of this course are that at the conclusion of this course students should be able to show a comprehensive view of key factors involved in reproductive biology and the processes involved in fertilization and implantation. Additionally, at the end of the course students will be able to perform a critical assessment of reported achievements on reproductive medicine and their current clinical possibilities and limitations.

Contents of the course: Contents: Biology of the gametes, fertilization and early embryo development Normal and pathological implantation, early pregnancy loss, ectopic pregnancy, repeated miscarriage In vitro spermatogenesis and oocyte maturation Clinical investigation and therapeutic approach on female and male infertility Genetics in infertility Gonadal dysgenesia Stem cells research Assisted reproduction techniques (ART) In vitro systems and cultures Cloning. Somatic cell nuclear transfer Clinical aspects of fertility preservation Cryobiology systems for fertility preservation Pre-implantation genetic diagnosis Epigenetics in assisted reproduction Experimental reproductive tissue transplantation procedures: -ovarian and testicular tissue transplantation -transplantation of the uterus

Teaching and learning activities: Lectures, seminars/discussions and laboratory demonstrations.
Examination: Written examination and general group discussion of relevant parts of the examination.
Compulsory elements: All teaching activities, including the laboratory sessions, the lectures and the assessments, are obligatory. In case of not attendance to the activities, students should produce a literature work related with the subject of the missing activity upon agreement with the course organizer.

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) start date of doctoral studies (priority given to earlier start date)

More information: The course will be held in lecture rooms at Karolinska University hospital.

Course responsible:
Kenny Rodriguez-wallberg
Department of Oncology-Pathology
0858580000
kenny.rodriguez-wallberg@ki.se

Reproduktionsmedicin
Karolinska Universitetssjukhuset Huddinge
141 86
Stockholm

Contact person:
Cecilia Gotherstrom
Institutionen för klinisk vetenskap, intervention och teknik
08-5851847
Cecilia.Gotherstrom@ki.se

Klinisk Immunologi F79
Karolinska Universitetssjukhuset Huddinge
14186
Stockholm

Jose Inzunza
Institutionen för biovetenskaper och näringslära
08-585 850 93
Jose.Inzunza@ki.se

Hälsövägen 7, Novum
Karolina Kublickiene  
Institutionen för klinisk vetenskap, intervention och teknik  
0735930988  
Karolina.Kublickiene@ki.se

Karolinska Universitetssjukhus-Huddinge campus  
Njurmedicin  
14186  
Stockholm

Kenny Rodriguez-wallberg  
Institutionen för onkologi-patologi  
0858580000  
kenny.rodriguez-wallberg@ki.se

Reproduktionsmedicin  
Karolinska Universitetssjukhuset Huddinge  
141 86  
Stockholm
Title: Functional Fluorescence Microscopy Imaging (fFMI) in biomedical research

Course number: 2348
Credits: 3.0
Date: 2021-11-15 -- 2021-11-26
Language: English
Level: Doctoral level

Purpose of the course: This course is on advanced fluorescence microscopy imaging and spectroscopy techniques for quantitative characterization of molecular transport and interactions in cells. The purpose of the course is to give an introduction of the underlying physicochemical principles, hands-on experience and an overview of applications of these specialized techniques in biomedical research. The course is suitable for doctoral students lacking training in mathematics, physics, or optical engineering but want to apply these techniques in their research.

Intended learning outcomes: At the end of the course the student will have hands-on experience with live cell imaging and specialized fluorescence microscopy and spectroscopy techniques and is expected to be able to: 1. Use fundamental aspects of molecular structure to describe light-matter interactions and the emission of fluorescence; use this knowledge to discuss fluorescent properties of a fluorophore. 2. Understand the buildup of fluorescence imaging instrumentation, identify different optical elements and describe their function. 3. Describe the theoretical background behind specialized fluorescence based methodologies for studying molecular interactions in live cells. Discuss pros and cons in relation to the biological problem studied. 4. Specify instrumental requirements and design a fluorescence imaging assay for a biological problem of interest. 5. Apply a specific labeling strategy and perform a fluorescence imaging assay. 6. Communicate the results in written and oral form. 7. Discuss the adequateness of the methodology used in the scientific literature concerned.

Contents of the course: Fluorescence microscopy and associated techniques are indispensable research tools for investigating molecular mechanisms of biological processes. Versatility of fluorescence microscopy based techniques comes from the possibility to characterize fluorescence emission by spatial position, intensity, wavelength, lifetime and polarization. In addition, fluorescence microscopy and spectroscopy based techniques allow us to quantitatively study the cellular dynamics of molecules and the kinetics of their interaction with high spatio-temporal resolution and ultimate, single-molecule sensitivity. These techniques bring new biological insight at an unprecedented rate and are of crucial importance for the development of life sciences. The course covers the following topics: Luminescence and the nature of light (Fluorescence, Phosphorescence, Light scattering); Fluorescent markers and their photo-physical properties (Organic fluorescent dyes for covalent conjugation (Rhodamine 6G, Alexa dyes, Cyanine dyes); Quantum dots; Intrinsically Fluorescent Proteins (Aequorea victoria (GFP, YFP), Discosoma coral (DsRFP) and Montipora (Keima) families); Selectively binding dyes (DiI, DraQ 5). Instrumentation for Confocal Laser Scanning Microscopy (CLSM): Light sources, Optical Elements, Objectives, Detectors, Read-out devices); Quantization and Sensitivity in fluorescence imaging (Instrumental sensitivity, Method sensitivity, Absolute sensitivity); Factors affecting quantitative accuracy. Point Spread Function; Spatially resolved fluorescence imaging: Multi-photon excitation, Total Internal Reflection Fluorescence (TIRF) Microscopy, Super-resolution techniques (STORM, PALM and STED). Fluorescence based methods for studying molecular diffusion and interactions in live cells (FRAP, FRET, FLIM, FCS, FCCS, RICS). Image analysis techniques for quantitative characterization of cell phenotypes (CellProfiler).

Teaching and learning activities: The course includes lectures, laboratory training, demonstrations, discussion sessions and short written assignments.

Examination: The final assignment consists of a written project report (5 pages) and an oral presentation of the project report (15 min).

Compulsory elements: All sessions are compulsory. Please report any absence 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 special cases be compensated by an individually tailored additional module and a special written examination organized by the course committee.

Number of students: 8 - 12

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

More information: This is a two-week course with 10 sessions that include: lectures, laboratory practice, hands-on training, written assignments, discussions, and time for self-study. The first week focuses on underlying physicochemical principles, instrumentation and hands-on training at the microscope. During this week, specialized techniques are introduced and the details are discussed in the context of a broader body of available techniques. The second week is dedicated to expert lectures on advanced applications and hands-on image analysis. The last session is reserved for assessment. Experimental exercises are carried out in the laboratory for Functional Fluorescence Microscopy Imaging (fFMI) at the Center for Molecular Medicine (CMM), Solna, L8:01, 056. Lectures are conducted in the seminar room at the Center for Molecular Medicine (CMM), Solna, L8:01, 021.

Course responsible: Vladana Vukojevic
Department of Clinical Neuroscience
51771797
Vladana.Vukojevic@ki.se

CMM L8:01
17176
Stockholm

Contact person:
Ann Tiiman
Institutionen för klinisk neurovetenskap
ann.tiiman@ki.se

Sho Oasa
Institutionen för klinisk neurovetenskap
sho.oasa@ki.se
Title : Career Skills for Scientists

Course number : 2463
Credits : 1.5
Date : 2021-08-31 -- 2021-10-22
Language : English
Level : Doctoral level

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

Specific entry requirements :

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

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

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

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

Examination : Digital oral presentations and written projects.

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

Number of students : 30 - 40

Selection of students : 1) Position + time left at KI: A) KI PhD students: priority based on time left to defence. Write in motivation whether you have applied for defence + your confirmed/prospective defence date. B) KI Postdocs: priority based on time left to end of postdoc. Write end date in motivation (5 reserved spots). C) Others: Only considered after the above. 2) Written motivation: the course has many applicants and few spots. Apply only if you are sure you want to take the course and will make time for it.

More information : The course runs over 8 weeks and is built up as follows: A) Aug 31st – Sept 30th: 5 weeks of live Zoom course sessions (1-3pm every Tue and Thu) and private study (total +- 6h/week). B) Oct 4th – Oct 15th: 2 weeks of individual exam prep and internship info sessions (total +- 4h/week). C) Oct 20th – Oct 23th: 1 week of exam presentations in smaller groups (+- 2h). More detailed schedule will be available to course participants on the course web. For questions about the course content, contact Ayla (ayla.de.paepe@ki.se). For practical questions about your application, contact Liisa (liisa.olsson@ki.se).

Course responsible :
Hanna Jansson
Department of Learning, Informatics, Management and Ethics
0852483861
hanna.jansson@ki.se

Contact person :
Anethe Mansen
Universitetsförvaltningen
08-524 863 76
Anethe.Mansen@ki.se

Ayla De Paepe
Universitetsförvaltningen
ayla.de.paepe@ki.se
Title: Mass spectrometry-based proteomics: When and How.

Course number: 2522
Credits: 3.0
Date: 2021-11-08 -- 2021-11-19
Language: English
Level: Doctoral level
Responsible KI department: Department of Oncology-Pathology

Specific entry requirements:

Purpose of the course: The aim of this course is to give an overview of mass spectrometry based proteomics for researchers who would like to be able to apply these techniques in their own research.

Intended learning outcomes: After completed the course, the student will be able to:
- Define and apply common proteomics terminology
- Recognize the principles of the most common proteomics techniques
- Understand the mass spectrometry based proteomics workflow: Experimental design, sample preparation and selection of techniques
- Understand proteomics to such an extent that he/she will be able to utilize proteomics core facilities or collaborate with proteomics researchers.
- Evaluate the quality of protein and peptide identifications.
- Demonstrate how modern proteomics is applied to clinical research and to evaluate when proteomics research could be beneficial to incorporate in research projects.
- Design their own research project by mass spectrometry based proteomics.

Contents of the course: Lectures and workshops on:
- Overview of proteomics
- The proteomics workflow
- Basic of separation sciences: Protein and peptides
- Introduction to Mass spectrometry
- Experimental design
- Sample preparation, immunoprecipitation and enrichment strategy
- Quantitative and qualitative proteomics by mass spectrometry
- Global and targeted proteomics
- Human protein atlas and Biological validation
- Clinical applications

A practical laboratory exercise using mass spectrometry based proteomics

Teaching and learning activities: The course contains lectures, seminars, and a practical laboratory exercise using proteomics techniques. The students will plan their own project as a case study as well make an oral laboratory report.

Examination:
- Students shall describe a proteomics project (beneficially related to their research) including different aspects from the proteomics workflow. This is handed in as a written exam.
- The students shall perform an oral laboratory report

Compulsory elements:
- Attendance at lectures and the practical laboratory exercise.
- Attendance at examination seminar and hand in the written examination assignment.
- Extra written assignments can be used to compensate absence.

Number of students: 12 - 24

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

More information: This course is included in the doctoral programmes Allergy, immunology and inflammation (All) and Biology of Infections and Global Health Programme (BIGH). See https://ki.se/en/staff/doctoral-programmes.

Course responsible:
Henrik Johansson
Department of Oncology-Pathology
henrik.johansson@ki.se

Contact person:
Ghazaleh Assadi
Institutionen för onkologi-patologi
ghazaleh.assadi@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Neuropsychopharmacology

Course number: 2526  
Credits: 2.0  
Date: 2021-11-29 -- 2021-12-03  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Clinical Neuroscience  
Specific entry requirements:

Purpose of the course: We are organizing a course in neuropsychopharmacology for graduate students who are interested in clinical and preclinical research in affective disorders, schizophrenia, drug dependence, and anxiety-related disorders. The purpose of this course is to highlight these psychiatric disorders, summarize current treatment strategies (e.g. pharmacological and cognitive-behavioral therapy (CBT)), and to discuss new ideas and future research ambitions within this field.

Intended learning outcomes: By the end of this course the PhD students should: 1) have achieved an understanding of the etiology of psychiatric disorders and are able to account for different hypotheses in this field and how the major psychiatric diseases are treated. 2) possess skills and abilities to describe, discuss, understand as well as choosing appropriate methods and animal models for studying the effects of drugs on different symptoms of psychiatric diseases. 3) be able to evaluate data and preclinical research within the research fields of psychiatric diseases.

Contents of the course: This course will focus on pharmacological strategies in the treatment of psychiatric disorders, e.g. schizophrenia, major depression etc. The course will also discuss methods and models which are used in preclinical research concerning the mechanisms of action of different drugs in the treatment of these disorders.

Teaching and learning activities: The pedagogic framing of the course include lectures given by invited clinicians and researchers within the field of psychiatric disorders. We will also have demonstrations of key models/methods which are used in specific research projects.

Examination: Written exam.

Compulsory elements: The demonstrations are mandatory. The student has to compensate absense from this part with a written description of the model/method.

Number of students: 10 - 30

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

More information: It will be decided later whether the course will be given via zoom or live at Campus-Solna, Karolinska Institutet.

Course responsible:
Kent Jardemark  
Department of Physiology and Pharmacology  
0768649348  
Kent.Jardemark@ki.se

Contact person:
Per Svenningsson  
Institutionen för klinisk neurovetenskap  
0852487926  
Per.Svenningsson@ki.se

Vasco Sousa  
Institutionen för klinisk neurovetenskap  
vasco.sousa@ki.se
Title: Writing Science and Information Literacy

Course number: 2561
Credits: 3.0
Date: 2021-11-01 -- 2021-12-10
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 and information literacy skills of the participant.

Intended learning outcomes: After this course, you will be able to demonstrate:
- an understanding of how to write an original scientific article and submit it for publication
- an understanding of the publication process, including how to use relevant resources to choose a journal in which to publish your research
- an ability to write other types of texts required for a scientific career, such as grant applications and popular science texts
- an ability to give, take and make use of constructive criticism
- an ability to search and manage the medical science literature in a structured way.

Contents of the course: Writing an original scientific article, grant applications and popular science texts; searching and managing the literature; and understanding the publication process, including using relevant resources to choose a journal and navigate peer review.

Teaching and learning activities: This online course will take place in the learning platform Canvas. Content will be taught using various learning objects, from film to group exercises. Formative feedback will be implemented by teachers, peers and via self-assessment.

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 throughout the course which will aid their ability to search and manage the literature effectively, as well as choose a journal for publication.

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

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

More information: You will proceed through this course largely at your own pace by viewing films, reading texts and taking part in group exercises online via Canvas. However, there are two live sessions that will take place via Zoom: the first on Nov 1, 9.30-11.30; the second on Dec 6, 10.00-16.00. In addition, there are a series of assignment deadlines that need to be met. Writing assignment deadlines are on Nov 10, Nov 26 and Dec 10. Information literacy deadlines are on Nov 16, Nov 22 and Dec 6. Formative feedback will be provided on each assignment.

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

Contact person:
Katarina Amcoff
Karolinska Institutet universitetsbibliotek
08-524 840 47
katarina.amcoff@ki.se
Title : Neurogenetics

Course number : 2600
Credits : 1.5
Date : 2021-09-27 -- 2021-10-01
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 introduce the concepts and methodology applied in human genetic studies in general with examples from human diseases in the nervous system and to use this knowledge to prepare and present oral presentations as well as ask and answer questions. The course will also allow interaction between PhD-students with master students in their second year, both with a special interest in neuroscience. A potential purpose for students attending all 6 courses given in sequence (Frontiers Courses in Neuroscience) is also to place Neurogenetics in a greater research context.

Intended learning outcomes : I) The student will be able to understand and describe the major differences and uses of human genetic studies of neurogenetic diseases using i) Twin-studies, ii) population based studies, iii) case-control studies, iv) family studies. Students will have an in depth knowledge and understanding of selected neurologic conditions such as Alzheimer disease, trinucleotide repeat disorders, their genetic basis and an insight into the molecular pathogenesis, if known. II) The students will also be able to describe how genetic studies can be used to increase our understanding of the biological basis of neurological conditions. III) The students will be able to contribute substantially to critical evaluation and presentation of scientific articles in the field of neurogenetics. IV) The students will have an understanding of the different genetic techniques and platforms available for studies in human (neurological) conditions.V) The students will have an insight in the application/use of genetic testing for neurological diseases.

Contents of the course : I) The course will give examples of how different types of genetic studies can help us identify genes involved in the pathogenesis of neurological disease: i) Twin-studies, ii) population based studies, iii) case-control studies, iv) family studies. II) The course will give examples of different gene defects in neurological diseases such as trinucleotide repeats, point mutations, copy number variations, susceptibility genes, rearrangements, transcriptional regulation and epigenetics. III) The course will provide an in depth understanding of the genetics of selected neurological diseases and how these genetic dysfunctions help us understand the molecular mechanisms of disease.

Teaching and learning activities : Daily class-room lectures. Time will be allocated for students to prepare a group presentation of a selected topic/genetic neurological disease. The presentation will be on the last day of the course and constitutes the examination.

Examination : The examination will be on the last day of the course and it will consist of i) participating in a group presentation of a selected topic/genetic neurological disease ii) participate as an active audience when other groups have their presentations. Every student will be assessed individually in accordance with the intended learning outcomes of the course.

Compulsory elements : All lectures/seminars are compulsory and in case of absence, the session can be compensated by a short written report using the literature after agreement with the course director.

Number of students : 8 - 20

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

More information : The course will most likely be online, lectures combined with literature studies on your own to prepare for the examination. The host will change from Dept NVS to Dept MMK.
Title : Basic Course in Medical Statistics - a distance course

Course number : 2609  
Credits : 3.0  
Date : 2021-09-27 -- 2021-10-08  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Learning, Informatics, Management and Ethics

Specific entry requirements : 

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

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

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

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

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

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

Number of students : 35 - 45

Selection of students : Selection will be based on: 1) start date of doctoral studies (priority given to earlier start date). Please make sure that you have entered the correct start date for doctoral education in your personal profile. 2) the relevance of the course syllabus for the applicant's doctoral project/post doctoral research (according to written motivation).

More information : Course dates (via Zoom): 27th of September and 8th October (Mandatory).

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

Mesfin.Tessma@ki.se

Contact person :
Karin Wrangö
Institutionen för lärande, informatik, management och etik

karin.wrango@ki.se
Title: Basic Course in Medical Statistics - a distance course

Course number: 2609
Credits: 3.0
Date: 2021-12-06 -- 2021-12-17
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

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

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

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

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

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

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

Number of students: 35 - 45
Selection of students: Selection will be based on: 1) start date of doctoral studies (priority given to earlier start date). Please make sure that you have entered the correct start date for doctoral education in your personal profile. 2) the relevance of the course syllabus for the applicant's doctoral project/post doctoral research (according to written motivation).

More information: Course dates (via Zoom): 6th December and 17th December (mandatory).

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

Contact person:
Karin Wrangö
Institutionen för lärande, informatik, management och etik
karin.wrango@ki.se
Title: Frontiers in Cognitive Neuroscience

Course number: 2616
Credits: 1.5
Date: 2021-09-20 -- 2021-09-24
Language: English
Level: Doctoral level

Responsible KI department: Department of Neuroscience

Specific entry requirements: 180 hp in medicine, biomedicine, biology, psychology, or cognitive science, or master degree in medical imaging engineering

Purpose of the course: Students attending this course will be exposed to exciting new research in cognitive neuroscience, and learn to evaluate and critically discuss recent findings.

Intended learning outcomes: After the course the student must be able to: (1) account for current concepts and key principles of cognitive neuroscience; (2) show an understanding of the inter-disciplinary nature of cognitive neuroscience with its roots in both psychology and neuroscience; (3) discuss and critically evaluate scientific articles in the field; (4) To show basic knowledge about the strengths and weakness of the different state-of-the-art methods used in cognitive neuroscience.

Contents of the course: (1) Series of lectures informing about the state of art knowledge about: (i) Perception and sensory mechanisms; (ii) action planning and execution (iii); (iv) sex differences in the brain; (v) higher cognitive functions including working memory and creativity; (vi) memory; and (vii) cognitive effects of aging (2) Seminars where the students will critically discuss key published papers, and group presentations where they will present their analyses and conclusions for the whole group.

Teaching and learning activities: Lectures, seminars, and group presentations.

Examination: The oral presentation and group discussions during the last days seminar count as examination. We will assess individual students ability to discuss and reason about current issues and problems in cognitive neuroscience.

Compulsory elements: The group seminar is obligatory. In addition to that, the students are assumed to take part in the lectures. The student will be able to compensate missing attendance by submitting written reports on the missed material later.

Number of students: 16 - 28

Selection of students: The selection is based on 1) the relevance of the syllabus for the applicant’s doctoral project (according to motivation), 2) the start date for doctoral studies

More information: The course is held daily between approximately 9 am and 4.30 pm with lectures and group exercises.

Course responsible:
Henrik Ehrsson
Department of Neuroscience
0852487231
Henrik.Ehrsson@ki.se

Retzius väg 8

17177
Stockholm

Contact person:
Title : Write Your Research Results and Get Them Published

Course number : 2618
Credits : 3.0
Date : 2021-08-23 -- 2021-09-03
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health

Specific entry requirements :

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, popular science summary and scientific poster.

Intended learning outcomes : AFTER ATTENDING THE COURSE, THE COURSE PARTICIPANT SHOULD BE ABLE TO: 1) Write a project plan 2) Write an abstract 3) Write a popular science summary and a scientific poster 4) Understand the ethics in publication 5) The writing process: structure, language and style 6. The main scope of a research project 7. Summarizing and presenting information aiming at the target audience 8. Identify the characteristics and disposition of different written presentation media and decide which forum is most suitable for a specific text 9. Understand, and apply, the terminology associated with scientific writing 10. Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing 11. Ethics in publication

Contents of the course : THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and formats. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Different formats for presenting your research a) scientific paper b) abstract c) scientific poster d) cover letter e) project plan g) popular science summary (for example for your dissertation kappa, project plan, grant application) 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. Summaries and presentations in popular science (e.g. PubMed) and decide what sources are reliable 8. Respond to the reviewer's comments 9. Write a cover letter 10. Write a project plan 11. Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing 12. Use the focus points in a scientific paper (where the readers focus their reading) to your advantage 13. Understand the main scope and focus of the research and summarize information aligned to the target group 14. Write a popular science summary and the tool for presentations 15. Give a poster presentation 16. Design a scientific poster and reflect upon structure, language and style 17. Understand the ethics in publication 18. Use the software EndNote for reference management 19. Search for references in databases (e.g. PubMed) and decide what sources are reliable 20. Respond to the reviewer's comments 21. Write a cover letter 22. Write a project plan 23. Reflect on own development as a writer of different texts during the course

Teaching and learning activities : Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the course participants 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 summary, poster and abstract. All assignments can (but doesn’t have to be) be based on own research (if applicable). 2) Evaluation sessions, where the course participants give each other constructive feedback on the written assignments as a part of the learning process 3) Poster presentation, where the course participants present their posters to a small group of their colleagues (there are no presentations in front of a larger group)

Compulsory elements : Lectures, seminars, 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 : 16 - 22
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to LATER registration date).

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

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

Contact person :
Title: Write Your Research Results and Get Them Published

Course number: 2618
Credits: 3.0
Date: 2021-09-20 -- 2021-10-01
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health

Specific entry requirements:

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, popular science summary and scientific poster.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE COURSE PARTICIPANT SHOULD BE ABLE TO: 1) Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text  2) Understand, and apply, the terminology associated with scientific writing  3) Write an abstract  4) Use the correct structure and language to compose a short draft for a scientific paper, following the editorial requirements  5) Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing  6) Use the focus points in a scientific paper (where the readers focus their reading) to your advantage  7) Identify the main scope and focus of the research and summarize information aligned to the target group  8) Write a popular science summary and use popular science as a tool for presentations  9) Design a scientific poster and reflect upon structure, language and style  10) Understand the ethics in publication  11) Use the software EndNote for reference management  12) Search for references in databases (e.g. PubMed) and decide what sources are reliable  13) Respond to the reviewer's comments  14) Write a cover letter  15) Write a project plan  16) 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. Different formats for presenting your research a) scientific paper  b) abstract  c) scientific poster  d) cover letter  e) project plan  g) popular science summary (for example for your dissertation kappa, project plan, grant application) 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

Teaching and learning activities: Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the course participants 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 summary, poster and abstract. All assignments can (but doesn't have to) be based on own research (if applicable). 2) Evaluation sessions, where the course participants give each other constructive feedback on the written assignments as a part of the learning process 3) Poster presentation, where the course participants present their posters to a small group of their colleagues (there are no presentations in front of a larger group)

Compulsory elements: Lectures, seminars, 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: 16 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to LATER registration date).

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

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

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

Contact person:

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21

18/147
Title: Write Your Research Results and Get Them Published

Course number: 2618
Credits: 3.0
Date: 2021-10-25 -- 2021-11-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health

Specific entry requirements:

Purpose of the course: The purpose of the course is to impart knowledge and practical experience in scientific writing, based on your own research, including manuscript, abstract, popular science summary and scientific poster.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE COURSE PARTICIPANT SHOULD BE ABLE TO:
- Understand 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 short draft for 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) to your advantage
- Identify the main scope and focus of the research and summarize information aligned to the target group
- Write a popular science summary 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
- Write a project plan
- 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
- Different formats for presenting your research a) scientific paper, b) abstract, c) scientific poster, d) cover letter, e) project plan, g) popular science summary (for example for your dissertation kappa, project plan, grant application)
- The writing process: structure, language, style
- Editorial requirements of different journals
- Summarizing and presenting information aiming at the target audience
- Identifying the main scope of a research project
- References
- Use and interpretation of popular science (EndNote software)
- Data base search
- Basic rhetoric for poster presentations
- More information

Teaching and learning activities: Lectures, seminars, writing exercises, group assignments and practical exercises. As part of the learning process, the course participants 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 summary, poster and abstract. All assignments can (but doesn’t have to) be based on own research (if applicable). 2) Evaluation sessions, where the course participants give each other constructive feedback on the written assignments as a part of the learning process 3) Poster presentation, where the course participants present their posters to a small group of their colleagues (there are no presentations in front of a larger group)

Compulsory elements: Lectures, seminars, 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: 16 - 22
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to LATER registration date).

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

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

Contact person:
Anna Hildenbrand Wachtmeister  
Institutionen för kvinnors och barns hälsa  
070-789 06 07  
anna.hildenbrand.michelman@ki.se

Lalit Kumar  
Institutionen för kvinnors och barns hälsa  
Lalit.Kumar@ki.se
Title: Write Your Research Results and Get Them Published

Course number: 2618
Credits: 3.0
Date: 2021-11-29 -- 2021-12-10
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health

Specific entry requirements:

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, popular science summary and scientific poster.

Intended learning outcomes: AFTER ATTENDING THE COURSE, THE COURSE PARTICIPANT 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 short draft for 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
- Write a popular science summary 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
- Write a project plan
- 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. Different formats for presenting your research a) scientific paper b) abstract c) scientific poster d) cover letter e) project plan g) popular science summary (for example for your dissertation kappa, project plan, grant application) 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 course participants 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 summary, poster and abstract. All assignments can (but doesn't have to) be based on own research (if applicable). 2) Evaluation sessions, where the course participants give each other constructive feedback on the written assignments as a part of the learning process 3) Poster presentation, where the course participants present their posters to a small group of their colleagues (there are no presentations in front of a larger group)

Compulsory elements: Lectures, seminars, 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: 16 - 22

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

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

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

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

Contact person:
Title : Write Your Research Results and Get Them Published

Course number : 2618
Credits : 3.0
Date : 2021-10-21 -- 2021-12-16
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements :

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, popular science summary and scientific poster.

Intended learning outcomes : AFTER ATTENDING THE COURSE, THE COURSE PARTICIPANT 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 short draft for 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) to your advantage - Identify the main scope and focus of the research and summarize information aligned to the target group - Write a popular science summary 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 - Write a project plan - 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. Different formats for presenting your research a) scientific paper b) abstract c) scientific poster d) cover letter e) project plan g) popular science summary (for example for your dissertation kappa, project plan, grant application) 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 course participants 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 summary, poster and abstract. All assignments can (but doesn't have to) be based on own research (if applicable). 2) Evaluation sessions, where the course participants give each other constructive feedback on the written assignments as a part of the learning process 3) Poster presentation, where the course participants present their posters to a small group of their colleagues (there are no presentations in front of a larger group)

Compulsory elements : Lectures, seminars, 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 : 16 - 22
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to LATER registration date).

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

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

Contact person :
Anna Hildenbrand Wachtmeister
Institutionen för kvinnors och barns hälsa
070-789 06 07
anna.hildenbrand.michelman@ki.se

Lalit Kumar
Institutionen för kvinnors och barns hälsa
Lalit.Kumar@ki.se
Title : Brain Circuits

Course number : 2624  
Credits : 1.5  
Date : 2021-09-13 -- 2021-09-17  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Neuroscience  
Specific entry requirements : Knowledge of neuron function and brain anatomy is required.

Purpose of the course : The purpose of the course is to provide doctoral students in the field of neuroscience with an overview of current state-of-the-art approaches, technologies and concepts used for understanding of the brain's circuits and functions in animal models. There is a very strong emphasis on research in mice. All invited speakers have made seminal contributions to how we currently study and understand the brain, and there will be ample opportunities for the students to interact with the speakers, and discuss aspects relevant to their own work.

Intended learning outcomes : By the end of the course the student shall be able to: - explain the structure and function of the main brain circuits, - describe the principles for excitatory and inhibitory networks, including receptors and neurotransmitters, as well as the action of different chemical neuromodulators, - describe principles, use and readout of optogenetics and recording technologies, - describe principles and methods to define the structure (neuroanatomy) of brain circuits, - explain how dysfunctions of networks can manifest as neuropsychiatric disorders, - describe animal behavior tests probing specific networks and network functions.

Contents of the course : The course will cover the organization and function of main circuits in the brain, including the interaction and participation of different cell types, the interplay between excitation and inhibition, and how circuit output results in behavior. Different techniques for recording, labeling and manipulation of neuronal circuits in animal models will be discussed, including electrophysiology, molecular targeting, optogenetics and viral tracing. The connection between deficient circuit functions and neuropsychiatric disorders will be included, as well as animal behavior tests probing specific circuits and circuit (dys)functions. Specific emphasis will be put into describing the technologies currently used in the neuroscience field.

Teaching and learning activities : Lectures by invited experts and group exercises.

Examination : The student should in discussions and a seminar presentation demonstrate the ability to critically evaluate original research papers on the topics covered and be able to show that the intended learning outcomes for the course are reached.

Compulsory elements : The seminar presentations are obligatory, and so are all lectures. Any absence has to be compensated for in accordance with the instructions of the course director.

Number of students : 12 - 24

Selection of students : We welcome highly motivated applicants from all areas of neuroscience. Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project according to the written motivation in the application, 2) the extent of experience in neuroscience research as stated in the written motivation, 3) start date of doctoral studies (priority given to earlier start date).

More information : Lectures will be given by international and KI neuroscientists who have made significant contributions to the study of brain and behaviour using advanced methods to define the organization and function of circuits. Lectures will cover the development and application of novel technologies (imaging activity, optogenetics, machine learning) with a focus on advances using transgenic rodents. We have a strong emphasis on engaging young neuroscientists and creating a network for future neuroscience leaders. The course will be given at Karolinska Institutet Campus Solna and/or on Zoom. Time: 9.00-17.00 (Monday to Friday). Updates regarding the course, including confirmed speakers, lecture halls will be posted on www.carlenlab.org

Course responsible :  
Marie Carlen  
Department of Neuroscience  
08-52483043  
Marie.Carlen@ki.se

Contact person :  
Dinos Meletis  
Institutionen för neurovetenskap  
Dinos.Meletis@ki.se
Title: Neurodegenerative Disorders I - From Molecule to Treatment

Course number: 2629
Credits: 1.5
Date: 2021-10-04 -- 2021-10-08
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 for participants to gain knowledge concerning clinical aspects and molecular mechanisms of neurodegenerative disorders. To gain and apply new knowledge, participants will (in addition to lectures by experts in the field) prepare and give own oral presentations as well as ask and answer questions in the group during the course week. The course will allow interaction between PhD-students and master students (in their second year), all with a special interest in neuroscience.

Intended learning outcomes: The student should after the course: 1) understand cellular processes and molecular mechanisms of neurodegeneration 2) understand mechanisms of protein turnover, degradation and aggregation 3) based on knowledge of these mechanisms critically be able to evaluate the concept of conformational disorders and its relevance to the different neurodegenerative disorders 4) have achieved basic knowledge about epidemiology, symptoms, pathology and current treatments of the most common neurodegenerative disorders such as Alzheimers disease, Parkinsons disease, amyotrophic lateral sclerosis and multiple sclerosis. 5) In addition, the student should understand how the pathology of these disorders is reflected in their symptoms. 6) Based on this understanding, the student should be able to discuss the effects of treatments, if they are (or may be) symptomatic or curative. 7) Be able to evaluate the relevance of different disease models, their advantages and limitations with respect to the clinical picture and to what is known about disease mechanisms.

Contents of the course: The course will cover topics related to the degeneration of neural cells, apoptosis and necrosis as well as the cellular and biochemical reactions to neuronal injury. During the course we will also present and discuss symptoms, diagnosis, pathology, epidemiology, genetics and treatment of the most common neurodegenerative disorders such as Alzheimers disease, Parkinsons disease, amyotrophic lateral sclerosis and multiple sclerosis. Molecular mechanisms of current and future treatment strategies, disease models and their potential will be presented and discussed. In addition, the students may within group assignments study less common neurodegenerative diseases such as frontotemporal dementia, Lewy body disease, ataxias and prion diseases.

Teaching and learning activities: The course runs day time for 1 week full-time with a mix of lectures by invited scientists, participants group assignments as well as individual studies.

Examination: The examination part includes: the group assignments, short formative examination questions at the end of some of the days during the course week, the oral presentations by the students and the following general discussion between all participants. All students are individually assessed.

Compulsory elements: The group assignments, the oral presentations by the students and the following general discussion between all participants are compulsory. Students that are absent from these parts will have to individually submit a written presentation of the subject.

Number of students: 10 - 25
Selection of students: If selection of course participants is necessary, we will prioritize 1) students for whom the course is mandatory, 2) students with an educational plan encompassing the topics of the course, and 3) PhD-students with an early registration date and close to finalizing the doctoral studies.

More information: The course will be held at Karolinska Institutet, Solna and/or as a web based course depending on the pandemic situation during 2021.

Course responsible:
Elisabet Åkesson
Department of Neurobiology, Care Sciences and Society
Elisabet.Akesson@ki.se

Contact person:
Helena Karlström
Institutionen för neurobiologi, vårdvetenskap och samhälle
Helena.Karlstrom@ki.se

Eva Kallstenius
Institutionen för neurobiologi, vårdvetenskap och samhälle
08-52483522
eva.kallstenius@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Neurodegenerative Disorders II - Cellular and Molecular Mechanisms

Course number: 2630  
Credits: 1.5  
Date: 2021-10-11 -- 2021-10-15  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Neurobiology, Care Sciences and Society

Specific entry requirements: The course is a continuation of the course Neurodegenerative disorders I, From molecule to treatment, but it can also be taken as a separate course, provided the participant has in other ways achieved the learning outcomes of that course.

Purpose of the course: The purpose of the course is to provide a deeper understanding of neurodegenerative disorders, focusing on molecular mechanisms and techniques used for studying these, as well as treatment strategies.

Intended learning outcomes: The student should be able to: - understand and critically evaluate relevant cellular and molecular pathophysiological mechanisms of neurodegenerative disorders such as stroke, Alzheimer disease, frontotemporal dementia, Lewy body disease, Parkinson’s disease, multiple sclerosis, amyotrophic lateral sclerosis, and the mechanisms of current and/or possible future treatments. - understand and perform important methods and assays for studying mechanisms behind neurodegenerative disorders, and discuss the results, taking into account the limitations of the assays. - discuss the present disease models, propose alternative models, and critically evaluate these models from the perspectives of a) clinical picture, b) disease mechanisms, and c) treatment mechanisms.

Contents of the course: The course addresses topics in basic and clinical research on neurodegenerative disorders. The focus will be on a deeper understanding of cellular and molecular mechanisms, and the techniques to study them. To this end, the students will learn about some powerful techniques that can be used for studying neurodegeneration, subcellular localization, and elucidation of pathogenic pathways.

Teaching and learning activities: The course runs daytime for 1 week full-time with some key lectures by invited scientists, laboratory practicals, and discussions in small groups and the entire class.

Examination: Oral examination followed by group discussions on the examination questions, and a general discussion between all participants.

Compulsory elements: The student is obliged to attend 80% of the lectures, all laboratory practicals, and the exam (including the group discussion after the exam). Students that are absent from the practicals and/or more than 20% of the lectures will have to submit a written presentation of the subjects missed.

Number of students: 10 - 24

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

More information:

Course responsible:  
Sophia Schedin Weiss  
Department of Neurobiology, Care Sciences and Society  
sophia.schedin.weiss@ki.se

Contact person:  
Lars Tjernberg  
Institutionen för neurobiologi, vårdvetenskap och samhälle  
Lars.Tjernberg@ki.se

Sophia Schedin Weiss  
Institutionen för neurobiologi, vårdvetenskap och samhälle  
sophia.schedin.weiss@ki.se

Per Nilsson  
Institutionen för neurobiologi, vårdvetenskap och samhälle  
Per.et.Nilsson@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title : Human physiology - an overview

Course number : 2644  
Credits : 3.0  
Date : 2021-09-20 -- 2021-10-01  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Physiology and Pharmacology  
Specific entry requirements :

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

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

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

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

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

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

Number of students : 15 - 20

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

More information : Scheduled events approximately 7 out of 10 course days, some half days and some full days.

Course responsible :  
Stefan Reitzner  
Department of Physiology and Pharmacology  
stefan.reitzner@ki.se

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

Course number: 2664
Credits: 4.0
Date: 2021-09-02 -- 2021-09-21
Language: English
Level: Doctoral level
Responsible KI department: Department of Neurobiology, Care Sciences and Society
Specific entry requirements:

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

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

Contents of the course: The content of the course is primarily based on aspects related to systematic quantitative data gathering processes. The course introduces: - The measurement process and the different aspects included in this process - Modern test theory and current definitions of concepts - Different quantitative data gathering methods - Approaches for construction, application, analysis, and evaluation of clinical tests/questionnaires The course content is individually adjusted for examining a specific aspect of data gathering processes (a clinical test/questionnaire/survey) that is chosen by the student and related to his/her own research project. This aspect is presented by the student during the first day of the course and will guide the individual learning processes.

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

Examination: The examination consist 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 leaning 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: Doctoral students within the research school in Health Care Sciences will be given priority. In addition, priority for admission will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date). The course language will be English unless all students are comfortable communicating in Swedish.

More information: The course dates are as follows: 2/9, 3/9, 9/9, 10/9, 16/9, and 21/9 2021. 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 or online depending on the situation in the Fall.

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

Contact person:
Title: From What to How; Contemporary Narrative Methodology in Health Care Research

Course number: 2670
Credits: 4.0
Date: 2021-09-30 -- 2021-11-23
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 for the doctoral students to develop an overview of theory and application of contemporary narrative and interpretive methods in health-care research and to develop knowledge and skills in applying this knowledge in their own project. Furthermore, the purpose is for the doctoral student to develop knowledge and proficiency in using qualitative methods to study processes and multifaceted phenomena.

Intended learning outcomes:

- Ability to perform narrative and interpretive analyses on own data material with supervision.
- Ability to analyse and discuss quality and relevance of narrative and interpretive methodology in relation to own question and relevant discourses in health care science.

Contents of the course:

- Positioning of narrative and interpretive analysis in relation to other qualitative methodology.
- Definitions of central concepts used in narrative and interpretive methodologies
- Methodological approaches in narrative and interpretive methods that focus on: (1) verbal data, (2) observed action, and (3) processes utilizing multiple data materials.
- Design of a study based on own research question that is well suited for narrative and interpretive methodology.
- Skill training in use of narrative and interpretive strategies in analyses of data from own project.

Teaching and learning activities:

The course will be given over one semester with course meetings in the form of workshops. The workshops will consist of lectures, seminars, and study groups with supervision. Students will participate in study groups depending on the form of the narrative analyses they choose to practice. This training format targets the learning needs of each student. Students will use their own data material and be supervised by an expert in the most suitable narrative methodology in the study groups. Between workshops, students will collaborate with help of an IT based platform.

Examination:

Criteria for pass: Fulfillment of learning outcomes. Students will be given written feedback on assignement in relation to learning outcomes.

Compulsory elements:

Participation is mandatory at workshops. In case of absence students will be given additional assignments

Number of students: 8 - 25

Selection of students:

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

More information:

The course is held September 30, October 1, October 25-26 and November 22-23.

Course responsible:

Staffan Josephsson
Department of Neurobiology, Care Sciences and Society
0852483733
Staffan.Josephsson@ki.se

Contact person:

-
Title: Practical approaches to qualitative research - based on blended learning

Course number: 2674  
Credits: 7.5  
Date: 2021-08-23 -- 2021-11-12  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Global Public Health  
Specific entry requirements: None  

Purpose of the course: Qualitative research is a powerful widely used methodology that allows researchers to understand why and how an event occurs in a given context. However, many health scientists are unfamiliar with theories and methods used in qualitative research. This course will contribute to fill this knowledge gap by providing the participants with practical skills to design, conduct, analyze and report qualitative studies.

Intended learning outcomes:  
- Design a qualitative study including selecting the appropriate sampling procedure and data collection methods.  
- Develop the data instruments including interview/focus group discussions guides and observation protocols.  
- Conduct the fieldwork.  
- Analyze the data.  
- Write up the findings.  
- Critically discuss others' qualitative research, e.g. described in research proposals and manuscripts.

Contents of the course:  
- Background on qualitative methodology.  
- Theory of qualitative research.  
- Sampling in qualitative research.  
- Designing an interview/discussion guide.  
- Ethical considerations in qualitative research.  
- Writing a research protocol.  
- Data collection methods (in-depth interviews, focus groups discussions and observation).  
- Alternative methods of data collection.  
- Analysis of qualitative data.  
- Trustworthiness and validity.  
- Other approaches to interpretation: Phenomenology, narrative research, oral history.  
- Qualitative research in evaluation.  
- Critical review of literature.  
- Ongoing development as qualitative researcher.

Teaching and learning activities: The course will be taught with a blended learning approach, which will combine self-study and face-to-face practical training sessions. Students will be able to access course materials and interact with each other through a common e-learning platform. Practical sessions will be conducted face-to-face where a theoretical and practical training will be provided in the three dominant qualitative data collection methods, including discussion of examples used in studies. In addition, the students will conduct individual assignments that will allow them to improve their skills.

Examination: Four assignments are to be done during the course. The first three assignments will take the students through a full mini research project. The first assignment will be to write a qualitative research protocol, the second to conduct two individual depth interviews and transcribe these and the third to analyze the interview transcripts. The fourth assignment will be to write a critical review of a published qualitative paper. There will be a written examination at the end of the course, which will be emailed to the students to be returned within 48 hours. In order to obtain a pass for the whole course, students must obtain a pass in the four assignments and in the written examination.

Compulsory elements: Participation in practical sessions, on-line lectures and discussions is compulsory. Non-participation will result in additional assignments at the discretion of the course tutor.

Number of students: 8 - 15

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

More information: The course is a blended learning course combining face-to-face and pre-recorded online lectures. Face-to-face lectures will be conducted on August 23rd (half a day) and on the practical week. The practical week will be held from September 27th to October 1st. Participation in the practical week is mandatory.
Title: Basic Laboratory Safety

Course number: 2690  
Credits: 1.8  
Date: 2021-10-04 -- 2021-10-11  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Microbiology, Tumor and Cell Biology

Specific entry requirements: Experience of and/or education in laboratory work

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

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

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

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

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

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

Number of students: 30 - 40

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

More information:

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

Maria.Johansson@ki.se

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

christina.johansson.1@ki.se
Title : Social determinants of health

Course number : 2711  
Credits : 3.0  
Date : 2021-11-22 -- 2021-12-03  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Global Public Health  
Specific entry requirements :  
Purpose of the course : The course intends to enable the PhD student, especially in public health, to acquire increased knowledge and skills to reflect with a research mindset over his/her own PhD thesis from the perspective of social determinants of health and inequalities in health.  
Intended learning outcomes : On completion of the course the student should be able to: 1. Reflect with a research mindset over major social determinants of health, and their relative importance in different contexts and settings. 2. Compare and contrast how social factors may influence disease and ill health and how diseases also may have social consequences. 3. Reflect with a research mindset over the social gradient in health. 4. Discuss some principal mechanisms by which health inequalities are generated.  
Contents of the course : The course aims to introduce and discuss some major social determinants of health and their relative importance in different settings and contexts. In addition the course discusses how the distribution of social determinants of health in the population may create a social gradient of disease and ill health in the population and some principal mechanisms by which inequalities in health may be generated. Different measures of socioeconomic position, advantages and disadvantages of the different measures and different data sources are discussed. As part of the course, students are expected in an individual assignment to reflect on their own PhD project from the perspective of social determinants of health and inequalities in health, with reference to the course literature.  
Teaching and learning activities : Teaching methods will include lectures, seminars, group work and a written individual assignment, and will be based on the course book and selected scientific articles.  
Examination : Successful examination involves - Completed individual assignment - Presentation of own written reflection, and commenting on the reflection of others - Participation in mandatory seminars and group work  
Compulsory elements : Active participation in seminars and group work is mandatory. The course director assesses if, and in that case how, absence can be compensated.  
Number of students : 10 - 25  
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)  
More information :  
Course responsible :  
Bo Burström  
Department of Global Public Health  
08-52480160  
Bo.Burstrom@ki.se  
Tomtebodavägen 18A  
Widerströmska huset  
17177  
Stockholm  
Contact person :  
-
Title: Intermediate Medical Statistics: Regression models

Course number: 2738
Credits: 3.0
Date: 2021-11-08 -- 2021-11-19
Language: English
Level: Doctoral level

Responsible KI department: Department of Learning, Informatics, Management and Ethics
Specific entry requirements: Basic Medical Statistics (or equivalent)

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

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

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

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

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

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

Number of students: 18 - 20

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

More information: The course will consist of three or four scheduled whole days per week for two weeks. Course dates are: November 8, 9, 11, 12, 15, 16, 19.

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

Contact person:
Karin Wrangö
Institutionen för lärande, informatik, management och etik
karin.wrango@ki.se
Title: Translational Medicine in the Field of Autoimmunity - an Overview

Course number: 2760  
Credits: 3.0  
Date: 2021-11-17 -- 2021-12-03  
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. - Formulate research questions in relation to a clinical and patient perspective. - Discuss differences and similarities between different autoimmune diseases as well as patient heterogeneity and different clinical phases of diseases. - Summarize and present research findings in the field of autoimmunity in a clear and concise manner.

Contents of the course: 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 is a full-time three plus three days course with compulsory reading of articles, and individual and group assignments during the additional days of the course. The course seminars and lectures will be given during the two blocks of three days each. The poster presentations take place on the last day of the second block. The course will feature multiple lectures, interactive discussions with patients, tutorial-style discussions in groups and student oral presentations related to the course subject.

Examination: The course examination will include group assignments and poster presentations of selected topics 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. To pass the course all intended learning outcomes must be achieved.

Compulsory elements: Attendance during two blocks of three is 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 in agreement with the course leader.

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

More information: The course will be given in two blocks with lectures and seminars November 17-19th (Wednesday to Friday) and December 1-3 (Wednesday to Friday). Time between the block will need to be dedicated to individual and group learning assignments equivalent to four days work.

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: The developing brain

Course number: 2780
Credits: 1.5
Date: 2021-08-30 -- 2021-09-03
Language: English
Level: Doctoral level
Responsible KI department: Department of Medical Biochemistry and Biophysics

Purpose of the course: Developmental biology lies at the heart of an effort to understand complex biological systems. By studying how neural circuits are assembled we can extrapolate key aspects of their function as well as devise strategies for their repair. This course is given to deepen the understanding of how molecular and cellular mechanisms underlie neurobiological function and to widen the horizon of students within the strong Karolinska neuroscience community.

Intended learning outcomes: By the end of the course the student shall be able to describe the major steps contributing to the development of the nervous system and transfer new knowledge acquired in the course into their specific projects or fields of research.

Contents of the course: The course will cover the main steps of development from neural stem cells to mature circuits, including the patterning of the neural plate and thus the origin of cell types, the interplay between intrinsic and extrinsic factors, gene regulation including epigenetics, neuro-glial interactions and the role of network activity in shaping the final circuits. Different molecular and tracing technologies, and model organisms will be covered. An important aspect of the course regards molecular technologies for labeling, transcriptional analysis and genetic manipulation of defined neural populations. Connections between aberrant developmental processes and neurological disorders will be discussed.

Teaching and learning activities: Lectures by invited international experts, group work and seminar presentations.

Examination: The students should demonstrate their knowledge about the intended learning outcomes stated above including reflect on which aspects are relevant for their own research in a seminar presentation and in discussions.

Compulsory elements: All lectures and the seminar presentation (examination) are compulsory.
Number of students: 16 - 24
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) the date for registration as a doctoral student (priority given to earlier registration date)

More information: This course is a full-time course and will be held at Campus Solna if possible, otherwise online. The schedule with all details will be sent out after acceptance to the course.

Course responsible:
Jens Hjerling-Leffler
Department of Medical Biochemistry and Biophysics
jens.hjerling-leffler@ki.se

Contact person:
Goncalo Castelo-Branco
Institutionen för medicinsk biokemi och biofysik
Goncalo.Castelo-Branco@ki.se

Ulrika Marklund
Institutionen för medicinsk biokemi och biofysik
Ulrika.Marklund@ki.se

Francois Lallemend
Institutionen för neurovetenskap
francois.lallemend@ki.se
Title: Present your research!

Course number: 2787  
Credits: 1.5  
Date: 2021-08-16 -- 2021-08-20  
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 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: 16 - 20

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

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

Course number: 2787
Credits: 1.5
Date: 2021-09-13 -- 2021-09-17
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: 16 - 20
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

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

Course number: 2787
Credits: 1.5
Date: 2021-10-18 -- 2021-10-22
Language: English
Level: Doctoral level
Responsibile 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. Flip chart 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: 16 - 20

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

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

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

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

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2021-11-15 -- 2021-11-19
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None

Purpose of the course: The purpose of the course is to 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 aseptically 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 understand enhancing 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: 16 - 20

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

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

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

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

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Present your research!

Course number: 2787
Credits: 1.5
Date: 2021-12-13 -- 2021-12-17
Language: English
Level: Doctoral level
Responsible KI department: Department of Women's and children's health
Specific entry requirements: None

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

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

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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: 16 - 20

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

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

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

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

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Principles of cellular metabolism

Course number: 2851  
Credits: 1.5  
Date: 2021-09-20 -- 2021-10-01  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Medicine, Solna  
Specific entry requirements:  

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

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

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

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

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

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

Number of students: 15 - 20  

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

More information: The course runs at 50% pace over 2 weeks. Seminars and labs on campus are planned for the days 20/9, 22/9, 24/9, 27/9, 29/9 and 1/10 (preliminary dates). Remaining time is for self-study.  

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

Contact person:  
-
Title: Advanced Course in SAS Programming for Health Care Data

Course number: 2868  
Credits: 1.5  
Date: 2021-11-29 -- 2021-12-03  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Medicine, Solna  
Specific entry requirements: Knowledge corresponding to the intended learning outcomes of the KI doctoral courses Introductory course in SAS programming, Epidemiology I: Introduction to Epidemiology, Biostatistics I: Introduction for epidemiologists and Biostatistics II: Logistic regression for epidemiologists.

Purpose of the course: The purpose of this course is to give students with prior experience in SAS the foundation needed to work independently with large data bases in SAS, performing the data management needed for observational studies from for instance a register linkage.

Intended learning outcomes: After this course the student should be able to - independently use a wide range of SAS functions and procedures for data management - manage data using Proc SQL, and in a given situation decide whether to use SQL or SAS Base - develop basic SAS macros - use core statistical procedures, and export results to other software. 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: Students will develop their skills in processing data using built-in functions and procedures, including loops, learn how to merge data sets and perform operations with SAS Base and SQL coding, and the benefits and tricks of transposition, where one moves between "long" and "wide" data sets. Students will also learn how to write user written functions (macros) in SAS, and work through examples of how to analyse data with core statistical techniques, and export relevant results to edited tables. Although exercises during the course will use health care data, the same skills would be useful for studies in e.g., demography, sociology, and economics.

Teaching and learning activities: Different strategies for teaching and learning, such as interactive lectures, laboratory exercises and small group discussions, will be used. Daily, formative assessments are used to support the students' learning processes.

Examination: A computerized individual take-home examination with realistic assignments, corresponding to the learning outcomes of the course. Students will be allowed to use any literature during the exam, including access to the Internet. Students who do not pass the examination will be offered a second examination within two months.

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

Number of students: 8 - 25

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

More information: Please note the specific entry requirements for the course.

Course responsible:  
Thomas Frisell  
Department of Medicine, Solna  

thomas.frisell@ki.se

Contact person:  
Thomas Frisell  
Institutionen för medicin, Solna  

thomas.frisell@ki.se
Title: Kvalitetssäkring av klinisk forskning

Course number: 2873
Credits: 1.5
Date: 2021-09-06 -- 2021-09-10
Language: Swedish
Level: Forskarnivå
Responsibile KI department: Department of Medicine, Solna
Specific entry requirements:


Intended learning outcomes: Kunskap och förståelse: - Ha kunskap om hur man dokumenterar data så att samtliga moment i en klinisk forskningsprocess kan återskapas på ett tillförlitligt sätt och valida data genereras - Förstå innebörden av Helsingforsdeklarationen och Good Clinical Practice så att åtgärder för att skydda forskningspersoners säkerhet vidtas - Ha kännedom om nationell, europeisk och internationell lagstiftning, vilka vetenskapliga projekt som kräver ansökan till olika myndigheter och hur detta går till Färdighet och förmåga: - Ha förmåga att avgöra vilka olika ansvar som forskaren, medarbetare och sponsor har i en klinisk prövning - Ha förmåga att sammanfatta ett projektförslag och göra en riskanalys - Visa färdighet i att använda enkla statistiska metoder för att avgöra ett projektets vetenskapliga validitet Värderingsförmåga och förhållningssätt: - Förhålla sig till forskningsprojekt 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 kvalitetsprinciper för att vid klinisk forskning, utveckling av nya behandlingar med läkemedel, medicinsk teknik, nya laboratoriera och diagnostiska metoder, kvalitetssäkring av epidemiologisk och registerbaserad forskning, säkerhetsrapportering till myndigheter, GDPR, etikprövningslagen, 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 kortssvarsfrågor.


Number of students: 20 - 25
Selection of students: Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier
More information: Kursveckan kräver 100%. Kombinera inte med annat arbete.
Contact person:
Mari Liljefors
Institutionen för medicin, Solna
mari.liljefors@ki.se
Title: Quality Assurance of Clinical Research

Course number: 2873  
Credits: 1.5  
Date: 2021-09-27 -- 2021-10-01  
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 that all moments in a clinical research process can be re-created in a secured way and valid data generated. Understand the meaning of the Helsinki Declaration and Good Clinical Practice so that research subjects safety always remain the first priority. Knowledge in Swedish, European and international legislations, where a project needs to be applied and to which authority, and how such applications are done. Skills and abilities: Able to differentiate the responsibilities between the investigator, study team members and sponsor in the clinical trial. Able to summarise a project proposal into a risk analysis of the project. Able to use simple statistical tools to judge a project proposal's scientific validity. Judgement and approach: Relate to project proposals from the patient perspective including a scientific and sound ethical approach. Able to judge and critically evaluate information from different internet database sources.

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

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

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

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

Number of students: 20 - 25  
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: This is a fulltime course.

Course responsible:  
Pierre Lafolie  
Department of Medicine, Solna  
08-51779647  
Pierre.Lafolie@ki.se  
Klinisk farmakologi  
L7:05 Solna  
171 76  
Stockholm

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Contact person:
Mari Liljefors
Institutionen för medicin, Solna
mari.liljefors@ki.se
Title: Research on personalized/precision cancer medicine (PCM)

Course number: 2919
Credits: 1.5
Date: 2021-10-04 -- 2021-10-08
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 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: 20 - 30

Selection of students: Twenty slots are reserved for the Clinical Cancer Research school NatiOn. Remaining ten slots will be offered based on the relevance of this course for the applicants doctoral project and the time since registration for PhD-studies.

More information: Fulltime 9.00 - 16.00 every weekday. If possible lectures in Biomedicum and CCK-building, otherwise via Zoom as much as possible (due to to the COVID pandemic).

Course responsible:
Ingemar Ernberg
Department of Microbiology, Tumor and Cell Biology
+46852486262
Ingemar.Ernberg@ki.se
Box 280, Karolinska Institutet
17177
Stockholm

Contact person:
Title : Statistics with R - from Data to Publication Figure

Course number : 2953
Credits : 3.0
Date : 2021-10-18 -- 2021-11-05
Language : English
Level : Doctoral level
Responsible KI department : Department of Laboratory Medicine
Specific entry requirements :
Purpose of the course : Do you need to turn data into a publication figure? We offer tools and confidence for the student to independently select a statistical method for research questions in their field. The course is practical and includes implementing a basic statistical analysis in R, the leading statistical programming language in bioinformatics and medical science. Furthermore, we give a brief introduction to visualization in R, with a focus on R/ggplot2. Students can bring data from their own research project, or work on data from the course.

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

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

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

Examination : Poster presentation and peer review.

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

Number of students : 15 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

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

Course responsible :
Alen Lovric
Department of Laboratory Medicine
alen.lovric@ki.se

Contact person :
Maria Westerstahl
Institutionen för laboratoriemedicin
Maria.Westerstahl@ki.se

Eric Rullman
Institutionen för laboratoriemedicin
Eric.Rullman@ki.se
Title : Medical Research Ethics

Course number : 2964
Credits : 1.5
Date : 2021-09-20 -- 2021-09-24
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics

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

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

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

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

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

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

Number of students : 30 - 35

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

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

Course responsible :
Gert Helgesson
Department of Learning, Informatics, Management and Ethics
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: 2021-10-25 -- 2021-10-29
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Specific entry requirements:

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

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

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

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

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

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

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

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

Course responsible:
Gert Helgesson
Department of Learning, Informatics, Management and Ethics
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: 2021-11-22 -- 2021-11-26
Language: English
Level: Doctoral level

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

Specific entry requirements:

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

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

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

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

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

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

Number of students: 30 - 35

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

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

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

Contact person:
Annelie Jonsson
Institutionen för lärande, informatik, management och etik
annelie.jonsson@ki.se
Title : Introduction to R - Data Management, Analysis and Graphical Presentation

Course number : 2971
Credits : 2.5
Date : 2021-09-24 -- 2021-10-29
Language : English
Level : Doctoral level
Responsible KI department : Department of Laboratory Medicine
Specific entry requirements : Basic statistical knowledge (e.g. taken "Basic course in medical statistics" or similar course)

Purpose of the course : To increase the doctoral student's skills in data analysis and data presentation.
Intended learning outcomes : After attending the course, the student will be able to use R for data management, statistical analysis and graphical data presentation. The student will be able to install new functions in R.

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

Teaching and learning activities : Online video lectures, web-based seminars and web-based practical exercises (individual and group assignments), peer assessment of other students' solutions. The examination takes place on KI campus.
Examination : Written examination.
Compulsory elements : The practical exercises and the peer assessments of these are compulsory. Students unable to complete the exercises in time due to e.g. illness can get an extension of the deadline.

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

More information : The course is web-based, with course dates 24/9 (self-studies), 27/9, 29/9, 6/10, 13/10, 20/10, 27/10. The examination is in Huddinge 29/10. Between these course dates, there will be deadlines for mandatory home assignments. Laptop required for programming exercises and examination.

Course responsible :
Jonatan Lindh
Department of Laboratory Medicine
08-58581201
Jonatan.Lindh@ki.se

Avd. för klin. farmakologi, C1:68
Karolinska universitetssjukhuset Huddinge
14186
Stockholm

Contact person :
Marine Andersson
Institutionen för laboratoriemedicin
08-585 81064
Marine.Andersson@ki.se
Title : Basic pharmacoepidemiology in a global context

Course number : 2972
Credits : 3.0
Date : 2021-10-18 -- 2021-10-29
Language : English
Level : Doctoral level
Responsible KI department : Department of Global Public Health

Specific entry requirements :
Purpose of the course : The purpose of the course is that the participants should gain basic knowledge about different study designs used in pharmacoepidemiological studies. The participants should further gain basic knowledge about how to design, conduct, analyse and interpret pharmacoepidemiological studies as well as treatment effects and adverse reactions to pharmaceuticals. The participants should also gain knowledge about determinants of drug use in countries at various income levels. The course will qualify the participants to critically review and evaluate pharmacoepidemiological studies.

Intended learning outcomes : At the end of the course the student should be able to: - Demonstrate knowledge of basic concepts in pharmacoepidemiology and its relevance for public health and for health policy making - Discuss common study designs and methods used in pharmacoepidemiological studies, including clinical trials - Explain the applications of these methods for studies of effects and adverse effects of drugs and economic consequences - Describe different types of data sources on drug exposure and explain their strengths and weaknesses - Describe systems for the reporting of adverse effects and explain their use for pharmacoepidemiological studies - Explain design of and methods to evaluate interventions qualitatively and quantitatively - Independently evaluate pharmacoepidemiological studies from scientific literature

Contents of the course : The course will provide an introduction to what pharmacoepidemiology is, how pharmacoepidemiological studies are conducted, how to interpret pharmacoepidemiological findings, and the relevance of pharmacoepidemiology for public health and for health policy making. The participants will be introduced to basic concepts in pharmacoepidemiology and drug statistics methodology (the ATC/DDD system). Choice of study design and common pitfalls in pharmacoepidemiological research will be discussed. Determinants of drug use such as health systems, policies, prescriber and patient factors in various contexts (low-, middle- and high-income countries) will be explored. Methods to improve use of drugs will be presented, including the role of guidelines and various kinds of information or educational interventions directed to health care professionals, patients or the public. Ways of evaluating such interventions will be presented and discussed. Clinical trials will be discussed. The role of pharmacoepidemiological studies in pharmacovigilance (drug safety) will also be discussed.

Teaching and learning activities : The course will use KI:s learning platform. Learning activities include lectures, seminars, individual work and group work.
Examination : Individual oral and written presentation of group work. Each student will be assessed individually.
Compulsory elements : It is compulsory to attend seminars and to participate in individual work and group work. Absence will have to be compensated by extra individual assignments provided by the course organizers.
Number of students : 8 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).
More information : This is a full time course 9.00-17.00 Monday-Friday both weeks. Lectures and group work will be mixed with individual reading time.

Course responsable :
Cecilia Stålsby Lundborg
Department of Global Public Health
0852483366
Cecilia.Stalsby.Lundborg@ki.se

Contact person :
Title : Study Design in Clinical Research

Course number : 2980
Credits : 3.0
Date : 2021-11-08 -- 2021-11-25
Language : English
Level : Doctoral level
Responsible KI department : Department of Molecular Medicine and Surgery

Specific entry requirements :

Purpose of the course : The purpose of the course is to give early stage doctoral students, that are going to conduct clinical research, an overview over the design and conduct of clinical research, including writing a study protocol and critically reflecting on its content.

Intended learning outcomes : At the end of the course the students should be able to: 1) Independently plan and produce a study protocol, including a thorough methodological evaluation and choice of appropriate study design; 2) Critically reflect on other students' individual project work in a scientifically constructive way; 3) Interpret and critically evaluate scientific studies relevant to the course content.

Contents of the course : 1) Basic terms in epidemiology and clinical study design; 2) Measures of disease occurrence; 3) Observational studies, including cohort and case-control studies; 4) Systematic and random errors; 5) Experimental studies, including randomised clinical trials; 6) Quality of life in clinical research; 7) Screening and diagnosis in relation to clinical research. Throughout the course the students will work on an individual project (examination 1) for peer-review (examination 2) and the students will critically review and discuss relevant scientific articles (examination 3).

Teaching and learning activities : Lectures, seminars, individual article review, group discussions, and homework tasks. The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts. Therefore, much of the focus of the course is on the individual project where students are required to develop a full study protocol including several important aspects covered in the lectures, article reviews and group discussions. Students will also peer-review each other's projects in the examination seminar.

Examination : 1) Individual project work: To develop a written comprehensive yet concise study protocol including several important aspects of study design as discussed during the course; 2) Peer-review of other students' projects followed by oral presentation of own project and opposition of other students projects during the group examination; 3) Critically review scientific articles relevant to the course content and participate actively in the seminars. To pass the course the student has to show that all intended learning outcomes have been reached.

Compulsory elements : Compulsory attendance includes the scheduled lectures and seminars. Absence will need to be replaced by individual assignments following discussion with the course co-ordinator, e.g. article reviews, with written or oral follow-up.

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 will take place during a 3-week period, at Karolinska Institutet, Solna unless restriction due to the Covid-19 pandemic requires the course to be held online. The majority of lectures and seminars are scheduled during the first 4 days of the first course week. The oral exam will take place at the end of the third week (Thursday). The course entails 3 credits, requiring two weeks of fulltime work, which in addition to the lectures and seminars includes individual work on the study protocol. The lecturers are active clinical researchers.

Course responsible :
Giola Santoni
Department of Molecular Medicine and Surgery

giola.santoni@ki.se

Contact person :
Kalle Mälberg
Institutionen för molekylär medicin och kirurgi

kalle.malberg@ki.se
Title : Rare Disease Genomics

Course number : 2981
Credits : 1.5
Date : 2021-10-04 -- 2021-10-08
Language : English
Level : Doctoral level

Responsible KI department : Department of Molecular Medicine and Surgery
Specific entry requirements :

Purpose of the course : This is a course aimed at students actively involved or planning genetic analysis of rare diseases. The course is also appropriate for those working with complex diseases and cancer whose projects involve high throughput DNA sequencing. The purpose of this course is to provide the participants with knowledge and practical experience about current research strategies and tools for analysis of DNA-sequencing data in the field of rare disease genomics. The participants will also be made aware of ethical issues in relation to rare disease genomics.

Intended learning outcomes : After the course, the participants should be able: 1. To select adequate genomic technologies and data analysis strategies to answer research questions in the field of rare disease genetics or in their field of research; 2. To evaluate candidate variants and genes using publicly available databases and tools; 3. To discuss suitable approaches for functional validation of candidate variants and genes; 4. To identify and discuss on ethical issues arising from large-scale sequencing studies.

Contents of the course : The focus of the course is the use of current DNA-sequencing methods and bioinformatics tools to understand the genetic basis of rare genetic diseases. Within the overall theme of clinical and experimental approaches to diagnostics of rare genetic diseases, particular attention will be paid to annotation and classification of different types of genetic variants (single nucleotide variants and structural variants). The course will cover the use of different in-silico pathogenicity scores, phenotype ontology terms, and population and family data for variant and gene interpretation. The course will cover selected experimental strategies to validate genetic findings. The course will also cover current clinical best practice guidelines concerning ethical issues such as report of incidental findings and acquisition of informed consent.

Teaching and learning activities : The course consists of lectures, seminars, hands-on computer-based exercises, self-studies, and group presentations. Students are required to bring their laptops with working internet connection.

Examination : It will be assessed whether each individual doctoral student has reached all the learning outcomes of the course through a take-home examination. Antiplagiarism tools will be used according to KI guidelines.

Compulsory elements : All teaching and learning activities are compulsory. Absence from compulsory parts is compensated 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) start date of doctoral studies (priority given to earlier start date)

More information :

Course responsible :
Anna Lindstrand
Department of Molecular Medicine and Surgery
Anna.Lindstrand@ki.se

Contact person :
Bianca Tesi
Institutionen för molekylär medicin och kirurgi
bianca.tesi@ki.se
Title: Adverse outcome pathways (AOPs)-principles and applications in toxicology and health risk assessment

Course number: 2986
Credits: 1.5
Date: 2021-10-11 -- 2021-10-15
Language: English
Level: Doctoral level
Responsible KI department: The institute of Environmental Medicine
Specific entry requirements:

Purpose of the course: The purpose of the course is to enable the acquirement of knowledge and understanding in how the concept of Adverse outcome pathways (AOPs) can provide a framework for research in toxicology and for applications for health risk assessment. An AOP is a description of a sequence of events starting with the interaction of a chemical with a biomolecule in a target cell or tissue (molecular initiating event), progressing through key events and ending in an adverse outcome.

Intended learning outcomes: At the end of the course the student should be able to:
- describe the principles and components of Adverse Outcome Pathways (AOPs)
- explain how experimental studies can support the development of AOPs
- discuss how AOPs can be used as a central framework for mechanistic toxicity studies, toxicity testing and health risk assessment

Contents of the course: The course will include the concept and principles of Adverse Outcome Pathways (AOPs). Development and assessment of AOPs. Examples of different AOPs. Application of the AOP concept in toxicological research and health risk assessment.

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 - 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) start date of doctoral studies (priority given to earlier start date)

More information: The course is given also for master students in toxicology and may also include professionals from public authorities and companies.

Course responsible:
Annika Hanberg
The institute of Environmental Medicine
08-52487526
Annika.Hanberg@ki.se

Contact person:
Johanna Bergman
Institutet för miljömedicin

johanna.bergman@ki.se

Nobels väg 13
17177
Stockholm

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title : Biostatistics III: Survival analysis for epidemiologists

Course number : 2992
Credits : 1.5
Date : 2021-11-08 -- 2021-11-17
Language : English
Level : Doctoral level

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

Purpose of the course : This course focuses on the application of survival analysis methods to epidemiological studies.

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

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

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

Examination : The course grade is based solely on a take-home examination. The focus of the exam will be on understanding concepts and their application to analysis of epidemiological studies rather than mathematical detail. The course examination will be held within two weeks of the final day of the course. 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

Number of students : 8 - 25

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

More information : The course will be held November 8, 10, 12, 15 and 17. The statistical software R will be used throughout the course. It is strongly recommended to have taken an introductory course in R or to have equivalent experience prior to taking this course. We have provided a self assessment test (http://biostat3.net) for you to confirm that you have understood the central concepts. We advise all potential applicants to take the test prior to applying to Biostatistics III. If you attempt the test under examination conditions (i.e., without referring to the answers) we would recommend: 1. if you score 70% or more then you possess the required prerequisite knowledge 2. if you score 40% to 70% you should revise the areas where you lost marks 3. if you score less than 40% you should, at 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.

Course responsible :
Mark Clements
Department of Medical Epidemiology and Biostatistics
mark.clements@ki.se

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

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Functional Neuroanatomy

Course number: 2994
Credits: 1.5
Date: 2021-09-06 -- 2021-09-10
Language: English
Level: Doctoral level
Responsible KI department: Department of Neuroscience

Specific entry requirements:
Purpose of the course: The purpose of this course is to provide the student with an in-depth understanding of human functional neuroanatomy. Besides human brain the course will focus on the most common animal model, the mouse, in order to point out similarities and differences.

Intended learning outcomes: 1) Gain a foundational understanding of human neuroanatomy and be able to contrast it to mice. 2) Be able to identify and understand the macro- and micro-anatomical structures of the adult brain. 3) To understand the anatomy and connections of the main functional systems in the brain 4) To be able to find these structures on Magnetic Resonance Images.

Contents of the course: A) Anatomical dissection of the human brain to understand its macroanatomy B) Microscopy to understand the histological features of adult human nervous system and how it differs between neocortical and archicortical (hippocampus) regions. C) Main morphological features of sensory, motor, limbic and cognitive functions. D) Microscopy of chosen neocortical, archicortical and cerebellar regions and recognition of the main cellular features between different layers in the respective areas. E) Understanding the principles of afferent and efferent connections.

Teaching and learning activities: Macroscopic dissections in the anatomic theatre, double-head microscopy, practical demonstration, lectures, work in the small groups, students presentation

Examination: a) identification of neuroanatomical structures on the pictures of human brain and b) writing an essay (max one A4 page) regarding the anatomy of one of the functional systems according to the instructions of the examiner.

Compulsory elements: All parts of the course are compulsory. In case of absence, a possible compensation will be discussed with the course leader.

Number of students: 10 - 50

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

More information:

Course responsible:
Tobias Karlsson
Department of Neuroscience
tobias.karlsson@ki.se

Contact person:
Title: Systematic reviews and meta-analyses in animal research - an introduction

Course number: 2995
Credits: 1.0
Date: 2021-11-23 -- 2021-11-24
Language: English
Level: Doctoral level
Responsible KI department: Comparative medicine
Specific entry requirements:

Purpose of the course: Systematic reviews are routinely used for scientific purposes in clinical studies, and are also currently rapidly gaining more attention in the field of animal research. Systematic overviews of all scientific literature on a well-defined specific research question are an important tool to improve the scientific quality of animal experiments, to improve translation of data generated from animals into the clinical situation, and to avoid unnecessary duplication of animal experiments, which are both an ethical and legal obligation. The aim of systematic reviews is to provide a comprehensive, objective, evidence-based and up-to-date overview of the current knowledge, which can be quantitatively summarized by means of a meta-analysis. Therefore, systematic reviews may result in new insights without having to use new animals. Systematic reviews can actually replace and refine animal experiments by better understanding the problems and limitations in previous experiments and by reducing the number of animals needed. This course objective is to encourage the use and conduct of systematic reviews and meta-analysis in animal research in order to 1) increase scientific quality, 2) to improve translation of animal data to the clinical situation, and 3) to prevent unnecessary duplication of animal studies.

Intended learning outcomes: After completion of the course the students should be able to: 1) Understand and demonstrate the value, principles and the different concepts related to systematic reviews and meta-analyses in animal studies; 2) Understand the difference between a classical review (so-called narrative) and systematic reviews; 3) Identify the strengths, limitations and pitfalls of systematic reviews and meta-analysis in animal research; 4) Interpret and apply basic methods of meta-analyses in animal studies.

Contents of the course: Key contents of the course include 1) Basic concepts in systematic reviews and meta-analyses, 2) strengths, problems and limitations of systematic reviews and meta-analyses, 3) conducting a systematic literature search, 4) data-extraction and quality assessment of included studies, 5) Statistical methods used in meta-analyses and interpretation. The course consists of two parts. The first part is ""flipped-classroom"" consisting of the mandatory course literature (see below) and the e-learning module ""Introduction to systematic reviews and meta-analysis of animal studies"", developed by our collaborators in SYRCLE (Systematic Review Centre for Laboratory Animal Experimentation; Radboud University Medical Center, Nijmegen, The Netherlands). The second part will be a two-day workshop during which we will build upon the acquired knowledge - with a clear focus on practical aspects of conducting systematic searches and meta-analyses, including the systematic literature search, data-extraction and quality assessment, and the statistical analyses (introducing the free software developed by Cochrane: RevMan).

Teaching and learning activities: This is a hands-on course based on active learning. The course will cover theoretical concepts mainly through the e-learning module and reading the mandatory course literature. Discussions in group and practical sessions will be used to facilitate deeper understanding, and to acquire the necessary skills to perform the different steps in systematic reviews and meta-analyses.

Examination: To pass the course the student must 1) complete the e-learning module, 2) read the mandatory course literature before the workshop, 3) actively participate during the two-day workshop, and 4) pass the final written examination (home exam/self-reflection) to consolidate the acquired knowledge.

Compulsory elements: The e-learning module needs to be completed before the course starts (certificates of completion need to be sent to the course organizer before the face-to-face workshop), and the students need to read the mandatory course literature. The face-to-face two-day workshop is mandatory (entire days). In case of well-justified circumstances, missed parts of the workshop may be replaced by a written assignment as approved by the course director.

Number of students: 8 - 16
Selection of students: Prior education and training in laboratory animal science is advised, but not required. Date of registration as a doctoral student, suitability of doctoral project, and the motivation to attend the course given will be used in the selection process.

More information: The course will take place by distance learning on Wednesday and Thursday between 9 am and 5 pm.

Course responsible:
Rafael Frias
Comparative medicine
085246660
rafael.frias@ki.se

Contact person:
Title: Anaesthesia, Analgesia and Surgery (mice and rats)

Course number: 2996
Credits: 1.5
Date: 2021-10-25 -- 2021-10-29
Language: English
Level: Doctoral level
Responsible KI department: Comparative medicine

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

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

Intended learning outcomes: After completion of this course, the students should be able to meet the defined learning outcomes as set out in the EU Education and Training Framework, with emphasis on modules 20, 21 and 22. Each module requires both theoretical knowledge, and acquisition and demonstration of practical skills. The list of suggested learning outcomes by such guidelines is comprehensive, but in summary, participants will acquire the knowledge and skills to 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 methods of euthanasia of mice and rats (EU modules 5-6) will also be included.

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

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

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

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

Number of students: 6 - 12

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 criteria will be used based on the date for registration as a doctoral student (priority given to earlier registration date).

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

Contact person:
Title: Advanced cancer biology

Course number: 3024
Credits: 3.0
Date: 2021-08-31 -- 2021-12-21
Language: English
Level: Doctoral level
Responsible KI department: Department of Microbiology, Tumor and Cell Biology
Specific entry requirements: Basic course in tumour biology and oncology.

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

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

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

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

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

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

Number of students: 8 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).

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

Course number: 3028
Credits: 1.5
Date: 2021-09-27 -- 2021-10-01
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 lägger 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 menyssystem. - 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 virken av dokumentation m.h.a. syntax. - Räkna med datumvariabler och hantera textvariabler. - 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 variabelkommando. 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 presentationsfårdiga rapporter som möjligt lär vi oss även att redigera resultatet av analysen. Ändamålet är att hjälpa dig att effektivisera ditt arbete, dokumentera dina analyser med hjälp av syntax och snabbt komma igång med SPSS.


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

Number of students: 10 - 15
Selection of students: Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier.


Course responsible:
Fredrik Johansson
Department of Clinical Sciences, Danderyd Hospital
fredrik.johansson.2@ki.se

Contact person:
Title : Grundkurs i SPSS

Course number : 3028
Credits : 1.5
Date : 2021-11-15 -- 2021-11-19
Language : Swedish
Level : Forskarnivå

Course number : 3028
Credits : 1.5
Date : 2021-11-15 -- 2021-11-19
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 lägger 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 menusystem. - 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 vilken dokumentation m.h.a. syntax. - Räkna med datamöjligheter och hantera textvariabler. - Självständigt kunna skapa grafer och avancerade tabeller och göra enklare redigeringar. - Ha kunskap om de vanligaste syntax kommandona för att hantera statistiska data i SPSS. - Ha ett förhållningssätt till datahantering som visar på grundläggande förståelse för vilken dokumentation m.h.a. syntax.

Contents of the course :

Oligo 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 presentionsfårdiga rapporter som möjligt lär vi oss även att revidera resultatet av analysen. Ändamålet 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).


Compulsory elements :


Number of students : 10 - 15

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


Course responsible :
Fredrik Johansson
Department of Clinical Sciences, Danderyd Hospital

Fredrik.Johansson.2@ki.se

Contact person : -
Exploring Entrepreneurial Opportunities in Research

**Course number**: 3037  
**Credits**: 4.5  
**Date**: 2021-09-13 -- 2021-11-12  
**Language**: English  
**Level**: Doctoral level  
**Responsible KI department**: Department of Learning, Informatics, Management and Ethics  
**Specific entry requirements**:  
**Purpose of the course**: This course will enhance your career opportunities inside and outside academia by facilitating and teaching discovery and identification of intellectual assets in the daily work of a researcher/PhD student, and how to apply it today and in the future. As a participant, identifying opportunities for entrepreneurship in connection to research will increase the awareness of the potential of innovation and entrepreneurship and its practical application and help you to expand the impact of your work. In order to develop a business idea - whether in an economic or social context, you need to apply a number of business concepts. Relevant business tools will be introduced in order to develop a business idea stemming from research. The final step when exploring opportunities of entrepreneurship is to communicate and test your business idea on the market. For that purpose you will learn how to package an already developed business idea for introduction into the start-up world.  
**Intended learning outcomes**:  
After the course, a doctoral student shall be able to: - demonstrate an understanding of the opportunities of innovation and entrepreneurship for utilisation of research and how to apply entrepreneurial tools in the research context - assess their new skills and reflect on possible future effects, from ones individual, organisational & societal perspective - use design tools to gain an understanding for the user experience to develop solutions to user needs - use business tools such as business modelling to develop a potential business idea stemming from research, - communicate ("pitch") the business plan to people within the start-up world, such as potential investors  
**Contents of the course**: "Exploring entrepreneurial opportunities in research" is a course divided into three modules. The first module begins with an introduction to entrepreneurship, what it is and how it can be used in the doctoral education. The doctoral students are then given a number of practical tools to identify intellectual assets within daily work to use in a minor innovation projects based on their own research. The second module begins with an introduction to prototyping using the design thinking approach. The doctoral students are then given a number of business tools to develop a business opportunity, stemming from their research, into a business model. The last module begins with an introduction to product roadmaps followed by a comprehensive business plan. The doctoral students are then given a number of practical business tools to write and test a complete business plan of the developed idea.  
**Teaching and learning activities**: Each of the three modules includes three mandatory days on KI Campus and two days for own work. The course days are usually Monday, Wednesday and Friday. The modules are separated with 2 week intervals. This course lays the foundation for development of an already identified business idea. It begins with an introduction to prototyping using the design thinking approach. The doctoral students are then given a number of business tools to develop a business opportunity, stemming from their research, into a business model. With the individual assignments the doctoral students are given the opportunity to take a closer look at the actual benefits of the new knowledge and put it into a larger context, with value for their own research and society. Learning activities consist of seminars and workshops as well as group and individual work.  
**Examination**: The doctoral student is examined individually, on a written report, the design of a poster, the development of a prototype, business model and completion of a business plan.  
**Compulsory elements**: Attendance is mandatory for all participants. The course director assesses if and in that case how absence can be compensated.  
**Number of students**: 10 - 25  
**Selection of students**: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)  
**More information**: Course days are 9 days in total. September 13, 15 and 17. October 18, 20 and 22. November 8, 10 and 12. Mondays 9:00 to 17:00 Wednesdays 9:00 to 12:00 Fridays 12:00 to 17:00  

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**Course responsible**:  
Samer Yammine  
Department of Learning, Informatics, Management and Ethics  
samer.yammine@ki.se  

**Contact person**: -
Title : Cellular Signalling

Course number : 3049
Credits : 1.5
Date : 2021-10-11 -- 2021-10-15
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) start date of doctoral studies (priority given to earlier start date)
More information : Depending on the situation, the course will be given as on-campus (Campus Flemingsberg) or live webinar lectures Monday to Thursday 11-14/10 between approx. 9am and 4pm, including student-focused activities to facilitate interaction and discussions. Allocated time slots will be provided for self-studies and mandatory home assignments. The examination seminar is on Friday 15/10.

Course responsible :
Anna Witasp
Department for Clinical Science, Intervention and Technology
Anna.Witasp@ki.se

Contact person :
Thomas Ebert
Institutionen för klinisk vetenskap, intervention och teknik
thomas.ebert@ki.se
Title : Methods for Systematic Review

Course number : 3066
Credits : 7.5
Date : 2021-09-23 -- 2021-12-10
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements :

Purpose of the course : The aim of the course is to give the course participant an introduction to systematic review as a method and to stimulate in-depth knowledge and understanding within the own research area.

Intended learning outcomes : After completing the course, the participants are expected to: 1) be able to reflect on the contribution of their own literature review to the field of knowledge and to identify questions that remain 2) have developed skills in the use of research synthesis as a scientific process 3) be able to critically evaluate procedures for systematic literature review

Contents of the course : The course will develop the participants’ skills to use a systematic approach and to summarize knowledge based on a scientific process, and to reflect on how the chosen research question within the frame of their doctoral project contributes to the knowledge base in the relevant research area. Central to the course is developing skills to use a systematic approach and to summarize knowledge based on a scientific process. Various purposes for and types of reviews are exemplified, including reviews of quantitative as well as qualitative research. The process of a systematic review is characterized by a clearly formulated question that is answered through systematic and explicit methods for identifying, selecting, critically assessing and analyzing relevant studies based on the research question.

Teaching and learning activities : The course provides an introduction to methods of systematic literature review. The course participant sets up a protocol for and conducts a literature review based on systematic approaches, that focuses on a component/aspect of relevance to the participant’s own doctoral project. The participant will also critically evaluate and discuss weaknesses and strengths in their own and co-students’ protocols and reviews. The course is given part-time via zoom and includes 2-3 short blocks (1-3 days each), and a final seminar day. Teaching and learning activities include lectures, independent work, evaluation of others’ work and group discussions, to enable course participants to reflect on how knowledge within their own research area is built. In the course, participants get the opportunity to work systematically based on principles of research synthesis, and also to manage and critically evaluate different procedures for systematic review. The focus of the first seminar is to discuss each participant’s research question and the role of the chosen component/aspect within the participant’s own doctoral project. For the second seminar, the participant writes an individual protocol/plan describing the implementation of a systematic review based on systematic approaches and on the research question regarding the chosen component. At the third, final seminar each participant’s review is presented and discussed and a co-student’s examination assignment is discussed.

Examination : The course is examined individually, orally and in writing, in the form of a literature review based on systematic approaches. In order to pass the course the learning goals must be fulfilled, which requires an approved result for the written examination and active participation in compulsory parts. The examination comprises: 1) An individual essay in the form of a literature review based on systematic approaches and on the selected research question. The focus of this assignment will be on a) how the student has researched and concluded the selected research question in the individually performed research synthesis and b) how the student in the methods discussions has critically assessed procedures in the own review. 2) Active participation in the final seminar where the individual assignment is presented and discussed. Examination will be provided for up to one year from the time the course is concluded.

Compulsory elements : Participation in the final seminar day is compulsory. Absence from the final seminar day must be compensated by a critical discussion (in writing) regarding another student’s report submitted to the final seminar.

Number of students : 10 - 20

Selection of students : Priority is given to doctoral students in the Research School of Health Care Sciences. In addition, priority for admission 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 : The course is given part-time with lectures, seminars and workshops conducted via zoom on the following dates : September 27-29, October 28-29, November 30, December 1. Participation at the final seminar (November 30 or December 1) is mandatory. December 10 is the last day for submission of the examination assignment.

Course responsible :
Claudia Lampic
Department of Women’s and children’s health
Claudia.Lampic@ki.se

Contact person : 
Claudia Lampic
Institutionen för kvinnors och barns hälsa

Claudia.Lampic@ki.se
Title : Philosophy of science and the concept of health

Course number : 3073
Credits : 1.5
Date : 2021-11-08 -- 2021-11-19
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics

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

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

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

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

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

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

Number of students : 10 - 15
Selection of students : Selection will be based on the written motivation explaining why the course would benefit the doctoral studies.

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

Course responsible :
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: Epidemiology I: Introduction to epidemiology

Course number: 3078
Credits: 1.5
Date: 2021-09-20 -- 2021-09-29
Language: English
Level: Doctoral level
Responsible KI department: Department of Global Public Health

Specific entry requirements:

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

Intended learning outcomes: After successfully completing this course students are expected to be able to:

- 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 information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information: Course dates are September 20, 22, 24, 27 and 29. The course is extended over time, but is still five full course days in order to promote reflection and reinforce learning.

Course responsible:
Renee Gardner
Department of Global Public Health
Renee.Gardner@ki.se

Contact person:
Anastasia Urban
Institutionen för global folkhälsa
0852483350
anastasia.urban@ki.se
Title: Gene Regulation in the Early Human Embryo

Course number: 3080
Credits: 1.5
Date: 2021-09-20 -- 2021-09-24
Language: English
Level: Doctoral level

Responsible KI department: Department of Biosciences and Nutrition

Specific entry requirements: Knowledge in pre-implantation embryology corresponding to the course Embryology I.

Purpose of the course: The aim of the course is to instruct the participants in human reproductive biology with focus on gene regulation and pathways that control the early embryo formation. To provide understanding in complexity of the molecular mechanisms that involve the successfully development of the early cleavage embryo, so that the student can evaluate, troubleshoot and improve existing assisted reproductive technology (ART) systems.

Intended learning outcomes: At the conclusion of this course students should be able to: 1. Show a good understanding of the genetic and epigenetic aspects of the preimplantation period of mammalian development that is crucial for reproductive success. 2. Show a good understanding of the dynamic changes in gene expression during human early embryo development involving differentiation, survival, fragmentation, zygotic genome activation, cell determination, embryo patterning and apoptosis, gene profiling from oocyte development to blastocyst formation. 3. Explain the general epigenetic influence of the laboratory and clinical environment on embryo culture and physical-chemical properties of the specific culture systems. 4. Produce coherent, logical and concise explanations of data and concepts in the field of gene regulation in the early human embryo - both in writing and orally, through consideration of the course material. 5. Discuss scientific literature related to ART and reproduction physiology in a constructive and informed fashion.


Teaching and learning activities: The course runs for one week with lectures, and literature work as part of the course examination.

Examination: The examination will consist of an individual or group oral presentation on a course topic, followed by a questions and answers session and an individual written exam.

Compulsory elements: Attendance during the lectures and active part in the literature work.

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 Bioscience and Nutrition, NEO Huddinge.

Course responsible:
Jose Inzunza
Department of Biosciences and Nutrition
08-585 850 93
Jose.Inzunza@ki.se

Hälsovägen 7, Novum
141 86
Stockholm

Contact person:
Virpi Töhönen
Institutionen för biovetenskaper och näringslära

Virpi.Tohon@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title : Cryobiology in assisted reproductive technology

Course number : 3089
Credits : 1.5
Date : 2021-11-22 -- 2021-11-26
Language : English
Level : Doctoral level
Responsible KI department : Department of Biosciences and Nutrition
Specific entry requirements :

Purpose of the course : The aim of the course is to instruct the participants in human and mouse reproductive biology with focus on cryopreservation technology and embryo banking, as well as to give them practical experience through practical demonstrations in cryopreservation of gametes and embryos in IVF technology. To provide understanding of principles of cryobiology and components of culture systems used in assisted reproduction technology (ART). Thus the student can evaluate, troubleshoot and improve existing technology.

Intended learning outcomes : The objectives of this course are that at the conclusion of this course students should have a good understanding of: Folliculogenesis and Fertilization; Preimplantation Embryology; sperm and oocytes retrieval; criteria of selected or scoring the gametes and zygotes for cryopreservation; liquid nitrogen handling; principles of cryobiology; The Cryoprotectants additives and how they protect the cells by stabilizing intracellular proteins; The factors that affect cellular response to freezing; The different cryopreservation protocols and what is ongoing in this field; The cross-contamination of samples in liquid nitrogen; problems in achieving a good result of cryopreservation procedure; The possible epigenetic effects of the cryopreservation procedure; testicular and ovarian tissue cryopreservation procedures; Storage of the cryopreserved samples, the advantages of the cryopreservation and embryo bank. Finally the students will improve their capacity to produce coherent, logical and concise explanations of data and concepts - both written and oral, through consideration of the course material. Students will also develop their ability to criticize scientific literature related with cryopreservations technology and reproduction physiology in a constructive and informed fashion; Be aware of potential development of cryobiology and IVF in the future.

Contents of the course : Contents . Sperm-and ovogenesis and Hormonal function . Main components of the culture system . Physical-chemical properties of culture system . Functional characteristics of different tissue culture incubators . The influence of the laboratory and clinic environment on embryo culture . The morphology of oocytes, zygotes and cleavage stage embryos as well as morulae and blastocysts . Developmental milestones . Biochemical tests for predicting developmental potential . Possible effects of culture and frozen condition on epigenetics events . Clinical aspects of frozen embryo transfer . The potential of the different cryopreservation techniques in clinic application with focus on IVF . General aspects and implication of the cryobiology in research


Examination : Examination on day 5, with individual or group presentations of the literature work related to the contents of the course, discussions and feedback. Every student will be individually assessed and the students has to show that all learning outcomes have been reached.

Compulsory elements : The laboratory demonstrations are obligatory; there will be lectures combined with laboratory demo, but if the student will be absent of one laboratory section, the student should present a literature work related to 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 Bioscience and Nutrition, NEO Huddinge.

Course responsible :
Jose Inzunza
Department of Biosciences and Nutrition
08-585 850 93
Jose.Inzunza@ki.se

Hälsövägen 7, Novum

141 86

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Stockholm

Contact person:
-
Title: Omics Data Analysis: From Quantitative Data to Biological Information

Course number: 3102
Credits: 3.0
Date: 2021-11-22 -- 2021-12-03
Language: English
Level: Doctoral level

Responsible KI department: Department of Oncology-Pathology

Specific entry requirements:

Purpose of the course: During recent years omics data has become an integral part of many biomedical and clinical research projects. This broad introductory course aims at bridging the gap between classical biomedical research, omics technologies and bioinformatics. The course will give students an introduction to omics technologies and basic knowledge of omics data analysis workflows.

Intended learning outcomes: After completed course, the student will be able to:

* Understand the principles and perform the basics of high-throughput technologies (genomics, transcriptomics, proteomics) and the omics data analysis workflow
* Understand the principle aspects of study design, experimental planning and sample selection
* Know how to do basic quality control of data by use of boxplots, principal component analysis (PCA) etc
* Know what normalization, data transformation etc means and what it does to your data
* Know the principles of some basic statistics such as t-test and false discovery rate
* Know the principles of dimensionality reduction methods such as PCA and t-distributed stochastic neighbor embedding (t-SNE) / uniform manifold approximation and projection (UMAP)

Contents of the course: * The omics data analysis workflow: from quantitative data to biological information (emphasis on analysis of quantitative Omics-data (e.g. proteomics, transcriptomics)) * Introduction to omics technologies and data structures * Omics experimental design and sample selection * Introduction to data transformation and normalisation * Introduction to basic statistics in omics data analysis: significance test/p-values/multiple testing correction/false discovery rate * Introduction to dimensionality reduction PCA/t-SNE/UMAP * Introduction to GO and enrichment analysis * Introduction to network and pathway analysis * Introduction to online bioinformatics resources and analysis tools * Introduction to the R statistical programming language * Literature study with a critical view on how omics data is analyzed in clinical research * Current state of the art in omics data analysis is highlighted through case studies, literature studies and demonstrations

Teaching and learning activities: The teaching activities for the course will be based on lectures, workshops and data analysis cases. The students will participate in a literature study with discussions in seminar groups as well as an independent data analysis exam project. The students will also be able to download and use some of the software in workshops during the course. For the final data analysis workshop students may be able to work on their own datasets, or datasets will be provided for them. The R statistical programming language will be used extensively in the course. Prior knowledge is not a requirement, but may prove useful.

Examination: The course assessment is based on two types of assignments: a literature study with a critical view on an omics data analysis subject performed in groups and an individual written omics data analysis project illustrating the different topics covered during the course.

Compulsory elements: * Attendance on lectures and data analysis demonstrations. * Attendance to literature study discussion seminar. * Attendance to examination seminar and hand in the written examination assignments. * Extra written literature study can be used to compensate absence.

Number of students: 16 - 24

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

More information: This course has previously been given with number 2523. The course is given jointly by the doctoral programmes Allergy, immunology and inflammation (Aii), Tumor Biology and Oncology (FoTO), Biology of Infections and Global Health (BIGH) and Development and Regeneration (DEVREG). See: https://staff.ki.se/doctoral-programmes

Course responsible:
Mattias Vesterlund
Department of Oncology-Pathology
Mattias.Vesterlund@ki.se

Contact person:
Ann-Sofi Sandberg
Institutionen för onkologi-patologi
Annsofi.Sandberg@ki.se
Title: The epigenome: a platform for the integration of metabolic and signaling pathways in development and on the path to diseases

Course number: 3104
Credits: 1.5
Date: 2021-10-11 -- 2021-10-15
Language: English
Level: Doctoral level
Responsible KI department: Department of Oncology-Pathology
Specific entry requirements:

Purpose of the course: To increase the understanding of the interplay between epigenetic regulation, signalling and metabolic pathways in complex human diseases.

Intended learning outcomes: Following the completion of the course the students will be able to describe and discuss the basic principles of epigenetic regulation and the role of chromatin in the maintenance of cellular phenotypes. Moreover, the students will learn how various signaling and metabolic pathways alter chromatin states during ageing and in human diseases, such as cancer, diabetes and psychiatric disorders. The students will also be able to design experiments for studying chromatin marks and to critically evaluate results obtained with these techniques.

Contents of the course: The course covers the molecular mechanisms of epigenetic regulation and how chromatin based processes are linked to human diseases. Particular attention will be paid to the crosstalk between chromatin marks and cellular signaling pathways as well as metabolism. Furthermore, we will discuss the regulation of these processes during the circadian cycle and their deregulation in cancer, diabetes mellitus and psychiatric diseases.

Teaching and learning activities: The learning activities used in the course include lectures, research seminars, group discussions, problem-based learning and research article presentations by the students. Every student will present a recent publication in the form of a journal club. 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: Examination is based on the journal club presentation (summative assessment) and on active participation in discussions during the course (formative assessment). Every student will be at one occasion presenting a pre-selected article and at another occasion will be the opponent for the presentation of a fellow student. The student's performance at these two occasions will be the basis for the final assessment.

Compulsory elements: The lectures, seminars, group discussions and journal club presentations are compulsory.
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) start date of doctoral studies (priority given to earlier start date)

More information: The course director is Anita Göndör at the Department of Oncology-Pathology. Telephone 08 524 862 03, email anita.gondor@ki.se.

Course responsible:
Anita Göndör
Department of Oncology-Pathology
08 524 862 03
anita.gondor@ki.se

Contact person:
Matti Nikkola
Institutionen för cell- och molekylärbiologi

Matti.Nikkola@ki.se
Title: Pathology

Course number: 3109
Credits: 3.0
Date: 2021-10-11 -- 2021-10-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Laboratory Medicine

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

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

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

Teaching and learning activities: This is a full time course with lectures, demonstrations, microscopy exercises and a project work.
Examination: Written examination and project work.
Compulsory elements: Demonstration/microscopy, pathology "tour" and project work are compulsory. Absence is compensated with a written report.
Number of students: 7 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)
More information: This is a full-time course over 2 weeks (3hp).

Course responsible:
Jonas Fuxe
Department of Medical Biochemistry and Biophysics
08-52487275
jonas.fuxe@ki.se

Contact person:
Barbro Ek-Rylander
Institutionen för laboratoriemedicin
08-58586444
Barbro.Ek-Rylander@ki.se

Pia Laselle
Institutionen för laboratoriemedicin
pia.laselle@ki.se
Title: Tumor immunology and immune therapy of cancer

Course number: 3110
Credits: 1.5
Date: 2021-11-15 -- 2021-11-19
Language: English
Level: Doctoral level
Responsible KI department: Department of Oncology-Pathology

Specific entry requirements:

Purpose of the course: The purpose of the course is to deepen the knowledge in the field of tumor immunology. More specifically, to understand how the immune system is regulated in cancer and how this knowledge can be used to treat patients with cancer.

Intended learning outcomes: After the course is completed the students will be able to (1) explain important aspects of tumor immunology, (2) indicate advantages and disadvantages of different immune therapy strategies, (3) explain mechanisms of immune escape, 4) hypothesize how different immune-based regimens may affect clinical outcome in patients with cancer.

Contents of the course: This course covers basic and applied immunology and a current review of experimental research and clinical application of tumor immunology. Both pre-clinical and clinical aspects of cancer vaccination, adoptive cell therapy, and antibody therapy will be discussed. Development of novel therapies through modification of immune cell subsets will be presented. Features of the tumor microenvironment, cancer-associated inflammation, immune surveillance and escape, and immunosuppression will also be discussed. Planning, performing, and monitoring of clinical trials are included in the course as well. One to two days are dedicated to lectures by invited international experts from the field.

Teaching and learning activities: Lectures, seminars, group discussions and case-studies.

Examination: Oral group presentation and individual assignment based on case-studies. Every student will be individually assessed.

Compulsory elements: All lectures and teaching activities 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 - 35

Selection of students: Doctoral students are prioritized and selection is based on the relevance of the course syllabus for the applicant's doctoral project.

More information: The course covers basic and applied immunology and a contemporary overview of experimental research and clinical applications in tumor immunology. The course constitutes of lectures, seminars, group discussions and case-studies. All teaching activities are mandatory. One day is dedicated to lectures by invited international experts from the field.

Course responsible:
Rolf Kiessling
Department of Oncology-Pathology
0851776857
Rolf.Kiessling@ki.se

Contact person:
Andreas Lundqvist
Institutionen för onkologi-patologi

Andreas.Lundqvist@ki.se
Title: Basic course in tumor biology and oncology

Course number: 3112
Credits: 3.0
Date: 2021-09-13 -- 2021-09-24
Language: English
Level: Doctoral level
Responsible KI department: Department of Oncology-Pathology

Specific entry requirements:

Purpose of the course: The purpose of the course is to give a general overview of the molecular mechanisms that promotes the carcinogenic transformation. We aim to link the basic tumor biology concepts with the main principles of diagnosis and treatment of cancer patients in line with the modern concept of translational and personalised cancer medicine.

Intended learning outcomes: This is a basic course for all PhD-students in the field of tumor biology. After the course the students will have an understanding of the cancer problem, the modern view what cancer is, from a clinical and basic science point of view. You will get the basic foundations of cancer biology as well as acquire some ability to discuss and understand advanced problems in cancer biology. You will have an idea which are the current most important problems to solve in cancer, to improve diagnosis, prevention, treatment and quality of life. The over all aim of the course is to form a bridge between pre-clinical and clinical aspects of tumor biology and oncology for PhD students and to provide the students an understanding of all aspects of the cancer problem. This course is a basic introduction to modern cancer research and is recommended to all PhD students within basic and clinical cancer research.

Contents of the course: The course will describe the causes as well as the consequences of the transformation of a normal cell into its malignant counterpart, in order to create an understanding of cancer --from molecule to patient--, eventually also discussing the management and treatment of malignant diseases. The topics of the course include genetics, the cell cycle, apoptosis, immunology, diagnosis and treatment, all topics presented from the cancer perspective. There will be focus on a few malignant diseases, described in more detail serving as models for basic concepts of Tumor Biology and Oncology, including molecular genetics, curative treatment and palliative care, psychosocial aspects of cancer, ethics and epidemiology. All students will be offered a possibility to visit the inward clinical care and meet cancer patients.

Teaching and learning activities: The course consists of lectures, group seminars, group discussions and demonstrations. Full time during two consecutive weeks.

Examination: Written examination and group discussion with a focus on understanding of concepts, relations and how and how problems are dealt with in cancer research. Every doctoral student will be individually assessed.

Compulsory elements: This course is full time for two weeks. All seminars and some demonstrations are compulsory, also some lectures, as well as the written examination. Single missed occasions can be compensated during the course after discussion with the course director. Single missed occasions can be compensated for during the course after discussion with the course director.

Number of students: 20 - 25

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

More information:

Course responsible:
Svetlana Bajalica Lagercrantz
Department of Oncology-Pathology
08-51771797
Svetlana.Lagercrantz@ki.se

Contact person:
Hanna Eriksson
Institutionen för onkologi-patologi

Hanna.Eriksson.4@ki.se
Title : Molecular Immunology

Course number : 3114  
Credits : 3.0  
Date : 2021-10-18 -- 2021-10-29  
Language : English

Level : Doctoral level

Responsible KI department : Department of Microbiology, Tumor and Cell Biology

Specific entry requirements : Basic knowledge in immunology corresponding to the learning outcomes of the courses "Basic immunology".

Purpose of the course : This course is an extension of the Basic Immunology course and is suitable for students who already have some background knowledge of immunology. The aim of the course is to expose students to the molecular aspects of the immune responses.

Intended learning outcomes : After the course, the student should be able to relate their own research project to the cutting-edge developments in other areas of immunology research. Furthermore, they should be able to present novel information about an immunological problem or a specific technique.

Contents of the course : The course covers topics of immune cellular interactions, immune cell signalling as well as the role of epigenetics and genetics in determining immune responses and immune cell development. Students will be asked to study an immunological method or problem deeply at the theoretical level.

Teaching and learning activities : Lectures, seminars and oral presentations. The course is given over 2 weeks. Invited national and international lecturers give their views on selected problems, or techniques, in immunology. The seminars take off from basic facts, and after that the speakers move on to current problems, and focus on both scientific and methodological aspects. During the course the students will be expected to present orally selected topics within the field of immunology focusing on molecular events important in the development or maintenance of immune responses. At the end of the course, the students will write an essay on these methods or problems.

Examination : Oral presentation of selected topics and a final written exam based upon take home essay questions. These questions cover current problems, theories in immunology or relate the student's own research to cutting edge developments in the other areas of immunology research.

Compulsory elements : Oral presentation of selected topics. If a student misses the presentation, a special presentation with the course leader will be arranged.

Number of students : 8 - 20

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

More information :

Course responsible :  
Benedict Chambers  
Department of Medicine, Huddinge

Benedict.Chambers@ki.se

Contact person :  
Nadir Kadri  
Institutionen för medicin, Solna

nadir.kadri@ki.se
Title: Forskningsetik

Course number: 3118
Credits: 1.5
Date: 2021-08-31 -- 2021-09-21
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.


Contents of the course: Att ge en introduktion till etiken i samband med forskning och en orientering om dess tillämpning på problem inom det vetenskapliga området. Kursen behandlar bl.a. följande teman: centrala etiska principer, teorier och argument, forskningsetik/forskaretik, grundläggande värderingar och normer för god sed i forskningen, innehål i och vårdet av regelverk så som Helsingforsdeklarationen dess funktion, tillämpning, möjligheter och begränsningar, etikprövningar, avvikelse från värderingar, forskningsfusk och vetenskaplig oredlighet. Det informerade samtycket historia och komponenter. Försöksdjurseitisk, innefattande argument för och emot att använda olika djur för forskningsändamål samt de 3 R:en. Hantering av vetenskapligt förfarande (medförfattarskap, författarordning) och intressekonflikter i forskningen.

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 inarbetats, och iv) opponering på annan students presentation av etiska dilemma i forskning. 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: 10 - 20

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


Course responsible:
Sigridur Kalman
Department for Clinical Science, Intervention and Technology
08-585 817 87
sigridur.kalman@ki.se

Contact person:
Nicoletta Raic
Institutionen för klinisk vetenskap, intervention och teknik
nicoletta.raic@ki.se
Title : Vetenskapsteori

Course number : 3119
Credits : 4.5
Date : 2021-11-02 -- 2021-11-30
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.


Teaching and learning activities : Undervisningstillfällen med föreläsningar, gruppövningar, seminarier samt muntlig och skriftlig examination anordnas en eftermiddag per vecka under totalt fem veckor.

Examination : Vi bedömer att lärandemålen för kursen är uppnådda genom examination som består av fyra delkomponenter: i) formativ bedömning i samband med aktivt deltagande i seminarier ii) en muntlig presentation av vetenskapsteoretiska aspekter i eget alternativt andra (centrala) forskningsfrågor inom den egna disciplinen iii) ett skriftligt PM där synpunkter från opponent på den muntliga presentationen inarbetats iv) opponering på annan students presentation av vetenskapsteoretiska aspekter i egen eller alternativt andra (centrala) forskningsfrågor inom den egna disciplinen. Godkänd kurs innebär att det framgår att de 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 utökad PM skrivande muntlig och presentation för kursen eller för kursgivaren.

Number of students : 10 - 15

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


Course responsible :
Sigridur Kalman
Department for Clinical Science, Intervention and Technology
08-585 817 87
sigridur.kalman@ki.se

Contact person :
Nicoletta Raic
Institutionen för klinisk vetenskap, intervention och teknik
nicoletta.raic@ki.se

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title : Flow cytometry: from theory to application

Course number : 3120
Credits : 1.5
Date : 2021-10-04 -- 2021-10-08
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements :

Purpose of the course : The course aims to provide doctoral students with: 1) a systematic introduction of flow cytometry, 2) an overview of flow cytometric applications in biomedical research, and 3) a hands-on opportunity of flow cytometry lab training designed for various levels of flow cytometer users.

Intended learning outcomes : Through this one-week course, the participants will acquire the knowledge of flow cytometry principles. They will know flow cytometric sample preparation and analysis, protocol set-up, major flow cytometric applications, as well as data interpretation and presentation.

Contents of the course : The course covers basic knowledge and main applications of flow cytometry, and contains both lectures and laboratory/group work. Experts in different fields of flow cytometric application are invited to give the lectures. The participants will be able to learn: a) Principles of flow cytometry: working mechanisms of flow cytometer; molecular and cellular probes for flow cytometry; quality control; and safe procedures and instrument maintenance. b) Basic skills: flow cytometric protocol design; sample handling and storage; data processing and analysis, and data presentation. c) Major applications of flow cytometry in biomedical research: leukocyte phenotyping, endothelial cell analysis, stem cell analysis, apoptosis, platelet measurement, cell function analysis (including membrane potential, oxidative metabolism, intracellular calcium mobilization, pH, and intracellular organelles), as well as nucleic acid analysis.

Teaching and learning activities : The course includes 28 hr lectures and 12 hr hands-on lab work.

Examination : The exam consists of two parts: a 30 min written test on flow cytometric principles; and a 60 min hands-on lab work examining flow cytometric lab skills.

Compulsory elements : The participants must attend hands-on lab sections during two afternoons. The students who have missed these sections can book extra lab section time within 4 weeks to compensate the absence.

Number of students : 20 - 32
Selection of students : Selection will be based on: 1) The relevance of flow cytometry for the applicant’s project (according to written motivation) 2) Urgency of flow cytometry training for the applicant’s project (according to written motivation) 3) Previous application (priority given to those who have applied previously)

More information : Course will be given during week 40 (Oct 4-8, 2021; 9:00-16:30). Major part of the course will likely be organized virtually, i.e., lectures via Zoom. The organizers will try their best to implement half-day or one-day on-site lab sessions for the course. If on-site lectures are allowed and practical, a lecture hall will be booked T4:00 at Karolinska University Hospital-Solna. Lectures will be given by 14-15 lecturers, usually half of them from institutions outside KI, with two to three lecturers from abroad. All the lecturers are well-established experts in their lecture subjects of flow cytometric applications. The course has been given 1-2 times/year at KI for 20 years. It has been highly appreciated by the participants through the years, with a median general satisfaction score never below 8 (out of 9; referred to paper-based course evaluation between 2001-2013), and highly remarked with the electronic course evaluation (since 2014). The course is given jointly by the doctoral programmes Cardiovascular Research (CVR) and Allergy, immunology and inflammation (Aii). See: https://staff.ki.se/doctoral-programmes

Course responsible :
Nailin Li
Department of Medicine, Solna
08-51773996
Nailin.Li@ki.se
Clinical Pharmacology Unit
Karolinska University Hospital-Solna
17176
Stockholm

Contact person :
Nailin Li
Institutionen för medicin, Solna
08-51773996
Nailin.Li@ki.se
Clinical Pharmacology Unit
Karolinska University Hospital-Solna
17176
Stockholm
Title: Experimental techniques in study of metabolic and endocrine disorders

Course number: 3121  
Credits: 1.5  
Date: 2021-11-29 -- 2021-12-03  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Molecular Medicine and Surgery  
Specific entry requirements:

Purpose of the course: This course will enable the doctoral student to acquire the necessary knowledge to address experimentally key points of metabolic characterization of experimental models in diabetes research.

Intended learning outcomes: After the course the students will be able i) to measure glucose transport in isolated rodent skeletal muscle; ii) to measure lipolysis in isolated adipocytes; iii) to dissect out mouse pancreatic islets and measure the insulin release; iv) to judge and analyze obtained data. The students will also be able to describe the possibilities and limitations of the above techniques.

Contents of the course: The course is laboratory based, aiming to give all participants hands on experience with isolation of pancreatic islets, skeletal muscle and adipose tissue. Techniques for measurement of glucose transport in isolated rodent skeletal muscle, of lipolysis in isolated adipocytes, and for studying insulin release from pancreatic islets will be covered. Theoretical and practical considerations will be presented and discussed.

Teaching and learning activities: The course meets for five days full time, including three full day laboratory practical sessions. The first day will consist of several lectures to give a background to the metabolic questions which will be addressed in the practical part of the course. Our aim is to provide the student with a hands on experience of each technique covered. In order to achieve this, for the laboratory work the course participants will be subdivided into smaller groups.

Examination: Summative assessment of the laboratory notebook notes from each student, of a short oral presentation of the project work, of the discussions with the course leader and the other students, and of a short summary of the project work by each group.

Compulsory elements: All three laboratory tasks are compulsory; as an exception, a written task could be given to a participant to compensate absence.

Number of students: 9 - 18

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

More information: Monday to Friday, 8:30 - 16:00, Solna and Fleminsberg campuses

Course responsible:  
Alexander Chibalin  
Department of Molecular Medicine and Surgery  
0852487512  
Alexander.Chibalin@ki.se

Contact person: -
Title: Human Cell Culture. Methods and Applications

Course number: 3127  
Credits: 1.5  
Date: 2021-10-04 -- 2021-10-08  
Language: English  
Level: Doctoral level  
Responsible KI department: The institute of Environmental Medicine  
Specific entry requirements:

Purpose of the course: The purpose of the course is to enable doctoral students to acquire state-of-the-art knowledge and good understanding of human cell culture.

Intended learning outcomes: After the course the students should be able to: - Describe the theory and give examples of practical applications of human cell culture. - Explain basic and state-of-the-art methods applied to cell cultures. - Discuss possibilities and challenges in cell culture work.

Contents of the course: Cell culture reflecting stem, transit amplifying, differentiated and terminally differentiated tissue states. Monolayer and organotypic culture involving one or more cell types. Applicability of cell cultures as alternatives to laboratory animal experiments. Mechanisms regulating cell growth and viability, differentiation and apoptosis. Assessment of cell transformation to immortal and malignant phenotypes. Isolation of specific cells, e.g., epithelial cells, characterisation of cultured cells. Handling and sterile techniques, choice of materials and media for cell culture, e.g., serum-dependent vs. serum-free culture conditions. Cell cloning and gene transfer. Practical handling of cultures: thawing/freezing, passage, expansion and long-term storage. Handling of normal and tumor tissue for optimizing obtainment of cultures. High-throughput screening technologies. Tissue engineering practices. Transcriptomics, proteomics and informatics methods for biomedical research with cell lines. Discussion of participants' own culture experience and problems.

Teaching and learning activities: Interactive lectures, laboratory work, computer exercises and group discussions on pitfalls and possibilities with cell cultures.

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

Compulsory elements: Participation in interactive lectures, group discussions, laboratory work and oral examination is compulsory. Absence from compulsory elements can be compensated by participation at the next course occasion.

Number of students: 8 - 15

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

More information:

Course responsible:  
Penny Nymark  
The institute of Environmental Medicine

penny.nymark@ki.se

Contact person:  
Johanna Bergman  
Institutet för miljömedicin

johanna.bergman@ki.se

Nobels väg 13

17177 Stockholm
Title: Basic Course in Medical Statistics

Course number: 3134  
Credits: 3.0  
Date: 2021-10-18 -- 2021-10-29  
Language: English  
Level: Doctoral level  
Responsible KI department: Department of Learning, Informatics, Management and Ethics  
Specific entry requirements:  
Purpose of the course: The aim of the course is to introduce the basic statistical methods and the fundamental principles of statistical inference and to offer basic skills that involve hands on data analysis using statistical software.  
Intended learning outcomes: The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.  
Contents of the course: Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.  
Teaching and learning activities: This course is a Team-Based Learning (TBL) course. TBL is a specific form of learning method that integrates individual assessment and group work with immediate feedback. Focus will be on solving statistical problems in a team setting. This two weeks course consists of online preparation through video lectures and exercises, and several TBL sessions (in class meeting). The time in between TBL sessions will be spent reading the course material, and preparing for the assessment and group application exercises.  
Examination: Individual and group readiness assurance tests, as well as application exercises.  
Compulsory elements: In class attendance during TBL sessions are mandatory for passing grade. If a student misses one of the five TBL sessions a supplementary exercise will be given. If the student misses more than one TBL session it is recommended that the student takes the course at another occasion (since absence also affects the other members of the team).  
Number of students: 35 - 45  
Selection of students: Selection will be based on: 1) start date of doctoral studies (priority given to earlier start date), 2) the relevance of the course syllabus for the applicant's doctoral project/post doctoral research (according to written motivation).  
More information: This course is a TBL-course, former course number was 1383. TBL, Team-Based Learning, is a special form of learning that integrates individual work, group work and immediate feedback. Focus will be on solving statistical problems in group/team setting. The course will consist of 2-3 full days per week for two weeks. Course dates (via Zoom) are: October 18-19, 21 and October 25, 27, 29.

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

Contact person: Karin Wrangö  
Institutionen för lärande, informatik, management och etik  
karin.wrango@ki.se
Title: Psychobiology of Intelligence

Course number: 3137
Credits: 1.5
Date: 2021-10-19 -- 2021-11-18
Language: English
Level: Doctoral level
Responsible KI department: Department of Neuroscience

Specific entry requirements:

Purpose of the course: In this course, you will be presented an overview of the main concepts and methods in studies of the psychobiology of intelligence. During the course, there will be open discussions with the course organiser, criticisms/evaluations of key peer-reviewed papers, and student oral presentations on the subtopics covered. Intelligence is, as will be argued for in class, one of the most important human traits. Inter-individual differences in IQ are correlated with school performance, career success, income, health, longevity, and many other outcomes. In addition, modern theories and measurements of intelligence have implications for a wide range of disciplines, from cognitive neuroscience and behavior genetics to clinical psychology, sociology and psychopharmacology. Understanding the basics about intelligence and how it is implemented in biological systems might be useful to you during your career, and will surely be important to you as an informed citizen.

Intended learning outcomes: At the end of the course the student should be able to:
- Understand the basic features of methods used in intelligence research: especially methods in psychometrics, neuroscience, and genetics
- Grasp modern theories of intelligence, and how intelligence is measured
- Discuss and evaluate key scientific articles about the psychobiology of intelligence
- Be able to distinguish what is scientifically relevant from what is not in the long-lasting controversy on the nature and nurture of intelligence

Contents of the course: Lectures and discussions about these main subtopics: 1) Definitions of intelligence and progress in intelligence test development; 2) Factor analyses and the debate of General Intelligence versus Multiple Intelligences; 3) Verbal abilities, spatial abilities, reasoning, speed of processing, and working memory; 4) Theories of intelligence; 5) Malleability of intelligence; 6) Genetics of intelligence; 7) Intelligence and the brain: overview and evolution; 8) Neural correlates of intelligence seen in human imaging studies; 9) The neurophysiological mechanisms of intelligence as glimpsed from animal studies. In addition, the course will include seminars where students will evaluate, criticize, and discuss key papers about the psychobiology of intelligence, as well as group presentations about one of the subtopics covered in class.

Teaching and learning activities: Lectures by the course organiser, seminars guided by students on key peer-reviewed papers, and group presentations.

Examination: The seminars and group presentations count as examination. The course organiser will assess your ability to discuss, to critical thinking and reason about each subject in relation to what will be taught during the lectures.

Compulsory elements: The seminars and group presentations are mandatory. If you miss an activity, you can compensate for it by submitting a written report related to the missed material.

Number of students: 8 - 20

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

More information: The course will be spread over 5 weeks, with the class meeting on Tuesdays and Thursdays from 14.00 to 17.00 at Karolinska Institutet, campus Solna.

Course responsible:
Bruno Sauce
Department of Neuroscience

bruno.sauce@ki.se

Contact person:
Title : Epidemiology II. Design of epidemiological studies

Course number : 3138
Credits : 1.5
Date : 2021-12-06 -- 2021-12-15
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 are prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.

More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are December 6, 8, 10, 13 and 15.

Course responsible:
Karin Leander
The institute of Environmental Medicine
08-52487498
Karin.Leander@ki.se

Box 210 (Nobels väg 13), KI

171 77
Stockholm

Contact person:
Johanna Bergman
Institutet för miljömedicin

johanna.bergman@ki.se

Nobels väg 13

17177
Stockholm
Title: Embryology I

Course number: 3150
Credits: 1.5
Date: 2021-10-18 -- 2021-10-22
Language: English
Level: Doctoral level

Responsible KI department: Department of Biosciences and Nutrition
Specific entry requirements:

Purpose of the course: The aim of the course is to instruct the participants in human reproductive biology with focus on assisted reproduction technologies (ART), as well as to give them practical experience through practical demonstrations in embryological and micro-manipulation techniques. To provide understanding of the components of culture systems used in ART, so that the student can evaluate, troubleshoot and improve existing systems.

Intended learning outcomes: At the conclusion of this course students should show a good understanding of: Laboratory environment, input materials. Physical-chemical properties of culture system. Functional characteristics of different workstations for ART and their benefits. The influence of the laboratory and clinic environment on embryo culture. The morphology of oocytes, zygotes and cleavage stage embryos as well as morulae and blastocysts. Developmental milestones. Student should be aware of the general aspects and implication of the stem cells research and the potentiality that this represent for clinical application. Morphological aspects of the blastocysts for derivation of ICM and Derivation methods. Characterization of the embryonic stem cells and the importance of the pluripotency of these cells. The different differentiation assays on stem cells and what is ongoing in this field. The production of isogonics embryonic stem cells by somatic cell nuclei transfer or therapeutic clone (SCNT). Finally the students will improve their capacity to produce coherent, logical and concise explanations of data and concepts - both written and oral, through consideration of the course material. Students will also develop their ability to criticize scientific literature related with ART and reproduction physiology in a constructive and informed fashion.


Teaching and learning activities: The course runs for one week with lectures, and practical demonstration in embryo-micro manipulation techniques (intra-cytoplasmatic sperm injection and Embryo biopsy for PGD).

Examination: Individual written exam on the last day of the course.

Compulsory elements: The laboratory demonstrations are obligatory. The student should compensate for absence at a laboratory demonstration by presenting a literature report in agreement with the course leader.

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 Bioscience and Nutrition, NEO Huddinge.

Course responsible:
Jose Inzunza
Department of Biosciences and Nutrition
08-585 850 93
Jose.Inzunza@ki.se

Hälsövägen 7, Novum
141 86
Stockholm

Contact person: -
Title: Biostatistics I: Introduction for Epidemiologists

Course number: 3154
Credits: 3.0
Date: 2021-10-04 -- 2021-10-27
Language: English
Level: Doctoral level
Responsible KI department: Department of Medical Epidemiology and Biostatistics

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. (S2) - suggest a statistical distribution to describe a naturally occurring phenomenon and evaluate the appropriateness of the distribution given real data. (S3) - present appropriate descriptive statistics for an epidemiological study. (S2) - explain the difference between hypothesis testing and interval estimation and the relation between p-values and confidence intervals. (S3) - suggest an appropriate statistical test for a comparison of two groups, perform the hypothesis test using standard statistical software, and interpret the results. (S3) - 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. (S3) - explain the concept of confounding in epidemiological studies and demonstrate how to control/adjust for confounding using stratified analysis. (S2) - 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. (S2) Learning outcomes are classified according to Bigg's structure of the observed learning outcome (SOLO) taxonomy: (S1) uni-structural, (S2) multi-structural, (S3) relational, and (S4) extended abstract.

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 the statistical software R, exercises not requiring statistical software, different group and individual assignments, literature review.

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). 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 examination (summative assessment) is compulsory.

Number of students: 8 - 25

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

More information: The course is extended over time in order to promote reflection and reinforce learning. Course dates are October 4, 6, 8, 11 and 13 (week 1) and October 18, 20, 22, 25 and 27 (week 2). During the computer labs, the statistical software R will be used.

Course responsible:
Erin Gabriel
Department of Medical Epidemiology and Biostatistics
erin.gabriel@ki.se

Contact person:
Gunilla Nilsson Roos
Institutionen för medicinsk epidemiologi och biostatistik
08-524 822 93
gunilla.nilsson.roos@ki.se
Title: Mechanisms of Gene Regulation in Metabolism

Course number: 3157
Credits: 1.5
Date: 2021-10-14 -- 2021-10-20
Language: English
Level: Doctoral level
Responsible KI department: Department of Physiology and Pharmacology

Specific entry requirements:

Purpose of the course: The students of this course will get a broad perspective of how the regulation of gene expression is linked to metabolic and endocrine regulation in different tissues. The course will also cover molecular and physiological aspects related to inter-organ communication, and how this is essential to maintain metabolic homeostasis.

Intended learning outcomes: At the end of the course students will understand and be able to discuss the different mechanisms that regulate gene expression. They will be able to describe how these processes can affect metabolic disease and disease progression. The students will be able to choose the most appropriate methodologies to study diverse aspects of gene regulation in metabolism.

Contents of the course: This course aims at giving students an overview of the current understanding of how metabolism and metabolic dysfunction are controlled at the level of gene regulation. During one week, students will focus on the genetic and epigenetic mechanisms that affect transcriptional output in diverse organs and tissues in health and disease situations. This will include: basic mechanisms of gene transcription, transcription factors and coregulators, mRNA splicing and genetic variability, the chromatin landscape and associated DNA and histone modifications, noncoding RNAs and regulation of gene expression. Attention will be given to single gene analysis as well as global regulation of gene expression. In each module the student will be introduced to the basic concepts in the field and analyze situations in which dysregulation of the processes under examination leads to metabolic disease. Each module will include a chapter dedicated to the presentation and discussion of current experimental approaches relevant to research in that particular field of science.

Teaching and learning activities: This course will consist mainly of lectures and group discussions covering both theoretical and practical questions related to the different areas of gene regulation and metabolism. Some sessions will be dedicated to problem solving and presentation of state-of-the-art methodologies relevant to research in each field.

Examination: Examination will consist of an oral presentation in which students discuss an example of metabolic disorder caused by dysregulation of gene expression and propose a research plan to further study that problem. Students will be able to discuss each other's presentations. The research plan should include appropriate methodology learned during the course.

Compulsory elements: Presence at lectures, group work, and final presentation and discussion is mandatory. To compensate for absence a written essay on the missed topic must be performed.

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

More information: International guest speaker will be announced later.

Course responsible:
Duarte Ferreira
Department of Physiology and Pharmacology

duarte.ferreira@ki.se

Contact person:
Title: Clinical Trials in Cardiovascular Research

Course number: 3173
Credits: 1.5
Date: 2021-12-16 -- 2021-12-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Specific entry requirements:

Purpose of the course: Purposes of the course are to: - Improve knowledge and skills related to clinical trial planning and design as well as successful running of different types of clinical trials (observational studies, registries, randomized trials); - Provide an overview of some recent key trials in the cardiovascular arena.

Intended learning outcomes: After the course, the participants should be able to: - Know how to design, plan and run a successful clinical trial - Account for the relevant regulatory aspects involved in the process of designing and running a clinical trial - Analyze and interpret trial data - Critically review literature of clinical trials - Predict important statistical issues (e.g. different types of adjustments for confounders, biases, how to perform subgroup analysis in trials, statistical methods for meta-analyses) related to different trial designs (e.g. observational studies, registries, randomized trials and meta-analyses).

Contents of the course: Lectures/Seminars/Workshops on the following topics: - Different designs of clinical trials - Requirements from regulatory agencies and post marketing surveillance - Upcoming and ongoing cardiovascular clinical trials (e.g. antithrombotics, lipidology, diabetes, heart failure) - Implementation of GCP and ethical principles in clinical trials - Statistical issues in clinical trials - How to interpret clinical trials

Teaching and learning activities: - Lectures/workshops, debates on important clinical trials (2 days) - Home-based studying and preparation of the exam - Group work (2 days) - Presentation and discussion of your own design of a clinical trial (1 day)

Examination: Home-based group assignment (design of a clinical trial on a topic of students' choice) which will be presented/discussed on the examination date. Each individual will be assessed on the basis of the achievement of the intended learning outcomes of the course.

Compulsory elements: Participants should attend all the sessions except the GCP training (which is not mandatory and will be performed only if the course won't be virtual) and be involved in group work and presentation of the home assignment. The students who have missed course sessions will be assigned extra reading and home work to compensate the absence.

Number of students: 8 - 50
Selection of students: Selection will be based on: 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: December 16th and 17th 2021: frontal teaching/workshops. December 20th and 21st 2021: home study and preparation of the exam in groups of 4/5 students (home-based). December 22th 2021: exam. Location: Karolinska University Hospital/Karolinska Institutet, Solna or Zoom/other virtual platform depending on the regulations for Covid-19 in December. The course is run in collaboration with the European Society of Cardiology - Working Group on Cardiovascular Pharmacotherapy, which will provide well-known global trialists as speakers. National experts on cardiovascular clinical trials will also be part of the team of teachers.

Course responsible: Gianluigi Savarese
Department of Medicine, Solna

gianluigi.savarese@ki.se

Contact person:
Title: Extracellular Vesicles: Progress Towards Diagnostics and Therapy

Course number: 3175
Credits: 2.0
Date: 2021-10-11 -- 2021-10-15
Language: English
Level: Doctoral level
Responsible KI department: Department of Laboratory Medicine
Specific entry requirements:

Purpose of the course: It is only in the past decade that extracellular vesicles (EVs) have been discovered to mediate essential biological processes and cell-cell communication in both health and disease. In addition to characterizing their roles in vivo, these findings have also given rise to unique strategies to treat and diagnose disease. The goal of this course is to expand student's knowledge of EV diversity, biological function and potential applications.

Intended learning outcomes: After the course is completed, the student will:
- Be able to describe the basics of EV biology and function, as well as a number of novel technologies for EV isolation and characterization.
- Gain the skills necessary to critically evaluate publications and methods used in the EV field.
- Gain an appreciation for the breadth and relevance of the EV field at present and the questions that are yet to be addressed.

Contents of the course: The course will cover key developments in EV biology, function and clinical application. This will begin with an introduction to EV diversity and biogenesis, as well as important examples of their in vivo roles in health and disease. It will include an overview of the most important methods used for EV isolation and characterization. Finally, we will discuss the latest strategies for utilizing EVs as tools in diagnostics and the treatment of disease. Students will play an active role in discussions with experts, as they give summaries of the latest findings in the EV field.

Teaching and learning activities: This course will primarily consist of interactive lectures with corresponding review papers. The information gained from these will be used for small group discussions and presentations, where the students will be required to take part in assessing the progress and pitfalls within the field. The examination will be a written report that is handed in after the course.

Examination: A written project report, consisting of two A4 pages covering one of the three topics provided by the course leaders, is expected to be handed in within one week of the course ending. We will also evaluate individuals for their contributions to group discussions and presentations. These elements will be evaluated for each student's understanding of the central concepts in EV biology, function and clinical application.

Compulsory elements: Students will be required to attend the lectures and discussions held during the course. The examination must be handed in within one week of course completion. Absence from any component must be compensated for by individual written assignments on the topics missed.

Number of students: 8 - 15
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information: The course will be held from 9:30am to 5:30 pm. It will be held in the conference room ""Cellen"" in the Novum building on the Flemingsberg campus of Karolinska Institutet; Hälsovägen 7, 4tr.

Course responsible:
Daniel Hagey
Department of Laboratory Medicine
Daniel.Hagey@ki.se

Contact person: Samir El-Andaloussi
Institutionen för laboratoriemedicin
Samir.El-Andaloussi@ki.se
Title: Core Concepts in Global Health and Global Burden of Disease

Course number: 3185
Credits: 3.0
Date: 2021-09-13 -- 2021-12-10
Language: English
Level: Doctoral level
Responsible KI department: Department of Global Public Health

Specific entry requirements:

Purpose of the course: The purpose of the course is to provide students with a broad perspective on global health and the range of solutions to critical health issues; students will also develop their skills in critical analysis, and will develop confidence in building and presenting arguments in favour of or against various solutions to addressing health issues at a global level.

Intended learning outcomes:
- Describe broad trends and inequality in the burden of disease in low, middle and high-income countries; and discuss globalisation and the drivers of these trends;
- Understand how data on the global burden of disease is collected and analysed;
- Describe key actors, institutions and legal regimes in global health;
- Discuss challenges in implementing the health-related Sustainable Development Goals;
- Discuss the role of health systems in addressing current global health challenges;
- Review individual projects and publications in view of the overall aims of the SDG.

Contents of the course:
- Trends in the global burden of disease, including infectious disease, non-communicable disease, mental health, accidents and violence;
- Drivers of global inequalities in health;
- Challenges in measuring and analysing the global burden of disease; including a critical review of indicators and measurement platforms;
- Global health governance and financing;
- Service delivery, health systems and concepts of quality of care;
- The legal basis underpinning action in global health;
- Development theories and the role of culture in global health;
- Historical review of key approaches and strategies, initiatives and international agendas in global health including maternal, reproductive and child health, HIV, malaria, rational drug use/drug resistance in health and beyond, humanitarian aid and other;
- Implementation of Sustainable Development Goals for health, particularly Goal 3;
- Current challenges in global health, such as migration, climate change and Ebola.

Teaching and learning activities: The course is structured through a combination of lectures, group work and self-directed learning in order to provide students with the tools to be analytical and reflective about how their own PhD topics fit into the wider context of global health. The course will start with a one-week course with lectures and seminars, followed by bi-weekly seminars (with the option to follow remotely) to discuss recent publications or other key events/congresses. Peer-review of the work of fellow students and critical reading and commenting via the learning management system is part of the course. The one-week on-site lectures will demand that students prepare selected a lecture. A reading list will be provided three weeks in advance.

Examination: Students will be asked to write a 2000 word essay on their PhD topic summarizing linkages to global context and their research addresses global health and development summarising the learning from this course and applying it to their PhD topic and to peer-review the essay of one colleague. The essay is take-home. The course is pass/fail.

Compulsory elements: The exam and the seminars are compulsory. If a participant cannot join in the seminars, he/she is expected to read the articles and to write a short essay to share with other students via the learning management platform.

Number of students: 8 - 15

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

More information: The first week (13th-17th September 2021) there will be lectures and seminars about 6 hours per day. These activities will be a combination of on-site and online teaching. The next activities will be online seminars conducted once or twice a month (from 15:00 to 16:30) over Zoom online platform on the following dates: September 27, October 11, October 25, November 8, November 22 and December 6. The final assignment must be submitted by 10 December 2021.

Course responsible:
Claudia Hanson
Department of Global Public Health
claudia.hanson@ki.se

Contact person:
-
**Title : Basic Immunology**

**Course number :** 3187  
**Credits :** 3.0  
**Date :** 2021-09-06 -- 2021-09-24  
**Language :** English  
**Level :** Doctoral level  
**Responsible KI department :** Department of Clinical Neuroscience  
**Specific entry requirements :** Knowledge in basic cell biology  

**Purpose of the course :** To give doctoral students the possibility to acquire a solid knowledge and understanding of fundamental principles in immunology. All other courses in the doctoral education program Aii (Allergy, immunology and inflammation) assume that students have taken the Basic Immunology course, or otherwise have attained the same level of previous knowledge and understanding.  

**Intended learning outcomes :** To be able to:  - Explain the basic principles of innate and adaptive immunity and how different components of the immune system cooperate.  - Describe and compare principles of immune-related diseases in a clinical perspective.  - Apply knowledge gained on the function of the immune system to propose an experimental project in immunology in the form of a written assignment, that will be discussed in pairs.  - Review a chosen immune cell type/process/disease, which will be presented as a group project.  

**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 defence against infection, autoimmune and allergic diseases or transplantation.  

**Part 1:** An overview of the immune system, T cells, B cells, Antigen presenting cells, Innate lymphoid cells, Innate vs adaptive immune responses.  

**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 consists of lectures and seminars arranged during mornings five days per week. In the afternoon, students are assigned for reading to prepare for the next day's topics as well as project work, further reading, meeting with mentors and a written assignment. Course literature will be available on the course platform in advance of the course start and will be the basis for active discussion during the lectures. We will run exercises and immunological quizzes connected to the different parts of the course, so that the student will be able to digest the relatively big material. On the last day of the course the project work will be presented orally.  

**Examination :** Each student will be examined on the project work and the written assignment, as well as its contributions during the discussions. The project work will be evaluated by the group project mentor and by the course organizers during the oral presentations of the work. The individual written assignment is evaluated by the course organizers and will be discussed in pairs.  

**Compulsory elements :** All activities included in the course are compulsory. Absence needs to be compensated for in agreement with the course director.  

**Number of students :** 20 - 35  

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

**More information :** The course is divided into two sessions with 5 mornings of lectures each, September 6th to 10th (Monday to Friday) and September 20th to 24th (Monday to Friday). The afternoons will be dedicated to individual and group learning activities. Group presentation will be given on Friday September 24th. Teachers include specialists in different fields of immunology including both basic and clinical researchers. This course has previously been given with number 5229. The course will take place at CMM (Karolinska Institutet, Solna) and/or through Zoom, following the university's recommendations.  

**Course responsible :**  
Nicolas Ruffin  
Department of Clinical Neuroscience  

nicolas.ruffin@ki.se  

**Contact person :**  
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Title: Nucleic Acid Chemistry and Therapy

Course number: 3190
Credits: 3.0
Date: 2021-11-12 -- 2021-11-29
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 with good and up to date knowledge of nucleic acid chemistry and oligonucleotide therapy. The intention is to increase general knowledge about nucleic acids and how these can undergo different reactions as well as how oligonucleotides are chemically synthesized and modified for therapeutic or other use. We expect that this will stimulate and inspire the students in their own research whether they work on nucleic acid biology, therapy, analyse nucleic acids or use oligonucleotides as tools for investigations. It is an intention to increase understanding of nucleic acids, how these molecules work and how they can be used in therapy. In addition, knowledge on how oligonucleotides are synthesized and how these can be modified will enhance the insight and enable the students to improve their use of oligonucleotides as tools or potential therapeutics.

Intended learning outcomes: At the end of the course the students - should be able to explain the underlying chemistry of nucleic acids and how these can react at different parts of the structure. - should be able to explain how oligonucleotides can be synthesized and modified and why currently used modifications and conjugations are done. - should be able to make selections of modifications and to design oligonucleotides, for use as potential therapeutics.

Contents of the course: Introduction to Nucleic acid chemistry and nomenclature
Reactions at nucleic acid bases
Reactions at ribose and deoxyribose sugars
Reactions at and nomenclature of phosphates and phosphate modifications
Methods for synthesis of native and modified oligonucleotides
Common modifications used for oligonucleotide therapy
Introduction to Oligonucleotide therapy
Antisense, pre-mRNA Splice-switching, siRNA, miRNA and DNA-targeting ON therapy
The problem of oligonucleotide delivery in therapy

Teaching and learning activities: The course consist of lectures by experts and seminars in the presence of experts on different aspects of nucleic acid chemistry and oligonucleotide therapy as well as workshop activity including presentations by the students. Additional home work combined with individual and group activities in the class room will be a part of the learning.

Examination: Oral presentations on workshops as well as a written account with specific course related questions.

Compulsory elements: The lectures, seminars and workshop activities with student presentations will be compulsory. Absence will be compensated by extra assignments. The student will also submit reports from a workshop in written form for review and approval, in connection to the student presentations.

Number of students: 8 - 24

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

More information: The course will include lectures, typically half days, but occasionally a whole day. There will also be some days without teaching (to allow for your PhD work) and also topics to work with in groups which includes group presentations towards the end of the course. Examination will be based on the topics group work and a home-exam.

Course responsible:
Roger Strömberg
Department of Biosciences and Nutrition
0852481024
Roger.Stromberg@ki.se

Neo, Hälsovägen 9
14183
Huddinge

Contact person: -
Title : Basic Cardiovascular Pathology

Course number : 3197
Credits : 1.5
Date : 2021-11-22 -- 2021-11-26
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna

Specific entry requirements :
Purpose of the course : The course is designed for doctoral students performing cardiovascular research that do not have an education in medicine and/or want to update their knowledge of cardiovascular diseases. The students will learn the basic concepts in cardiovascular physiology and pathology. The course will provide an overview of cardiovascular medicine and give the possibility to gain up to date knowledge in the field. In this way the doctoral students will be prepared for more advanced courses in the Cardiovascular Research program.

Intended learning outcomes : To understand basic principles of cardiovascular physiology and pathology and how different components of the cardiovascular system cooperate. To be able to relate, compare and understand experimental aspects of cardiovascular diseases. To be able to present and explain experimental design of cardiovascular disease models. To illustrate and discuss the challenges of future improvements in drug development related to the cardiovascular diseases. To adapt knowledge of cardiovascular physiology and relating it to cardiovascular pathologies.

Contents of the course : The course contains the following topics: cardiovascular biology and development, cardiovascular physiology, cardiovascular disease genetics, regeneration of the cardiovascular system, vascular inflammation, and implications for other inflammatory disorders.

Teaching and learning activities : The course is a full-time one week course. The teaching is mainly in lecture/seminar form but also includes project work with group discussions. Time will be dedicated for individual assignments focusing on different topics of cardiovascular pathology. Students will present their assignments at the end of the course followed by open discussions.

Examination : All the learning outcomes of the course have to be reached to pass the course. During oral presentations special attention is given to scientific correctness. At the end of the course, a short written exam will recapitulate the contents of the course.

Compulsory elements : All elements of the course, including seminars, group discussions and individual presentations, are compulsory. In case of absence from theoretical parts, extra assignments have to be completed and then approved by the course organizers.

Number of students : 8 - 25

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

More information : The course location will mainly be at Karolinska University Hospital in Solna. The designated time is 9:00 to 16:00 Monday to Friday including time for individual studies and group work.

Course responsible :
Anton Gisterå
Department of Medicine, Solna
anton.gistera@ki.se

Contact person :
-
Title: Clinical and experimental neuroimmunology

Course number: 3200
Credits: 1.5
Date: 2021-10-11 -- 2021-10-15
Language: English
Level: Doctoral level
Responsible KI department: Department of Clinical Neuroscience

Specific entry requirements:

Purpose of the course: The purpose of this course is to enable doctoral students and other participants to gain an understanding of the major neuroinflammatory diseases and the key players involved, including the interaction between the central nervous and immune systems. An additional purpose is that those who participate in the course learn to understand critical aspects of creating and using experimental systems to model neuroinflammatory diseases.

Intended learning outcomes: After this course the students should be able to: (i) describe the basic clinical characteristics of the major neuroinflammatory diseases; Multiple Sclerosis (MS), Myasthenia Gravis (MG) Guillain-Barré Syndrome (GBS), and Narcolepsy, (ii) explain how to create experimental models for neuroinflammatory diseases in rats and mice, compare models and discuss their advantages and limitations, (iii) evaluate and interpret new findings and recent scientific papers in the field in relation to main previous findings and (iv) speculate on molecular mechanisms underlying neuroinflammatory disease and hypothesize how knowledge on these mechanisms can enable therapy and prevention.

Contents of the course: The course includes an overview of clinical symptoms, signs, pathology, treatments and diagnostic criteria for the most important neuroimmunological diseases including MS, MG GBS/CIDP and Narcolepsy. Also included is an overview of experimental models of neuroimmunological diseases, with an emphasis on techniques for genetic analysis (intercrosses, congenics, transgenics etc). Key molecular concepts in neuroinflammation are covered such as immune mechanisms (the blood-brain barrier (BBB), major cell players, MHC-TCR interaction, costimulation, chemotraction) as well as key tissue degeneration/regeneration. Different techniques used to study neuroinflammation are discussed including imaging, high-throughput genotyping, expression analysis and proteomics.

Teaching and learning activities: The course combines: (i) traditional lectures (usually in the morning), given by the experts in the field, (ii) an afternoon with video demonstrations of experimental models, (iii) a structured discussion in small groups to design an experimental model for one of the major neuroinflammatory diseases with a short presentation to the class, followed by the evaluation of strengths and weaknesses of an experimental model proposed by another group and (iv) an individual assignment followed by an interactive presentation/discussion on the last day. The assignment will consist of a presentation of a high-impact scientific paper relevant to the student's own research topic and that is of importance for the neuroimmunology field.

Examination: Examination will be based on the groups assignment/discussion and the individual assignment, including the subsequent discussions (please see "Teaching and learning activities") and the feedback given to other students on their assignments. In their presentations, students should be able to comment on the design of their experimental model for one of the major neuroinflammatory diseases or article of choice in the context of the items described above under "learning outcomes". Guidelines for the preparation of the assignments will be sent out to the students two weeks before the start of the course.

Compulsory elements: All lectures, demonstrations and group tasks are compulsory. Compensation for absence can be discussed with the course directors, and may involve literature reviews with written reports on the topic missed.

Number of students: 8 - 30

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

More information: This course is given jointly by the doctoral programmes Allergy, immunology and inflammation (Aii) and Neuroscience (Neuro). See: https://ki.se/en/staff/docoral-programmes. Time: Monday-Friday, 9:00-17:00; Location: Center for Molecular Medicine (CMM), Karolinska University Hospital, Solna, building L8, lecture hall/seminar room and conference room. The course focuses on neuroimmunological diseases, from clinical to molecular (experimental) perspectives. It combines lectures on the most important diseases with lectures on key immunological aspects as well as different strategies/techniques to answer scientific questions regarding pathogenesis.

Course responsible:
Pernilla Strid
Department of Clinical Neuroscience
Pernilla.Strid@ki.se

Contact person:
Manuel Zeitelhofer
Institutionen för medicinsk biokemi och biofysik

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title : Teaching and Learning in Higher Education: A Doctoral Course

Course number : 3201
Credits : 4.5
Date : 2021-09-06 -- 2021-12-03
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 to prepare students for teaching in higher education and contribute to the professional development as teacher.

Intended learning outcomes : Intended Learning Outcomes At the end of the course, students are expected to be able to: - Analyse different roles of a professional university teacher and current conditions related to teaching-learning within higher education. - Understand and be able to employ core educational concepts of teaching and learning in Higher Education. - Design teaching in regards to outcome- and competency based curriculum frameworks in relation to theories of learning or research on student learning in higher education.

Contents of the course : - Roles and conditions related to being a professional university teacher - Pedagogical core concepts - Students learning in higher education - Different forms of teaching and learning activities - Design of teaching for learning

Teaching and learning activities : This course is based on theories of experiential learning, collaboration and meaningful learning. This means that active participation during course sessions is an essential part of the course content. Students get the opportunity to experience a variety of teaching-learning activities and teaching techniques related to e.g. lectures, different forms of seminars and group work. The variety of forms is planned to facilitate learning and serve as models for own teaching.

Examination : Participants will through a written essay describe and review a teaching experience (or if needed participated as a student) within higher education, reason about the experience based on pedagogical theories/principles. The essay maybe written in English or Swedish and will be presented orally.

Compulsory elements : - Participation during three webinars. The webinars, scheduled for 1.5 hours each, are used to follow up two of the assignments and will be held in Zoom. - Provide feedback based on peer-review of one written essay. Absence from compulsory sessions can be compensated through written tasks.

Number of students : 12 - 18
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : This is a three-week course spread out over the term and which requires time for independent work outside of scheduled class time. Scheduled sessions are on the following dates: 8 September (Campus day), 7 October (Webinar), 21 October (Webinar), 11 November (Webinar) and 30 November (Campus day). The course is given in English.

Course responsible :
Per Palmgren
Department of Learning, Informatics, Management and Ethics
per.palmgren@ki.se

Contact person :
Karin Wrangö
Institutionen för lärande, informatik, management och etik
karin.wrango@ki.se
Title : Function B - to Design Procedures and Projects Involving Research Animals

Course number : 3214
Credits : 3.0
Date : 2021-08-31 -- 2021-10-06
Language : English
Level : Doctoral level

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

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

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

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

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

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

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

Number of students : 8 - 12

Selection of students : This course is primarily aimed at experienced senior researchers, but postdocs and doctoral students at the last stage of their studies will be accepted. Preference will be given to doctoral students working with animal models in the last stage of their projects.

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

Course responsible :
Rafael Frias
Comparative medicine
085246660
rafael.frias@ki.se

Contact person : -
Title : Basic Human Neuroscience

Course number : 3220
Credits : 10.0
Date : 2021-09-23 -- 2021-11-04
Language : English
Level : Doctoral level
Responsible KI department : Department of Neuroscience

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

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

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

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

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

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

Number of students : 1 - 6

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

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

Course responsible :
Lennart Brodin
Department of Neuroscience
0852486902
Lennart.Brodin@ki.se

Contact person : 
Title : Assessing and Alleviating Pain and Distress in Laboratory Animals

Course number : 3221
Credits : 1.0
Date : 2021-11-09 -- 2021-11-11
Language : English
Level : Doctoral level
Responsible KI department : Comparative medicine
Specific entry requirements : Completed the “Function A” laboratory animal science course (“to carry out scientific procedures on animals”), or completed an equivalent training.

Purpose of the course : The course provides advanced training in the recognition, prevention and alleviation of pain and distress in laboratory species. The main purpose of the course is to enable participants to apply and assess the value of improvements to the methods used in research projects that involve the use of live animals. Implementing such improvements is a key element in Refining animal research – a legal and ethical requirement of Swedish and European legislation.

Intended learning outcomes : After completion of this course, the students should be able to apply refinements effectively. They will also be able to evaluate protocols to determine what additional modifications could be made to improve animal welfare. They should also appreciate the ethical, scientific and practical issues involved in assessing and preventing pain and distress.

Contents of the course : The course provides a broad understanding of the physiology of pain and distress, concepts of consciousness in animals, and means of assessing pain and distress in animals. Key details on the pharmacology of analgesic agents is provided to underpin selection of appropriate treatment regimens in laboratory species. The potential confounding effects of pain, distress, and analgesic use on research protocols will be described, together with means of avoiding these confounding effects.

Teaching and learning activities : The course will adopt a blended learning approach that combines e-learning, seminar lectures, discussions and interactive sessions. Four e-learning modules on assessment of pain and distress and management of perioperative pain will be included in the course. In addition, seminars will provide information on: • What we know about pain and distress in people and animals, and an introduction to the physiology of pain and nociception. • How methods of assessing pain and distress have evolved, and provide an up-to-date summary of the methods that can be used in a range of different species. • How we can assess distress and the general welfare state of animals, and how the use of score sheets can provide more structured and reliable assessments. • How different types of analgesic act to reduce or eliminate pain, and the practicalities of managing pain in a research setting. • Methods of reducing, avoiding or alleviating pain and distress by improving periprocedural care, and by refinement of research procedures. • Why analgesics may be withheld in some research protocols, and explain how some of these barriers to effective pain relief can be overcome. The seminars incorporate video material and interactive tuition in assessing pain and distress. 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.

Examination : Formative assessment during the face-to-face sessions, summative quizzes in the e-modules and a summative short answer/multiple choice question final written examination is held following conclusion of the course.

Compulsory elements : All face-to-face sessions and active contribution to the course are compulsory if the student is to be provided with certification of the successful completion of the course. Completion of all e-learning modules is also a requirement. 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). If necessary, additional selection criterium will be used based on the date for registration as a doctoral student (priority given to earlier registration date).

More information : This course will be held by distance learning from Tuesday to Thursday between approx. 10 am and 4 pm. The main instructors of this course are internationally-recognized experts Professor Paul Flecknell, MA, VetMB, PhD, DECLAM, DLAS, DECVA, (Hon) DACLAM, (Hon) FRCVS, author of the Handbook Laboratory Animal Anaesthesia, 4th Edition, and Matthew Leach, Ph.D., Lecturer, School of Natural and Environmental Sciences, Newcastle University, Newcastle upon Tyne, UK.

Course responsible :
Rafael Frias
Comparative medicine
085246660
rafael.frias@ki.se

Contact person :
Title : Genomics for Biomedical Scientists: Handle Your Gene Expression Data

Course number : 3230
Credits : 3.0
Date : 2021-09-20 -- 2021-10-01
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biology

Purpose of the course : The biomedical field has experienced a revolution thanks to the development of the massive parallel sequencing technologies. We can now obtain the complete genetic information of a patient in a few days at low costs. However, there is a gap between the application of classical molecular biology tools and the full use of the current genomic and computational approaches. To bridge this gap, the course is designed to give students an introduction to genomic approaches in gene regulation. The emphasis is that the students learn to apply genomic tools in their research without prior knowledge in computational biology. The students will also be made aware of ethical aspects in relation to 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 investigating the dynamics of chromatin 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 analyse ChIP-Seq and RNA-Seq experiments.   - Make use of publicly 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 : Prior knowledge of programming is not required. The learning activities used in the course include lectures, practical training in data analysis, group discussions and problem-based learning activities. The students will be able to use gene expression data analysis software during the course. Students will be grouped in learning groups and present the results of their analysis of a preselected dataset from a recent publication in form of an oral presentation 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 during the quiz and Q&A (question and answer) sessions. There will be substantial time for practising and discussing after the lectures.

Examination : The students will be examined for all learning outcomes. The examination is based on:   - The student's contribution to the discussions during the course.   - The performance during the bioinformatic hands-on sessions.   - The student's individual contribution to the analysis and presentation at the last day of the course.

Compulsory elements : Students will be asked to describe a (e.g. their own) research problem prior to the course. The seminars, group discussions and presentations are compulsory. Absence cannot be compensated for.

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) start date of doctoral studies (priority given to earlier start date)

More information : The course most likely takes place at SciLifeLab in Solna (alternatively at Biomedicum in Solna). In the case that physical attendance is not recommended due to the SARS-CoV-2 pandemic, the course will be given online. The course will provide theoretical training combined with hands-on training. Part of the practical training can be performed remotely. Students are encouraged (but it is not obligatory) to work on their own RNAseq and ChIPseq data during the course.

Course responsible :
Vicente Pelechano Garcia
Department of Microbiology, Tumor and Cell Biology

vicente.pelechano.garcia@ki.se

Contact person :
Vicente Pelechano Garcia
Institutionen för mikrobiologi, tumör- och cellbiologi

vicente.pelechano.garcia@ki.se
Title: Thrombosis and Hemostasis, from Mechanisms to Therapies

Course number: 3238
Credits: 3.0
Date: 2021-11-08 -- 2021-11-19
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Solna

Purpose of the course: The course aims to bring doctoral students in-depth knowledge of thrombosis and hemostasis, to elucidate the links between molecular mechanisms and clinical disorders, to introduce current advances and future directions of thrombosis research, as well as to enhance the abilities for research question identifying and research design. The course is designed for the students who work with basic and clinical aspects of hemostasis, thrombosis and cardiovascular research.

Intended learning outcomes: The concept from bench to bedside and back will be reinforced at all levels. Therefore, at the end of the course the students should be able to: 1. Describe the molecular and cellular mechanisms of hemostasis and thrombosis, as well as the dynamic processes of primary hemostasis, secondary hemostasis, and thrombosis. 2. Explain the mechanisms underlying bleeding and thrombotic disorders. 3. Have a good understanding of current anticoagulant and antiplatelet therapies, and obtain a clear view of the challenges of future anticoagulant and antiplatelet drug developments. 4. Apply current knowledge of thrombosis and hemostasis into future research design and to formulate new treatment strategies. 5. Sharpen the sense of critical appreciation of research literature, and strengthen their ability to develop new research concepts through critical reading and reflecting.

Contents of the course: The following aspects of hemostasis and thrombosis will be discussed: biochemistry of the blood clotting system; cell-cell and cell-protein interactions in the cardiovascular system in relation to thrombosis and bleeding disorders; cross-talks of the clotting system with inflammation, host defense and complement systems; diagnosis of bleeding and thrombotic disorders; therapeutic strategies to fight thrombosis and bleeding with the emphasis placed on new pharmacological concepts. In light of the new knowledge conveyed in the course, the emphasis will be laid on critical review of the literature, research question identification, and independent research design.

Teaching and learning activities: Seminars Group work Online learning and group work on research design Presentation of papers related to the key lectures
Examination: Presentation of a paper related to key lectures Research project design and reciprocal review between the work groups. Multiple-choice test.

Compulsory elements: To participate in the lectures, group work and presentation of the group work is compulsory. The students who have missed the group work sessions can book extra session time within 4 weeks to compensate the absence. Absence in lectures should be compensated for in accordance with the course director.

Number of students: 8 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: The doctoral course Thrombosis and Haemostasis has been active at KI for more than 20 years, previously with the course number 2484. The course has been extended into two-week full time format with 3 HEC credits, which was much appreciated by the course participants. The extension allows the course to reinforce, apart from in-depth understanding of coagulation, thrombosis and haemostasis and their links to multiple clinical settings through course lectures (40%), the training on research competence and independence through online learning and individual/group work (60%). The latter includes critical review and presentation of research literature, research question identification, research project design, as well as reciprocal review and criticism of project design. The second week of the course will be individual work on research literature review and research project design. A mentor is assigned for each course participant to evaluate and comment on the individual research project design. The course has been well appreciated by previous course participants as indicated by the course evaluation report (link below).

Course responsible:
Nailin Li
Department of Medicine, Solna
08-51773996
Nailin.Li@ki.se

Clinical Pharmacology Unit
Karolinska University Hospital-Solna
17176
Stockholm

Contact person:
Angela Silveira
Institutionen för medicin, Solna

https://kiwais.ki.se/katalog/katalog/pdf?term=HT21
Title : Biopsykosocialt perspektiv på beroendetillstånd

Course number : 3239
Credits : 3.0
Date : 2021-08-30 -- 2021-09-10
Language : Swedish
Level : Forskarnivå
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements : Doktorand vid svenskt universitet.
Purpose of the course : Syftet är att ge en fördjupad kunskap inom beroendefältet samt ge kunskap för att kritiskt kunna granska forskning inom området.

Intended learning outcomes : Efter kursen förväntas studenten: Kunskap • kunna definiera nyckelbegrepp inom beroendeområdet • kunna redogöra för teoretsiska modeller för beroendetutveckling • kunna redogöra för olika metoder för att studera beroende samt aktivt kunna redogöra för och reflekttera över fördelar och nackdelar med dessa metoder • ha kännedom om prevalens och epidemiologi för beroendesättningar och beroendesättningar • kunna redogöra för olika behandlingsformer inom beroendeområdet • kunna redogöra för beroendets inverkan på individen och omgivning. Färdighet och förmåga • kritiskt och konstruktivt opponera på andra studenters arbeten • delta i diskussioner, argumentera kring för kursens relevanta förståelser • kritiskt och konstruktivt kunna reflektera över centrala beroendeteorier, behandlingsformer samt modeller för att studera beroendetillstånd.

Contents of the course : • Beroende utifrån följande perspektiv: Epidemiologi, neurobiologi, psykologi, socialmedicin och samhällsvetenskap • Modeller och metoder för att studera beroende, från cell till människa och samhälle • Prevention, psykologisk och farmakologisk behandling • Skadeverkningar på individ och omgivning


Examination : Examinationen sker i form av bedömning av insatserna i kursens obligatoriska moment inklusive mundlig presentation av gruppuppgift som innebär att applicera alternativa modeller/teorier på en befintlig forskningsplan. För att få godkänd på kursen ska deltagaren kunna visa att alla kursens lärandemål har uppnåtts.


Number of students : 10 - 26
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier (där företräde ges för doktorander som ej genomfört halvtidskontroll, dvs som är tidigt i sin forskarutbildning).

Title: Clinical and Molecular Bacteriology

Course number: 4215
Credits: 1.5
Date: 2021-11-08 -- 2021-11-12
Language: English
Level: Doctoral level
Responsible KI department: Department of Neuroscience

Specific entry requirements:

Purpose of the course: The purpose of this course is to introduce students to a variety of topics relating to both clinical and molecular bacteriology and the interaction between clinical and basic research.

Intended learning outcomes: At the end of the course the students should have a good overview of and will be able to show good understanding of: - The forefront of clinical, public health and experimental research in antibiotic resistance and bacterial pathogenesis - Ongoing clinical and molecular bacteriology research at Karolinska Institutet / Karolinska University Hospital - A range of different experimental techniques and approaches used in bacteriology research.

Contents of the course: Topics of the course will include: - Molecular pathogenesis of bacteria - Clinically important bacterial infections and antibiotic resistance - The role of the bacterial microbiota in health and disease - Innovation and emerging technologies and techniques in bacteriology

Teaching and learning activities: This one week course will consist of lectures/seminars by leading researchers/clinicians in the field of Bacteriology as well as group and individual assignments. Active participation is expected in lectures, seminars and group assignments.

Examination: The learning outcomes will be assessed through individual written assignments and group oral presentations. Each student will need to show that all the learning outcomes of the course are achieved.

Compulsory elements: Lectures/seminars have compulsory attendance which may be compensated by a given written assignment in exceptional circumstances.

Number of students: 8 - 25

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

More information:

Course responsible:
Keira Melican
Department of Neuroscience
Keira.Melican@ki.se

Contact person:
Benedict Chambers
Institutionen för medicin, Huddinge
Benedict.Chambers@ki.se
Title: Immunometabolism: Implications for Health and Disease

Course number: 5214
Credits: 1.5
Date: 2021-09-13 -- 2021-09-17
Language: English
Level: Doctoral level

Responsible KI department: Department of Medicine, Solna

Specific entry requirements: Basic knowledge of immunology (corresponding to the KI doctoral education course Basic Immunology, 3 hp), molecular biology and biochemistry is required.

Purpose of the course: This course intends to provide doctoral students an in-depth knowledge on the emerging field of immunometabolism, more specifically, the interplay between immunological and metabolic processes. This will add an extra dimension to our understanding of the immune system in health and disease.

Intended learning outcomes: After successful completion of this course students are expected to be able to:
1. Identify the concept of immunometabolism and differentiate it from other types of cellular metabolisms.
2. Summarize a number of different mechanisms that modulate the metabolism of the immune response in a healthy state.
3. Understand the molecular mechanisms underlying energy metabolism and immunology into the development of metabolic and inflammatory diseases.
4. Compare and contrast scientific papers in the immunometabolism field into a coherent conclusion.
5. Argue and judge scientific data about immunometabolism and the application on inflammatory and metabolic diseases.
6. Design a research proposal based on acquired knowledge during lectures and through a search of the scientific literature.

Contents of the course: Our understanding of molecular pathways that govern metabolism and immunology has evolved largely in parallel. However, current evidence points to a close interplay between immunological and metabolic processes. It is now clear that the behavior of cells of our immune system including monocytes, macrophages and lymphocytes is largely determined by the status of their intracellular energy metabolism. This course will provide an in-depth knowledge about immunometabolism. The course will specifically focus on the molecular mechanisms of metabolism, such as oxidative phosphorylation and glycolysis that underlie immune cell functioning. Furthermore, the concept of immunometabolism will be applied to various pathological conditions ranging from host defense against infections, cancer and cardiometabolic diseases and related complications. Of note, during the course it will be discussed how targeting of metabolism in immune cells can lead to tangible therapeutic advancements.

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

Examination: To pass the course, the participant has to:
1) Give a presentation about the research proposal in a seminar.
2) Discuss the presented proposal in a seminar and actively engage in discussing other participants' presentations related to different aspects of immunometabolism.
3) Pass a written exam recapitulating the course's content.

Compulsory elements: Examination is compulsory to pass the course.

Number of students: 8 - 30

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

More information: This course is given jointly by the doctoral programmes Cardiovascular Research (CVR), Allergy, immunology and inflammation (Aii) and Metabolism and Endocrinology (MetEndo). See: https://staff.ki.se/doctoral-programmes

Course responsible:
Maria Forteza de los Reyes
Department of Medicine, Solna
0704608018
maria.forteza.de.los.reyes@ki.se

Akademiska stråket, 1

17164
Solna

Contact person:
Daniel Ketelhuth
Institutionen för medicin, Solna

Daniel.Ketelhuth@ki.se
Title: Artificial Intelligence and Machine Learning for Biomedical and Clinical Research

Course number: 5223  
Credits: 3.0  
Date: 2021-11-22 -- 2021-12-03  
Language: English  
Level: Doctoral level

Responsible KI department: Department of Microbiology, Tumor and Cell Biology  
Specific entry requirements: At least 1.5 credits from a course in basic statistics.

Purpose of the course: To increase knowledge about Machine Learning (ML) and Artificial Intelligence (AI) applications in biological and medical research, introduce first-hand experience and skills with different frameworks. The course requires no preliminary programming skills as well as no preliminary expertise in ML and AI. This course is given at a basic/novice level with no expertise in ML/AI and preliminary programming skills required, though experience in data analysis using RStudio/MatLab or similar analytic environment is an advantage.

Intended learning outcomes: After the completed course, the participants will be able to describe and discuss general aspects of ML and AI in a biomedical or medical context including ethical dilemmas and challenges. Practically, they should be able to prepare and analyse different data types related to own research, such as texts, omics, genomic sequences, images etc. using a range of ML and AI exploration and classification techniques as well critically analyse the outcome and estimate performance.

Contents of the course: Basic information about AI and ML, multivariate dataset preparation, classic methods of univariate and multi-dimensional analysis (Principal Component Analysis, Linear Discrimination Analysis, Factor Analysis), variable selection and sparse regression models (lasso regression, ridge regression, elastic net), supervised and unsupervised learning with neural networks, federated learning, performance estimation methods.

Teaching and learning activities: The course consists of lectures, group discussions, and hands-on labs. Previous experience from practical experience applying modelling in a computer-based environment (e.g. in R, SAS, STAT, Matlab or Python), is strongly recommended.

Examination: The student will be examined by their (a) labs accomplishment (b) final project report and (c) written reviews of projects of 2 other students.

Compulsory elements: All planned activities including lab and group works are mandatory. Absence has to be compensated with a report on the lab work, which student will have to do.

Number of students: 8 - 8

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

More information: The course takes place at Campus Solna. It is full time and intensive. For any questions about course contents and practicals, email iurii.petrov@scilifelab.se who is the main teacher of the course.

Course responsible:  
Andrey Alexeyenko  
Department of Microbiology, Tumor and Cell Biology  
Andrey.Alexeyenko@ki.se

Contact person:  
Matti Nikkola  
Institutionen för cell- och molekylärbiologi  
Matti.Nikkola@ki.se
Title: Advanced Scientific Writing

Course number: 5227
Credits: 1.5
Date: 2021-09-06 -- 2021-09-10
Language: English
Level: Doctoral level

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

Specific entry requirements: Knowledge corresponding to basic doctoral courses in scientific writing at KI and some experience of scientific writing.

Purpose of the course: This is an advanced course in scientific writing, specifically designed for post docs and PhD students in the later part of their education. The aim is to improve the participants’ ability to write, revise and review original scientific articles.

Intended learning outcomes: After passing the course, the participant will: - have a better understanding of how to write an original scientific article, including use of the proper structure and language - be aware of and, thereby, able to avoid the common mistakes involved in writing scientific articles - have the ability to offer constructive criticism regarding these matters to other scientists (e.g., co-workers, as peer reviewers for journals) - be able to assess constructive criticism of their manuscripts from other scientists and revise accordingly

Contents of the course: This is an advanced course in scientific writing that requires prior knowledge and experience in writing research articles. The participant will be writing and revising manuscripts based on their own research (written, at least in part, before the course begins) as well as peer reviewing the manuscripts of other course participants. The teachers will focus on giving feedback in great detail on the scientific articles of the students and also guiding the revision of the manuscripts after the review sessions.

Teaching and learning activities: Lectures, individual writing and revising of manuscript, individual and group peer reviewing of the manuscripts of other course participants, group discussions including feedback from the teachers.

Examination: Writing and rewriting a manuscript based on the comments and feedback from the other course participants and teachers, thoughtful peer reviewing of the manuscripts of other course participants, active participation in group exercises.

Compulsory elements: All scheduled teaching, unless stated otherwise or the participant informs the teachers in advance of an acceptable reason for not being present. Absence can be compensated for by individual work specified by the teachers or in connection with the next time the course is taught.

Number of students: 8 - 12
Selection of students: Selection will be based on 1) personal motivation including prior experience of manuscript writing 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 3) start date of doctoral studies (priority given to earlier start date)

More information: This is an advanced course on scientific writing for Post Docs and PhD students in the later part of their education. Focus will be on writing and revising a manuscript based on your own research results with a lot of individual coaching. In order to participate in the course, a requirement is to have a manuscript draft to work on. Please address ALL questions to: anna.hildenbrand.michelman@ki.se or phone: 0707890607

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

Contact person:
-
Title : Oral Presentation of Own Research

Course number : 5231  
Credits : 1.5  
Date : 2021-11-08 -- 2021-11-12  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Women's and children's health  
Specific entry requirements : Basic course in presentation techniques or similar knowledge level.  
Purpose of the course : The purpose of the course is to build skills and increase the participant’s confidence in presenting own research results. This is an advanced course in presentation skills requiring prior experience of presenting your research. The course is specifically targeting post docs and PhD students in the later part of their education.  
Intended learning outcomes : After passing the course, the participant will: - be able to structure and build compelling presentations based on own research results - have skills in how to consistently deliver in an engaging manner - be capable of building instant rapport and get an audience on their side every time - understand the best use of voice, body language and posture - be able to make their mark and be remembered - understand how to deal with challenges during presentations, e.g. hostile audience members, difficult questions, technology problems, nervousness and blacking out - have knowledge of a broad variety of presentations styles in order to find their own - be able to use supportive media - be able to design presentation slides that support the message  
Contents of the course : The course is highly personalized, tailored to the specific needs of the individual participants. A variety of techniques will be presented and tried out to enable the participants to develop in their own way to become more professional at presenting, yet remaining authentic. The course includes: - presentation structure - presentation techniques - dealing with the audience - overcoming challenges, e.g. hostile audience members, questions, nervousness, technology issues - body language, voice and presence on stage - filming of an elevator pitch, which the participants get to keep after the course to use e.g. on a webpage - how to design successful PowerPoint presentation slides - how to use supporting media  
Teaching and learning activities : Lectures, group work, exercises, individual coaching and filming.  
Examination : Presentations and participating in exercises during the course.  
Compulsory elements : All scheduled teaching and group work is compulsory. Absence can be compensated for during individual assignments or during the next course occasion.  
Number of students : 8 - 12  
Selection of students : Selection will be based on 1) Personal motivation including previous experience and/or relevant courses on the topic 2) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 3) start date of doctoral studies (priority given to earlier start date)  
More information : Welcome to apply for PhD course 5231 Oral presentation of your own research! This is a presentation techniques course for PhD students, who have some previous experience of presenting their research results and want to further improve their skills. Focus will be on presenting your own results in different formats and individual coaching. The course will be given in a venue in central Stockholm. Please address ALL questions to: anna.hildenbrand.michelman@ki.se or phone: 0707890607  

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

Contact person :  
-
Title: Tumor Microenvironment

Course number: 5232
Credits: 1.5
Date: 2021-11-08 -- 2021-11-12
Language: English
Level: Doctoral level
Responsible KI department: Department of Oncology-Pathology
Specific entry requirements: Basic course in tumor biology and oncology or corresponding knowledge
Purpose of the course: The purpose of the course is to provide: - A systematic overview on the cellular, structural and chemical composition of the tumor microenvironment (TME) - A platform for scientific discussions on how differences in the tumor microenvironment can influence tumor progression and therapy response - Practice in what to consider when selecting a relevant TME model system and how to analyze the tumor microenvironment ex vivo and in vivo - A context for reflection on advances and challenges with existing and future TME-targeting therapies

Intended learning outcomes: After completion of the course, the students should be able to: - Describe the main cellular and acellular components of the TME - Discuss principal mechanisms of TME communication - Systematically identify and compare properties of different TMEs and their clinical impact - Critically evaluate different methods and model systems for TME studies and motivate their use from a context-dependent perspective (level of complexity, ethics, clinical relevance, etc)

Contents of the course: The course content is structured as follows: - Components of the TME are introduced (cancer-associated fibroblasts, endothelial cells, pericytes, immune cells, ECM and associated factors etc). Processes like angiogenesis and lymphangiogenesis are discussed together with conditions like hypoxia and acidosis. - TME properties are related to malignant growth, invasion, metastasis, and response to therapy from a clinical perspective. The specific TME of selected tumor types will be further studied in depth according to the participants' interest. - Model systems and tools for TME studies are presented (organoids, digital image analysis etc.)

Teaching and learning activities: The course consists of lectures, group work and discussions, literature search, and a hands-on demonstration of digital image analysis using clinical tissue samples. TME characteristics of different tumor types will be explored by problem-based learning (starting from a clinical case). The course is designed to stimulate interactive learning. Digital platforms like Canvas and Zoom will be used and internet connection is therefore needed.

Examination: The course assignments consist of: (1) Daily Canvas quiz in groups (formative assessment) (2) Oral group presentation (3) Essay, 1 page (summative assessment)

Compulsory elements: All parts of the course are mandatory and require full attendance. Absence must be compensated for by other activities (after discussion with the course organizer).

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

More information: The course is between 9:00 and 16:00 at the KI Solna Campus and/or Zoom.

Course responsible:
Monika Ehnman
Department of Oncology-Pathology

Monika.Ehnman@ki.se

Contact person:
Title: Clinical and Molecular Parasitology and Mycology

Course number: 5234
Credits: 1.5
Date: 2021-11-15 -- 2021-11-19
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 advanced aspects of clinical and molecular parasitology and mycology. Students will be presented to cutting-edge technologies and approaches used in research on these fascinating eukaryotic pathogens, to stimulate their curiosity and inspire them to translate and apply it to their own research.

Intended learning outcomes: After the course, the students will have acquired knowledge on the current understanding of the cellular and molecular interplay between parasites, parasitic fungi and their hosts. The students will be able to give examples of interdisciplinary studies in host-parasite interaction and should be able to relate their own research project to the forefront developments in other areas of parasitological and mycological research. Thus, after the course the students will have a more holistic picture of infection biology, and hopefully be encouraged to apply new information for the benefit of their further graduate training and research.

Contents of the course: The course covers topics on microbial virulence, transmission and evolution, the cellular and molecular interplay between eukaryotic pathogens and their hosts and how this related to disease pathogenesis.

Teaching and learning activities: The course consists of lectures by invited national and international experts on parasitological and mycological research. Lectures will cover basic aspects of parasite and host biology and disease pathogenesis to provide the students with a foundation in the subject. In addition, the lectures will contain a more advanced part where state-of-the-art research is presented. The students will be encouraged to actively interact in discussions with the lecturers and to think on the spot to ask questions. The students will also be presented to selected scientific and/or methodological conundrums and are expected to choose and write an essay on one of these, containing suggestions on research approaches on how to solve the scientific mystery.

Examination: The students will be presented a number of current scientific problems related to the parasitological and mycological research topics discussed during the course. The students are expected to choose and write an essay on one of these. The essay should contain a summary of the research field, suggestions on research approaches aimed to solve the scientific conundrum and relate it to their own research. This essay assignment serves as course examination, where students will be individually assessed.

Compulsory elements: Attendance of the lectures is compulsory. If the students are unable to attend lectures they should write a summary based on the course literature provided for that lecture. Obligatory is also a written essay assignment where students will present and discuss a chosen scientific and/or methodological problem.

Number of students: 8 - 20

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

More information: Course will be held on the Solna campus. However it may also be held online via zoom for 2021

Course responsible:
Benedict Chambers
Department of Medicine, Huddinge
Benedict.Chambers@ki.se

Contact person:
Benedict Chambers
Institutionen för medicin, Huddinge
Benedict.Chambers@ki.se
Title: Human Viral Diseases: Mechanisms and Pathogenesis

Course number: 5237
Credits: 1.5
Date: 2021-11-01 -- 2021-11-05
Language: English
Level: Doctoral level
Responsible KI department: Department of Medicine, Huddinge
Specific entry requirements: Ingen
Purpose of the course: The aim of the course is to enable students to acquire a good knowledge on mechanisms and pathogenesis related to viral infection in humans.

Intended learning outcomes: The course should give knowledge of molecular virology with special consideration to the role of virology within medicine. On completion of the course the student is expected to:
- Be able to account for taxonomic subdivision of viruses.
- Be able to account for the most important human pathogenetic viruses.
- Be able to account for the molecular mechanisms of the virus life cycle.
- Be able to account for emerging viruses and pandemics.
- Be able to account for viral pathogenesis.
- Be able to account for virological methods in research.
- Be able to account for viral immunology, antiviral therapy and vaccination.

Contents of the course: Virus taxonomy, important human pathogenic viruses, virus structure, infection process at cell level and organism level, pathogenesis, epidemiology, molecular interactions between viruses and host cells, genetic stability of viruses, influence on host cell growth control, immune response against viruses, virus vaccines, antiviral drugs, virus vectors for gene therapy.

Teaching and learning activities: The course will be given over one week (full time). The teaching is mainly through lectures/seminars. The lectures include introduction to the various topics (described above).

Examination: Written exam containing open questions.

Compulsory elements: All seminars and lectures. Absence needs to be compensated for in agreement with the course leader. More than one day of absence cannot be compensated for.

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

More information: The course may be held online in 2021.

Course responsible:
Benedict Chambers
Department of Medicine, Huddinge

Benedict.Chambers@ki.se

Contact person:
Title : Introduktionskurs i kliniska studier: från idé till arkivering

Course number : 5274
Credits : 1.5
Date : 2021-10-06 -- 2021-11-10
Language : Swedish
Level : Forskarnivå
Responsible KI department : Department of Oncology-Pathology

Specific entry requirements :
Purpose of the course : Denna kurs riktar sig till doktorander utan erfarenhet av kliniska studier men som planerar genomföra en klinisk studie. Syftet med kursen är att ge kursdeltagarna en praktisk förståelse och inblick i processen, principer och regler inom uppstart, genomförande och avslut av kliniska studier.

Intended learning outcomes : Studenten ska efter genomgången kurs:   - Ha kunskap om vad som krävs för att planera, genomföra och avsluta en klinisk studie  - Självständigt kunna planera och ta fram ett studieprotokoll inklusive en grundlig metodisk utvärdering och val av lämplig studiedesign  - Ha grundläggande kunskap och förståelse för innebörden av de olika avtal och regelverk som styr för inför uppstart, vid genomförande samt avslut av en klinisk studie  - Reflektera kritiskt över andra studenters forskningsprojekt på ett vetenskapligt konstruktivt sätt

Contents of the course : - Genomgång av olika begrepp och aktörer inom kliniska studier - Studieplanering - Good Clinical Practice (GCP), Helsingforsdeklarationen och andra regelverk liksom genomgång av prövare/sponsors ansvar - Avtal/kostnadsberäkning - Ansökan - Studiegenomförande - Avslut/Arkivering/Rapportering

Teaching and learning activities : Föreläsningar, gruppövningar, seminarier samt muntliga och skriftliga presentationer. Kursen fokuserar på praktiskt lärande genom att omsätta kunskap i praktisk bemärkelse och kritisk reflektion av kunskap.

Examination : För att bli godkänd i kursen måste studenten visa att lärandemålen har uppnåtts. Detta bedöms genom aktivt deltagande i seminarier och godkänd muntlig och skriftlig presentation. Intyg i GCP ingår om man blir godkänd.

Compulsory elements : Obligatorisk närvaro vid föreläsningar, gruppövningar och presentationer. Frånvaro från enstaka obligatoriska moment (motsvarande högst 20% av tiden) kan kompenseras genom utförande av andra uppgifter i överenskommelse med kursansvarig.

Number of students : 10 - 30
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) startdatum för doktorandstudier


Course responsible :
Elham Hedayati
Department of Oncology-Pathology
elham.hedayati@ki.se
banérgatan 29
11522 stockholm

Contact person :
Helen Eriksson
Institutionen för onkologi-patologi
08-52482338
helen.eriksson@ki.se
BioClinicum J5:30, Solnavägen 30
171 64 Stockholm

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Health Science and Implementation: Conceptual Foundations

Course number: 5294
Credits: 2.0
Date: 2021-09-13 -- 2021-09-23
Language: English
Level: Doctoral level
Responsible KI department: Department of Neurobiology, Care Sciences and Society
Specific entry requirements:

Purpose of the course: To introduce concepts that shape and are shaped by health science as well as trigger critical reflection about how this impacts on a knowledge continuum relevant in understanding implementation and utilization of evidence-based interventions.

Intended learning outcomes: Based on relevant conceptual resources, upon completion of the course the learner is expected to be able to: • Identify, situate, and compare central concepts and ideas in health science research • Reflect and critically explore an alignment between relevant concepts and methodologies concerning i.e. design, intervention, relevance, and implementation in a continuum of health sciences research. • Identify models and methods that form the basis for promoting health, preventing and treating disease, and contributing to the development of sustainable, ethically grounded, and evidence-based interventions.

Contents of the course: The course commences with an introduction of concepts often related to health science, with an explicit point to trigger critical dialogue about: what is health science, or what is it not? Illustrations will be used to generate discussion about research methodologies, methods, and implementation strategies. Moreover, the course rests on assumptions that utility/relevance of research is important, thus challenging course participants to reflect on the practice and social implications as well as utility for health science research. The course builds on illustrations from different fields such as environmental medicine, health education, nursing, occupational therapy, physical therapy, psychology, public health, and social work to name some.

Teaching and learning activities: The course is designed to constitute a series of expert lectures, seminars, and debates in combination with active group work, individual writing, and oral presentations, which will culminate in the foundations for a written examination. The learning experience builds on a mix of active reading and own reflection in combination with dialogue around learning activities with others. The course thus requires active involvement of the learner.

Examination: The examination will consist of an individual written report. Each participant has to show that all the ILOs are reached. Results will be assessed as Pass/not pass

Compulsory elements: All course activities are mandatory. Absence of max 20% can be compensated for by additional tasks in agreement with the course organiser. At least 80% attendance and passing the final examination is mandatory for a grade of "pass" in the course.

Number of students: 8 - 20

Selection of students: Doctoral students within the research school in health science will be given priority. In addition, priority for admission will be based on 1) course syllabus' relevance for the applicant's project within doctoral education (based on a written motivation), and 2) date of commencement for doctoral studies.

More information: The course is being planned as an online course based on the current situation (please keep posted for updates). The course will include learning activities during 3 full days (Sept 13-15), 3 half days (Sept 20, 21, and 23), and time for own work during the course period.

Course responsible:
Eric Asaba
Department of Neurobiology, Care Sciences and Society
0852483838
Eric.Asaba@ki.se

Contact person:
Title: Advanced Causal Inference

Course number: 5298
Credits: 3.0
Date: 2021-09-01 -- 2021-10-27
Language: English
Level: Doctoral level
Responsible KI department: Department of Medical Epidemiology and Biostatistics

Specific entry requirements: The specific entry requirements are one of the following: 1) At least 60 higher education (HEC) credits from 1st and/or 2nd cycle courses in the subjects: statistics, probability, mathematics and data science of which at least 20 HEC credits must be in statistics or probability. 2) Course on Probability theory at least 7.5 HEC on 2nd cycle level; and Theory of statistical inference at least 7.5 HEC on 1st cycle level. In addition, the student should have taken courses in epidemiology (Epi I and Epi II) and in basic causal inference on 3rd cycle level.

Purpose of the course: The purpose of this course is to give doctoral students with a previous degree in mathematics, statistics or a related area an introduction to the rigorous foundation of modern causal inference. Emphasis will be put on mathematical concepts, derivations and proofs.

Intended learning outcomes: After having successfully completed the course the students will be able to: - Use potential outcomes and counterfactuals to define causal effects. - Briefly account for the philosophical controversies around counterfactuals. - Show how exchangeability makes causal effects identifiable. - Use d-separation on causal diagrams, to determine sufficient covariate adjustments for hypothesis testing. - Use d-separation on twin networks, to determine sufficient covariate adjustments for effect estimation. - Show how exposure regression (i.e. G-estimation) and outcome regression can be used to estimate conditional causal effects, and use M-estimation theory for asymptotic inference on these effects. - Show how exposure regression (i.e. IPW) and outcome regression (standardization) can be used to estimate marginal causal effects, and use M-estimation theory for asymptotic inference on these effects. - Use the concept of (non-)collapsibility to show the relation between conditional and marginal causal effects. - Use causal diagrams to show how hypothesis testing works in instrumental variable (IV) settings. - Show how two-stage estimation and G-estimation can be used for effect estimation in IV settings, and use M-estimation theory for asymptotic inference on these effects. - Outline how linear programming techniques can be used to bound causal effects in IV settings.

Contents of the course: The course content is defined by the learning outcomes.

Teaching and learning activities: The course will use a flipped classroom model, where the learning is student-driven and focused on understanding and problem solving. All materials will be provided to the students in advance and during the first bi-weekly meeting with the teacher, all topics will be briefly introduced. One specific topic for the following class will be identified in advance for a longer, but still brief, discussion and any questions that the students have will be answered in a discussion with the teacher. After the first meeting, at each meeting, one or two of the students will give an oral presentation on the previously discussed topic. After the presentation, the students and the teacher will engage in a further discussion of the topic. Finally, at the end of each meeting the teacher will briefly introduce the topic for next meeting and allow for a brief discussion and assign students to present that topic. The students who are presenting will have two weeks until the next meeting to prepare their presentation. The teacher will be available via email or in person (as COVID-19 allows) to answer any questions the presenting students might have. All students, not only those assigned to present, are expected to study the material to be presented carefully so that they are able to actively engage in the discussion at all meetings. All students will be required to write a summary of each presentation demonstrating their understanding of the material. These will not be graded, but they will be read and feedback will be provided as needed to individual students to aid in mastery of the material.

Examination: Each student will give a graded oral presentation where they demonstrate mastery of a set of the learning outcomes specific to the topic they cover, this presentation will be graded by the teacher for accuracy and understanding. In addition, all learning outcomes will be examined as an oral exam, which will involve a problem-solving exercise specific to a given data source and a scientific question that requires mastery of all learning outcomes. The problem will be provided in advance. The students will demonstrate their understanding by explaining to the teacher their understanding of the problem and how and which causal methods to apply to solve the problem. This solution and therefore the mastery of all learning outcomes will be graded. Students must pass both the presentation assessment and the oral exam to pass the course. Students that fail either piece can demonstrate mastery of the learning outcomes by providing an adequate written summary of the topic their presentation, which they had previously not demonstrated mastery of, or, in the case of failure of the oral exam, student can provide in writing an updated and now adequate solution to the problem posed to them. Students will have two additional opportunities for each requirement to demonstrate mastery, after which students will be asked to retake the course. Students can always select to provide a written solution to the problem posed to them, rather than an oral exam, but the same timeframe will be applied in both cases.

Compulsory elements: All seminars are compulsory. If a student miss a seminar, then the student will be given a chance to compensate for this by presenting the topic individually for the teacher, at a separate occasion.

Number of students: 10 - 30

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

More information: The course is given 9.00-12.00 on every second Wednesday within the time span, i.e. on 1, 15 and 29 September as well as 13 and 27 October. The remaining time is devoted to self-studies. The last course
occasion is reserved for the exam.

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

Contact person:
-
Title : Get started with R – Programming Basics, Data Analysis and Visualisation

Course number : 5300
Credits : 3.0
Date : 2021-08-23 -- 2021-09-06
Language : English
Level : Doctoral level
Responsible KI department : Department of Neurobiology, Care Sciences and Society

Purpose of the course : The course is practical and aims at teaching students how to: Use the programming environment R and RStudio, which includes installation, how to handle errors, problem solve and access helper documents. Use basic concepts of programming, such as data types, logical and arithmetic operators, if else conditions, loops and functions. Use common R packages to perform basic statistical analysis (e.g., t-test, chi2-test, correlation) and visual presentation (e.g., boxplot, histogram and heat-map) of data in R.

Intended learning outcomes : After attending the course the student should know: • How to download, install and navigate R and RStudio • How to solve common problems arising from data formatting and handling • Common programming concepts and how to employ them in R • How to import data and packages in R • How to use R for basic statistical analysis and visual presentation of data

Contents of the course : Course participants start the course by installing and familiarising with the R and RStudio environment. This includes version control, as well as structuring and documenting code for publication. Next, basic concepts shared between all programming languages are introduced, such as data types and operators. Students will also learn how to use recommended naming conventions, syntax and how to comment code. Methods for importing packages and data is then introduced and students will learn how to search for help and get examples of common problems that may arise. Finally, students will practice using packages for data management, statistical analysis and visual presentation. Methods include distribution tests, power-analysis, t-test, chi2-test, correlation, boxplot, scatterplot and bar plot. Visual presentation will mainly use the ggplot2 package, providing a good example of object-oriented programming in R. Throughout all lectures focus will be on application and understanding of the methods used, not statistical assumptions or interpretation of the results. Examples will primarily be taken from experimental research and tasks will use dataframes available upon installation of R. However, when possible students are encouraged to use their own data. The last day of the course can either be used to continue to apply R on own data or to learn procedures that can be performed with R which most other statistical software’s cannot. Such as, managing folders and files, querying databases and importing codes and algorithms.

Teaching and learning activities : Distance learning with online interactive lectures. Group and individual exercises where a teacher will be available to help. Assignments and Canvas quizzes that the student completes on their own. Reviewing other students’ code and interaction with other students. Individual project work. Four days each week will consists of lectures in the morning introducing concepts and tasks in the afternoon, where these concepts are put to practice. The last day of each week will be a larger exercise where the student is required to combine introduced concepts into a whole. This exercise will be reviewed by a fellow student who will have the opportunity to comment on ways to improve the work. The 11th (last) day is optional and described in the previous paragraph.

Examination : Project presentation and review.
Compulsory elements : Canvas quizzes and tasks. Individual projects and reviews of other students’ project. Participation during project presentation and review. Students who miss obligatory elements will complete extra tasks associated with the specific element. Course participants unable to participate during the project presentation will have the presentation for the course administrator but will miss the opportunity to get their work reviewed by other participants.

Number of students : 15 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information : From Monday to Thursday, the course consists of Zoom lectures in the morning (8:30 - 12:00) and tasks that can be completed alone in the afternoon. One course leader will be available during afternoons to help any student who experiences difficulty completing the tasks. On the first Friday students will get an exam assignment, which will be presented and reviewed on the second Friday. The 11th day of the course is not obligatory, but intended for students who want to learn about functions available in R that most other statistical software can not do.

Course responsible :
Billy Langlet
Department of Neurobiology, Care Sciences and Society
+46762033996
billy.langlet@ki.se

Contact person : -

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Methods for Design and Formative Evaluation of eHealth Interventions

Course number: 5301
Credits: 3.0
Date: 2021-11-08 -- 2021-12-03
Language: English
Level: Doctoral level
Responsible KI department: Department of Learning, Informatics, Management and Ethics

Purpose of the course: Digital health—eHealth—is a rapidly growing area with high potential to improve health and social care from both a clinical and individual perspective. In research, digitalization creates new possibilities for data collection, but also the ability to increase outreach and deliver information, support and care to different patients or population groups. There is a great need for innovative digital solutions to improve health, social or self-care; however, to ensure that an eHealth intervention will be useful in the specific context that it is intended for, it needs to be built upon evidence-based design methods and be carefully tested and evaluated before being implemented. It is these design and evaluation methods that are addressed in this course. The course is designed for doctoral students and postdocs who work on an ongoing eHealth project, or plan/aim to include an eHealth component or digital tool in a research intervention study.

Intended learning outcomes: At the end of this course, the students should be able to: [Knowledge and understanding] • describe and discuss the importance of understanding and analyzing healthcare organizations, users’ needs and requirements in different contexts • describe and compare different methods for context-of-use and user needs analyses and their application • explain, discuss and analyze different evaluation methods and techniques to assess functionality and usability in eHealth interventions [Skills] • based on the chosen individual assignment and the student’s own research project, apply at least one of the methods related to user needs analysis, requirements specification, or formative evaluation • critically assess the choice and application of method in another student’s individual work [Attitudes] • explain and motivate the need of an iterative development process and continuous user involvement

Contents of the course: When studying the effects of eHealth interventions, the results will be highly dependent on how well the developed eHealth intervention or digital tool is designed to suit the intended use and specific context of care. Therefore, this course focuses on user-centered and collaborative methods for the design as well as evidence-based tools for formative evaluation of interventions – to avoid pitfalls in eHealth design. During the course, students will learn about methods for analyzing health and social care organizations and user needs, as well as documentation and communication of these and formulation of requirements based on the needs. Specific prerequisites for requirements engineering in health and social care are discussed. Furthermore, the course gives an overview of relevant methods and techniques for evaluation of eHealth solutions in health, social and self-care, and lifestyle interventions. The aim is also to provide an understanding of the role of formative evaluations in the design process. Different methods and tools will be presented, and the students will work on their own research project by applying at least one of these methods during the course.

Teaching and learning activities: The course spans over 4 weeks (50%) with lectures, seminars, group discussions and an individual assignment related to the student’s own research project. The individual assignments will be supervised by an external researcher with experience in the area.

Examination: Examination consists of an individual written assignment, oral presentation of the individual work at the examination seminar, as well as peer review of another student’s work. Peer review includes both oral opposition at the examination seminar and a written opposition report.

Compulsory elements: Active participation in group discussions and participation in seminars when individual assignments are presented is compulsory. The course examiner assesses if and, in that case, how absence can be compensated. Only when the student has participated in all compulsory parts, or compensated absence in accordance with the examiner’s instructions, the student’s results for the course will be registered in LADOK.

Number of students: 8 - 12
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant’s doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date).

More information: Due to COVID-19 situation, the course 2021 is planned to be given online through Zoom. Lectures and seminars are being planned on: Mon-Thu Nov 8-11th (week 45); Nov 15-16th and 18-19th (week 46); and Nov 29th and Dec 2-3rd (week 48). All scheduled course days are half-days (9am-12am) except Thursday Dec 2nd which is a full day (examination seminars). Nov 22-26th (week 47) is individual work. The course targets PhD-students or postdocs with different types of background, who are conducting or plan to conduct an intervention study with a digital/eHealth component. For those interested in the evaluation and implementation of digital lifestyle interventions, we recommend combining the course with the doctoral course given at the Linköping University: Digital lifestyle interventions – from idea to implementation, 3 credits.

Course responsible:
Maria Henström
Department of Biosciences and Nutrition
maria.henstrom@ki.se
Karolinska Institutet, Group MLÖ/Maria Henström

14183
Huddinge

**Contact person:**
Sabine Koch
Institutionen för lärande, informatik, management och etik
sabine.koch@ki.se

Maria Henström
Institutionen för biovetenskaper och näringslära
maria.henstrom@ki.se

Karolinska Institutet, Group MLÖ/Maria Henström

14183
Huddinge
Title: Information Literacy, Philosophy of Science and Research Ethics

Course number: 5302
Credits: 3.0
Date: 2021-10-11 -- 2021-10-22
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 this course is to enhance the doctoral student’s capacity to identify, analyse and critically reflect upon theories, concepts and problems in information literacy, philosophy of science and research ethics, especially problems that may rise in relation to medical research. The aim is also to provide the doctoral students with extended possibilities to develop a scientific and ethical approach to medical research.

Intended learning outcomes: After the course the student is expected to be able to: with respects to Information Literacy: 1) describe how search strategies are created and adjusted to a specific information source/database, and 2) be able to compare, evaluate and manage the outcome of different search strategies. with respects to Philosophy of Science: 1) account for central concepts and theories in philosophy of science, 2) account for common problems that arise in the area of the philosophy of science, and 3) identify, analyze and discuss problems that arise in the area of philosophy of science, especially in the field of medical sciences. with respects to Research Ethics (in accordance with https://ki.se/en/staff/purpose-and-requirements-for-doctoral-courses-in-research-ethics): 1) account for important research ethical theories, principles and, to a certain extent, guidelines, 2) account for common problems that arise in the area of research ethics, 3) identify, analyze and discuss ethical problems and conflicts that might emerge in the area of research on humans and animals, and 4) be able to carry out a research ethical argumentation for or against a particular procedure.

Contents of the course: The course provides general scientific knowledge in a coherent block as an introductory basis for further doctoral education. The main content of the course: Philosophy of science and research ethics 2 hp (Research ethics 1.5, philosophy of science 0.5) Information literacy 1 hp

Teaching and learning activities: The pedagogic framing is based on student activity with interactive lectures, seminars and workshops. The scheduled face-to-face activities in the course will be mixed with individual work and feedback from teachers and peers via the web-based platform Canvas.

Examination: The knowledge, skills and attitudes acquired in the course will be assessed through written assignments and oral presentations. For a pass grade, the course participant has to show that all intended learning outcomes of the course have been achieved.

Compulsory elements: Assignments, seminars and group activities. Absence from seminars and group activities can be compensated by replacement activities.

Number of students: 8 - 20

Selection of students: Doctoral students within the research school in health science will be given priority. In addition, priority for admission 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:

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: Interdisciplinary Impactful Research for the Future

Course number: 5306
Credits: 1.5
Date: 2021-10-04 -- 2021-11-26
Language: English
Level: Doctoral level
Responsible KI department: Department of Cell and Molecular Biology

Specific entry requirements:

Purpose of the course: In this course, the participants learn about the importance of interdisciplinarity in creating impactful research in Health Sciences, and learn about different ways of designing research projects and platforms that benefit from an interdisciplinary, collaborative approach.

Intended learning outcomes: After the completed course, the participants will be able to describe and discuss the benefits, advantages and challenges of interdisciplinarity and global collaboration in research advancing global health in an impactful way. The participants can describe the concepts of interdisciplinary, multidisciplinary and transdisciplinary research. The participants can describe practical ways of integrating interdisciplinary components into research programs.

Contents of the course: Interdisciplinary, multidisciplinary and transdisciplinary research. The key components of interdisciplinary research. Defining research problems for innovative, impactful health research. Cultural and organisational aspects of collaborative and interdisciplinary research. Working in an interdisciplinary, international team of course participants. Preparation and presentation of a research concept including definition of an research problem arising from an interdisciplinary context, and designing an interdisciplinary research approach and a diverse research team.

Teaching and learning activities: The teaching and on-line learning activities include lectures, group discussions, and a team project. Participation in the group discussions and the team project preparation and presentation are mandatory. Compensation is according to the instructions of the course director.

Examination: The students are examined on the basis of their interdisciplinary posters, poster presentations and discussions.

Compulsory elements: Participation in the preparation of interdisciplinary poster, poster presentation and poster discussion are mandatory. Compensation is according to the instructions of the course director.

Number of students: 5 - 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) start date of doctoral studies (priority given to earlier start date)

More information: This all-digital course is jointly organized by Karolinska Institutet, King’s College London, Peking University and Keio University. The participating doctoral students and the teachers come from the four organising universities. The base of the digital course is at Karolinska Institutet at Biomedicum. The course includes both synchronous and asynchronous activities and takes place part time between 2021-10-04 and 2021-11-26. The detailed schedule will be published well advanced of the course.

Course responsible:
Matti Nikkola
Department of Cell and Molecular Biology
Matti.Nikkola@ki.se

Contact person:
-
Title : Clinical Trials in Heart Failure Research

Course number : 5307  
Credits : 1.5  
Date : 2021-09-30 -- 2021-10-05  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Medicine, Solna  
Specific entry requirements : Epidemiology I and Biostatics I or equivalent knowledge  
Purpose of the course : To enable students to learn the principles of study designs and data analyses/interpretation for clinical trials in heart failure.

Intended learning outcomes : At the end of the course, the participants are supposed to be able to: - choose the adequate trial design to conduct an interventional study - apply important ethical principles while designing a clinical trial - design a clinical trial which satisfies the requirements of the regulatory agencies - choose and use key statistical methods for running randomized controlled trials and meta-analyses of randomized controlled trials - critically interpret data from randomized controlled trials and meta-analyses of randomized controlled trials

Contents of the course : The lectures will cover: 1) Key elements in randomized controlled trials design: methods for randomization; differences between superiority and non-inferiority trials; different types of endpoint analysis (e.g. first to time event vs. recurrent event analysis), interpretation of subgroup analyses 2) Novel randomized controlled trial design: registry based randomized controlled trials, adaptive, basket & umbrella & platform designs 3) Key aspects differentiating randomized controlled trials from registry-based studies 4) Systematic Reviewers and Meta-analyses of randomized controlled trials: different designs and main methods  The “Hands-on” workshops will consider: 1) Power and sample size calculations 2) Survival analysis including competing, recurrent event analysis, interaction analysis 3) Key statistical methods for meta-analysis 4) Adjusting and matching in registry-based studies (e.g. propensity score): how to run it and why it does not replace randomization

Teaching and learning activities : The course will consist of: - two and half days distance learning via Zoom or using prerecorded lectures and provided readings - two days on-site lectures/workshops - half day: exam The formats of course activities include: - Distance learning with critical readings of course literature - On-site lectures/seminars - Debates on relevant clinical trials - Workshops - Group work

Examination : Home-based assignment including open questions and multiple choice questions. All learning outcomes of the courses need to be achieved to pass the course.

Compulsory elements : Participants should attend all the sessions and the exam to pass the course. The students who have missed course sessions will be assigned extra reading and home work to compensate for the absence.

Number of students : 5 - 20

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

More information : September 30th: home study/distance learning using provided readings, prerecorded or live lectures on zoom. October 1st (afternoon) TO October 3rd 2021 (lunch time): frontal teaching/workshops. October 4th 2021: home study/distance learning using provided readings and prerecorded lectures. October 5th 2021 (half day): exam. Location: Frontal teaching/workshop which will be held in SORRENTO, ITALY. 

The course is run in collaboration with the Heart Failure Association (HFA) of the European Society of Cardiology, which will support the organisation of the course, provide well-known global trialists as speakers and faculty. A Limited number of travel grants from HFA will be provided and more information will follow.

Course responsible :  
Gianluigi Savarese  
Department of Medicine, Solna  
gianluigi.savarese@ki.se

Contact person :  

Title: Cancer and Cancer Stem Cells

Course number: 5309  
Credits: 1.5  
Date: 2021-09-27 -- 2021-10-01  
Language: English  
Level: Doctoral level

Responsible KI department: Department of Medicine, Huddinge  
Specific entry requirements: Basic knowledge in Cancer Biology and Cell Biology.

Purpose of the course: The purpose of the course is to deepen the participant’s knowledge about the concept of cancer stem cells and to understand the necessity of targeting cancer stem cells directly in cancer treatment. The course will provide a historical perspective of the discovery of the cancer stem cells. It will focus on current research in the field and methods to detect cancer stem cells in solid tumors and hematological cancers. Another focus point will be the therapeutical applicability of targeting cancer stem cells specifically.

Intended learning outcomes: After completion of the course, the student will be able to describe the concept of cancer stem cells, the relationship between cancer and cancer stem cells, as well as assays to identify these stem cells. Within this framework, the student will be able to demonstrate an understanding for the development of cancer in the context of solid tumors and hematological cancers. In addition, the students will be able to critically evaluate the advantages and drawbacks of basic mechanisms employed for cancer treatment in the clinic.

Contents of the course: The course covers key principles of cancer development and cancer therapies, and provides an appreciation for the concept of cancer stem cells and its implications from a clinical and basic science perspective. This includes a general overview of molecular and cellular mechanisms underlying cancer development, drug resistance, disease relapse, cancer stem cells, therapeutic stem cell transplantation and clinical care for the treatment of solid tumors and leukemia, immunological cancer-related considerations, and perspectives for novel cancer therapies. The student will be required to take an active part in this course by contributing with presentations and discussions related to cancer and cancer stem cells.

Teaching and learning activities: The pedagogic frame of this course is based on lectures combined with topic-related research articles. The course includes workshops where the students are required to present articles, integrate the knowledge acquired from lectures and reading of the articles, and actively discuss their acquired knowledge as a group. Each student will research, prepare and present his or her examination task orally. Online presentation of methods combined with a short lab visit may be offered (depending on the appropriateness at the time point of the course).

Examination: The individual performance of each student will be evaluated separately based on their presentation of a cancer stem cell-related topic and the feedback the student provides to their fellow students. The content and organization of the presentation and discussion will follow a format provided by the instructors.

Compulsory elements: The lectures and discussions are mandatory. Absence is compensated according to the instructions of and in agreement with the course director.

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) start date of doctoral studies (priority given to earlier start date)

More information: The course will be given Monday - Friday, with lectures, JCs, discussion forums from 9.00-14.00, and individual and group work in the afternoon. The course will be held online. The course is given jointly by the doctoral programmes Development and Regeneration (DevReg) and Tumor Biology and Oncology (FoTO). See: https://staff.ki.se/doctoral-programmes. The course has previously been given with course number 2849.

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Course responsible:  
Arnika Wagner  
Department of Medicine, Huddinge  
Arnika.Wagner@ki.se

Contact person:  
Marios Dimitriou  
Institutionen för medicin, Huddinge  
marios.dimitriou@ki.se
Title: Diabetes and Cardiovascular Disease

Course number: 5310
Credits: 1.5
Date: 2021-12-06 -- 2021-12-10
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, with emphases on up-to-date therapeutic strategies, key findings of major clinical trials, and major challenges of future clinical managements and research. This includes the management of diabetes in the broad spectrum of cardiovascular disease as well as understanding and interpretation of large cardiovascular outcome trials of new glucose-lowering agents. Gaps in knowledge will be emphasized in order to create ideas for future clinical research in the field.

Intended learning outcomes: The participants should, after the course, be able to: 1. show a good insight in the pathophysiological mechanisms linking diabetes to cardiovascular disease 2. know how to appropriately screen for and diagnose diabetes and pre-diabetes 3. perform cardiovascular risk stratification of patients with diabetes 4. understand the prognostic influence of diabetes on cardiovascular diseases 5. show an insight in preventive measures for diabetes and cardiovascular disease 6. know and interpret results of recent, large cardiovascular outcome trials on glucose-lowering drugs 7. understand some of the gaps in knowledge in the relation between diabetes and cardiovascular disease

Contents of the course: Lectures/Seminars on the following topics: - Epidemiological aspects of the combination of diabetes and cardiovascular disease - Screening of diabetes and pre-diabetes in different populations - Cardiovascular risk assessment in people with glucose perturbations - Mechanisms of cardiovascular disease in diabetes: biomarkers, epigenetics, insulin resistance and microvascular disease - Multifactorial management of people with diabetes and cardiovascular disease through lifestyle interventions and pharmacological treatment - Cardiovascular outcome trials on glucose-lowering agents and their effects on atherosclerotic cardiovascular disease, heart failure and kidney disease - Proposed mechanisms of cardioprotection by means of cardioprotective glucose-lowering agents - Patient-centered care and management of complications - Learning activities through interactive polls and clinical case presentations

Teaching and learning activities: Lectures/Seminars with international lecturers and guideline experts Debates about clinical issues Clinical case presentations and discussion with interactive polls Group work Presentation and discussion of 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. Multiple choice questions and quizzes will be integrated in the different sessions of the course. To pass the course the course participant must be able to show that all intended learning outcomes of the course are achieved.

Compulsory elements: The course participants should attend no less than 75% of the scheduled contents of the course. The participants must actively involve in the preparation of group work and attend the sections of their respective group work and presentation/discussion. Absence from these sections cannot be compensated for.

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

More information: Zoom. Day 1 09.00 – 12.00 – Lectures 13.00-16.30 - Group work Day 2 09.00 – 12.00 – Lectures 13.00-16.30 - Group work Day 3 09.00 – 12.00 – Lectures + interactive case presentations 13.00-16.30 - Group work Day 4 09.00 – 12.00 Lectures + Group work presentations Day 5 09.00 – 12.00 Group work presentations

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

Contact person:
Nailin Li
Institutionen för medicin, Solna
08-51773996
Nailin.Li@ki.se

Clinical Pharmacology Unit
Karolinska University Hospital-Solna
17176
Stockholm

https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Title: Introduction to Artificial Intelligence in Cancer Precision Medicine

Course number: 5313
Credits: 1.5
Date: 2021-10-18 -- 2021-10-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Medical Epidemiology and Biostatistics
Specific entry requirements:

Purpose of the course: This course aims to provide an introduction to artificial intelligence (AI) and its contemporary applications in cancer precision medicine, including key principles, challenges and routes to clinical translation. The course will also provide course participants with a starting point to understand how AI can be applied in their own research. AI and machine learning (ML) hold the promise to provide decision support tools for clinical use that can contribute to increased quality and precision in routine diagnostics, and provide means to develop novel solutions that go beyond current diagnostic capabilities. The emergence of AI applications in cancer research at this point in time is driven by increased availability of large amounts of biological and medical data, together with emergence of new methodologies and growing compute resources. Typically, such models are trained on huge amounts of data, e.g. millions of images, and address a very specific problem. We have recently seen several examples of AI models performing on a level that is comparable to human experts, especially in the domain of medical image analysis, indicating a potential for AI both in research applications and in the clinic.

Intended learning outcomes: After successfully completing this course you as a student are expected to be able to understand: - Basic principles of machine learning (ML) and AI - Key application domains of AI in cancer research - How to critically assess AI-based medical research and AI-based tools - Risks, opportunities and limitations of AI in the medical domain - Ethical aspects of AI for medical purposes

Contents of the course: This course provides a conceptual introduction to AI and ML, with application examples from medical research. The course includes basic theory and ideas, and aims to provide understanding of key concepts behind AI (e.g. deep learning) and ML, limitations and challenges associated with prediction models in the medical domain, and how to critically assess research studies and clinical evidence. In the domain of cancer diagnostics, primary examples include deep learning models to detect and classify cancer based on stained cell and tissue samples, and the assessment of radiology images to detect e.g. breast cancer. It will be explained why the development of successful AI models requires careful study design and validation strategies together with an understanding of both the strengths and limitations. The different parts of the course are: Introduction to AI, ML and deep learning, supervised learning, study design, validation & cross-validation, measures of accuracy; assessing medical evidence; understanding risks and limitations; basic regulatory requirements for diagnostic products; and examples of applications of AI in medical research.

Teaching and learning activities: The course is based around lectures, exercises, student presentations and discussions.

Examination: The students will present and discuss an AI project design based on the course content and related to their research. Each student needs to show that all intended learning outcomes are achieved during the presentation and discussion of the project in order to pass the course.

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

Number of students: 8 - 25
Selection of students: Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) start date of doctoral studies (priority given to earlier start date)

More information:

Course responsible:
Mattias Rantalainen
Department of Medical Epidemiology and Biostatistics

mattias.rantalainen@ki.se

Contact person:
Title : Biostatistics II: Logistic Regression for Epidemiologists

Course number : 5314  
Credits : 1.5  
Date : 2021-09-20 -- 2021-09-24  
Language : English  
Level : Doctoral level  

Responsible KI department : Department of Global Public Health

Specific entry requirements : Knowledge in epidemiology and biostatistics equivalent to Epidemiology I: Introduction to epidemiology and Biostatistics I: Introduction for epidemiologists or corresponding courses

Purpose of the course : The course introduces statistical methods for the analysis of categorical outcome data.

Intended learning outcomes : After successfully completing this course you as a student are expected to be able to: - choose the appropriate regression model for studying a specific research hypothesis using data collected from an epidemiological study, implement the model using standard statistical packages, assess the goodness of fit, and interpret the results, - explain the concept of confounding in observational studies and use statistical models to control/adjust for confounding, - apply appropriate statistical models to study and interpret effect modification, - carefully read an epidemiological paper to critically review the methodological aspects of the article, with emphasis on the study assumptions, design, analysis and interpretation

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 focuses on the formulation and application of the logistic regression model in the analysis of epidemiological studies to estimate relative and absolute effect measures. Topics covered include a brief introduction to binary outcome data, measures of associations in two-by-two tables, univariable and multivariable models, interpretation of parameters for continuous and categorical predictors, flexible modeling of quantitative predictors, confounding and interaction, model fitting and a glance to model diagnostics.

Teaching and learning activities : Lectures, computer based assignments with applications focusing on analysis of real data sets, using statistical packages such as Stata or R, hand based exercises, group discussions and literature review.

Examination : The student has to show that the learning outcomes have been achieved to pass the exam. The course grade is based on the individual written examination (summative assessment). The focus of the examination will be on the understanding of the underlying principles of categorical data models and their application to analysis of epidemiological studies, and therefore less emphasis will be given to mathematical details. 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 priority for admission to the next course's offering. 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 take-home written examination (summative assessment).

Number of students : 8 - 25

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

More information :

Course responsible :
Nicola Orsini  
Department of Global Public Health

Nicola.Orsini@ki.se

Contact person :
Anastasia Urban  
Institutionen för global folkhälsa  
0852483350  
anastasia.urban@ki.se
Title : Fundamentals of Stata Language

Course number : 5315
Credits : 1.5
Date : 2021-09-13 -- 2021-09-17
Language : English
Level : Doctoral level
Responsible KI department : Department of Global Public Health
Specific entry requirements :

Purpose of the course : This course aims at introducing students to the fundamental elements of the statistical software Stata. Motivating examples arising from health-related research will be used to demonstrate how to use the programming language. Learning activities will give students the possibility to learn Stata the hard yet easier way – that is – problem, code, and run.

Intended learning outcomes : After successfully completing this course you as a student should be able to:
- describe quantitative, categorical, and string data
- recode existing variables
- explain how to work with time and space variables
- select an appropriate visualization according to the data
- illustrate how to control and automatize code
- draw random variables from realistic mechanisms
- compare distributions of statistics under repeated sampling
- write do-files for preparing and analysing research data
- create well-structured do-files to facilitate reproducible research

Contents of the course : This course is providing the basics to import, and describe common forms of data; create tables of descriptive statistics eventually stratified; generate new variables; recode existing variables; and visualize either empirical data or theoretical data. Advanced topics include define a new function; avoid replication of code by looping; and simulate a plausible data generating mechanism. Learning activities will be based on real or hypothetical studies arising in health-related research.

Teaching and learning activities : Lectures, group work, exercises, and individual coding workout using Stata®.
Examination : Individual written examination. Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.

Compulsory elements : The individual examination (summative assessment) is compulsory.
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written information), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.
More information : The content on how Stata can be used to analyze epidemiological data is not covered in this course. Students should bring their own laptop with a Stata license (any version will do).

Course responsible :
Nicola Orsini
Department of Global Public Health
Nicola.Orsini@ki.se

Contact person :
Anastasia Urban
Institutionen för global folkhälsa
0852483350
anastasia.urban@ki.se
Title: Fundamentals of using Python in Health Related Research

Course number: 5316
Credits: 1.5
Date: 2021-10-18 -- 2021-10-22
Language: English
Level: Doctoral level
Responsible KI department: Department of Global Public Health

Specific entry requirements: Epidemiology I: Introduction to epidemiology; Biostatistics I: Introduction for epidemiologists and Biostatistics II: Logistic regression for epidemiologists, or equivalent courses.

Purpose of the course: This course aims at introducing students to the fundamental elements of the Python programming language. Motivating examples arising from health-related research will be used to demonstrate how to use the programming language to answer a variety of relevant questions. Learning activities will give students the possibility to learn Python the hard yet easier way – that is – problem, code, and run.

Intended learning outcomes: After successfully completing this course you as a student should be able to: • import and describe different types of data • produce high quality figures of statistics • estimate multivariable regression models (linear, logistic) including spline analysis • conduct statistical inference based on the statistical model • simulate plausible data generating mechanisms • automatize code using looping and comprehension

Contents of the course: The course is a full-time hands-on practice of Python language answering relevant health related questions based on either empirical or simulated data. The participant will learn how to import a dataset, create visualizations of distributions and statistics, estimation using popular regression models (linear, logistic), inference (likelihood based statistical tests, pointwise confidence intervals) on predicted responses or changes in predicted responses, draw pseudo-random values from theoretical probability distributions, Monte-Carlo simulations of common data generating mechanisms (interaction, non-linearity), and basic elements of programming such as creating new functions and avoid looping using comprehensions.

Teaching and learning activities: Lectures, group work, exercises, and individual coding workout using Python.

Examination: Individual written examination. Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.

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

Number of students: 8 - 25

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

More information: The participant is expected to have sufficient familiarity with the computer to be able to install Python (https://www.python.org), Jupyter Notebook (https://jupyter.org/) as well as the following modules: pandas, matplotlib, numpy, scipy, statsmodels (https://pypi.org/project/pip/) prior to the course start.

Course responsible:
Nicola Orsini
Department of Global Public Health
Nicola.Orsini@ki.se

Contact person:
Anastasia Urban
Institutionen för global folkhälsa
0852483350
anastasia.urban@ki.se
Title: Sex and Gender Perspectives in Biomedical Research

Course number: 5318  
Credits: 1.5  
Date: 2021-10-18 -- 2021-10-22  
Language: English  
Level: Doctoral level  

**Responsible KI department:** Department for Clinical Science, Intervention and Technology  
**Specific entry requirements:** Second cycle - Master’s level study in medicine or biomedicine  

**Purpose of the course:** "Every cell has sex and every person is gendered". This course encourages students to examine the validity and implications of this statement in the field of experimental and clinical medical research, and, in particular, in relation to their PhD projects. It will focus on what the current evidence and regulations suggest in respect to implementation of sex and gender perspectives (gender dimension) in the field of experimental and clinical medicine with further implementation in cardiovascular, metabolic, neurological, immunological and renal fields of medicine and in experimental and clinical research towards personalized medicine.

**Intended learning outcomes:** After completion of both the online module and the face-to-face part of the course, students are expected to be able: I) to account for sex and gender in biomedical research involving animals, cells or tissues; II) to account for sex and gender when considering aspects of experimental and clinical research in humans. III) to account for gender dimension in the research content in their PhD projects and potential grant applications.

**Contents of the course:** This short course consists of two modules. The first module consists of a web-based course developed by Canadian Institute of Gender and Health with the title SEX AND GENDER IN BIOMEDICAL RESEARCH, as well as individual work designed by course organizers mainly including web-based tools for requirement of relevant information. The face-to-face module will concentrate on research topics in the selected research fields. It will include a number of in-house seminars/workshops with guest lecturers (Meet an Expert - Get Inspired) who will facilitate and enhance the learning process as it draws on team-based learning approaches, while promoting a sense of community among the students. Examples of experimental and clinical research towards cardiovascular, neurological, metabolic health, sex-specific cell signaling in health and disease, female and male models for the disease of interest will be linked with presentations of subjects of importance regarding sex/gender perspectives in the diseases development, and with presentation of symptoms, availability and feasibility of treatment regimens and outcomes. Finally, the advice for successful execution of implementation of gender dimension in the research projects and potential grant applications will be discussed with leading experts in the field for Horizon Europe grant applications.

**Teaching and learning activities:** The course consists of an online creative, flexible and free-accessible module SEX AND GENDER IN BIOMEDICAL RESEARCH that anyone can take in one’s own pace (about one day to complete) and face-to-face days with seminars/workshops with guest lecturers (Meet an Expert - Get Inspired). The participants should write a reflective report (1-2 A4 pages;) followed by preparation of a group presentation/s on the topic of interest with application of sex and gender perspective in the content for the selected project or application for a grant for a final presentation day.

**Examination:** Exam format: I) assessment of the web-based course: pass when acquiring the answer to 90% of the questions. II) presentations of assigned work, either individually or in group.  

**Compulsory elements:** All sections of the course are mandatory and cannot be compensated for.

**Number of students:** 8 - 20

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

**More information:** Please see more information from comparable course last year; https://staff.ki.se/capacity-building-event-sex-gender-perspectives-in-cardiovascular-research-october-19-23-2020 Please see the link below for evaluation from previous comparable course.

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**Course responsible:**  
Karolina Kublickiene  
Department for Clinical Science, Intervention and Technology  
0735930988  
Karolina.Kublickiene@ki.se

Karolinska Universitetssjukhus-Huddinge campus  
Njurmedicin  
14186  
Stockholm

**Contact person:**  
Liam Ward  
Institutionen för klinisk vetenskap, intervention och teknik  
liam.ward@ki.se

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https://kiwas.ki.se/katalog/katalog/pdf?term=HT21
Agne Laucyte-Cibulskiene
Institutionen för klinisk vetenskap, intervention och teknik
agne.laucytecibulskiene@ki.se
Title : Migration and Health

Course number : 5319  
Credits : 2.0  
Date : 2021-09-20 -- 2021-10-01  
Language : English  
Level : Doctoral level  
Responsible KI department : Department of Global Public Health  
Specific entry requirements :  
Purpose of the course : The objective of the course is to give the students a deepened understanding of research on migration and health and how this is relevant, not only in studies with a specific focus of health outcomes in migrants health but in public health at large. The course will cover theoretical concepts like e.g. ethnicity as well as quantitative and qualitative methods in this field. The course aims to increase the student’s skills in using theoretical concepts in studies using empiric methods. During this course, the student will get introduced to different theoretical frameworks for studying migration health as well as the challenges with studying migration related concepts in public health research.

Intended learning outcomes : At the end of the course, the student is supposed to be able to 1) describe different theoretical frameworks for understanding migration health. 2) describe relevant designs for studies assessing migration health. 3) discuss own results related to migration health or ethnic differences. 4) evaluate research within the scientific area of migration health and assess when migration is a relevant determinant of health.

Contents of the course : During this course the student will get introduced to different theoretical frameworks for studying how migration influences health. The concept of ethnicity will be discussed too as well as the challenges with studying ethnicity in public health research. Different designs and methods for studying migration health, both qualitative and quantitative, will be discussed and compared.

Teaching and learning activities : The teaching activities will be based on lectures and workshops, in which the students will actively interact with teachers and each other. Lectures by invited speakers are mixed with lectures by local experts. Literature studies are followed up by seminars with student presentations and discussions.

Examination : The course assessment is based on two activities 1) student performance during interactive classes and workshops where the student is expected to actively participate in exercises, 2) a written examination focusing on the own research.

Compulsory elements : Article seminars are mandatory as participation in group discussions is part of the examination. Missed participation in other learning activities can be compensated with individual written assignments in agreement with the course leader.

Number of students : 10 - 20

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

More information : The course is spread over two weeks with three days of teaching and learning activities each week. The course will be a mix of online and on campus activities.

Course responsible :  
Anna-clara Hollander  
Department of Global Public Health  
0852480171  
anna-clara.hollander@ki.se

Contact person :  
Janne Agerholm  
Institutionen för global folkhälsa  
janne.agerholm@ki.se
Title : Global Mental Health

Course number : 5320
Credits : 3.0
Date : 2021-10-11 -- 2021-10-22
Language : English
Level : Doctoral level

Responsible KI department : Department of Global Public Health
Specific entry requirements : Background or previous coursework in public health, global health, health care, or other relevant medical or social science subject area.

Purpose of the course : The aim of this course is to provide an overview of the field of Global Mental Health, and advance students’ understanding of its key concepts and challenges. Students will consider mental health across cultures and contexts, and learn innovative approaches to preventing and treating mental disorders in low-resource settings. We will integrate knowledge and approaches from public health, global health, transcultural psychiatry and psychology, anthropology, and psychiatric epidemiology.

Intended learning outcomes : • Define key concepts in the field of global mental health, • Describe the epidemiology of mental disorders, risk factors, and social determinants of mental health in a global perspective. • Describe mental health challenges in low- and middle-income countries and discuss issues unique to understanding, measuring and caring for mental health in these settings. • Discuss the role of culture and stigma in the presentation of mental disorders. • Identify vulnerabilities in different populations, such as at different ages and life stages, and for those exposed to migration or armed conflict. • Discuss complex issues related to mental health and its care across socially and culturally diverse contexts globally.

Contents of the course : This course examines global mental health beginning with an understanding of the foundations of the field, to social and cultural shaping of mental health, to approaches to reduce the global burden of mental disorders. The course will explore various perspectives and a diversity of experiences from low- and middle-income countries when considering models of global mental health research and practice. Students will learn methods of cross-culturally adapting psychological tools, and challenges for measurement, interventions and mental health research in low-resource settings and humanitarian contexts. Topics will include: • the epidemiology and burden of mental disorders, and mental health challenges in low-and middle-income countries • social determinants of mental health, risk factors and vulnerabilities of particular populations, such as across different phases of development and for individuals exposed to violence, trauma, migration and armed conflict; • the role of culture in the shaping of mental health and presentations of mental disorders; the impacts of stigma; • mental health and psychosocial support in humanitarian and post-conflict settings • the promotion of mental health and strengthening of mental health systems, and approaches to prevention and treatment of mental disorders, especially in resource-constrained settings.

Teaching and learning activities : The course will be held over 2 consecutive weeks, full-time. Learning activities include lectures, group discussions, video-lectures and interactive seminars with international experts, individual and group presentations. Students will critically review relevant scientific articles and other works, and are expected to engage analytically with assigned readings, coming to class ready to participate actively in discussions of the issues raised therein. Students will be encouraged to question, critique and reflect on ideas, assumptions, evidence and examples presented in course activities.

Examination : The students will have two individual assignments during the course that need to be presented orally. The students are expected to be discussant on presentations by peers and show active participation in course discussions and presentations. All intended learning outcomes have to be achieved in order to pass the course.

Compulsory elements : It is compulsory to attend all lectures, seminars, group work sessions, and discussions. There will also be two individual assignments with oral components and a group presentation that are compulsory. Absence may in special circumstances be compensated by extra individual assignments arranged in agreement with the course organizers.

Number of students : 12 - 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) start date of doctoral studies (priority given to earlier start date).

More information : The course will be planned to be offered in person and incorporate lectures delivered digitally from global mental health experts around the world.

Course responsible :
Andreas Lundin
Department of Global Public Health
andreas.lundin@ki.se

Contact person :
**Title : Health Policy and Management**

**Course number :** 5321  
**Credits :** 3.0  
**Date :** 2021-10-11 -- 2021-10-22  
**Language :** English  
**Level :** Doctoral level  
**Responsible KI department :** Department of Global Public Health  

**Specific entry requirements :**

**Purpose of the course :** The course aims to review scientific approaches to the formulation of health policies and actors in different contexts; - Describe actors and functions of health systems; - 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 and appraise management concepts and theories - Critically appraise concept and theories within Health Policy and Management.

**Intended learning outcomes :** After the course the students will be able to: - Identify health policy processes and actors in different contexts; - Describe actors and functions of health systems; - 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 and appraise management concepts and theories - Critically appraise concept and theories 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 - Management concepts - Actors in health sytems - 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 presents 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 at the beginning of the second 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 peer-review (20%). All the intended learning outcomes of the course must have been achieved to pass the course.

**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 :** 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) start date of doctoral studies (priority given to earlier start date)

**More information :** This course has previously been given with course number 2740.

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**Course responsible :**  
Claudia Hanson  
Department of Global Public Health  
claудia.hanson@ki.se

**Contact person :**