Course catalogue for doctoral education

VT18

Human biology or pathology * General science courses
1383 Basic Course in Medical Statistics * 2018-03-12 -- 2018-03-23 (English)
1383 Basic Course in Medical Statistics * 2018-05-21 -- 2018-06-01 (English)
1391 Writing science and information literacy * 2018-04-16 -- 2018-04-27 (English)
1447 Introductory course in SAS programming 2018-05-14 -- 2018-05-18 (English)
1551 Cardiovascular Research - An overview of the process of atherosclerosis 2018-05-28 -- 2018-06-01 (English)
1561 Health risk assessment: principles and applications 2018-03-12 -- 2018-03-16 (English)
1622 Epidemiology II. Design of epidemiological studies 2018-03-22 -- 2018-03-28 (English)
1684 Epidemiology III. Analysis and interpretation of epidemiological data 2018-05-07 -- 2018-05-15 (English)
1685 Biostatistics III: Survival analysis for epidemiologists * 2018-02-12 -- 2018-02-21 (English)
1873 Quality of life as an outcome measure in care sciences 2018-03-08 -- 2018-03-23 (English)
2001 What is life? The future of biology. 2018-01-30 -- 2018-06-13 (English)
2044 Pathology # 2018-05-14 -- 2018-05-25 (English)
2132 Forskningsetik * 2018-01-23 -- 2018-02-13 (Swedish)
2133 Vetenskapsteori * # 2018-02-27 -- 2018-04-24 (Swedish)
2144 To communicate science in different contexts * 2018-02-06 -- 2018-02-21 (English)
2212 Human embryonic stem cells 2018-05-14 -- 2018-05-18 (English)
2214 Redox regulation, oxidative stress and selenoproteins 2018-05-21 -- 2018-05-25 (English)
2416 Causal Inference for Epidemiological Research 2018-02-26 -- 2018-03-06 (English)
2433 Clinical Research in Lipid Metabolism 2018-04-16 -- 2018-04-20 (English)
2463 Career skills for scientists 2018-02-07 -- 2018-03-15 (English)
2520 Interview techniques in health and care research 2018-04-04 -- 2018-05-03 (English)
2561 Writing science and information literacy * 2018-01-22 -- 2018-03-16 (English)
2609 Basic Course in Medical Statistics - a distance course * 2018-02-12 -- 2018-02-23 (English)
2609 Basic Course in Medical Statistics - a distance course * 2018-05-07 -- 2018-05-18 (English)
2618 Write your research results and get them published * 2018-03-05 -- 2018-03-16 (English)
2618 Write your research results and get them published * 2018-01-15 -- 2018-01-26 (English)
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2621 Klinisk forskning och Good Clinical Practice: protokoll, informerat samtycke och ansökan i enlighet med lagar/regler * 2018-02-05 -- 2018-02-09 (Swedish)
2641 Sickness absence research: theories, methods, and concepts 2018-02-05 -- 2018-04-18 (English)
2644 Human physiology - an overview # 2018-01-15 -- 2018-01-26 (English)
2666 Methods for statistical analysis: From analysis of variance to multilevel modeling * 2018-04-19 -- 2018-06-01 (English)
2690 Basic Laboratory Safety * 2018-04-09 -- 2018-04-16 (English)
2690 Basic Laboratory Safety * 2018-01-29 -- 2018-02-05 (English)
2714 Biobanking as a resource for biomedical research 2018-03-12 -- 2018-03-16 (English)
2716 Breast Cancer: Research and treatment 2018-05-14 -- 2018-05-18 (English)
2733 Calcium signaling 2018-06-11 -- 2018-06-15 (English)
2738 Intermediate Medical Statistics: Regression models * 2018-04-09 -- 2018-04-20 (English)
2767 Analysis of genome wide association data 2018-03-08 -- 2018-03-14 (English)
2787 Present your research! * 2018-03-19 -- 2018-03-23 (English)
2787 Present your research! * 2018-06-11 -- 2018-06-15 (English)
2787 Present your research! * 2018-02-05 -- 2018-02-09 (English)
2787 Present your research! * 2018-04-09 -- 2018-04-13 (English)
2787 Present your research! * 2018-01-08 -- 2018-01-12 (English)
2845 Cell-based heart regeneration 2018-05-14 -- 2018-05-18 (English)
2851 Principles of cellular metabolism 2018-03-12 -- 2018-03-23 (English)
2873 Kvalitetssäkring av klinisk forskning * 2018-02-12 -- 2018-02-16 (Swedish)
2873 Quality assurance of clinical research * 2018-04-09 -- 2018-04-13 (English)
2877 Practical approach to animal models in cardiovascular research 2018-04-16 -- 2018-04-20 (English)
2878 Current advances in atherosclerosis research 2018-03-08 -- 2018-04-27 (English)
2879 Principles of toxicology 2018-02-19 -- 2018-02-23 (English)
2888 Regenerative Medicine: Principles to Practice 2018-04-04 -- 2018-06-13 (English)
2896 Core concepts in global health and global burden of disease 2018-04-09 -- 2018-04-13 (English)
2909 Heart failure - from pathophysiology to evidence based treatment 2018-03-13 -- 2018-03-20 (English)
2912 Manuscript writing in English * 2018-05-21 -- 2018-05-25 (English)
2928 Public Health Research- concepts and theories 2018-03-12 -- 2018-03-23 (English)
2940 Multi modality imaging in oncology 2018-03-05 -- 2018-03-09 (English)
2942 The epigenome: a platform for the integration of metabolic and signaling pathways in development and on the path to diseases 2018-06-04 -- 2018-06-08 (English)
2948 Principles of nucleic acid structure 2018-04-11 -- 2018-04-27 (English)
2953 Statistics with R - from data to publication figure 2018-04-25 -- 2018-05-18 (English)
2957 Neural Control of Inflammation: An introduction to Bioelectronic Medicine 2018-06-11 -- 2018-06-15 (English)
2958 Introduction to R 2018-05-28 -- 2018-06-01 (English)
2959 Fundamentals of statistical modeling 2018-05-21 -- 2018-05-25 (English)
2963 Open science and reproducible research 2018-03-05 -- 2018-03-16 (English)

2964 Medical research ethics * 2018-02-12 -- 2018-02-16 (English)
2964 Medical research ethics * 2018-05-14 -- 2018-05-18 (English)
2964 Medicinsk forskningsetik * 2018-03-12 -- 2018-03-16 (Swedish)
2964 Medical research ethics * 2018-04-09 -- 2018-04-13 (English)
2968 Methods for life course epidemiology 2018-04-16 -- 2018-04-20 (English)
2971 Introduction to R - data management, analysis and graphical presentation 2018-04-04 -- 2018-05-07 (English)
2996 Anaesthesia, analgesia and surgery (mice and rats) 2018-05-15 -- 2018-05-17 (English)
3022 Translational Paediatric Oncology in the Era of Immunotherapy and Omics 2018-04-23 -- 2018-04-27 (English)
3023 Microbiota, metabolism and immunity in the development and treatment of malignancies 2018-06-04 -- 2018-06-08 (English)
3024 Advanced cancer biology 2018-01-09 -- 2018-06-12 (English)
3025 Advanced Cell Culture - modelling with human induced pluripotent stem (iPS) cells 2018-01-22 -- 2018-02-02 (English)
3026 Cell cycle, cancer and anti-cancer targets 2018-03-19 -- 2018-03-23 (English)
3027 Bioinformatics analysis of gene regulation in omics data and its applications to medical problems * 2018-02-26 -- 2018-03-09 (English)
3028 Grundkurs i SPSS 2018-03-12 -- 2018-03-19 (Swedish)
3029 Observation and visual methods in health care sciences research 2018-03-05 -- 2018-04-25 (English)
3030 Human Papilloma Virus - from molecular biology to global health - an eLearning course 2018-02-05 -- 2018-03-09 (English)
3031 Introduction to teaching * 2018-03-13 -- 2018-04-12 (English)
3032 Mixed methods: integration of qualitative and quantitative data within applied health research 2018-04-02 -- 2018-05-01 (English)
3035 Imaging in neuroscience: with a focus on MEG and EEG methods 2018-02-05 -- 2018-02-09 (English)
3036 Mouse necropsy 2018-04-11 -- 2018-04-18 (English)
3037 Exploring entrepreneurial opportunities in research 2018-02-26 -- 2018-04-13 (English)
3038 Basic Immunology 2018-01-16 -- 2018-03-08 (English)
3040 Aging Societies: Challenges and Opportunities 2018-04-09 -- 2018-04-27 (English)
3041 Epidemiology I: Introduction to epidemiology 2018-03-07 -- 2018-03-16 (English)
3042 Biostatistics I: Introduction for epidemiologists * 2018-04-04 -- 2018-04-24 (English)
3043 Biostatistics II: Logistic regression for epidemiologists * 2018-01-24 -- 2018-01-31 (English)
3044 Basic bioinformatics * 2018-04-16 -- 2018-04-24 (English)
3045 Computational modelling and data analysis for cognitive neuroscience 2018-05-09 -- 2018-05-25 (English)
3046 Causal inference: emulating a target trial to assess comparative effectiveness 2018-03-19 -- 2018-03-21 (English)
3047 Understanding and fighting disease using structural biology 2018-04-09 -- 2018-04-20 (English)
3049 Cellular Signalling 2018-03-19 -- 2018-03-23 (English)

Title : Basic Course in Medical Statistics

Course number : 1383
Credits : 3.0
Date : 2018-03-12 -- 2018-03-23
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.
Learning outcomes : The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.
Contents of the course : Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.
Teaching and learning activities : This course is a Team-Based Learning (TBL) course. TBL is a specific form of learning method that integrates individual assessment and group work with immediate feedback. Focus will be on solving statistical problems in a team setting. This two weeks course consists of online preparation through video lectures and exercises, and several TBL sessions (in class meeting). The time in between TBL sessions will be spent reading the course material, and preparing for the assessment and group application exercises.
Examination : Individual and group readiness assurance tests, as well as application exercises.
Compulsory elements : In class attendance during TBL sessions are mandatory for passing grade. If a student misses one of the five TBL sessions a supplementary exercise will be given. If the student misses more than one TBL session it is recommended that the student takes the course at another occasion (since absence also affects the other members of the team).
Number of students : 40 - 45
Selection of students : Date for registration as a doctoral student (priority given to earlier registration date). Please make sure that you have entered the correct registration date for doctoral education in your personal profile.
More information : This course is a TBL-course. 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 are: March 12, 13, 15, 19, 21 and 23.

Course responsible :
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Title : Basic Course in Medical Statistics

Course number : 1383
Credits : 3.0
Date : 2018-05-21 -- 2018-06-01
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.
Learning outcomes : The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.
Contents of the course : Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.
Teaching and learning activities : This course is a Team-Based Learning (TBL) course. TBL is a specific form of learning method that integrates individual assessment and group work with immediate feedback. Focus will be on solving statistical problems in a team setting. This two weeks course consists of online preparation through video lectures and exercises, and several TBL sessions (in class meeting). The time in between TBL sessions will be spent reading the course material, and preparing for the assessment and group application exercises.
Examination : Individual and group readiness assurance tests, as well as application exercises.
Compulsory elements : In class attendance during TBL sessions are mandatory for passing grade. If a student misses one of the five TBL sessions a supplementary exercise will be given. If the student misses more than one TBL session it is recommended that the student takes the course at another occasion (since absence also affects the other members of the team).
Number of students : 40 - 45
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : This course is a TBL-course. 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 are: May 21, 22, 24, 28, 30 and June 1.

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Title : Writing science and information literacy

Course number : 1391
Credits : 3.0
Date : 2018-04-16 -- 2018-04-27
Language : English
Level : Doctoral level
Responsible KI department : Karolinska Institutet University Library
Specific entry requirements :
Purpose of the course : The aim of the course is to develop the medical scientific writing skills and information literacy of the participant.
Learning outcomes : After the course, you will be able to demonstrate: -understanding of how to write an original scientific article and submit it for publication. -the ability to write other types of texts required for a scientific career. -the ability to give, take and make use of constructive criticism. -the ability to search and manage the medical sciences literature in a structured way. -the ability to use resources which facilitate choosing a journal to publish your research. -and be able describe aspects of post-publication evaluation and processing of the medical sciences literature.
Contents of the course : Basics of scientific writing, Searching the literature, Writing an original scientific paper, Supporting the text, Managing the literature, Scientific writing in other contexts, Choosing a journal, The publication process, Evaluating published science.
Teaching and learning activities : This is a KI CAMPUS course (there is also an 100% online version with course code 2561) with face to face teaching including: individual writing and rewriting, lectures, working in pairs and groups, web-based teaching, demonstrations, computer exercises and individual study.
Examination : Writing a grant application (including references) with popular science summary and rewriting based on peer and teacher feedback. There are also three assignments in which participants demonstrate development of their information literacy.
Compulsory elements : The course writing assignment is obligatory and has to be submitted about 10 days BEFORE course start. All scheduled teaching is compulsory (except where clearly stated otherwise). Absence can usually be compensated for by reading and individual work after consultation with course leaders. There are three obligatory assignments in relation to information literacy development.
Number of students : 30 - 34
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information :

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Title : Introductory course in SAS programming

Course number : 1447
Credits : 1.5
Date : 2018-05-14 -- 2018-05-18
Language : English
Level : Doctoral level
Responsible KI department : Department of Public Health Sciences
Specific entry requirements :
Purpose of the course : The aim is to introduce fundamental SAS programming language for use in database handling and preparation for analyses. Further, the aim is to introduce the student on how to use statistical procedures in SAS, with focus on descriptive statistics.
Learning outcomes : After successfully completing this course you as a student are expected to be able to: - apply the SAS system when importing and exporting data. - manipulate data using SAS labels and formats. - manipulate data using SAS functions and programming statements. - perform descriptive statistics using adequate SAS procedures. - describe how to use the SAS help manual (SAS OnlineDoc).
Contents of the course : The course is designed to give fundamental insights in the SAS system and basic skills in the SAS programming language. The course embraces commands for definition, description, modification, selection and analysing of data, and covers: - Introduction to the SAS Windows - SAS data sets, creating, importing and exporting data - Data handling, programming statements and SAS functions - SAS procedures for descriptive statistics
Teaching and learning activities : Full-time in supervised computer lab with a mixture of interactive lectures and excercises. Every morning a quiz, recapitulating the previous days' lectures.
Examination : To pass the course, the student has to show that the learning outcomes have been achieved. The course will end with an examination consisting of both an individually written and individually computerized exam where the covered commands are used. Students who do not obtain a passing grade in the first examination will be offered a second 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 : Only the examination is compulsory.
Number of students : 8 - 20
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.
More information : The course is held at Karolinska Institutet Campus Solna. Fulltime in supervised computer lab with a mixture of interactive lectures and exercises. Every morning a quiz, recapitulating the previous days' lectures. Basic computer skills are required.

Course responsible :
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Title : Cardiovascular Research - An overview of the process of atherosclerosis

Course number : 1551
Credits : 1.5
Date : 2018-05-28 -- 2018-06-01
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements :
Purpose of the course : Atherosclerosis will be discussed from the molecular, cellular, genetic, clinical and epidemiological viewpoints. Therefore, participants with a medical background will have the possibility to be more exposed to experimental work and, conversely, participants with a non-medical background will be enabled to obtain good knowledge of distinct clinical manifestations of atherosclerosis. This will be useful for, among others, bioinformaticians in the field. In addition, the course gives the participants the possibility to network with other students in the cardiovascular field.
Learning outcomes : The participant should be able to: 1. Relate risk factors with the pathology of atherosclerosis 2. Discuss the development of the atherosclerotic lesion on cellular and molecular level 3. Motivate the use of different models (in vitro-, epidemiological, animal model) to study atherosclerosis and apply them to a given project.
Contents of the course : Atherosclerosis will be discussed from the molecular, cellular, genetic, clinical and epidemiological viewpoints. Topics to be covered include discussions of the roles of the following in atherosclerosis: lipids and lipoproteins; oxLDL; thrombosis; plaque stability; inflammation; innate and adaptive immunity; proteinases; blood pressure; and diabetes/insulin resistance. Examples of in vitro and animal models as well as clinical studies will be discussed.
Teaching and learning activities : Lectures, project group, presentation by participants.
Examination : To pass the course, the participant has to: 1) Give a presentation in a seminar and to be able to discuss the different aspects of atherosclerosis with the course leader and the other participants. 2) To be able to discuss the other participants' presentations. 3) Pass a written exam recapitulating the course's content.
Compulsory elements : Examination is compulsory to pass the course.
Number of students : 15 - 25
Selection of students : Selection will be based on: 1) field of study (priority given to cardiovascular, metabolic and chronic inflammatory disease fields), 2) date for registration as a doctoral student (priority given to earlier registration date), 3) expressed written motivation to attend the course.
More information : Course location: CMM KI Hospital Solna (http://cmm.ki.se/) Time: 09:00 - 16:00 all days

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Course responsible :
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Title : Health risk assessment: principles and applications

Course number : 1561
Credits : 1.5
Date : 2018-03-12 -- 2018-03-16
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements :
Purpose of the course : The purpose of this course is to build knowledge and understanding of the scientific method to assess risks to humans of exposure to different types of chemicals.
Learning outcomes : Upon completion of the course, the student should be able to: -describe the basic concepts and principles of health risk assessment of chemical substances -explain how different types of data from in vivo/animal, epidemiological and in vitro studies as well as exposure data are used in risk assessment -assess the relevance and reliability of data used in risk assessment -derive health based guidance values such as Acceptable Daily Intake (ADI) based on the data -reflect on the role of health risk assessment in regulatory decision making
Contents of the course : Health risk assessment of chemicals is the scientific method to assess the risk to humans of exposure to different types of chemical substances, such as pharmaceuticals, environmental pollutants, chemicals in cosmetics, clothing or other everyday products and pesticide residues, food additives and other substances in food. The course starts off with introducing the concepts in risk assessment, e.g. aims of risk assessment, role of risk assessment in risk analysis (risk assessment, risk management, risk communication), different steps in risk assessment (hazard identification, hazard characterisation, exposure assessment, risk characterisation). It moves on to the different types of data from in vivo/animal, epidemiological and in vitro studies as well as exposure data that are used in risk assessment. Thereafter it is discussed how the relevance and reliability of the data is assessed, and how different types of evidence are integrated (for example from animal and epidemiological studies). The principles on how to derive health-based guidance values such as Acceptable Daily Intake (ADI) and to derive Margins of Safety values based on the data are exercised. The course then moves on to provide examples of the role of risk assessment in regulatory decision making. Case studies of different types of risk assessments exemplify how research connects to risk assessment activities. The participants will also discuss how their own research can contribute to risk assessments.
Teaching and learning activities : Teaching and learning activities include lectures, exercises and group assignments.
Examination : Examination is in the form of a written assignment and/or oral presentation.
Compulsory elements : Participation in the exercises and group assignments is compulsory. Absence can be compensated with an individual task.
Number of students : 8 - 30
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information :

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Title : Epidemiology II. Design of epidemiological studies

Course number : 1622
Credits : 1.5
Date : 2018-03-22 -- 2018-03-28
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.
Learning outcomes : After successfully completing this course you as a student are expected to be able to: - in a self-directed manner, formulate the principles of different types of common epidemiological study designs. - mainly independently, explain how a specific measure of disease occurrence and measure of association is governed by the study design. - in a self-directed manner, explain and discuss epidemiological concepts, including accuracy, in the context of different epidemiological study designs. - draw conclusions from epidemiological scientific papers and to review and criticize these regarding study design, results and accuracy. Learning outcomes are classified according to Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation.
Contents of the course : The course focuses on issues related to study design with emphasis on case-control methodology and different types of sampling strategies, study base, study efficiency, matching in epidemiological studies, induction time, interpretation of epidemiological evidence.
Teaching and learning activities : Lectures, group discussions and various forms of group exercises on selected topics, will be used. The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts.
Examination : To pass the course, the student has to show that the learning outcomes have been achieved. Assessments methods used are group tasks (formative assessments) along with a written individual task (summative assessment).The examination is viewed as a contributing to the development of knowledge, rather than as a test of knowledge. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.
Compulsory elements : The individual examination .
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information : Course dates are March 22, 23, 26, 27 and 28. The course is extended over time, but is still 5 full course days in order to promote reflection and reinforce learning. The individual examination will be performed as a take-home examination.

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Title : Epidemiology III. Analysis and interpretation of epidemiological data

Course number : 1684
Credits : 1.5
Date : 2018-05-07 -- 2018-05-15
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Knowledge equivalent to "Epidemiology I: Introduction to epidemiology", "Epidemiology II: Design of epidemiological studies", "Biostatistics I: Introduction for epidemiologists" or corresponding courses.
Purpose of the course : The purpose of the course is to familiarise the student with principles for epidemiological data analysis and critical interpretation of study results.
Learning outcomes : After successfully completing this course you as a student are expected to be able to: - analyse and interpret measures of association between exposure and disease in different study designs, - analyse and interpret interactions between causes, - reason about principles of causal inference, - evaluate methodological aspects when critically reviewing individual epidemiological studies, - apply good practices for quantitative bias analysis to epidemiological data, and - demonstrate how to communicate areas of expertise to the public and to those not familiar with your research area.
Contents of the course : The course focuses on issues related to causal inference, principles of epidemiological data analysis, and interpretation of epidemiological concepts and principles of relevance when critically reviewing individual epidemiological studies.
Teaching and learning activities : Lectures, group discussions and various forms of group exercises on selected topics, will be used. The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts.
Examination : To pass the course, the student has to show that all the intended learning outcomes have been achieved. Assessments methods used are group assignments (formative assessments) along with a written individual take-home examination. The examination is viewed as contributing to the development of knowledge, rather than as a test of knowledge. Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.
Compulsory elements : Individual examination task (summative assessment).
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information : Course dates are May 7, 8, 9, 14 and 15. The individual examination will be performed as a take-home examination, and will be distributed the last day of the course.

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Title : Biostatistics III: Survival analysis for epidemiologists

Course number : 1685
Credits : 1.5
Date : 2018-02-12 -- 2018-02-21
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements : Epidemiology I: Introduction to epidemiology, Biostatistics I: Introduction for epidemiologists and Biostatistics II: Logistic regression for epidemiologists or equivalent courses, and practical experience applying statistical models.
Purpose of the course : This course focuses on the application of survival analysis methods to epidemiological studies. The statistical software Stata will be used in the course.
Learning outcomes : After successfully completing this course students should be able to: - propose a suitable statistical model for assessing a specific research hypothesis using data from a cohort study, fit the model using standard statistical software, evaluate the fit of the model, and interpret the results. - explain the similarities and differences between Cox regression and Poisson regression. - discuss the concept of timescales in statistical models for time-to-event data, control for different timescales using standard statistical software, and argue for an appropriate timescale for a given research hypothesis. - discuss the concept of confounding in epidemiological studies and control/adjust for confounding using statistical models. - apply and interpret appropriate statistical models for studying effect modification and be able to reparameterise a statistical model to estimate appropriate contrasts. - critically evaluate the methodological aspects (design and analysis) of a scientific article reporting a cohort study.
Contents of the course : This course introduces statistical methods for survival analysis with emphasis on the application of such methods to the analysis of epidemiological cohort studies. Topics covered include methods for estimating survival (life table and Kaplan-Meier methods), comparing survival between subgroups (log-rank test), and modelling survival (primarily Poisson regression and the Cox proportional hazards model). The course addresses the concept of 'time' as a potential confounder or effect modifier and approaches to defining 'time' (e.g., time since entry, attained age, calendar time). The course will emphasise the basic concepts of statistical modelling in epidemiology, such as controlling for confounding and assessing effect modification.
Teaching and learning activities : Lectures, exercises focusing on analysis of real data using statistical software, exercises not requiring statistical software, group discussions, literature review.
Examination : The course grade is based solely on a written examination. The examination will contain two sections and a passing grade must be obtained for each section in order to obtain a passing grade for the course. Students who do not obtain a passing grade on both sections and wish to take the examination again must retake the entire examination (i.e., both sections) even if they previously obtained a passing grade on one of the two sections. The focus of the exam will be on understanding concepts and their application to analysis of epidemiological studies rather than mathematical detail. Students who do not obtain a passing grade in the first examination will be offered a second examination within 2 months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered. If the course is not offered during the following two academic terms then a third examination will be scheduled within 12 months of the final day of the course.
Compulsory elements : The individual examination (summative assessment).
Number of students : 8 - 25
Selection of students : Highest priority will be given to applicants previously enrolled in the course without obtaining a passing grade. Other eligible applicants with appropriate prerequisite knowledge will be prioritized according to the relevance of the course for their research training. Please provide a short description of current research training and motivation for attending the course, along with a description of relevant previous courses taken.
More information : The course will be held February 12, 14, 16, 19, 21. The course is extended over two weeks (but still five course days) to promote reflection and active learning. Participants are expected to have prerequisite knowledge equivalent to the learning outcomes of the courses Epidemiology I, Biostatistics I and Biostatistics II.
 We have provided a self-assessment test (http://biostat3.net/download/self-assessment.pdf) for you to confirm that you understand the central concepts. We advise all potential applicants to take the test prior to applying for Biostatistics III. If you attempt the test under examination conditions (i.e., without referring to the answers), we would recommend:
 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 a minimum, undertake an extensive review of central concepts in statistical modelling and possibly consider studying intermediate-level courses (e.g., Biostatistics II) before taking Biostatistics III.
 The statistical software Stata will be used throughout the course. Participants are expected to possess basic knowledge of Stata prior to the start of the course. An introduction to Stata can be downloaded from the course web-page (www.biostat3.net).

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Title : Quality of life as an outcome measure in care sciences

Course number : 1873
Credits : 3.0
Date : 2018-03-08 -- 2018-03-23
Language : English
Level : Doctoral level
Responsible KI department : Department of Neurobiology, Care Sciences and Society
Specific entry requirements :
Purpose of the course : The course aims to give doctoral students a basic understanding of the theory behind measurement of quality of life and introduce the methods used when conducting studies with quality of life as an outcome measure. Students will get the opportunity to dig into their own research by critically reviewing the instruments they are using and to orally defend the methods they are using.
Learning outcomes : After the course, the students should be able to critically review research papers analyzing quality of life. This includes phrasing research questions, choosing appropriate instruments, timing of assessments and procedure as well as choosing methods for analysis. Furthermore should students be able to interpret and discuss results from studies of quality of life.
Contents of the course : The concept quality of life and health-related quality of life will be discussed to give insights into these concepts. Aditionally the criticism against these concepts and their measurement will be addressed.The course will further include phrasing research questions, choosing appropirate instruments, designing studies measuring quality of life (timing of assessments and procedure), choice of methods for analysis, and interpretation of results.
Teaching and learning activities : Learning activities include lectures, group-seminars and assignments.
Examination : Doctoral students are required to accomplish a number of assignments which will be presented the first day of the course. Assignments are typically prepared and worked through at home and thereafter followed up and discussed in class.
Compulsory elements : Assignments and seminars are compulsory. Absence from group-seminars will be made up with essay-writing on the topics that were to be discussed during the seminar.
Number of students : 10 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Course activities are scheduled to 8-9 and 21-23 of March.

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Title : What is life? The future of biology.

Course number : 2001
Credits : 2.3
Date : 2018-01-30 -- 2018-06-13
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biologi
Specific entry requirements :
Purpose of the course : This course should be chosen by those curious of where biomedicine will take us next. What are the possibilities and challenges with new high through put technologies? How accessible to research are complex systems like cells, organisms or brains? The students will also acquire an understanding of the conceptual and technical challenges in future biomedicine and advance their ability to ask scientific questions and identify significant - and possible - areas for problem solving. You will be involved in advanced reasoning on issues at the borderline of knowledge .
Learning outcomes : After the course students shall be able to discuss: 1. Theories about complexity of biological systems 2. How biocomplexity can be studied. 3. The role of computational simulations in modern biology. How simulations can be done and what the predictive power is. How mathematics can be used in simulating biological phenomena. 4. How one understands the organisational principles of biological systems. If self-organisation is a field for study or just a trivial phenomenon. 5. How evolutionary theory can be formalised into mathematical models. 6. If quantum mechanical theory can have a role in molecular biology. 7. How genetic information can be converted to mechanical or electrical force in biological system.
Contents of the course : Inspired by the seminal book by Erwin Schrödinger "What is life?" published close to 75 years ago we will adress this question again, in view of the impressive development since then. There are many new concepts to consider in the future of biology, such as the consequencies of the -omics era, complexity, computation and simulation, as well as the role of mathematicss and physics in biological theory. The course will cover areas such as biocomplexity, quantum mechanical theory in biology, computation and simulation (in silico biology), organization of biological systems, causality in biology, how does chemistry become electric and magnetic forces and evolutionary theory in the light of molecular biology. Leading scientists with an overview perspective will be invited to discuss in the seminar form the challenges that meet us today in biology, as a result of the --omics era, the availability of large amounts of data as a result of high through-put techniques, and the possibilities provided by mathematics, simulation theory and computational biology. Young scientists in this areas are also invited to lecture from their perspective.
Teaching and learning activities : One-two seminars + workshops every month for five months. Every occasion consists of a 1-2 hour seminar with the invited expert, followed by a two hour workshop of basic concepts, i. e. 3-4 hours on each occassion. For each seminar the students will usually be given one article on the topic to read. Active participation in discussions in groups with invited speaker of high international standards is a key element. Some lectures are shown as recorded DVD-lectures. You also receive DVD-recordings of all lectures for further self studies at home.
Examination : Formatively during the workshop discussions. Summatively by a written individual home-exam (essay) covering the intended learning outcomes of the course.
Compulsory elements : The seminars and workshops are compulsory. Absence has to be compensated by an extra assignment after discussion with the course leader.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Every occassion with a lecture consists of appr 60 min lecture, followed by 1,5 hrs discussion in a smaller group, 1-2 lectures/month at 3 pm. They take place in the Wallenberg lecture Hall at Nobel Forum or other lecture hall at KI Solna Campus, The lecturers invited are Swedish or International high class speakers with topis intreresting to the What is life-theme. We have had guests speakers earlier such as Jim Watson, Craig Venter, Sydney Brenner or Antjé Jacklén. Occassionally instead a "live" speaker we show recordings of some earlier lectures. All lectures are recorded on DVD/YouTube and made available to all the partcipants. This term Schrödingers book "What is life?" will be included as course litterature as well as Chapters from Ernberg I, What is life? (eng translation of Vad är liv? Ernberg et al 2010, KI Univ Press)

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Contact person :
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Title : Pathology

Course number : 2044
Credits : 3.0
Date : 2018-05-14 -- 2018-05-25
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.
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 and inflammation. Methods in cellular and molecular pathology are discussed. During the other part of the course a selected group of diseases are studied both during microscopy practices and as a written and an oral presentation. How basic pathological responses to inflammation or injury might be the first steps on a multi-step path to malignancy is also discussed.
Teaching and learning activities : This is a full time course with lectures, demonstrations, microscopy exercises and a project work.
Examination : Written examination and project work.
Compulsory elements : Demonstration/microscopy, pathology "tour" and project work are compulsory. Absence is compensated with a written report.
Number of students : 16 - 30
Selection of students : Selection will be based on 1) documented knowledge in areas such as human tissue biology, cell biology or physiology (this kind of knowledge is a prerequisite to be able to benefit from the course). Those who already have studied pathology earlier (for example medical doctors) are not prioritized. 2) Date of admission to doctoral studies (those who have been admitted longest time ago have priority).
More information :

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Title : Forskningsetik

Course number : 2132
Credits : 1.5
Date : 2018-01-23 -- 2018-02-13
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.
Learning outcomes : Den forskarstuderande ska efter att ha gått kursen kunna: 1. Redogöra för forskningsetiska teorier, principer och till viss del riktlinjer, 2. Visa kunskap angående vanliga forskningsetiska problemsituationer och de etiska verktygen som kan användas för att hantera forskningsetiska konflikter Färdigheter: Den forskarstuderande ska efter att ha gått kursen kunna: 1. Analysera forskningsetiska konflikter, 2. Ge hållbara forskningsetiska argument för eller mot ett förfarande Förhållningssätt: Den forskarstuderande ska efter att ha gått kursen ha: 1. Utvecklat ett forskningsetiskt förhållningssätt till andra forskarstuderande, handledare och seniora forskare, 2. Förståelse för hur ett etiskt förhållningsätt uppfattas hos allmänheten 3. Förståelse för vilken roll forskarens egen hederlighet och integritet har
Contents of the course : Att ge en introduktion till etiken i samband med forskning och en orientering om dess tillämpning på problem inom det vetenskapliga området. Kursen behandlar bl.a. följande teman: centrala etiska principer, teorier och argument, forskningsetik/forskaretik, grundläggande värderingar och normer för god sed i forskningen, innehåll i och värdet av regelverk så som Helsingforsdeklarationen dess funktion, tillämpning, möjligheter och begränsningar, etikprövningar, avvikelser från värderingar, forskningsfusk och vetenskaplig oredlighet. Det informerade samtyckets historia och komponenter. Försöksdjursetisk, innefattande argument för och emot att använda olika djur för forskningsändamål samt de 3 R:en. Hantering av vetenskapligt författarskap (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 och summativ bedömning i samband med aktivt deltagande i seminarier, ii) en muntlig presentation av etiska dilemman i egen 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 dilemman 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 : 15 - 20
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förtur)
More information : Kursen ges en eftermiddag per vecka (tisdagar kl.13:30-17:15) under totalt fyra veckor på Karolinska Universitetssjukhuset, Huddinge (B31/K32). Kursen innehåller föreläsningar, seminarier, gruppövningar samt studenters muntliga och skriftliga presentationer. Mellan kurstillfällena finns det material att läsa enligt ett schema som ges till de antagna.

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Title : Vetenskapsteori

Course number : 2133
Credits : 4.5
Date : 2018-02-27 -- 2018-04-24
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.
Learning outcomes : Efter kursen skall doktoranden ha kunskaper om 1. Vetenskapsteoretiska teorier, principer och grundläggande begrepp 2. Aktuella diskurser om vad som är vetenskaplighet Efter kursen skall doktoranden ha färdigheter i att 1. Analysera och beskriva forskning i vetenskapsteoretiska termer 2. Delta i vetenskapsteoretisk diskurs om forskning och argumentera för styrkor och svagheter med olika vetenskapsteoretiska ingångar till en frågeställning Efter kursen skall doktorandens förhållningssätt till vetenskaplig diskurs vara 1. Grundad i respekt för den roll som dialogen och debatten har i utvecklandet av vetenskap 2. Byggd på insikt av att vetenskaplig diskurs kräver respektfull attityd till andra forskare, forskningsområden och samhälle
Contents of the course : En introduktion till vetenskapsteorin och en förståelse för olika slag av vetenskapligt kunskapssökande. En grundläggande orientering om vetenskapsteoretiska frågor ges. Följande teman behandlas: begreppet kunskap, vetenskap - pseudovetenskap, hypoteser - hypotesprövning, orsaker - förklaringar, vetenskapliga värderingar - samhälle.
Teaching and learning activities : Föreläsningar (ca 12 t), gruppövningar, seminarier (ca 14 t) och muntlig och skriftlig presentation.
Examination : Vi bedömer att lärandemålen för kursen är uppnådda genom examination som består av fyra delkomponenter: i) formativ och summativ 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 : 15 - 20
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förtur)
More information : Kursen ges en eftermiddag per vecka (tisdagar ca kl.13:30-17:15) under totalt nio veckor på Karolinska Universitetssjukhuset, Huddinge (B31/K32). Kursen innehåller föreläsningar, seminarier, gruppövningar samt studenters muntliga och skriftliga presentationer. Flera föreläsningar ges av externa föreläsare. Mellan kurstillfällena finns det material att läsa och presentationer att förbereda enligt ett schema som ges till de antagna.

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Title : To communicate science in different contexts

Course number : 2144
Credits : 3.0
Date : 2018-02-06 -- 2018-02-21
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : The course aims are orally presentation of own research adapted to different groups and reflection on presentation skills and ability.
Learning outcomes : After the course the student is expected to be able to: 1. Orally present own research adapted to different target groups. 2. Reflect on presentation skills and ability to adapt to different target groups.
Contents of the course : During the course each participant will be given the opportunity to develop practical and theoretical knowledge in: - Communication, perception and learning - Presentation techniques - Rhetoric - Use of different media (such as Posters, Overhead-projector, PowerPoint, Whiteboard)
Teaching and learning activities : The course design is based on reflective practice and includes self-directed learning, lectures and literature seminar to process theoretical knowledge, and practical training in presentation skills. Each course participant will perform three oral presentations and receive feedback on content, presentation skills and adaptation towards target group.
Examination : The assessment consists of two different tasks: 1. Reflective statement based in experience, feedback and research/literature within communication and learning. 1. Oral presentation in a popular scientific context supported by PowerPoint or similar. To pass the course the participant needs to show evidence that they reached the learning outcomes by fulfillment of the assessment criteria.
Compulsory elements : Compulsory sessions are: 1. Oral presentation in a popular science context (video recorded) 2. Oral presentation in a scientific context and observe and give feedback to an oral presentation made by a peer. Absence from the compulsory sessions or assessment seminar can be compensated through supplementary activity.
Number of students : 20 - 30
Selection of students : The selection for this basic general science course will be based on your admission date to doctoral education (priority given to earlier registration date). Please make sure that you have entered the correct registration date for doctoral education in your personal profile.
More information : This is a two-week course which requires time for independent work outside of scheduled class time. Scheduled class room sessions are on the following dates: 6-7 February, 13-14 February and 20-21 February. The course is given in ENGLISH.

Course responsible :
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Title : Human embryonic stem cells

Course number : 2212
Credits : 1.5
Date : 2018-05-14 -- 2018-05-18
Language : English
Level : Doctoral level
Responsible KI department : Department of Biosciences and Nutrition
Specific entry requirements :
Purpose of the course : The purpose of the course is to enable doctoral students to obtain a basic understanding of human reproductive biology with focus on human embryonic stem cell knowledge and cells replacement therapies and translational medicine. Experts in the field will provide a fresh overview of clinical and pre-clinical research aiming at development of novel treatment possibilities, but also discussing current limitations and general ethical aspects. Finally the students will be enabled to improve their capacity to produce coherent, logical and concise explanations of data and concepts - both written and orally, through consideration of the course material.
Learning outcomes : At the conclusion of this course students should be able to show a comprehensive view of: - Pre implantation Embryology - Derivation methods and culture conditions of hESCs - Nutritional requirements of the blastocyst and stem cells - Functional characteristics of different tissue culture incubators - Characterization of the embryonic stem cells and the importance of the pluripotency of these cells and what is ongoing in this field - Production of isogenics embryonic stem cells by somatic cell nuclear transfer (SCNT) - The pluripotence induction of somatic cell by transduction (the iPS cells) - Know the prospective possibilities of having a good culture system and be aware of potential development of hESC technology in the future. - Be aware of the general aspects and implication of the stem cells research and the potentiality that these represent for clinical application.
Contents of the course : 1. Embryology theory (lectures) 2. In vitro culture system (lectures) 3. Human Embryonic Stem cells culture (lectures) 4. Characterization of hESC (lectures) 5. Laboratory demonstrations 6. Genetics (lectures) 7. Introduction to different cell types (lectures) 8. Cell reprogramming (lectures) 9. Stem cells therapy and challenge today 10. Future in human embryonic stem cells (lecture) Course test, evaluation, discussions, examination and closing of course.
Teaching and learning activities : Lectures and laboratory demonstrations.
Examination : Written individual examination
Compulsory elements : The laboratory parts are obligatory. If absent at laboratory activity; student should present a literature work related with the subject of the missing activity
Number of students : 8 - 16
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course will be held at Karolinska Institutet, Department of Biosciences and Nutrition, Novum Huddinge.

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Title : Redox regulation, oxidative stress and selenoproteins

Course number : 2214
Credits : 3.0
Date : 2018-05-21 -- 2018-05-25
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Biochemistry and Biophysics
Specific entry requirements :
Purpose of the course : The purpose of the course is to give doctoral students and post docs a good understanding of redox biology and redox biochemistry in living cells and organisms. The course is also designed to give the participants experience in scientific networking, and to increase generic skills in understanding, presenting and discussing frontline research topics.
Learning outcomes : After the course, each student should have acquired the following knowledge: - Good knowledge of structure-function relationships for the major low molecular-weight antioxidant compounds found in cells (GSH, Ascorbate, tocopherol) - Good knowledge of the major antioxidant and redox regulatory systems and redox sensitive signaling pathways (glutathione-dependent systems, thioredoxin systems, Nrf2/Keap1, Yap1, peroxiredoxins, methionine sulfoxide reductases, peroxidases, catalases, superoxide dismutase, NADPHoxidase, oxidative burst, PTP regulation, cyt c, ASK-1) - Good knowledge of selenoprotein synthesis and selenoprotein function
 After the course, each student should also have the skill to present and discuss a redox-regulated research project at a level generally expected for presentations held at international cutting-edge conferences in the subject.
Contents of the course : The course is planned as a joint training encompassing an international exchange graduate course, with students and lecturer's primarily recruited from Karolinska Institutet together with Medical University of South Carolina (MUSC) and the Redox Biology Center of the University of Nebraska in Lincoln (UNL), Nebraska, which are two NIH COBRE (Center of Biological Research Excellence) initatives focused on research in redox biology. The course is planned to be annually held and will have the following major components: - Students from MUSC, UNL and Karolinska Institutet - Lecturers from MUSC, Karolinska Institutet and UNL
 Planned lectures will contain subjects such as the following examples: - "Glutathione S-transferases in redox regulation and glutathione dependent catalysis" - "Nitric oxide (NO) signaling in relation to redox state" - "Calcium signaling in oxidative stress and in relation to apoptosis" - "Glutaredoxin and thioredoxin systems" - "The concepts and effects of redox cycling and selenoprotein reactivity" - "Selenoproteomes and dedicated Cys- and/or Sec-dependent redox systems" - "Using protein crystallography to probe the function of redox active enzymes" - "Redox activities of proline in a cellular context" - "The effects of metals on metabolism and oxidative stress in human disease" - "With the sight on redox: glutaredoxin and thioredoxin systems in the ocular lens and their relation to cataract" - "Redox control of ion channels" - "How oxygen can be sensed in the carotid body" - "Mitochondrial production of reactive oxygen species in relation to human disease"
Teaching and learning activities : The course it is built upon a pedagogic framework of discussions between graduate students in redox biology with leading experts in the field, combined with cutting-edge lectures, training in oral presentation, career counceling sessions and a written exam for control of detailed basic knowledge in redox biology. It is the firm belief of the course organizers that this pedagogic framework should well support the students to obtain the learning objectives of the course. It should furthermore help the students to prepare for their next level of a career beyond the doctoral examination. The type of teaching will be: - Morning sessions with lectures in basic concepts as well as cutting-edge front-line research findings in the field - Afternoon sessions with student presentations followed by discussions between lecturers and students - Career discussions and future perspectives in the field of redox biology
Examination : The student skills are examined as follows: - Evaluation of the degree of participation in student-lecturer discussions and the level of initiated comments and questions during those discussions (grade pass/not pass) - Evaluation of the presentation of the student's own project (grade pass/not pass) - Results at written examination (at least 60% right answers for the grade of pass) Attendence during compulsory parts of the course as well as the grade of "Pass" in all three parts of the examination must be fulfilled for a final grade of "Pass".
Compulsory elements : Absence from any part of the course (lectures, student presentations, career discussions, exam and award ceremony) is generally not accepted but could in special cases be compensated by an individually tailored additional discussion and a special written examination organized by the course committee.
Number of students : 25 - 30
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Note: At this occasion the course will be held at the Medical University of South Carolina (MUSC) in Charleston, SC, USA, thus necessitating travel to the course during the weekend of May 19-20 and return to Sweden during the weekend of May 26-27. Travel support will be given to the home department at Karolinska Institutet (KI) with a flat rate of SEK 8.000 per doctoral student that comes from from KI. The given number of participants in this international course entails all participants from all sites. From Sweden a maximum number of eight (8) participants can be accepted to the course.

Course responsible :
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Title : Causal Inference for Epidemiological Research

Course number : 2416
Credits : 1.5
Date : 2018-02-26 -- 2018-03-06
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements : The students are expected to have taken Epidemiology I, Epidemiology II, Biostatistics I, and Biostatistics II. Exceptions can be made if the students have taken other courses with an equivalent content.
Purpose of the course : This course aims to present causal theory and introduces how concepts and methods can be understood within a general methodological framework.
Learning outcomes : After the course the student will - be able to use counterfactuals to express and interpret causal queries - be able to judge when standard statistical methodology is appropriate for causal inference, and when it is not - be able to use Directed Acyclic Graphs to describe and analyze complex epidemiological scenarios - be able to use Marginal Structural Models to analyze longitudinal data, with additional help from a skilled statistician
Contents of the course : Causal inference from observational data is a key task of biostatistics and of allied sciences such as sociology, education, behavioral sciences, demography, economics, health services research, etc. These disciplines share a methodological framework for causal inference that has been developed over the last decades. This course presents this unifying causal theory and shows how biostatistical concepts and methods can be understood within this general framework. The course emphasizes conceptualization but also introduces statistical models and methods for time-varying exposures. Specifically, this course strives to a) formally define causal concepts such as causal effect and confounding, b) identify the conditions required to estimate causal effects, and c) use analytical methods that, under those conditions, provide estimates that can be endowed with a causal interpretation. The (causal) methods can be used under less restrictive conditions than the traditional statistical methods. For example, causal methods allow one to estimate the causal effect of a time-varying exposure in the presence of time-dependent confounders that lie on the causal pathway between exposure and outcome.
Teaching and learning activities : Lectures and group discussions.
Examination : There will be a take-home exam handed out at the last day of the course. Students who fail will be given the opportunity to write at a maximum 2 re-exams. Dates for the re-exams will be announced later.
Compulsory elements :
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research and motivation for attending, as well as an account of previous courses taken.
More information : Course dates are February 26, 28, March 2, 5 and 6. The course is extended over 2 weeks (but still 5 full course days) in order to promote reflection and reinforce learning.

Course responsible :
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Title : Clinical Research in Lipid Metabolism

Course number : 2433
Credits : 1.5
Date : 2018-04-16 -- 2018-04-20
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Huddinge
Specific entry requirements :
Purpose of the course : The course constitutes an opportunity for the student to gradually increase his/her understanding of clinical research in lipid metabolism during the course of a week. The purpose of the course is to provide comprehensive as well as in depth knowledge in order for the student to be able to apply established models and methods used in this field in his/her own research.
Learning outcomes : After the course the students will be able to describe: 1. lipid and lipoprotein metabolism 2. diseases associated with lipid metabolism and their characteristics 3. approaches available and under development for preventing or treating lipid disorders 4. models and laboratory methods used in lipid metabolism in in vivo studies
Contents of the course : Overview and new developments within the field of clinical research in lipid metabolism. Emphasis will be laid on cholesterol metabolism, lipoproteins, lipoprotein receptors and on the regulation of enzymes involved in metabolism of cholesterol, bile acids, fatty acids and triglycerides. Genetic diseases and effects of diet on clinical conditions such as atherosclerosis, obesity, diabetes, and gallstone disease will also be highlighted.
Teaching and learning activities : The course is comprised by lectures.
Examination : The intended learning outcomes of the course will be assessed by a written examination on the last day of the course.
Compulsory elements : The lectures are mandatory. All information presented at the lectures is compulsory and will be a significant basis for the written examination. A missed lecture has to be compensated for by completing an essay in accordance with instructions of the organizers.
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) and 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : The course is held in English and lectures and self studies will correspond to 40 working hours (1.5 credits). The location is the Karolinska Institutet at Karolinska University Hospital Huddinge in Flemingsberg. A more detailed location will be announced in proximity to the course.

Course responsible :
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Title : Career skills for scientists

Course number : 2463
Credits : 1.5
Date : 2018-02-07 -- 2018-03-15
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : This course prepares PhD students for life after dissertation. You start to explore your transferable skills and how to communicate them. You learn a lot about yourself and the many career paths there are for PhDs. The course also gives you the opportunity to expand your contacts and network. This course gives you the possibility to explore your interests, talents and skills. Course participants also get the opportunity to apply for a one month financed internship at a company or organisation whithin life sciences.
Learning outcomes : After the course the participants should be able to discuss options in academic and nonacademic settings. The participants should be able to identify transferable skills achieved during doctoral training and be able to explain the value of these skills within as well as outside academia. They will also be able to describe the financing procedure of research projects and discuss project management. They should also be able to apply what they have learned in the course to market their skills in different situations.
Contents of the course : The course includes an introductory reflection of the career options available for PhDs and researchers. This will be followed by sessions where academic and non-academic career paths and entrepreneurial options are presented and discussed. The course covers financing of research activities, project management and networking exercises. In addition, the course includes the process and steps in a job application procedure and how to use communication skills in various contexts.
Teaching and learning activities : The course will be highly interactive and will consist of lectures, discussions, individual projects and student presentations.
Examination : The participants will be examined thorugh oral group presentations and an individual written project.
Compulsory elements : It is compulsory to attend all the lectures and workshops (except where clearly stated otherwise). Absence from compulsory parts will be compensated for according to instructions of the course director with an additional individual project.
Number of students : 25 - 35
Selection of students : Selection will be based on 1) PhD students who are in their third or fourth year of the doctoral education 2) written motivation letter
More information : The course starts on February 7 and ends at March 15. Course days are Wednesdays from 13.00-17.00 during the first four occasions. The last two occasions (March 14 and 15) consists of examinations in half groups from 13.00-17.00. The course takes place at campus Solna.

Course responsible :
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Title : Interview techniques in health and care research

Course number : 2520
Credits : 4.0
Date : 2018-04-04 -- 2018-05-03
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements :
Purpose of the course : The course aims to provide course participants with a broad understanding for a research interview; i.e. planning and conducting a research interview within a research program. In addition the participants will be enabled to gain an increased understanding and a professional attitude of the researcher as an instrument for data collection which can be applied and potentially enhance the quality of data in future research interviews.
Learning outcomes : After the course the student is expected to be able to (a) Identify and understand the content of a research interview. (b) Demonstrate and master necessary interview tools in order to, (c) Independently, analyze and adapt this knowledge and practical skills in order to compose a research interview; i.e. planning, designing, carrying out and critically evaluating the interview. (d) Communicate and give feedback to other students' research interviews
Contents of the course : a. different perspectives and knowledge for conducting interviews b. the role of empathy in interview communication c. the researcher´s role as an instrument in data collection d. intersubjectivity, biases and ethical considerations of research interviewing e. how to plan an interview guide f. how to formulate questions g. how to conduct an interview with respect for culture and vulnerable groups
Teaching and learning activities : The course will be offered part-time, usually full Days from 9 a.m. to 4 p.m., 1-2 days weekly including lectures, video demonstrations covering various interviews and interview techniques, interview technique training seminars in small groups, supervision seminars (interview guides) with literature discussions and self-monitored studies and practice. Since interview training is a process - which requires testing in vivo, improvements, reflection between training - the course covers approximately a 5-week period.
Examination : Examination will consist of an interview guide and of an individually taped documentation of an interview with a research subject in the own research field presented in the course group. In addition the course participant will critically analyze a fello student's video-taped interview. The presentation will furthermore be within a theoretical frame of reference including the course literature, discussing interviews, interview techniques, potential biases challenging the quality of the interview responses. The reason behind choosing this kind of examination is that it has been proven to give earlier interview student-groups valuable learning experiences which immediately can be applied in the respective research area.
Compulsory elements : The education will be compulsory scheduled all through the course. If the student is unable to be present he/she has to consult the course leader/examiner for adequate opportunities to recover missed hours (usually in the form of written assignments, except for practical training and examination with the video-taped interviews).
Number of students : 10 - 14
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course will take place at Huddinge Campus. The course is given full days; i.e. 9 am - 4 pm the following dates: (1) Wednesday April 4th; (2) Thursday April 5 th; (3) Wednesday April 11th; (4) Wednesday April 18th; (5) Wednesday May 2nd; (6) Thursday May 3rd.

Course responsible :
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Contact person :
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Title : Writing science and information literacy

Course number : 2561
Credits : 3.0
Date : 2018-01-22 -- 2018-03-16
Language : English
Level : Doctoral level
Responsible KI department : Karolinska Institutet University Library
Specific entry requirements :
Purpose of the course : The aim of the course is to develop the medical scientific writing skills and information literacy of the participant.
Learning outcomes : After the course, you will be able to demonstrate: -understanding of how to write an original scientific article and submit it for publication. -the ability to write other types of texts required for a scientific career. -the ability to give, take and make use of constructive criticism. -the ability to search and manage the medical sciences literature in a structured way. -the ability to use resources which facilitate choosing a journal to publish your research. -and be able to describe aspects of post-publication evaluation and processing of the medical sciences literature.
Contents of the course : Basics of scientific writing, Searching the literature, Writing an original scientific paper, Supporting the text, Managing the literature, Scientific writing in other contexts, Choosing a journal, The publication process, Evaluating published science.
Teaching and learning activities : This 100% ONLINE course (there is also a KI Campus version with course code 1391) will be held using the learning management system Ping Pong. Content will be learnt with various learning objects and learning practiced by exercises. Formative feedback will be given by teachers/peer/self-assessment. Scientific writing, literature management and other IT-related skills will be developed in the context of scientific communication.
Examination : The intended learning outcomes are assessed in the summative examination. Participants will write and rewrite a grant application and popular science summary based on teacher and peer feedback. Participants will also complete a number of assignments which demonstrate their ability to use relevant IT resources in a context of scientific writing and communication.
Compulsory elements : There will be a number of obligatory assignments and assessments to be completed.
Number of students : 20 - 22
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information :

Course responsible :
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Contact person :
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Title : Basic Course in Medical Statistics - a distance course

Course number : 2609
Credits : 3.0
Date : 2018-02-12 -- 2018-02-23
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.
Learning outcomes : The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.
Contents of the course : Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.
Teaching and learning activities : The course is a hybrid course mixing online studies with face-to-face in-class final seminars. The course activities are video lectures, self-study, self-assessment exercises, individual computer based exercises, and statistical software demonstration videos in Statistica and SPSS. The first and last day of the course will be face-to-face with an introduction the first day and seminars and group discussions the last day.
Examination : Correct answers on the individual computer based exercises. The doctoral students will have to demonstrate their ability to recognize, critically examine and discuss the statistics presented in the medical articles during the seminars.
Compulsory elements : Attendance is mandatory for the seminars on the last day of the course. If the student is absent, he or she will have priority for admission to the seminars the next time the course is offered. If a student joins the course when physically located in another country it is the student's responsibility to contact the course director in advance to agree on an individual supplementary task to compensate for the absence.
Number of students : 40 - 45
Selection of students : Date for registration as a doctoral student (priority given to earlier registration date). Please make sure that you have entered the correct registration date for doctoral education in your personal profile.
More information : Course dates at KI: February 12th (not mandatory) and February 23rd (mandatory).

Course responsible :
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Contact person :
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Title : Basic Course in Medical Statistics - a distance course

Course number : 2609
Credits : 3.0
Date : 2018-05-07 -- 2018-05-18
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.
Learning outcomes : The course participants shall after the course be able to; 1) perform and interpret basic descriptive statistics from frequency tables and graphical presentations, 2) perform and interpret results from basic inferential statistical analysis and tests, 3) recognize and critically examine the statistics being presented in articles within the medical field of research.
Contents of the course : Concepts being treated are descriptive vs inferential statistics, collection of data and study design, different types of data and level of measurement, independent and dependent samples, correlation and regression, hypothesis testing and different type of statistical errors in relation to the testing and data collection procedure. The major topics for the course are t-test, chi-square test, nonparametric test and regression analysis, and how to evaluate the assumptions for the different techniques.
Teaching and learning activities : The course is a hybrid course mixing online studies with face-to-face in-class final seminars. The course activities are video lectures, self-study, self-assessment exercises, individual computer based exercises, and statistical software demonstration videos in Statistica and SPSS. The first and last day of the course will be face-to-face with an introduction the first day and seminars and group discussions the last day.
Examination : Correct answers on the individual computer based exercises. The doctoral students will have to demonstrate their ability to recognize, critically examine and discuss the statistics presented in the medical articles during the seminars.
Compulsory elements : Attendance is mandatory for the seminars on the last day of the course. If the student is absent, he or she will have priority for admission to the seminars the next time the course is offered. If a student joins the course when physically located in another country it is the student's responsibility to contact the course director in advance to agree on an individual supplementary task to compensate for the absence.
Number of students : 40 - 45
Selection of students : Date for registration as a doctoral student (priority given to earlier registration date). Please make sure that you have entered the correct registration date for doctoral education in your personal profile.
More information : Course dates at KI: May 7th (not mandatory) and May 18th (mandatory).

Course responsible :
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Title : Write your research results and get them published

Course number : 2618
Credits : 3.0
Date : 2018-03-05 -- 2018-03-16
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None.
Purpose of the course : The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.
Learning outcomes : AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course
Contents of the course : THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer´s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication
Teaching and learning activities : Lectures, seminares, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feed-back to their colleagues.
Examination : 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feed back on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)
Compulsory elements : Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments
Number of students : 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 : Welcome to apply for the writing course Write your research results and get them published! The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The focus is on scientific writing (manuscript, abstract and poster). The popular science writing is covering the skills you need in order to successfully write a popular science summary for a project plan or to apply for grants. The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible :
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Title : Write your research results and get them published

Course number : 2618
Credits : 3.0
Date : 2018-01-15 -- 2018-01-26
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None.
Purpose of the course : The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.
Learning outcomes : AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course
Contents of the course : THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer´s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication
Teaching and learning activities : Lectures, seminares, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feed-back to their colleagues.
Examination : 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feed back on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)
Compulsory elements : Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments
Number of students : 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 : Welcome to apply for the writing course Write your research results and get them published! The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The focus is on scientific writing (manuscript, abstract and poster). The popular science writing is covering the skills you need in order to successfully write a popular science summary for a project plan or to apply for grants. The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

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Institutionen för kvinnors och barns hälsa

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Title : Write your research results and get them published

Course number : 2618
Credits : 3.0
Date : 2018-04-16 -- 2018-04-27
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None.
Purpose of the course : The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.
Learning outcomes : AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course
Contents of the course : THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer´s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication
Teaching and learning activities : Lectures, seminares, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feed-back to their colleagues.
Examination : 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feed back on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)
Compulsory elements : Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments
Number of students : 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 : Welcome to apply for the writing course Write your research results and get them published! The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The focus is on scientific writing (manuscript, abstract and poster). The popular science writing is covering the skills you need in order to successfully write a popular science summary for a project plan or to apply for grants. The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible :
Anna Hildenbrand Wachtmeister
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0707890607
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Lalit Kumar
Institutionen för kvinnors och barns hälsa

Lalit.Kumar@ki.se

Title : Write your research results and get them published

Course number : 2618
Credits : 3.0
Date : 2018-05-28 -- 2018-06-08
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None.
Purpose of the course : The purpose of the course is to impart knowledge and practical experience in scientific writing, based on own research, including manuscript, abstract and cover letter writing and scientific poster design.
Learning outcomes : AFTER ATTENDING THE COURSE, THE DOCTORAL STUDENT SHOULD BE ABLE TO: - Explain the characteristics and disposition of different written presentation media and decide which forum is the most suitable for a specific text - Understand, and apply, the terminology associated with scientific writing - Write an abstract - Use the correct structure and language to compose a scientific paper, following the editorial requirements - Revise a manuscript according to a checklist with the most common language and structure mistakes in scientific writing - Use the focus points in a scientific paper (where the readers focus their reading) - Identify the main scope and focus of the research and summarize information aligned to the target group - Apply the structure of popular science writing and use popular science as a tool for presentations - Give a poster presentation - Design a scientific poster and reflect upon structure, language and style - Understand the ethics in publication - Use the software EndNote for reference management - Search for references in databases (e.g. PubMed) and decide what sources are reliable - Respond to the reviewer's comments - Write a cover letter - Reflect on own development as a writer of different texts during the course
Contents of the course : THE MAIN SCOPE OF THE COURSE is how to write about research in different contexts and forums. THE CONTENT OF THE COURSE: 1. Terminology associated to scientific writing 2. Designing and writing a) a poster b) an abstract c) a draft for a research paper d) a cover letter e) a reply to the reviewer´s comments f) a cover letter g) a popular science paper 3. The writing process: structure, language, style 4. Editorial requirements of different journals 5. Summarizing and presenting information aiming at the target audience 6. Identifying the main scope of a research project 7. References and reference management (EndNote software) 8. Data base search 9. Basic rhetoric for poster presentations 10. References 11. Ethics in publication
Teaching and learning activities : Lectures, seminares, writing exercises, group assignments and practical exercises. As part of the learning process, the Ph.D students will be members of in-class review groups, giving feed-back to their colleagues.
Examination : 1) Written assignments reflecting the intended learning outcomes of the course: draft for scientific paper, popular science paper, poster, cover letter, and abstract. All assignments can be based on own research (if applicable). 2) Evaluation sessions, where the PhD students give each other feed back on the written assignments as a part of the learning process 3) Poster presentation, where the PhD students present their posters to a small group of course participants (there are no presentations in front of a larger group)
Compulsory elements : Lectures, workshops, evaluation sessions, and group assignments as well as all written assignments. Absence can be compensated: a) during next course occasion b) individual assignments
Number of students : 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 : Welcome to apply for the writing course Write your research results and get them published! The course includes manuscript writing, poster design and presentation, cover letter writing, abstract writing and popular science writing. The focus is on scientific writing (manuscript, abstract and poster). The popular science writing is covering the skills you need in order to successfully write a popular science summary for a project plan or to apply for grants. The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible :
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Lalit Kumar
Institutionen för kvinnors och barns hälsa

Lalit.Kumar@ki.se

Title : Klinisk forskning och Good Clinical Practice: protokoll, informerat samtycke och ansökan i enlighet med lagar/regler

Course number : 2621
Credits : 1.5
Date : 2018-02-05 -- 2018-02-09
Language : Swedish
Level : Forskarnivå
Responsible KI department : Department of Clinical Sciences, Danderyd Hospital
Specific entry requirements : --
Purpose of the course : Kursen ger god kunskap om det regelverk som gäller vid klinisk forskning (registerforskning och kliniska prövningar). Detta är nödvändig kunskap för alla som bedriver klinisk forskning.
Learning outcomes : Kunskaper om Good Clinical Practice (GCP) samt forskningsetik (Helsingforsdeklarationen). Kursen täcker de krav på GCP-utbildning som Läkemedelsverket ställer för att delta i en klinisk läkemedelsprövning. Deltagaren ska efter genomgången kurs kunna delta som en prövare i en klinisk prövning. Kunskaper om hur man praktiskt ansöker om klinisk prövning till Regional etikprövningsnämnd, Läkemedelsverket samt till Datainspektionen. Deltagaren ska efter genomgången kurs kunna skriva en ansökan till Regional etikprövningsnämnd och veta hur man skriver sådan till Läkemedelsverket samt till Datainspektionen. Kunskaper rörande regelverket för klinisk prövning (Etikprövningslagen, Personuppgiftslagen, Biobankslagen, Läkemedelsverkets författningssamling m fl). Deltagaren ska efter genomgången kurs känna till regelverket för att rätt kunna planera en klinisk prövning. Beräkning av deltagarantalet i en studie. Deltagaren ska efter genomgången kurs veta vad som påverkar studiestorlek och kunna ta fram rätt underlag för att kunna beräkna detta. Kunskap om kraven att registrera en studie i publik databas (Clinical Trial Registry) samt hur man gör för att få en studie publicerad. Deltagaren ska efter genomgången kurs kunna registrera en studie i en publik databas. Kunskaper om de krav som ställs vid registerforskning. Deltagaren ska efter genomgången kurs känna till regelverket vid registerforskning.
Contents of the course : Föreläsningar om det regelverk som gäller vid klinisk forskning (registerforskning och kliniska prövningar): Helsingforsdeklarationen, GCP, Etikprövningslagen, Personuppgiftslagen, Biobankslagen, Läkemedelsverkets författningssamling, Codex: regler och riktlinjer för forskning (codex.vr.se) m fl. Beräkning av patientantal. Genomgång av ansökningshandlingar till Regional etikprövningsnämnd, Läkemedelsverket och Datainspektionen. Hur man skriver en etikansökan och författar en patientinformation. Hur man gör för att registrera en prövning i ett Clinical Trial Registry samt regler för publicering. Praktiska GCP-råd på hur man genomför en klinisk prövning. Kursen lämpar sig också väl för de som bedriver klinisk registerforskning.
Teaching and learning activities : Föreläsningar, diskussioner och seminarier samt examinationsuppgift (studiesynopsis, etikansökan och patientinformation).
Examination : Doktorandens examinationsuppgift kommer att bedömas och diskuteras i seminarieform.
Compulsory elements : Närvaro vid undervisning/seminarier samt inlämning av examinationsuppgift (studiesynopsis, etikansökan och patientinformation). Vid frånvaro från schemalagda aktiviteter måste deltagaren genom kompletterade extra inlämningsuppgift kunna styrka motsvarande inhämtning av kunskap.
Number of students : 10 - 30
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förtur)
More information : Kursen består av föreläsningar och arbete i seminarieform på Danderyds sjukhus 2018-02-05--07 + 2018-02-09. Examinationsuppgiften (studiesynopsis, etikansökan och patientinformation) genomförs 2018-02-06--08 och lämnas därefter in för individuell bedömning och återkoppling. Examinationsuppgiften kommer också att diskuteras och bedömas i seminarieform.

Course responsible :
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Contact person :
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Title : Sickness absence research: theories, methods, and concepts

Course number : 2641
Credits : 4.5
Date : 2018-02-05 -- 2018-04-18
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements :
Purpose of the course : The course aims to provide participants with basic and wide competence about current research on sickness absence, regarding different types of study designs, data, and analytical approaches within different scientific disciplines, as a bases for own reserach on sickness absence/disability pension.
Learning outcomes : After succesfully completing this course the doctorial student will be able to: - show knowledge about the area of sickness absence, in terms of what research that is conducted in various scientific disciplines (e.g. economics, sociology, medicine, management, psychology, law, philosophy, public health) and to be able to relate own research project to this, according to a classification presented at the course. - show basic knowledge about different scientific methods used in research on sickness absence, with respect to study design, data collection, and data analysis. - show knowledge about risk factors for sickness absence, consequences of being sickness absent, and factors that hinder or promote return to work. - show basic knowledge on international as well as historical aspects of sickness insurance systems. - search for relevant studies in litterature databases. - participate in scientific discussions, verbally and in writing, regarding sickness absence and issues in the research area, with regard to perspectives, theories, explanatory models, and concepts.
Contents of the course : This multidisciplinary course covers knowledge of sickness absence/disability pension with a focus on theories, methods, and concepts used in such research. Among other things, the theories and methods used in research in medicine, sociology, economics, psychology, law, and management will be presented. Furthermore, the different perspectives within the research area will be considered such as a gender perspective and a social class perspective.
Teaching and learning activities : The course begins with three full, mandatory days of lectures by national and international well known researchers in the field and of group work. Thereafter, nine weeks with individual work (studying literature, write a paper (with focus on own project), logbook, etceteras) and group meetings with discussions of central scientific articles within the research area, will follow. Group discussion takes place either at face-to-face meetings, Skype, or discussion forums via KIs' web-based forum. After that, the whole course meets again, for three additional mandatory days of lectures, group work, and seminaries about the papers the students have written.
Examination : Examination will take place at the seminars on all the papers during the three last days of the course. Each participant is to actively demonstrate that he/she has acquired the above knowledge, skills and attitudes in all the roles as respondent, opponent, and seminar participant. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course.
Compulsory elements : To pass the course, active participation in all course days in Stockholm is required, taking active part in the group work and discussions in between the course days, write a summary of the individual logbook, and submitted a paper in due time. Any absence is to be compensated by arrangement with the course leader and may vary depending on which course sections that have been missed.
Number of students : 10 - 15
Selection of students : Acceptence to the course is based in the relevance of the course for the PhD project (based omn given motivation)
More information : The course starts with three intensive, fully scheduled days + evenings in Stockholm, followed by several weeks of individual and group work. Thereafter, additional three days in Stockholm, including seminars. Several lectures will be given, covering different aspects and disciplines within the research areas.

Course responsible :
Kristina Alexanderson
Department of Clinical Neuroscience
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Kristina.Alexanderson@ki.se

Division of Insurance Medicine
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171 77
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Contact person :
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Title : Human physiology - an overview

Course number : 2644
Credits : 3.0
Date : 2018-01-15 -- 2018-01-26
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.
Learning outcomes : After completing the course, the student will gain a basic understanding of how the human organ systems function and interact under normal conditions. The content covered in this course will be useful for further studies where knowledge about human biology is of value. More specifically, the student will be able to: - Demonstrate knowledge and understanding of basic functions and interactions between organ systems in the human body. - Demonstrate a critical and scientific approach to literature sources for the different course tasks.
Contents of the course : - Overview of cellular and integrative physiology - Basic anatomy - Biochemistry and cell biology - Nervous system - Endocrinology - Digestive system - Cardiovascular physiology - Renal physiology - Respiration - Basic immunology
Teaching and learning activities : Different learning methods such as problem based learning, lectures and a hands-on human lab session will be used. Full time during two consecutive weeks.
Examination : To pass the course, the student must demonstrate that the learning outcomes have been achieved. Oral and written examinations are used for student assessment.
Compulsory elements : Examinations and the hands-on human lab are required. Students that are absent during the quiz or the lab must perform a make-up quiz/lab. Students that are absent from the exam or do not obtain a passing grade in the first examination will be offered a second examination.
Number of students : 20 - 25
Selection of students : Selection is based on 1. the date of the registration and 2. the written motivation
More information : Conducted at KI Campus Solna

Course responsible :
Jessica Norrbom
Department of Physiology and Pharmacology

Jessica.Norrbom@ki.se

Contact person :
-

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

Course number : 2666
Credits : 4.0
Date : 2018-04-19 -- 2018-06-01
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements : Documented knowledge about basic statistics
Purpose of the course : To give graduate students an opportunity to learn to use a number of statistical methods.
Learning outcomes : After the course the participants should be able to conduct the following statistical analyses: (1) Analysis of variance; (2) Multiple regression analysis; (3) Risk- and Odds-ratios; (4) Logistic regression; (5) Cox regression; (6) Factor analysis; (7) Structural Equation Modeling; (8) Multilevel Modeling
Contents of the course : The above mentioned methods for statistical analysis.
Teaching and learning activities : The course contains lectures and computer exercises. The lectures will cover the theoretical material and contain relevant examples. In the computer exercises the methods of analysis will be used on given data. SPSS (or, on request, R) will be used in the computer exercises. No support for SAS will be available.
Examination : The participants will conduct the analyses that are included in the course and present and interpret the results from these analyses in an individual examination report.
Compulsory elements : No compulsory elements.
Number of students : 18 - 23
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : Live lectures/workshops on the following dates: 19/4, 26/4, 3/5, 9/5, 17/5, 24/5, 31/5. Submission of examination task: 1/6. Besides these occasions, the participants are asked to watch recorded lectures on the internet, one lecture (3-5 hours) before each workshop.

Course responsible :
Kimmo Sorjonen
Department of Clinical Neuroscience

Kimmo.Sorjonen@ki.se

Contact person :
-

Title : Basic Laboratory Safety

Course number : 2690
Credits : 1.8
Date : 2018-04-09 -- 2018-04-16
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biologi
Specific entry requirements : Experience of and/or education in laboratory work
Purpose of the course : The purpose of the course is to give the students an understanding of risks and of principles in safety measures in the biological 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.
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, the active participation in a group presentation and the risk assessment. One needs a pass of 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) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicants doctoral project (according to written motivation).
More information :

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

Maria.Johansson@ki.se

Contact person :
Annika Carlsson
Institutionen för mikrobiologi, tumör- och cellbiologi

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Title : Basic Laboratory Safety

Course number : 2690
Credits : 1.8
Date : 2018-01-29 -- 2018-02-05
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biologi
Specific entry requirements : Experience of and/or education in laboratory work
Purpose of the course : The purpose of the course is to give the students an understanding of risks and of principles in safety measures in the biological 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.
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, the active participation in a group presentation and the risk assessment. One needs a pass of 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) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicants doctoral project (according to written motivation).
More information :

Course responsible :
Maria Johansson
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Contact person :
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Institutionen för mikrobiologi, tumör- och cellbiologi

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Title : Biobanking as a resource for biomedical research

Course number : 2714
Credits : 1.5
Date : 2018-03-12 -- 2018-03-16
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements : Nej
Purpose of the course : This course aims to provide practical knowledge to start biobanking with state of the art quality comprising ethics, legal aspects, sampling handling and logistics. Furthermore the course aims to enable the course participants to get insight in and knowledge about how to collect human tissue samples and associated data, about how to apply technology advancements such as next generation sequencing, proteomics and metabolomics to harness biological information from biobanked material such as tissues and liquid biopsies and finally to get insight into successful research projects where biobanking in combination with large scale analysis is having direct impact on health care. .
Learning outcomes : At the end of the course the student should: - Understand the value of biobanks and be able to explain how to use these rich sources of samples and related data. - Understand the legal and ethical framework related to biobanks and how to utilize biobanked samples in future national and international projects, - Have insight and knowledge about how to start a new study and understand the impact of quality and standardization on downstream applications, - Understand and explain the need for a secure IT structure in order to ensure the sample donors integrity with a full traceability of samples and data, - Discuss own or other's research projects related to biobanked samples.
Contents of the course : 1. Practical knowledge to enable biobanking including - Ethical and Legal aspects - IT infrastructure - Required documentation and stakeholders - Biobank service; available infrastructures 2. How to biobank with high quality from various sources such as: - Blood/plasma/serum/urine - PBMC - Single cells - Tissues 3. Examples of how to apply molecular technologies to harness information - Proteomics of plasma and tissues - Metabolomics of plasma, serum and urine - Sequencing of circulating tumor DNA/RNA - Single cell sequencing of circulating tumor cells and tissues - DNA and RNA sequencing of tumor tissues - Epigenetics of blood and tissues 4. The value of applying quality registries to biobanked material
Teaching and learning activities : - Lectures - Exercises - Field trip (visiting a biobank) - Final seminar with presentations and discussions about the course assignment (either a pre-defined biobank study or an example from own research)
Examination : Presentation and discussion of the course assignments, either a pre-defined biobank study or an example from own research. All learning outcomes will be covered.
Compulsory elements : Taking part in all scheduled activities: lectures, field trip and presentation/examination. Compensation according to the instructions of the course director.
Number of students : 15 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : Monday - Friday 9:00-16:00 Venue: Wargentin, Dept of medical epidemiology and biostatistics, Campus Solna.

Course responsible :
Gunnel Tybring
Department of Medical Epidemiology and Biostatistics

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Contact person :
Johan Lindberg
Institutionen för medicinsk epidemiologi och biostatistik

johan.lindberg@ki.se

Title : Breast Cancer: Research and treatment

Course number : 2716
Credits : 1.5
Date : 2018-05-14 -- 2018-05-18
Language : English
Level : Doctoral level
Responsible KI department : Department of Oncology-Pathology
Specific entry requirements : Basic knowledge within the field of cancer biology is required
Purpose of the course : The course aims to provide an overview of the molecular characterization, epidemiology and current treatment of breast cancer. The overall purpose is to form a bridge between pre-clinical and clinical aspects of breast cancer biology and oncology and to enable the PhD students to obtain a deeper understanding of all aspects of the breast cancer problem.
Learning outcomes : At the end of the course the students need to be able to show - a thorough understanding of the basic foundations of breast cancer biology - the ability to discuss and understand advanced concepts and problems in breast cancer biology - to understand and be able to discuss important problems to solve in breast cancer in order to improve diagnosis, prevention of disease, treatment and quality of life.
Contents of the course : This course is a basic introduction to modern breast cancer research and treatment and it is recommended to all PhD students within basic, epidemiologic and clinical breast cancer research. The course will describe our current understanding of breast cancer --from molecule to patient--, eventually also discussing its management, pathology, prevention and treatment. The topics of the course include genetics, the cell cycle, apoptosis, immunology, diagnostics and treatment, and pathology. All topics will be presented from the breast cancer perspective. There will be focus on breast cancer biology and oncology, including molecular genetics, curative treatment and palliative care, psychosocial aspects of cancer, ethics and epidemiology.
Teaching and learning activities : The course consists of lectures, group seminars, group discussions and demonstrations.
Examination : To pass the course the students must show that they have reached the learning outcomes of the course. This will be assessed by a written individual examination with a focus on understanding of concepts, relations and how problems are dealt within breast cancer research and treatment.
Compulsory elements : All seminars and 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.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : Information about the venue of the course will be provided to the students in due time.

Course responsible :
Antroula Papakonstantinou
Department of Oncology-Pathology

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Contact person :
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Title : Calcium signaling

Course number : 2733
Credits : 1.5
Date : 2018-06-11 -- 2018-06-15
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Science and Education, Södersjukhuset
Specific entry requirements :
Purpose of the course : The aim of this course is to enable the students to get an insight in the fundamental mechanisms of the regulation of cellular Ca2+ homeostasis, the generation and the decoding of Ca2+ signaling, the principles of the methods for measuring Ca2+ concentrations in different cellular compartments, and the general roles of Ca2+ signals in mediating cellular functions.
Learning outcomes : After the course the students should be able to: 1. Critically analyze and interpret how the different constituents of the Ca2+ signaling tool-kit participate in the generation and decoding of Ca2+ signals, and in maintaining Ca2+ homeostasis. 2. Choose appropriate methods for studying different aspects of Ca2+ signaling 3. Critically analyze the existing literature on Ca2+ signaling, generate new ideas and put forward new hypotheses. 4. Design new studies on Ca2+ signaling in the context that is relevant to the research areas of the students themselves
Contents of the course : 1. Phospholipase C and inositol 1,4,5 trisphosphate-mediated signaling. 2. Identity and roles of the molecular players involved in Ca2+ and phospholipid-mediated signaling. 3. Preparation of Ca2+ buffers. 4. Principles of methods used in the study of calcium and phospholipid signaling including fluorescent techniques, electrphysiology and imaging techniques. 5. Regulation of ion channels involved in Ca2+ signaling including voltage sensitive channels, Transient Receptor Potential channels, store- operated channels and intracellular C a2+ channels. 6. Roles of Ca2+ and phospholipid mediated signaling in cellular processes including in secretion and apoptosis. 7. Mechanism of generation and decoding of Ca2+ signals. 8. Spatial and temporal aspects of Ca2+ signaling. 9. How to pick research problems in the areas of Ca2+ and phospholipid signaling and how to approach the problems.
Teaching and learning activities : This course will follow the principles of active learning including the seven steps problem-based-learning (PBL), and flipped classrooms. Emphasis will be on self-directed learning through problem-solving in small groups rather than on cathedral lectures. Generous small-group interactive "lecture sessions" by resource personnel with ample time for questions and answers will be provided. Participants will work on selected problems designed to be starting points, in groups of about ten participants, under supervision of trained facilitators who will be available during all of the sessions. Participants will be provided with an outline of the objectives, areas expected to cover, and reprints of selected learning materials.
Examination : Each student must submit a research proposal in the area of Ca2+ signalling where they will critically analyze the existing literature, identify the gaps in the existing knowledge, put forward a new hypothesis, and choose appropriate methods to test the hypothesis. They will use conventional headings like: specific aims, background, methods, significance, and references. The proposal should be at least one A4 page long, but no longer than three pages.
Compulsory elements : Attendence in all the sessions is obligatory. In case of absence, the participant will have to submit written reports specified by the course-supervisor, to compensate for the absence.
Number of students : 10 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course will be held at the Department of Clinical Science and Education, Södersjukhuset (Metro Skanstull, Bus number 3 to the entrance of the Södersjukhuset). The course will start every day at 09:00 and end by latest 16:00. Lunch break 12:00-13:00.

Course responsible :
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Contact person :
Joseph Bruton
Institutionen för fysiologi och farmakologi

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Title : Intermediate Medical Statistics: Regression models

Course number : 2738
Credits : 3.0
Date : 2018-04-09 -- 2018-04-20
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 acquirement of skills that involve hands-on data analysis using statistical software.
Learning outcomes : After successfully completing this course students are expected to be able to: Understand the basic theory behind the statistical methods introduced in the course and to evaluate their applicability and limitations. Choose a suitable statistical model for assessing a specific research hypothesis using data from a medical science study, evaluate the fit of the model, and interpret the results. Apply the methods discussed in the course on real data.
Contents of the course : The course is an introduction to more advanced statistical methods and requires that the student is familiar with the statistical concepts of descriptive and inferential statistics, and has some basic knowledge of linear regression. The course covers intermediate regression analysis, one-way and two-way analysis of variance, repeated measures ANOVA, logistic regression, and introduction to survival analysis. Concepts examined in this course include dummy variables, confounding variables, interaction between variables, influential observations and model selection.
Teaching and learning activities : The course consists of lectures, group discussions and assignments solved individually and in groups. Some group discussions and exercises are compulsory.
Examination : Assessment of the intended learning outcomes by a passing grade on the computer based exercises, and active participation in the final seminar and article presentations.
Compulsory elements : Computer based exercises, seminars, article presentations and some lectures are mandatory. The course leader assesses whether and if so, how absence can be compensated.
Number of students : 18 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : The course will consist of three or four scheduled whole days per week for two weeks. Course dates are: April 9, 10, 12, 13, 16, 17 and 20.

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

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Contact person :
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Elisabeth Löfgren
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elisabeth.lofgren@ki.se

Title : Analysis of genome wide association data

Course number : 2767
Credits : 1.5
Date : 2018-03-08 -- 2018-03-14
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Knowledge corresponding to Biostatistics I: Introduction for epidemiologists and Epidemiology I: Introduction to epidemiology or equivalent courses.
Purpose of the course : The aim is to enable students to independently perform a complete genome wide association study (GWAS) analysis in a computationally effective and statistically correct manner.
Learning outcomes : After the course the student should be able to execute a standard genome wide association study (GWAS) analysis using various tools (Linux, plink, R, among others). More specific the student should be able to: - Create directories, move files and perform other standard tasks using Linux-type commands. - Perform standard quality control procedures and filter data accordingly using plink, define the logic behind each quality assessment and explain why high quality data is essential. - Perform tests of association and apply multiple testing correction, interpret and discuss the result. - Investigate the presence of biases, identify reasons for their presence and manage different ways to correct for these. - Use the language R to read and write files, and to illustrate results from each step of the GWAS analysis. - Perform secondary analysis and review the results.
Contents of the course : The course follows a standard GWAS analysis of a real data set of a complex trait, from receiving the data to processed and illustrated association results. During the course the student will use multiple different tools and computer languages.
Teaching and learning activities : The course focuses on active learning and includes introductory lectures, practical hands on analysis of GWAS data sets as well as group discussions.
Examination : To pass the course the student must fulfill the learning outcomes. This will be assessed through a written individual report outlining the commands used and discussing their relevance as well as the achieved results.
Compulsory elements : The individual examination (summative assessment).
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information : Course dates are March 8, 9, 12, 13 and 14. The individual examination will be performed as a take-home examination.

Course responsible :
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Contact person :
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Institutet för miljömedicin

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Nobels väg 13

17177
Stockholm

Title : Present your research!

Course number : 2787
Credits : 1.5
Date : 2018-03-19 -- 2018-03-23
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.
Learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rethoric. 4. Have gained knowledge on how to interact with the audience.
Contents of the course : The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation
Teaching and learning activities : Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.
Examination : Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch
Compulsory elements : Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students' presentations e. Reflecting on own learning and development during the course
Number of students : 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 earlier registration date)
More information : Welcome to apply for the doctoral course Present your research! The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

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

Course number : 2787
Credits : 1.5
Date : 2018-06-11 -- 2018-06-15
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None
Purpose of the course : The purpose of the course is to 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.
Learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rethoric. 4. Have gained knowledge on how to interact with the audience.
Contents of the course : The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation
Teaching and learning activities : Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.
Examination : Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch
Compulsory elements : Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students' presentations e. Reflecting on own learning and development during the course
Number of students : 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 earlier registration date)
More information : Welcome to apply for the doctoral course Present your research! The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

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

Course number : 2787
Credits : 1.5
Date : 2018-02-05 -- 2018-02-09
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.
Learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rethoric. 4. Have gained knowledge on how to interact with the audience.
Contents of the course : The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation
Teaching and learning activities : Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.
Examination : Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch
Compulsory elements : Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students' presentations e. Reflecting on own learning and development during the course
Number of students : 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 earlier registration date)
More information : Welcome to apply for the doctoral course Present your research! The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

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

Course number : 2787
Credits : 1.5
Date : 2018-04-09 -- 2018-04-13
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.
Learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rethoric. 4. Have gained knowledge on how to interact with the audience.
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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 - 22
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Welcome to apply for the doctoral course Present your research! The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

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

Course number : 2787
Credits : 1.5
Date : 2018-01-08 -- 2018-01-12
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements : None
Purpose of the course : The purpose of the course is to 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.
Learning outcomes : After attending the course, the doctoral student should: 1. Be able to design an oral presentation in an asequate way. 2. Be able to design and use supportive media for a successful presentation. 3. Know the basics of presentation techniques and rethoric. 4. Have gained knowledge on how to interact with the audience.
Contents of the course : The scope of the course is to design and give oral presentations of your research results in different contexts. The main content of the course: 1. DESIGN AND DISPOSITION OF AN ORAL PRESENTATION (e.g. poster presentation, short presentation of research results): a. Goals and aims b. Structure c. Simplifications to enhance understanding d. Choice of pictures e. Language f. Time management 2. PRESENTATION TECHNIQUES AND RHETORIC FOR ORAL PRESENTATIONS: a. Body language and posture b. Language and pace c. How to prepare yourself for a presentation d. How to remember what you want to present e. Building confidence (be less nervous) to present f. What to avoid doing during a presentation g. How to deal with questions from the audience 3. DESIGN AND USE OF SUPPORTING MEDIA FOR A PRESENTATION: a. Power Point slides including introduction to power point b. Scientific poster c. Flipchart and other supporting media 4. INTERACTION WITH THE AUDIENCE: a. Catching the audience's attention b. How to address the audience c. Keeping the audience's attention for a longer period of time d. Communicating with the audience e. How to make the audience trust you f. Preparing the presentation with different audiences in mind g. Different learning styles which influences the audience's attention h. How to impress your audience i. Attention curve of the audience j. How to ease the learning of the audience 5. PRACTICAL EXERCISES: a. Presenting in front of an audience: i. Poster presentation ii. Presentation of student's choice iii. Elevator Pitch iv. Power point presentation v. Video recording of presentation with feedback b. Presentation exercises in pairs or small groups c. Presenting to different audiences d. Body language e. Language and pace f. How to use your audience as an asset g. How to interact with your audience h. How to remember your presentation i. Give and receive feedback on presentations j. Deal with nervousness and stay focused on your presentation
Teaching and learning activities : Lectures, written assignments, workshops, coaching, filming, group work, and practical exercises in groups and with a learning peer.
Examination : Formative assessment during active participation in all parts of the course Summative assessment of a. Poster presentation including scientific poster, b. Power Point presentation c. Elevator pitch
Compulsory elements : Three complete presentations (designed and presented to the class): a. Poster presentation including a scientific poster b. Power Point presentation c. Elevator Pitch d. Giving feed back on the other students' presentations e. Reflecting on own learning and development during the course
Number of students : 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 earlier registration date)
More information : Welcome to apply for the doctoral course Present your research! The course will be given in central Stockholm, in Gamla Brogatan (close to Hötorget). Please address all questions to: anna.wachtmeister@ki.se or phone: 0707890607

Course responsible :
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Contact person :
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Title : Cell-based heart regeneration

Course number : 2845
Credits : 1.5
Date : 2018-05-14 -- 2018-05-18
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Huddinge
Specific entry requirements :
Purpose of the course : This course provides tools and insights in regenerative medicine for heart disease.
Learning outcomes : Upon completion of the course, the doctoral students will be able to describe important principles in studying the development of the human heart, relate these to heart disease, and critically evaluate important methods and technologies applied in the context of regenerative medicine for heart disease.
Contents of the course : The developmental principles, logic, pathways, technology, and model systems to unravel human heart disease. Regenerative cardiology, bioartificial heart tissues and translational bench to bedside regenerative medicine.
Teaching and learning activities : The learning modes used in the course include lectures, discussions, seminars and a one day research symposium.
Examination : The students are examined with individual and group presentations on the course themes.
Compulsory elements : Participation in the group discussions and student presentations is mandatory. Compensation is according to the instructions of the course director.
Number of students : 12 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information :

Course responsible :
Emil Hansson
Department of Medicine, Huddinge

Emil.Hansson@ki.se

Contact person :
Emil Hansson
Institutionen för medicin, Huddinge

Emil.Hansson@ki.se

Title : Principles of cellular metabolism

Course number : 2851
Credits : 1.5
Date : 2018-03-12 -- 2018-03-23
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.
Learning outcomes : After completing the course, the student should understand the principles underlying the organization of metabolic pathways in human cells; be able to critically evaluate literature and data on cellular metabolism; understand current methods for measuring cellular metabolism; and have a solid foundation to enable deeper study of metabolism independently.
Contents of the course : The fundamental organization of cellular metabolism; physical constraints on metabolism; important building blocks of metabolic pathways and their properties; major metabolites in human cells; carbohydrate metabolism; amino acid metabolism; nucleotide metabolism; lipid metabolism (briefly); principles of enzyme catalysis and bioenergetics of metabolic pathways; genomic organization of enzymes; properties of metabolic networks; metabolic fluxes and flux balance analysis; catabolism during nutrient starvation; anabolism in proliferating cells; methods for measuring metabolism, in particular isotope tracing; experimental considerations when studying metabolism in cell systems.
Teaching and learning activities : The course will utilize a problem-based learning model with "flipped classroom" techniques, interactive seminars, problem-solving in groups, oral presentations, and individual assignments. Computer labs are included to study metabolic networks and metabolic flux analysis.
Examination : Knowledge is assessed by performance in connection to seminars (comments, questions, answers), performance on computer labs, and an individual home assignment (problem solving / essay) with a short individual oral presentation.
Compulsory elements : Presence on seminars and computer labs is mandatory. Absence must be compensated for by a written resume.
Number of students : 15 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : The course will run at half speed, distributed over two weeks. The course includes own study time (video lectures) and five half-day seminars.

Course responsible :
Roland Nilsson
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Contact person :
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Title : Kvalitetssäkring av klinisk forskning

Course number : 2873
Credits : 1.5
Date : 2018-02-12 -- 2018-02-16
Language : Swedish
Level : Forskarnivå
Responsible KI department : Department of Medicine, Solna
Specific entry requirements :
Purpose of the course : Kursen ger deltagaren kunskap och förståelse för vad som krävs för att kvalitetssäkra klinisk forskning. Du kommer efter kursen veta hur man ska göra för att säkert och i enlighet med lokala och nationella regelverk, etiska riktlinjer och internationella överenskommelser genomför klinisk forskning. Kursen är användbar för dem som arbetar med translationell eller klinisk laboratorieforskning. Den är också värdefull för forskare som arbetar med kvalitetsregister i vården, annan registerforskning och epidemiologisk forskning. Särskilt stort värde har kursen för de forskare som arbetar med interventioner av olika slag som medicinsk teknik eller kliniska prövningar. Utöver den kompetens kursen ger dig kommer du att kunna avlägga test för erhållande av ett internationellt gångbart certifikat i ICH-GCP (International Conference on Harmonisation - Good Clinical Practice). Oavsett forskningsområde kommer du förstå vikten av att sätta patientens säkerhet främst, och hur man gör för att skapa säkra data som andra kan lita på.
Learning outcomes : Kunskap och förståelse - Ha kunskap om hur man dokumenterar data så att samtliga moment i en klinisk forskningsprocess kan återskapas på ett tillförlitligt sätt - Förstå innebörden av Helsingforsdeklarationen och Good Clinical Practice så att forskningspersoners autonomi och integritet alltid sätts i första rummet - Ha kännedom om nationell, europeisk och internationell lagstiftning, vilka projekt som kräver ansökan till olika myndigheter och hur detta går till Färdighet och förmåga - Ha förmåga att avgöra vilka olika ansvar som prövare, medarbetare och sponsor har i en klinisk prövning - Ha förmåga att sammanfatta ett projektförslag i en synopsis och utifrån detta göra en riskanalys över ett projekt - Visa färdighet i att använda enklare statistiska metoder för att avgöra ett projekts vetenskapliga validitet Värderingsförmåga och förhållningssätt - Kunna värdera forskningsprojektförslag utifrån patientens perspektiv med ett etiskt och vetenskapligt förhållningssätt - Visa förmåga att värdera information från olika källor framförallt databaser på internet
Contents of the course : Kursen ger kunskaper om forskningsetik och hur ansökan till olika myndigheter görs, kunskap om kliniska prövningar, utveckling av nya behandlingar och då särskilt läkemedel, säkerhetsrapportering till myndigheter, personuppgiftslagen, etik-prövningslagen, biobankslagen och patientdatalagen, arkivering, internationella register över kliniska prövningar, riskanalys och viss statistik
Teaching and learning activities : Kursen är en distansutbildning. Den omfattar två huvudspår som delvis går parallellt. Det ena utgör arbete i grupp kring olika arbetsuppgifter som redovisas. Det andra utgörs av inläsning av GCP-regler. Pedagogiken baseras flipped classroom som innebär att läsanvisningar ges tidigt och att studenten därefter individuellt och i grupp arbetar med olika problem, fall och case. Förslag på lösningar presenteras och diskuteras under lärarhandledning. Frågestunder erbjuds under kursen. Inläsningen stöds av frågor som studenten kan använda för att kontrollera sin egen inlärning. Enstaka föreläsningar som webinars kan komma att ges, beroende på den enskilda kursens behov.
Examination : Utöver ett godkänt grupparbete kommer det att ges en individuell examination med flervalsfrågor.
Compulsory elements : Varje student måste delta i godkänt grupparbete. Varje student måste visa aktivitet på kursens hemsida i form av minst fem frågor, presentationer och/eller kommentarer på andras inlägg. Frånvaro eller brist på online aktivitet kan efter examinators bedömning kompenseras med en individuellt skriven uppsats.
Number of students : 15 - 25
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förtur)
More information : Kursen är en lärarledd distanskurs som ger tillfälle till GCP-prov efter godkänd examination. Den kräver att studenten har tillgång till dator och nätverk.

Course responsible :
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Klinisk farmakologi
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Contact person :
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Title : Quality assurance of clinical research

Course number : 2873
Credits : 1.5
Date : 2018-04-09 -- 2018-04-13
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.
Learning outcomes : Knowledge and understanding Knowledge on how to document data so all moments in a clinical research process can be recreated in a secured way Understand the meaning of the Helsinki Decaration and Good Clinical Practice so that research subjects autonomy and integrity always remain the first priority Knowledge on Swedish, European and international legislations, on which projects that need to be applied for and to which authority, and how such applications are done Skills and abilities Able to decide what different responsabilities the investigator, study team members and sponsor has in the clinical trial Able to summarise a project proposal into a synopsis and based on that make a risk-benefit analysis of the project Able to use simple statistical tools to judge a project proposal's scientific validity Judgement and approach Able to judge project proposals from the patient perspective including a scientific and sound ethical approach Able to evaluate information from different internet database sources
Contents of the course : The course provides insights into research ethics, and how applications to different authorities are done, it presents how clinical trials are undertaken, and how development of new treatments, in particular medicinal products, are done, and how safety reporting to authorities is done. The following laws, regulations and sources are discussed: Act on integrity of personal data, Act on ethical review of research projects, Act on biobanking, Act on patient data in health care, Act on archiving, and international registry's on clinical research. Risk analysis and some statistics are discussed.
Teaching and learning activities : The course is based on e-learning. There are two tracks, in part parallel. One track is based on group work around cases that are presented to the course. The other track is based on individual studies of GCP regulations. Both tracks include study material and tutor support. The pedagogy is based on flipped classroom meaning that instructions and learning resources will be made available early to support the individual learning and group works. Cases and their solutions will be presented and discussed under teachers supervision. Q&A will be provided. The GCP studies will be supported by MC self tests. Webinars may be provided, pending the need from the course.
Examination : In addition to an approved group work there will be an individual multiple choice examination.
Compulsory elements : Each student must participate in a group work. Each student must show activity on the course's home page with at least five questions, presentation and/or comments on others postings. Absence or lack of online activity can after the examiner's assessment be compensated by an individually written essay.
Number of students : 15 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : This is a tutor-led e-learning providing a GCP-test after approved examination. The student need access to internet and a computer to be able to participate.

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Contact person :
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Title : Practical approach to animal models in cardiovascular research

Course number : 2877
Credits : 1.5
Date : 2018-04-16 -- 2018-04-20
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements : Laboratory animal science course equivalent to a FELASA B or FELASA C level (Directive Function A, D - EU Directive 2010/63 art. 23-26). Researchers with education in laboratory animal science from countries other than Sweden need to pass the Swedish legislation, ethics and animal use course before they will be granted access to animal facilities at Karolinska Institutet.
Purpose of the course : The purpose of the course is to enable doctoral students to obtain practical experience in models of cardiovascular research as well as to discuss with fellow students and experts in the field the theory of the models and ethical aspects of translation research.
Learning outcomes : At the end of the course the participant should be able to: - Know how to develop, and maintain breeding programs for genetically manipulated mice in the most optimal fashion - Show an understanding on how to maintain experimental mice in order to investigate cardiovascular diseases and obtain maximal data from each experiment - Show an understanding of the main functional cardiovascular disease models and how to use them -Understand the benefits and limitations of the cardiovascular disease models that are used - Be able to practically perform common mouse models for cardiovascular disease
Contents of the course : The course is aimed at students who are starting or have just started to use animal models in cardiovascular research. It is designed for students who have done a basic animal course such as FELASA B or C. The course will give theoretical knowledge about how to create genetically manipulated mice, as well as breeding and maintaining mice for optimal use. Furthermore, an incite to other animal models will be given such as pigs and rats. There is also a practical component where students will get hands-on-experience in the most common models used.
Teaching and learning activities : The course is partly theoretical, partly practical, where lectures/group discussions and laboratory demonstrations are integrated. Time is also allocated for discussing of laboratory results and lectures.
Examination : All the learning outcomes of the course have to be reached to pass the course. The final grade (pass or fail) will be based on: - summative assessment of the contributions during the discussions that are part of the course - individual presentation at a seminar where different aspects of an animal model will be discussed, i.e. disease aspect to be investigated, which model would suit best, and how are the results analyzed and interpreted
Compulsory elements : Practical sessions are compulsory. Absence from practical sessions cannot be compensated for, but absence from one theoretical session can be compensated for in subsequent sessions.
Number of students : 8 - 10
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : This course will have a large practical component working with animal models, therefore students must have completed FELASA B and have been approved into a KI animal house facility.

Course responsible :
Lars Maegdefessel
Department of Medicine, Solna

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Contact person :
Alexandra Bäcklund
Institutionen för medicin, Solna

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Title : Current advances in atherosclerosis research

Course number : 2878
Credits : 1.5
Date : 2018-03-08 -- 2018-04-27
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements : Participants should have a basic knowledge of atherosclerosis.
Purpose of the course : This course will provide an historical and contemporary overview of the major discoveries in atherosclerosis research. The course is specially planned to support the PhD students in the area of cardiovascular research by giving them an opportunity to deepen their understanding of the molecular mechanisms involved in atherosclerosis.
Learning outcomes : At the end of the course the participant should be able to: - Recognize the major breakthroughs that led to atherosclerosis being seen as a chronic inflammatory disease rather than a mere lipid disorder. - Present and discuss these findings in the form of a seminar. - Critically evaluate research papers in small groups. - Hypothesize new therapeutic opportunities for the treatment of cardiovascular disease.
Contents of the course : 1 Atherosclerosis as an immune disease: Major clinical and experimental findings supporting this notion. 2 Possible approaches to investigate atherosclerosis. 3 The role of the immune system in atherosclerosis. 4 Anti-inflammatory therapies for cardiovascular disease. 5 Hot topics in atherosclerosis.
Teaching and learning activities : The course consists of 10 half-day sessions: 5 sessions (study time) will be used by the students to prepare for the seminars (5). During each seminar one or several specific aspects of research in atherosclerosis will be studied. A typical structure for a seminar involves: - An introduction about the topic-of-interest by an invited expert. - Presenting, analyzing and discussing an assigned paper following a journal club style where everyone is expected to participate.
Examination : Formative assessments will be conducted throughout the seminars. All the intended learning outcomes will be assessed. To pass the course, a participant has to: - Actively participate in the discussions during the seminars. - Present a selected publication relevant to the subject (working in small groups). - Demonstrate a true understanding of research perspectives of atherosclerosis.
Compulsory elements : All group discussions are compulsory
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 activities (5 seminars) will take place at KI Solna Campus between March 8 and April 27.

Course responsible :
Andres Laguna Fernandez
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Contact person :
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Title : Principles of toxicology

Course number : 2879
Credits : 1.5
Date : 2018-02-19 -- 2018-02-23
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 learn how chemical substances can have unwanted/adverse effects on living organisms and how the toxicity is studied.
Learning outcomes : Upon completion of the course, the student should be able to: -describe the principles of toxicology -explain how toxicological methods are applied -evaluate toxicological data -reflect on the role of toxicology in biomedical research and for sustainable development
Contents of the course : Toxicology is the study of unwanted/adverse effects of chemical substances on living organisms. Toxicology deals with substances such as pharmaceuticals, environmental pollutants, chemicals in cosmetics, clothing or other everyday products and pesticide residues, food additives and other substances in food. The course introduces the history of toxicology and the tasks and scope of toxicology today in biomedical research and for a sustainable society. It moves on to the general principles of toxicology, including exposure to chemicals, absorption, distribution and elimination of chemicals, toxic effects on different organs and the role of dose-response relationships. Thereafter the application of in vivo, in vitro and in silico toxicological methods is discussed. Ethical principles of toxicological studies are addressed. Toxicological data from different methods is analysed using examples from toxicological research studies. The participants will discuss how their own research questions can relate to toxicological research.
Teaching and learning activities : Teaching and learning activities include lectures, exercises and group assignments.
Examination : Examination is in the form of a written assignment and/or oral presentation.
Compulsory elements : Participation in the exercises and group assignments is compulsory. Absence can be compensated with an individual task.
Number of students : 8 - 30
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information :

Course responsible :
Charlotte Nilsson
The institute of Environmental Medicine

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Contact person :
Johanna Bergman
Institutet för miljömedicin

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Stockholm

Title : Regenerative Medicine: Principles to Practice

Course number : 2888
Credits : 3.0
Date : 2018-04-04 -- 2018-06-13
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements : None.
Purpose of the course : The overall purpose of the course is to expose students to the latest scientific findings in the field of regenerative medicine, and to provide students with skills to conceptually develop independent lines of research within collaborative international networks.
Learning outcomes : After completion of this course, the student will be able to describe the basics of stem cell biology and provide an appreciation for novel approaches and applications in regenerative medicine. The student will be able to demonstrate an interdisciplinary understanding of central concepts in stem cells and critically evaluate the potential, advantages and drawbacks of different methods that are currently researched in the fields of stem cell and regenerative therapy. The student will be able to extract and integrate information from state-of-the-art lectures, scientific articles and literature search within the field.
Contents of the course : The course covers principles of stem cell biology and provides an appreciation for applications in regenerative medicine. Lectures and journal club-based topics include fundamental features of stem cell platforms, as well as the use of these and other platforms in the design and development of regenerative therapies. The course will exemplify how regenerative therapies can be targeted to different organs (e.g. within the cardiovascular system and the nervous system) with particular emphasis on the state-of-the-art technologies, prospects for clinical translation and current challenges within the field. The student will be required to take an active part in this course by contributing in journal clubs and discussions related to stem cell-based regenerative medicine.
Teaching and learning activities : The pedagogic frame of this course is based on lectures combined with topic-related research articles. Approximately half of the lectures will take place at KI (Huddinge and Solna campus). The other lectures will take place at Mayo Clinic and will be projected to students at KI via video conferencing. The course includes journal clubs where the students are required to present articles (written and orally), integrate the knowledge acquired from lectures and reading of the articles, and actively discuss their acquired knowledge as a group. Some journal clubs will be carried out in groups using interactive e-platforms. The examination task consists of a written report that is handed in for evaluation toward or at the completion of the course.
Examination : The examination consists of a written report that is handed in for evaluation at the end of the course. All students are also required to peer-review another student's examination report. The individual performance of each student will be evaluated separately.
Compulsory elements : Active participation in lectures and journal club-based discussions is mandatory. Compensation according to the instructions of the course director.
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 : The course will be held on Wednesdays 15.00-17.00. About half the sessions will take place in the Solna campus and half the sessions in the Huddinge campus.

Course responsible :
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Contact person :
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Institutionen för medicin, Solna

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Title : Core concepts in global health and global burden of disease

Course number : 2896
Credits : 1.5
Date : 2018-04-09 -- 2018-04-13
Language : English
Level : Doctoral level
Responsible KI department : Department of Public Health Sciences
Specific entry requirements : Ingen
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 favor of or against various solutions to addressing health issues at a global level.
Learning outcomes : -Describe broad trends and inequality in the burden of disease in low, middle and high-income countries; -Discuss globalization and the drivers of these trends; -Understand how data on the global burden of disease is collected and analysed; -Describe key actors, intuitions 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
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 -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.
Examination : The examination consists of an oral and a written essay part. Both needs to be passed to get a pass grade for the course. The students need to show by way of the discussions that they have obtained a broad understanding of core concepts in global health and global burden of disease. Students should present on the last day of the course an outline of an essay reviewing and reflecting on how their research addresses global health and development. Students will be asked to write an approximatly 2000 words essay on their research topic summarising linkages to the global context. Students should review and reflect on how their research addresses global health and development by summarising the learning from this course and applying it to their research topic. The essay is a take-home exam and is due five working days after the end of the course. The course grade is pass/fail.
Compulsory elements :
Number of students : 10 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course will run as a full-time course over one week with a combination of lectures, group work and self-directed learning.

Course responsible :
Claudia Hanson
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Contact person :
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Institutionen för folkhälsovetenskap

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Title : Heart failure - from pathophysiology to evidence based treatment

Course number : 2909
Credits : 0.6
Date : 2018-03-13 -- 2018-03-20
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 a comprehensive overview of heart failure, a major public health problem and the most common cause of hospitalisation. The course will address all aspects of the disease, from mechanism and pathophysiology, to how these aspects affect diagnosis and therapeutic effects. The course will also introduce the new developments and future directions of heart failure research.
Learning outcomes : To be able to define and understand heart failure and its different phenotypes; to be able to understand the pathophysiological basis for diagnosis and therapy; to be able to understand and account for concepts for developing and testing novel interventions; and to demonstrate a good understanding of translational approach between basic research and the development of treatment of heart failure, as well as the principles of registry based research on heart failure.
Contents of the course : The module will cover pathophysiology, clinical diagnosis and treatments, as well as epidemiology of heart failure. A series of lectures will be given to reveal the molecular and cellular mechanisms of heart failure development, the relations of heart failure to other cardiovascular diseases, and new diagnotic and therapeutic approaches of the disease. Registry based research of heart failure will also be addressed.
Teaching and learning activities : The 2-day course module includes course lectures and seminars.
Examination : Written exam.
Compulsory elements : The participants must attend the lectures and seminars. The students who have missed these sessions can book extra session time within 4 weeks to compensate the absence.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Two full days. Tuesday 13th of March and Tuesday 20th of March 2018.

Course responsible :
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Clinical Pharmacology Unit
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Title : Manuscript writing in English

Course number : 2912
Credits : 1.5
Date : 2018-05-21 -- 2018-05-25
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Science and Education, Södersjukhuset
Specific entry requirements :
Purpose of the course : The purpose of this course is to increase the competence and efficiency of the doctoral students in academic writing with a focus on writing scientific manuscripts. The ability to publish in high quality scientific journals is crucial for a successful completion of the doctoral education and pursuing a career that requires a PhD. Participation in this course is thus likely to benefit the students in both short- and long-term perspective.
Learning outcomes : After completing the course the students should be able to: (1) prepare for writing a manuscript and choose an approach to write the manuscript, (2) compose the first draft consisting of the standard structures, (3) choose and use tables, figures, graphs, photographs, and schematic diagrams appropriately, (4) revise the first (and subsequent) drafts for clarity, brevity, coherence and readability, (5) improve choices of words, and styles of sentence constructions, (6) write grammatically correct texts, punctuations, numbers as numbers, and numbers as words, (7) submit a manuscript, address the comments from the referees, and resubmit the manuscript.
Contents of the course : The process approach of writing; literature review; plagiarism, ethical issues, permissions, and authorship issues; choice of journals; how to write the different parts e.g. introduction, materials and methods, results, discussion, conclusion, acknowledgement, references, abstract, and title of a manuscript; tables, figures, graphs; statistics; tense, spelling and grammar; readability, clarity and brevity; abbreviations and acronyms; numbers as numbers, and numbers as words; choice of words, active and passive voices; which and that; subject verb agreement, correct placement of modifiers, punctuations, capitalizations; submission format, common mistakes in grammar and choice of words; how to reply to the comments of the referees, revise and resubmit; practical tips; how to overcome writers´ block.
Teaching and learning activities : We shall use the concepts of active learning, flipped classroom, deliberate practice, and formative and summative assessments as the main methods for teaching and learning in this course. Instead of traditional lectures, there will be small-group interactive learning sessions, interspersed with probing questions, tasks, group-works, and individual studies. Students will solve problems and perform writing tasks that are constructed by the teachers, with well-defined learning objectives. Students will receive accurate and immediate feedback from the peers and the teacher to facilitate learning. During the course, students will write part of their own manuscript under the supervision of the teacher.
Examination : Participants will write part of their own manuscript (approximately 2000 words) where they will incorporate the newly acquired knowledge from the course.
Compulsory elements : Presence in all of the scheduled sessions and participation in the writing tasks are obligatory. Absence should be compensated for in accordance with the indications of the course director.
Number of students : 10 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course will be given at the Department of Clinical Science and Education, Södersjukhuset, from 09:00 - 16:00 everyday from Monday to Friday. You can reach Södersjukhuset by metro (nearest metro station Skanstull) or by bus number 3.

Course responsible :
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Contact person :
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Title : Public Health Research- concepts and theories

Course number : 2928
Credits : 3.0
Date : 2018-03-12 -- 2018-03-23
Language : English
Level : Doctoral level
Responsible KI department : Department of Public Health Sciences
Specific entry requirements :
Purpose of the course : This course is designed for students in all areas related to advancing the health of the population or who want an understanding of the theories and concepts relevant when doing public health research. After this course the student should be able to put her/his research in a public health context and relate it to key public health concepts.
Learning outcomes : The learning outcomes are: 1. Discuss what constitutes a public health issue; 2. Reflect upon key public health concepts in relation to your own research area; 3. Discuss how theory can aid in advancing research in public health; 4. Reflect upon the role of political and social discourses on public health issues and health policies
Contents of the course : The course provides knowledge on key concepts and theories in the multidisciplinary field of public health and an overview of the development of public health as a research area. Areas that will be covered include the concept of health and how it may be measured, global health needs and priorities, health policies, health prevention and promotion as well as determinants of health and health inequalities. Theories in these areas as well as on social stratification, gender and intersectionality are explored.
Teaching and learning activities : Different strategies for teaching and learning will be used such as lectures, group-discussions, peer reviewing and article seminars. The focus will be on critically reflecting upon the knowledge and relating it to your own research.
Examination : To pass the course the student has to achieve the learning outcomes and this will be assessed in small group assignments and an individual assignment.
Compulsory elements : Group assignments, article seminars and seminar on individual assignment are compulsory. If the student is unable to attend, a written report of the questions related must be handed in.
Number of students : 15 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information :

Course responsible :
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Department of Public Health Sciences

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Contact person :
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Title : Multi modality imaging in oncology

Course number : 2940
Credits : 1.5
Date : 2018-03-05 -- 2018-03-09
Language : English
Level : Doctoral level
Responsible KI department : Department of Molecular Medicine and Surgery
Specific entry requirements :
Purpose of the course : To describe the various imaging modalities used in the field of oncology, how multi modality imaging can be used to predict and assess treatment response and to describe how standardized interpretation of oncological imaging is performed in research, clinical trials and in individual patient care using existing standards such as PIRADS, RECIST, WHO and other criteria.
Learning outcomes : At the end of the course, the student is expected to (1) understand the basics of imaging methods and multi modality assessment in oncological imaging, (2) understand advantages and limitations of different imaging techniques (3) describe how to use diagnostic imaging in an oncological research project plan
Contents of the course : This course covers both pre-clinical and clinical aspects of oncological imaging. The student will be introduced to basic diagnostic modalities, cancer histopathology, molecular diagnostics and clinical implementations. Principle strategies for planning, performing and monitoring of cancer will be addressed. A final goal is that the students will be able to formulate a translational project of oncological imaging related to their own research fields.
Teaching and learning activities : The course will include a series of learning activities, such as introductory and comprehensive lectures/seminars, group discussions and case-studies.
Examination : The course assignment will consist on writing an individual short project (max 1 and ½ half page) where one or more imaging techniques learnt during the course should be applied to a research topic that interests the student. The project description should be handed in maximum three weeks after the completion of the course to the organizers via email.
Compulsory elements : Attendance to all the activities of the course and the individual presentation of a research proposal are mandatory. Absence from mandatory parts of the course will be compensated by other activities after discussion with the course organisers.
Number of students : 8 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course is a joint course with the National Clinical Oncology research school NatiON and will be held at the Department of Diagnostic Radiology, Karolinska University Hospital, Solna. More information will be provided to the students in due time, before the beginning of the course.

Course responsible :
Chikako Suzuki
Department of Molecular Medicine and Surgery

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Contact person :
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Title : The epigenome: a platform for the integration of metabolic and signaling pathways in development and on the path to diseases

Course number : 2942
Credits : 1.5
Date : 2018-06-04 -- 2018-06-08
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.
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 : 10 - 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) date for registration as a doctoral student (priority given to earlier registration date).
More information :

Course responsible :
Anita Göndör
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Contact person :
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Institutionen för cell- och molekylärbiologi

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Title : Principles of nucleic acid structure

Course number : 2948
Credits : 3.0
Date : 2018-04-11 -- 2018-04-27
Language : English
Level : Doctoral level
Responsible KI department : Department of Biosciences and Nutrition
Specific entry requirements :
Purpose of the course : The purpose of the course is to provide participants a good and up-to-date knowledge of DNA and RNA structural biology, to stimulate the curiosity and to inspire their own research in the field such as RNA/DNA biology, biotechnology and DNA/RNA therapeutics. To deeply understand how molecules work, detailed knowledge of their structures is necessary. The course aims also to help to practice key academic skills, such as learning from scientific presentations and literature, providing constructive criticism and presenting scientific data in oral/written form.
Learning outcomes : After the course, the students should be familiar with the principles regulating DNA/RNA structures and with the techniques used to provide DNA/RNA structural information. Furthermore, the students should have acquired the capacity to visualize three DNA/RNA dimensional structure and to identify the relation between structure and function
Contents of the course : A general introduction to nucleic acids nomenclature. Structural and conformational features of nucleotides. Physical properties. Hydrogen bonding and base stacking. Water and nucleic acid. Metal ion and nucleic acid. Secondary and tertiary structures of DNA and RNA and techniques to determine structures and dynamics of DNA and RNA systems (such as x-ray crystallography, NMR, theoretical approaches and so on) General consideration on protein-nucleic acid interactions, DNA super-helix, higher order nucleic acid structure. Last advances in DNA/RNA structural field.
Teaching and learning activities : The course consists of lectures, computer tutorial, short presentations by the students and seminars from national and international experts. The participants are involved in-class (individual and group) activities. The students should integrate each lectures hour with homework.
Examination : Written exam, graphical and oral presentation on a selected topic
Compulsory elements : The compulsory parts of the course are the lectures, computer tutorial and the seminars. Absence will be compensated with extra assignments. The students will get some key questions on the corresponding lecture topic, and the answers should be submit in written form for review and approval.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course starts with some individual activities during week 15. Lectures will be held Monday-Friday, from 9:00 to 16:00 at Flemingsberg campus during week 16 (16/4-20/4). Individual and small group activities, symposium and tutorials will be held during week 17.

Course responsible :
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Title : Statistics with R - from data to publication figure

Course number : 2953
Credits : 3.0
Date : 2018-04-25 -- 2018-05-18
Language : English
Level : Doctoral level
Responsible KI department : Department of Laboratory Medicine
Specific entry requirements : none
Purpose of the course : Do you need to turn data into a publication figure? We offer tools and confidence for the student to independently select a statistical method for research questions in their field. Furthermore we teach a structured way to discuss their choice efficiently with a professional statistician. The course is practical and includes implementing a basic statistical analysis in R, the leading statistical programming language in bioinformatics and medical science. Students can bring data from their own research project, or work on data from the course.
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. Learn to speak statistics. A structured approach to selecting statistical method and communicating with a statistician. Practice how to go from data to publication figure using data from your project or more or less friendly data offered by the course.
Teaching and learning activities : Distance learning with online lectures, quizzes and interaction with other students. Campus lectures and computer work using your own computer. Individual project work.
Examination : Online examination. Participation in labwork and seminar. Written project work with executable code.
Compulsory elements : Online quizzes and tasks. Active participation in online discussions (asynchronous, not bound to a particular time of day). Active participation in computer lab sessions. Written report including executable code. Active attendance in seminar. Compulsory attendance approximately four afternoons and one day.

Number of students : 20 - 30
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course starts with a kickoff meeting April 25 at 0930-1200 helping you to get started with the distance learning part of the course. The distance learning is at your own pace, but should be finished by May 13. For the novice, the distance learning corresponds to one week full time studies. May 14 through 18 are scheduled full days with lectures, work shop, preparation time and poster presentations. All scheduled activities take place in Huddinge.

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

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Title : Neural Control of Inflammation: An introduction to Bioelectronic Medicine

Course number : 2957
Credits : 1.5
Date : 2018-06-11 -- 2018-06-15
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements :
Purpose of the course : The purpose of this course is to give doctoral students insights into the neural control of homeostasis, particularly the regulation of inflammation, and how engineering, neuroscience, immunology and clinical medicine can come together to find new ways to treat disease.
Learning outcomes : After the course, the doctoral student will be able to define prototypical neural circuits that regulate homeostasis explain the role of inflammation in the pathogenesis of and recovery from autoimmune diseases, cardiovascular diseases and infection identify the components of the "inflammatory reflex" discuss regulatory mechanisms for cytokine release classify different interfaces with the nervous system and the immune system contrast advantages and drawbacks with major treatment approaches for inflammatory diseases describe molecular sensors for danger in the immune system and the nervous system define bioelectronic medicine and explain its potential role in clinical medicine summarize challenges in engineering and medicine for development of bioelectronic medicine technology
Contents of the course : Neural control of organ systems will be discussed in molecular, cellular and clinical perspectives. Special attention will be given to the mechanisms that detect and regulate inflammation. The neurophysiology of vagus nerve stimulation and other treatments that involve interfacing with the nervous system will be reviewed. Progress in neural interfacing and device development within the emerging field of Bioelectronic Medicine will be discussed.
Teaching and learning activities : Lectures, a student project group and a student presentation.
Examination : Project presentation and written examination.
Compulsory elements : Lectures, project group participation, active participation in presentation and passing the examination is compulsory for "PASS". Limited absence from lectures can be compensated for after individual discussion with the course organizers.
Number of students : 8 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information :

Course responsible :
Peder Olofsson
Department of Medicine, Solna

Peder.Olofsson@ki.se

Contact person :
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Title : Introduction to R

Course number : 2958
Credits : 1.5
Date : 2018-05-28 -- 2018-06-01
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements : Biostatistics I: Introduction for epidemiologists or corresponding courses.
Purpose of the course : The purpose of this course is to introduce students to using the R statistical software to perform basic to intermediate statistical data analysis in a replicable manner.
Learning outcomes : After successfully completing this course, students are expected to be able to: - explain basic concepts of the R language and environment, the online- and offline sources of documentation for R, and basic concepts of data management and workflow in a standard statistical analysis, - run a standard statistical analysis interactively within the R environment, - formalize and document such a standard analysis as a stand-alone R script, - produce graphical representations, as part of reporting their analysis, - interpret their scripts for potential simplifications via functional implementation, - find, install and compare extension packages for unfamiliar statistical applications.
Contents of the course : The course will cover the basic elements of a standard statistical workflow: reading data into R; pre-processing and quality assessment of data via numerical and graphical methods; descriptive statistics via summary measures, tabulations and graphics; basic statistical inference in terms of significance testing and confidence intervals; specification, fitting & diagnosis of regression models; exporting and reporting results from the previous steps. The course includes an introduction to the Rstudio integrated development environment to provide a common framework for interactive and scripted analysis. The extensibility of the R system will be demonstrated by example.
Teaching and learning activities : Course days will be organized around a common theme, with concepts and background covered in the mornings via presentations, demos, in-class exercises and discussions, and practical application via individual and small-group lab exercises in the afternoons. Formative assessment will be integrated via in-class quizzes and lab reviews.
Examination : Students will perform an open-book examination based on practical application of the concepts presented during the course to realistic data sets and problems. Students who do not pass the examination will be offered a second examination within two months from the end of the course (excluding academic holidays).
Compulsory elements : The individual examination (summative assessment) is compulsory.
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information :

Course responsible :
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Contact person :
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Title : Fundamentals of statistical modeling

Course number : 2959
Credits : 1.5
Date : 2018-05-21 -- 2018-05-25
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Courses "Epidemiology I: Introduction to epidemiology", "Epidemiology II: Design of epidemiological studies", "Biostatistics I: Introduction for epidemiologists", "Biostatistics II: Logistic regression for epidemiologists" and "Biostatistics III: Survival analysis for epidemiologists"or corresponding courses.
Purpose of the course : The purpose of this advanced course is to provide an introduction to the tools of statistical modeling.
Learning outcomes : After successfully completing this course the students should be able to do the following independently of others: - explain the concepts of marginal and conditional distributions, - illustrate the relationship between cumulative distribution, probability mass/density, quantile, sparsity, cumulative hazard, and hazard functions, - propose possible models for the above functions both marginally and conditionally on covariates, - identify suitable models to answer scientific research questions and motivate the choice, - estimate the parameters of the above functions, and - use standard statistical software, evaluate the fit of the model, and critically interpret the results.
Contents of the course : The students are introduced to a general framework for data analyses that hinges on creating statistical models. The course focuses on the intricacies and potentials of modeling in a number of examples and real-data applications. The range of the covered examples is broad, and some examples are worked out in greater details than others. The course will enable students to gain an advanced knowledge of (1) random variables, (2) joint and conditional probability distributions, (3) modeling tools, (4) interpretation of statistical models, (5) relations between known methods, (6) estimation tools, (7) computer programming. The students will improve the level of knowledge of the foundations for data analysis, statistical practice, and use of statistical software. They will also be prepared to pursue more advanced studies in statistics. The focus of the course is on analysis of real data and interpretation.
Teaching and learning activities : The course activities are based on lectures and computer exercises, exercises not requiring statistical software, and literature review. We will provide laptop computers to all participants, but participants are welcome to bring their laptops if they prefer.
Examination : Individual written examination based on practical application of the course content, where the student has to show that all the intended learning outcomes have been achieved. Students who do not pass the examination will be offered a second examination within two months from the end of the course.
Compulsory elements : The individual examination (summative assessment) is compulsory.
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information : The individual examination will be performed as a take-home examination.

Course responsible :
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Contact person :
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Institutet för miljömedicin

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Title : Open science and reproducible research

Course number : 2963
Credits : 3.0
Date : 2018-03-05 -- 2018-03-16
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements :
Purpose of the course : The purpose of the course is to provide an overview of current challenges in reproducibility and to provide tools and skills for students wishing to practice science openly.
Learning outcomes : After the course, students should be able to: - Analyse reproducibility problems in science, including the impact of analysis flexibility and questionable research practices, and identify practices contributing to improved reproducibility - Account for principles of replication research - Preregister research protocols and assess others' preregistered research protocols - Openly publish scientific works including data and code, and find and make use of scientific works, including data and code, published by others.
Contents of the course : - The "reproducibility crisis" in biomedical sciences: what is it? - Research fraud and questionable research practices - Impact of bias due to analysis flexibility - Observed statistical power and implications for inference - Comprehensive methods reporting and field-specific guidelines - Preregistration of protocols - Replication research - Open access publishing - Open materials, open data, and open code - Introduction to principles of data re-use in secondary analyses and meta-analyses
Teaching and learning activities : The course will contain lectures, seminars, workshops, and a final assignment. The purpose of the lectures is to introduce the concepts covered by the course and to situate them in context. The seminars will cover the course literature, which the students will be expected to critically appraise. Computer-assisted workshops will be used as interactive learning activities to cover some parts of the course, e.g. statistical power.
Examination : Examination consists of an assignment where students will be able to choose a topic related to the course content, and write a short report. For example, they may compare a preregistered protocol to the published scientific paper, or they may attempt to replicate results from a published paper using openly published data. This assignment will be presented before the class and students will give comments on each others' presentations.
Compulsory elements : Participation in the seminars and labs is mandatory. Absence from a seminar may be compensated by writing a short reflection paper on the literature for that seminar. Participation in the final assignment presentation session is also mandatory.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course will be held at Campus Solna. Materials from when the course was given in the spring of 2017 are available here: https://osf.io/fa9rg/. The course is given jointly by the doctoral programmes in Neuroscience and Cell biology and genetics. See: http://ki.se/medarbetare/forskarutbildningsprogram.

Course responsible :
Gustav Nilsonne
Department of Clinical Neuroscience

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Contact person :
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Title : Medical research ethics

Course number : 2964
Credits : 1.5
Date : 2018-02-12 -- 2018-02-16
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 to provide the doctoral student with tools to deepen his or her knowledge of medical research ethics and good research practice; and to enhance the doctoral student's ability to critically discuss and reflect upon ethical questions that can derive from research. This is to provide the doctoral student with enhanced possibilities to reflect on ethical aspects of his or her own research.
Learning outcomes : After having completed the course, the doctoral student should: - be able to give an account of important research ethical theories and principles. - be able to identify, analyze and discuss ethical problems in research on humans and animals - have an ethical approach to research
Contents of the course : The course includes the following: - Important research ethical theories and principles. - Ethical guidelines on how to conduct research, such as the Helsinki Declaration. - Cases that are problematic from an ethical point of view. - Ethical aspects concerning research on humans. - Informed consent and its ethical basis. - Ethical aspects concerning research on animals, including arguments for and against using animals for research purposes, as well as the three R:s. - Deviations from good research practice, fraud, fabricated data and plagiarism - Handling of authorship in scientific writing - Conflicts of interest in research - Ethical review - Important concepts and positions in philosophy of science, and connections between philosophy of science and research ethics
Teaching and learning activities : Lectures, group work and general discussions.
Examination : The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group.
Compulsory elements : Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.
Number of students : 30 - 35
Selection of students : Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation).
More information :

Course responsible :
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Contact person :
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Title : Medical research ethics

Course number : 2964
Credits : 1.5
Date : 2018-05-14 -- 2018-05-18
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 to provide the doctoral student with tools to deepen his or her knowledge of medical research ethics and good research practice; and to enhance the doctoral student's ability to critically discuss and reflect upon ethical questions that can derive from research. This is to provide the doctoral student with enhanced possibilities to reflect on ethical aspects of his or her own research.
Learning outcomes : After having completed the course, the doctoral student should: - be able to give an account of important research ethical theories and principles. - be able to identify, analyze and discuss ethical problems in research on humans and animals - have an ethical approach to research
Contents of the course : The course includes the following: - Important research ethical theories and principles. - Ethical guidelines on how to conduct research, such as the Helsinki Declaration. - Cases that are problematic from an ethical point of view. - Ethical aspects concerning research on humans. - Informed consent and its ethical basis. - Ethical aspects concerning research on animals, including arguments for and against using animals for research purposes, as well as the three R:s. - Deviations from good research practice, fraud, fabricated data and plagiarism - Handling of authorship in scientific writing - Conflicts of interest in research - Ethical review - Important concepts and positions in philosophy of science, and connections between philosophy of science and research ethics
Teaching and learning activities : Lectures, group work and general discussions.
Examination : The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group.
Compulsory elements : Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.
Number of students : 30 - 35
Selection of students : Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation).
More information :

Course responsible :
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Title : Medicinsk forskningsetik

Course number : 2964
Credits : 1.5
Date : 2018-03-12 -- 2018-03-16
Language : Swedish
Level : Forskarnivå
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : Syftet med kursen är att fördjupa den forskarstuderandes förståelse för medicinsk forskningsetik och god forskningssed; samt att förbättra den studerandes förmåga att kritiskt reflektera och argumentera kring etiska problem som kan uppstå i samband med forskning. Detta i syfte att ge den forskarstuderande förbättrade möjligheter att reflektera kring etiska aspekter av den egna forskningen.
Learning outcomes : Den forskarstuderande ska efter avslutad kurs: - kunna redogöra för centrala forskningsetiska teorier och principer. - kunna identifiera, analysera och diskutera etiska problem som kan uppstå i samband med forskning på människor och djur. - ha ett forskningsetiskt förhållningssätt.
Contents of the course : Kursen innehåller följande moment: - Centrala forskningsetiska teorier och principer. - Forskningsetiska riktlinjer, t ex Nürnbergkoden och Helsingforsdeklarationen. - Forskningsetiskt problematiska fall. - Etiska aspekter på forskning på människor. - Informerat samtycke och dess etiska grund. - Etiska aspekter på djurförsök, innefattande argument för och mot att använda djur för forskningsändamål, samt "de tre R:en". - Avvikelser från god forskningssed, fusk, fabricerade data och plagiat. - Hantering av vetenskapligt författarskap (medförfattarskap, författarordning). - Intressekonflikter i forskningen. - Etikprövning. - Centrala vetenskapsteoretiska begrepp och positioner, och dess relevans för forskningsetik.
Teaching and learning activities : Föreläsningar, grupparbeten och plenumdiskussioner.
Examination : Deltagaren genomför en skriftlig forskningsetisk reflektion företrädesvis angående det egna forskningsprojektet. Ett fåtal studenter ges möjlighet att muntligt redovisa en forskningsetisk reflektion, i relation till samtliga lärandemål, angående sin forskning för samtliga deltagare.
Compulsory elements : Gruppdiskussioner och plenumdiskussioner är obligatoriska. Vid frånvaro kan studenten i viss utsträckning kompensera detta genom att lämna in skrivna svar angående de fall som diskuterats.
Number of students : 30 - 35
Selection of students : Urvalet baseras på 1) datum för doktorandregistrering (där tidigare registreringsdatum har förtur), 2) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering).
More information :

Course responsible :
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Contact person :
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Title : Medical research ethics

Course number : 2964
Credits : 1.5
Date : 2018-04-09 -- 2018-04-13
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : The objective of this course is to provide the doctoral student with tools to deepen his or her knowledge of medical research ethics and good research practice; and to enhance the doctoral student's ability to critically discuss and reflect upon ethical questions that can derive from research. This is to provide the doctoral student with enhanced possibilities to reflect on ethical aspects of his or her own research.
Learning outcomes : After having completed the course, the doctoral student should: - be able to give an account of important research ethical theories and principles. - be able to identify, analyze and discuss ethical problems in research on humans and animals - have an ethical approach to research
Contents of the course : The course includes the following: - Important research ethical theories and principles. - Ethical guidelines on how to conduct research, such as the Helsinki Declaration. - Cases that are problematic from an ethical point of view. - Ethical aspects concerning research on humans. - Informed consent and its ethical basis. - Ethical aspects concerning research on animals, including arguments for and against using animals for research purposes, as well as the three R:s. - Deviations from good research practice, fraud, fabricated data and plagiarism - Handling of authorship in scientific writing - Conflicts of interest in research - Ethical review - Important concepts and positions in philosophy of science, and connections between philosophy of science and research ethics
Teaching and learning activities : Lectures, group work and general discussions.
Examination : The doctoral student writes an essay on a research ethical theme, in relation to all intended learning outcomes, preferably related to his or her own research. A small number of students get the opportunity to orally present an ethical reflection concerning their research in front of the whole group.
Compulsory elements : Attendance is mandatory for the group work and general discussions. If the student is absent, he or she can to some extent compensate by handing in written answers concerning the cases that have been discussed.
Number of students : 30 - 35
Selection of students : Selection will be based on 1) date for registration as a doctoral student (priority given to earlier registration date), 2) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation).
More information :

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

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Contact person :
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Title : Methods for life course epidemiology

Course number : 2968
Credits : 1.5
Date : 2018-04-16 -- 2018-04-20
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Knowledge equivalent to "Epidemiology I: Introduction to epidemiology", "Biostatistics I: Introduction for epidemiologists", "Epidemiology II: Design of epidemiological studies", "Biostatistics II: Logistic regression for epidemiologists" and "Biostatistics III: survival analysis for epidemiologists" or corresponding courses.
Purpose of the course : The course critically reviews life course theory and methods for analysis of longitudinal data with applications to life course epidemiology. A special focus is put on discussing and applying methods for mediation analysis.
Learning outcomes : After successfully completing this course, the student is expected to be able to: - Discuss the most common life course models and their implications for health policy - Evaluate strengths and limitations in using register data for research in life course epidemiology - Explain the applicability of visualization techniques for research in life course epidemiology - Identify and apply appropriate methods for mediation analysis - Perform mediation analysis, and interpret and communicate the derived results - Critically appraise evidence from life course epidemiological studies.
Contents of the course : This course focuses on an overview and critical discussion of life course theory and methods for analysis of longitudinal data with applications to life course epidemiology. We shall review, discuss and apply different approaches to addressing common challenges in register-based, life course and intergenerational research through both methodological innovations and adaptation of existing statistical methods. Examples of techniques to be discussed and applied include methods for visualizing and modeling changes in categorical variables, modeling the effects of binary exposure variables over the life course, and techniques for mediation analyses. We shall also discuss and apply concepts and methods from the field of causal inference to life course studies. The statistical software used in the lectures and computer labs is Stata.
Teaching and learning activities : Lectures, computer labs and individual and group work involving analysis of real-life research problems using longitudinal data and a statistical software (Stata).
Examination : To pass the course, the student has to show that the intended learning outcomes have been achieved. The assessment methods used in this course are individual and group assignments (formative assessment) and an individual take-home examination (summative assessment). The focus will be on application of methods to research problems and interpretation of results, rather than mathematical detail. The examination is viewed as contributing to the development of knowledge, rather than a test of that 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.
Compulsory elements : Individual written examination (summative assessment).
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information : The individual examination will be performed as a take-home examination.

Course responsible :
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Title : Introduction to R - data management, analysis and graphical presentation

Course number : 2971
Credits : 2.5
Date : 2018-04-04 -- 2018-05-07
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.
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 theroretical background, underlying assumptions or the theoretical intepretation of the results.
Teaching and learning activities : Lectures and online video material, practical exercises (individual and group assignments), peer assessment of other students' solutions.
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 extention of the deadline.
Number of students : 18 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course is held at Karolinska University Hospital Huddinge. Course dates: 4/4, 6/4, 13/4, 20/4, 27/4, 4/5, 7/5. Between these course dates, there will be deadlines for mandatory home assignments. Laptop required for programming exercises. The duration of the course has been extended from 1.5 to 2.5 credits. The evaluation report link refers to the previous, shorter version of the course (course number 2657).

Course responsible :
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Title : Anaesthesia, analgesia and surgery (mice and rats)

Course number : 2996
Credits : 1.5
Date : 2018-05-15 -- 2018-05-17
Language : English
Level : Doctoral level
Responsible KI department : Comparative medicine
Specific entry requirements : Students need to complete a laboratory animal science course on how to carry out scientific procedures on the appropriate animal species i.e. EU Function A or equivalent course.
Purpose of the course : 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 techniques to in vivo studies enhances outcomes from research studies, reduces data variability, and is perceived as ethically acceptable. The course 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.
Learning outcomes : The course is designed to meet the learning outcomes specified by the training recommendations supplied as an annex to EU Directive 2010/63/EU. Swedish legislation was amended to meet the requirements of this Directive in 2013. After completion of this course, the students should be able to meet the defined learning outcomes as set out in the EU 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 the endorsed 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.
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 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 module provides information about possible complications, post-operative care and monitoring along with details of the healing process. It also covers more practical elements for example the demonstration of commonly used instruments and provides an opportunity for trainees to practice some of the practical aspects of basic surgical technique, such as methods of suturing, and using appropriate non-animal models.
Teaching and learning activities : The course will adopt a blended learning approach that combines seminars, discussions, interactive sessions and practical components. Nine seminars will be given: - Introduction to anaesthesia - basic principles and definitions, anaesthesia and the 3Rs (replacement, reduction and refinement), selection of anaesthetics. - Preparation for anaesthesia, inhalational anaesthesia. - Injectable anaesthetics. - Monitoring anaesthesia and intra-operative care. - Long term anaesthesia and use of ventilators and neuromuscular blocking drugs. - Post-operative care - fluids, nutrition and nursing care. - Pain assessment and pain alleviation. - Surgery and aseptic techniques (1). - Surgery and aseptic techniques (2). Two interactive problem based sessions will be included, using Audience response systems to facilitate discussions. An audience response system will also be used throughout the seminars to encourage participation and engagement by the students. The seminars incorporate video material and supplemental material is provided via on-line e-learning components. Laboratory practical sessions (5-6 hours) on anaesthesia and surgical skills are interspersed with the seminars and interactive sessions.
Examination : Practical skills are assessed during the laboratory session using DOPS (direct observation of practical skills), and a short answer/multiple choice question final written examination is held following conclusion of the course. A pass/fail criteria will be used as a global rate for this course, a level of supervision for the prospective work on animals will be assigned, as suggested in the EU guidelines endorsed by the Swedish competent authority for the protection of animals used in science.
Compulsory elements : All sessions and active student participation are compulsory if the student is to be provided with certification of the successful completion of the course. Missed parts of the course as a consequence of a well-justified absence will need to be compensated after agreement with the course director e.g. with written assignment or in future course editions.
Number of students : 8 - 16
Selection of students : Selection will be based on the relevance of the course syllabus for the applicant's doctoral project (need to use anaesthetic or surgical techniques in rodent models), which will be according to written motivation. If necessary, additional selection criterium will be used based on the date for registration as a doctoral student (priority given to earlier registration date).
More information : Face-to-face teaching will be held from Tuesday to Thursday between approx. 9am and 5pm. Location: Learning Lab, von Eulers väg 4A, 2nd floor. Key topics of this course include basic and advanced anaesthetic and analgesia, and basic surgical procedures on laboratory animals, with focus on anaesthesia, pain recognition and analgesia in rodent models. The main instructor of this course is internationally-recognized expert Professor Paul Flecknell, MA, VetMB, PhD, DECLAM, DLAS, DECVA, (Hon) DACLAM, (Hon) FRCVS, author of the Handbook Laboratory Animal Anaesthesia, 4th Edition, and a number of research publications and educational

material in the field.

Course responsible :
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Contact person :
-

Title : Translational Paediatric Oncology in the Era of Immunotherapy and Omics

Course number : 3022
Credits : 1.5
Date : 2018-04-23 -- 2018-04-27
Language : English
Level : Doctoral level
Responsible KI department : Department of Women's and children's health
Specific entry requirements :
Purpose of the course : - To enable to obtain a comprehensive overview of the different domains within childhood cancer research and to understand the historical milestones forming the paradigms that have led to a cure of 8 out of 10 children with cancer - To give an insight into the current limitations and problems of childhood cancer treatment - To enable to get an understanding of how new methodologies in molecular biology increase our knowledge about tumourigenesis and tumour evolution. - To provide an opportunity to hypothesise and develop ideas about how to cure the remaining 2 out of 10 children with cancer.
Learning outcomes : At the end of the course the students should be able to: - Summarise the basic epidemiological data, tumor biology and genetics, novel therapy modalities like targeted therapies and immunotherapy, including side effects, late effects and follow up within the field of paediatric oncology. - Discuss the ethical issues around childhood cancer research. - Describe and understand the principles of treatment, existing therapies, new targeted therapies and personalized medicine. - Explain and theorize about the link between cancer cell biology, tumour microenvironment, immunology, genetics, and drug treatments - current and development of new drugs. - Understand and discuss the current experimental methodology applied to pediatric oncology research such as in vivo, in vitro and in silico models. - Critical comment on research findings regarding paediatric oncology research.
Contents of the course : Introduction to research on paediatric oncology for PhD students and junior postdocs, with research projects in this specific area or in an adjacent area. The students will be presented with and will discuss problems, possibilities, and research models that are specific for the research area of paediatric oncology. The course will provide a general introduction to the field and focus on distinct, but interconnected topics specific for paediatric oncology, namely ethics, epidemiology, tumor biology and genetics, existing and novel targeted drug treatments as well as immunotherapy, and side effects, late effects and follow up. The last day will be dedicated to a symposium with invited lecturers that are internationally renowned expert in their fields.
Teaching and learning activities : Lectures, seminars, group exercises with supervised discussions. To promote active discussion and participation, each student will prepare a poster and a short oral presentation on their current or intended research to be submitted no later than two weeks before the course start. The course will be complemented with a one-day research mini symposium.
Examination : To pass the course the students must show that they have reached the learning outcomes of the course. Each students should prepare a scientific poster on an actual or hypothetical childhood cancer research project, including one of the following topics: epidemiology, register research, tumour biology and genetics, novel therapy modalities like targeted therapies and immunotherapy, and give an oral presentation of the poster and answer to critical questions of the audience consisting of the course leaders and course participants. Each participant in the course needs to be able not only to answer questions in a satisfactory way but also to raise relevant questions and to be able to discuss in line with the intended learning outcomes of the course.
Compulsory elements : All course activities are compulsory. Absence can be compensated for by other activities in agreement with the course leaders.
Number of students : 8 - 28
Selection of students : Priority will be given to registered doctoral students with projects concerning pediatric oncology research who are in the later phase of their doctoral education. Thereafter student in an earlier phase will be prioritized while acceptance of post docs will be subjected to availability.
More information : Monday to Thursday are organized as full days with lectures, seminars and discussions. The course concludes with a symposium on Friday with several known experts in the field. The course will be held at Cancer Centre Karolinska (CCK) and the Astrid Lindgren Children's Hospital (exact rooms will be announced in due time). The symposium will take place at the Nobel Forum.

Course responsible :
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Title : Microbiota, metabolism and immunity in the development and treatment of malignancies

Course number : 3023
Credits : 1.5
Date : 2018-06-04 -- 2018-06-08
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biologi
Specific entry requirements :
Purpose of the course : The microbiota has emerged as an important arbitrator of health and disease. The impact of the microbiota on intestinal malignancies has gained much attraction. This course intends to impart knowledge and introduce analytical tools to critically assess current ideas and evidence underpinning the role of the microbiota in cancer development and their effects on therapeutic regimes.
Learning outcomes : At the end of the course the student is expected to: - Understand various ways to study the microbiota in health and disease - To assess what tools are available to study the function of the microbiota in cancer - Have basic knowledge about cancer pathology, especially gastrointestinal malignancies - To explore the molecular mechanisms underlying the impact of the microbiota on cancer development - To understand how the microbiota may be a determinant in influencing treatment strategies
Contents of the course : Cancer susceptibility is sometimes defined as gene-environment interaction. A critical component of our immediate environment is the commensal microbiota, which have a major impact on metabolism and immunity, two facets of physiology that impact on cancer. This course aims to convey current ideas and an understanding of the tools necessary to assess the slew of reports that link the microbiota to cancer development and treatment. The modules/lectures will explore how high throughput studies have been applied to assess this link, paying particular attention to the strength of the evidence and and limitations of the anaylses. Apart from lectures on metagenomics and metabonomics, students will be introduced to basic diagnostic cancer histopathology and molecular diagnostics, as well as to breakthroughs in exploratory translational research. A final goal is that the students shall be able to critically assess the research published on this subject and formulate the necessary criteria to test their assumptions. This can be in the form of a defined research project.
Teaching and learning activities : The course will be organized as a series of lectures coupled with defined discussion topics, led by selected lectures. All students are to participate in the scheduled group discussions with invited experts/lecturers. Students are also very much encouraged and expected to engage in critical dialectic constructive discussions throughout the course ("Filip och Fredrik pedagogic"). The students will be provided before the starting of the course with material that they should read in advance and that will be used as base for the lectures and discussions.
Examination : To pass the course the students must show that they have reached the learning outcomes of the course. This will be assessed formatively during the group discussions with the lecturers where students will be divided in group of 2-3, and by an individual assessment based on writing a microbiota-cancer project related to their own research interests.
Compulsory elements : Attendance to the lectures, scheduled discussions and seminars is compulsory. In special cases, with limited absence, the student can compensate with a written report upon discussion with the course organisers.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : We intend to start with a brief presentation of research interests of participants and their expectations of the course.
 1. Three and a half days of lectures, seminars and theory discussion sessions
 2. One lab visit (microbiota sequencing laboratory)
 3. Two afternoons of research proposal preparations
 4. Presentation of research proposal

Course responsible :
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Contact person :
-

Title : Advanced cancer biology

Course number : 3024
Credits : 3.0
Date : 2018-01-09 -- 2018-06-12
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biologi
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.
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 in the MTC-seminar room, A 302, Nobels väg 16, KI Campus Tuesdays at 1 pm, unless else stated.

Course responsible :
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Title : Advanced Cell Culture - modelling with human induced pluripotent stem (iPS) cells

Course number : 3025
Credits : 3.0
Date : 2018-01-22 -- 2018-02-02
Language : English
Level : Doctoral level
Responsible KI department : Department of Neuroscience
Specific entry requirements :
Purpose of the course : The purpose of the course is to give students training on advanced cell culturing and how to implement them in medical research for cancer treatment and regenerative medicine. The participants will be given the opportunity to develop basic hands-on skills in how to culture human iPS cells and other human cell types
Learning outcomes : After the course, the student is expected to: - Be able to describe the basic knowledge on how to culture human induced pluripotent stem (iPS) cells. - Be able to critically assess how cultured cells can be used in therapies today. - Understand organoid culturing and their role in medical research. - Acquire basic knowledge on tissue engineering and critically assess their future implementation in research. - Discuss how cell cultures can be developed in medical research and how to implement their use within the frame of their current and future research activities.
Contents of the course : The course covers a wide variety of topics involving cell culturing, including; sources (human) of cells for culturing, growth conditions, monitoring, basic quality analysis of cells in culture, culturing of cells in monolayers, as organoids and in co-cultures with other cells types. Strong emphasis will be given to practical hands-on sessions. Throughout the course, the concept of good manufacturing practice (GMP) for human cell cultures and the practical use of cell cultures for disease modeling, regenerative medicine and cancer treatment will be strongly implemented.
Teaching and learning activities : To provide a comprehensive and practical hands course, several teaching activities will be combined during the course, including lectures, laboratory practice, group discussion, presentation of a research proposal and study visit to laboratory implementing human cell cultures in production.
Examination : The course assignment will consist on a formative assessment based on individual presentation of a research proposal. The proposal is focusing on the study design of the cell culture experiments demonstrating that they can design a cell culture experiment and put cell culturing into context of a specific scientific question, related to their scientific activities. The course organizers will lead the examination, providing feedback during the presentation in line with the concept of formative assessment, and they will be further responsible for the summative individual assessment.
Compulsory elements : Laboratory practice, group tasks and presentations are mandatory
Number of students : 8 - 16
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant¿s doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Lectures will be held at the department of Neuroscience in Solna. Hands-on cell culturing will be performed at the MTC course lab in Solna.

Course responsible :
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Title : Cell cycle, cancer and anti-cancer targets

Course number : 3026
Credits : 1.5
Date : 2018-03-19 -- 2018-03-23
Language : English
Level : Doctoral level
Responsible KI department : Department of Cell and Molecular Biology
Specific entry requirements :
Purpose of the course : The course aims to provide the students with an updated overview of the cutting edge research activities within the fields of cell cycle and oncology focusing on the role of cell cycle (de)regulation as a cause and possible treatment opportunity for cancer.
Learning outcomes : The course is organized to encourage analytical and critical thinking. At the end of this course, students should: - be able to understand, analyze and criticize current strategies towards exploiting the available information on cell cycle regulation, tumor suppressors and oncogenes for the development of novel therapeutics, - evaluate the relevance of the topics presented for their future research activities and PhD studies
Contents of the course : The course contains approximately 10 seminars/lectures, held by invited national and international prominent scientists, as well as 15 hours of discussion/problem-based learning. The speakers will be asked to give a comprehensive and pedagogical overview of the research area as well as an in depth discussion on their own research. Each seminar will be followed by a discussion led by the course organizers where the students are encouraged to interact with the invited speaker. To enable a fruitful discussion the students will have to read relevant literature in the field in advance of each seminar. The topics presented will cover the main aspects of the following themes: 1. Cell Cycle - molecular overview and biological functions 2. Oncogenes and tumor suppressors within the cell cycle 3. The connection between cell cycle and the hallmarks of cancer 4. Targeting aberrant cell cycle signaling in cancer - current therapeutics 5. Technological advances in cancer cell cycle therapeutics Each day will be dedicated to a cell-cycle phase/process and these themes will be incorporated.
Teaching and learning activities : The course is full-time. It will consist of approximately of 3 hours lectures/day. Each lecture will be followed by a discussion led by one of the course organizers. To increase the learning process and to stimulate the reflection on the seminars, the students will be required to study the most recent literature, still not present in the text books within the presented fields in advance of each seminar. Further, students will be required to individually present and discuss specific aspects of the content.
Examination : As assessment, students will be evaluated based on their contributions i) to the discussion during the problem-based learning of each topic; ii) in connection to an individual presentation on a specific topic assigned at the beginning of the course.
Compulsory elements : Students are expected to attend and participate in all lectures, presentations and discussions. In the case of absence, the student will be asked to read a relevant review and/or original research article on the topic missed, summarize it and discuss it with the organizer of the course at a convenient time by appointment.
Number of students : 8 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Information about the venue and material necessary for the course will be communicated to the students in due time.

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

Course number : 3027
Credits : 3.0
Date : 2018-02-26 -- 2018-03-09
Language : English
Level : Doctoral level
Responsible KI department : Department of Biosciences and Nutrition
Specific entry requirements :
Purpose of the course : To increase the understanding of the basic principles of bioinformatics and to gain practical skills in bioinformatics analysis of genomic sequencing data.
Learning outcomes : After the completed course, the participants will be able to understand the principles and perform basic bioinformatics analysis of genomics sequencing data. The participants will be able to plan experimental designs and to critically evaluate the appropriateness of the different sequencing based omics methods and technologies for genome-wide gene regulation studies.
Contents of the course : Principles of gene regulation in non-disease cases and dysregulation in diseases at individual locus level as well as on genome-wide level. Principles of sequencing based genomics technologies and corresponding bioinformatics data analysis. Concrete bioinformatics data analysis by the students of selected published projects.
Teaching and learning activities : The course consists of preparatory work, lectures, discussion, seminars and hands-on bioinformatics analysis.
Examination : The students will be examined for all learning outcomes by their performance in (a) submitted replies to tasks given for course week 1, (b) discussions and quizzes during the course week 2, and (c) individual presentations at the last course day of their bioinformatics analysis results conducted during course week 2.
Compulsory elements : The preparation is done in the first course week without the need to be present on-site. Week 2 consists of tasks, lectures, discussions, seminars and hands-on practicals. Both parts are compulsory. Absence has to be compensated for according to the instructions from the course leader.
Number of students : 15 - 20
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course is given in collaboration with the RIKEN Division of Genomic Technologies (http://www.riken.jp/en/research/labs/clst/genom_tech/). The course faculty consists of invited speakers from the RIKEN Division of Genomic Technologies and Karolinska Institutet. Note that during the first week of the course the participants will work on their own at their own departments and there is no room/study space booked for this part. The second week of the course takes place at CMB, KI, seminar room A216, entrance Berzelius v 35.

Course responsible :
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Title : Grundkurs i SPSS

Course number : 3028
Credits : 1.5
Date : 2018-03-12 -- 2018-03-19
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. 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.
Learning outcomes : Efter kursen skall doktoranden: - Ha grundläggande kunskaper om statistikprogrammet SPSS för att skapa strukturerade datafiler, modifiera data, samt skapa grafer och tabeller med hjälp av programmets menysystem. - Självständigt kunna skapa en datafil utifrån ett protokoll/enkät och mata in data. - Självständigt kunna definiera, sortera, modifiera och selektera data för enklare situationer. - Självständigt kunna skapa grafer och avancerade tabeller och göra enklare redigeringar. - 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. 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 presentationsfärdiga rapporter som möjligt lär vi oss även att redigera resultatet av analysen. Ändamålet är att hjälpa dig att effektivisera ditt arbete och snabbt komma igång med SPSS.
Teaching and learning activities : Denna kurs som sträcker sig över 5 dagar (2 dagar workshop + en övningsuppgift med avslutande seminarium).
Examination : Examination av kursen består av en hemuppgift som redovisas muntligt och skriftligt.
Compulsory elements :
Number of students : 15 - 20
Selection of students : Urvalet baseras på 1) kursplanens relevans för den sökandes doktorandprojekt (enligt motivering), 2) datum för doktorandregistrering (där tidigare registreringsdatum har förtur).
More information : Måndag och tisdag hålls kursen fysiskt vid Danderyds sjukhus hus 18 plan 5. Lokal annonseras senare.

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

Course number : 3029
Credits : 4.5
Date : 2018-03-05 -- 2018-04-25
Language : English
Level : Doctoral level
Responsible KI department : Department of Neurobiology, Care Sciences and Society
Specific entry requirements :
Purpose of the course : To develop knowledge about the methodological underpinnings of visual and observation methods, which are utilized within health care sciences research
Learning outcomes : Based on theoretically relevant tools, upon completion of the course the student is expected to be able to: - analyse and explain the rationale for methodological approaches using participant observation, photographic data generation, and video observations. - critically compare different visual methodological approaches in relation to research questions. - demonstrate practical skills with theoretically grounded arguments for the choices made in data gathering and analysis related to different visual methods. - demonstrate critical reasoning about ethical issues concerning the collection of, and working with, visual data in healthcare sciences.
Contents of the course : Engaging the visual senses in healthcare science research can be done in many ways. Visual methods are here used to include ethnographic observations as well as photographic and video observations. The visual evokes elements of human consciousness that can serve as a compliment to words, when words are insufficient or at times not at all accessible. The course content includes studies of theoretical underpinnings of methodological and ethical issues related to visual methods. Students will work with participant observation, photography, and video as methods while exploring these techniques in different methodological paradigms. Students will also explore different analysis with data in the course or from their own research projects.
Teaching and learning activities : This course is designed to have short trigger lectures alternated with active experiential learning tasks, workshops, seminars, and individual assignments/project work. The course requires active involvement of the student through participation in the various types of learning activities.
Examination : The examination will consist of an individual oral presentation followed by a questions and answers session and an individual short written report. Results will be assessed as Pass/not pass.
Compulsory elements : All learning activities except the lectures are mandatory. Absence can only be compensated for in agreement with the course organizer.
Number of students : 10 - 15
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : Course dates are set for: 5-7 March, 11-13 April, and 23-25 April, 2018. The course will have campus attendance at Alfred Nobels Alle 23 (Flemingsberg) and online.

Course responsible :
Eric Asaba
Department of Neurobiology, Care Sciences and Society
0852483838
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Contact person :
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Title : Human Papilloma Virus - from molecular biology to global health - an eLearning course

Course number : 3030
Credits : 1.5
Date : 2018-02-05 -- 2018-03-09
Language : English
Level : Doctoral level
Responsible KI department : Department of Laboratory Medicine
Specific entry requirements : The pre-course knowledge prerequisites are BSc or equivalent in biomedicine.
Purpose of the course : The course aims to provide knowledge of the scientific background of the biology of Human Papilloma Virus (HPV) infection, the burden of HPV associated diseases, screening and vaccination. In this one-week course on the global health importance of Human Papilloma Virus (HPV) infection, you will learn about HPV molecular biology and mechanisms of virus-induced cancer, screening of cervical samples, using HPV testing as well as bioinformatic analysis and methods for quality assurance and follow-up of programs of HPV-based screening and vaccination. You will explore how this knowledge can be applied to reduce the risk of disease. Taking part in an online discussion thread will give you a chance to reflect on the impact of HPV vaccination and screening in society. You will also learn about HPV analysis methods.
Learning outcomes : On completion of the course the student should be able to: 1 Understand and describe HPV infection and the burden of HPV-associated diseases. 2 Understand and describe methods for detection of HPV and the bioinformatics methods for HPV classification. 3 Describe the best practice for organized cervical screening. 4 Assess internationally standardized quality indicators of cervical screening 5 Interpret and validate results from screening and vaccination and their implications on the cancer burden.
Contents of the course : Block 1, Day 1-3: Molecular Biology of HPV Block 2, Day 3-4: Cervical Screening and HPV vaccination Block 3, Day 5-6: Quality Assurance and Follow-up of HPV-targeted Cancer Control
Teaching and learning activities : The course is internet-based and is open for 5 weeks in total. Each day in the first week video lectures, assignments relating to the contents of the video lectures and supplementary material in the form of open access scientific articles will be released. In some cases, the assignments will be in the form of lecture quizzes and in some cases you will be asked to post in a discussion forum.
Examination : You will need to have completed the learning activities before being able to participate in the final examination. Examination will be scheduled on two occasions, one immediately after the first two weeks and the other after five weeks. Using a webcam, you will identify yourself by taking a photo of yourself together with your government-issued photo ID. Examination will be internet-based in the form of multiple choice questions and writing assignments.
Compulsory elements : Participation in lecture quizzes, discussion thread, and examination is mandatory. The discussion thread will be organized and supervised according to the established format of the open source eLearning software Moodle. The teachers supervising the discussion thread will ensure that the participants reach the pre-defined educational goals.
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) date for registration as a doctoral student (priority given to earlier registration date)
More information : This is an online course.

Course responsible :
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Contact person :
Ulla Rudsander
Institutionen för laboratoriemedicin

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Title : Introduction to teaching

Course number : 3031
Credits : 1.5
Date : 2018-03-13 -- 2018-04-12
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : The purpose of this course is to introduce a variety of teaching and learning methods, and to stimulate a reflective approach to teaching in order to enhance students' meaningful learning and active involvement.
Learning outcomes : At the end of the course we expect you to: - Be able to explain general aspects of how to facilitate student learning in different teaching situations - Be able to reflect upon own teaching experiences and use educational concepts in a discussion about teaching and learning
Contents of the course : During the course we will discuss and elaborate on practical issues regarding teaching and learning in laboratory, seminars and lectures. We will discuss and work with ways to challenge students and what to do to facilitate their learning. Course participants will observe (auscultate) teaching and reflect upon their experiences. We will touch upon the role of the teacher and KI teaching policies as well as strategies for coping with stress.
Teaching and learning activities : The course is designed to promote active learning and a variety of teaching and learning strategies will be used during the course. Examples are lectures, small group discussion, peer teaching, group work, literature studies, auscultation of teaching and reflection in groups.
Examination : To satisfactorily complete this course you must demonstrate that you have reached the learning outcomes by orally presenting your reflections of literature studies and auscultation of teaching.
Compulsory elements : The assessment seminar the last day of the course is mandatory. If absent, the student need to present his/her knowledge at a separate occasion.
Number of students : 15 - 30
Selection of students : Priority will be given to doctoral students who have just started or soon will be involved in teaching and that have no teacher training.
More information : The course is based on theories of experiential learning, a reflective approach and learning through active participation and collaboration. In order to learn as much as possible from the course it is important to be present at scheduled meetings and, where appropriate, be prepared for them. The course is scheduled 13 March, 22 March and 12 April. In addition, time for reading and auscultation must be planned by the course participants. The course is given in English. The course is equal with the previous course number 2686 - Introduction to teaching at KI.

Course responsible :
Mohammed Seed Ahmed
Department of Learning, Informatics, Management and Ethics

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

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Title : Mixed methods: integration of qualitative and quantitative data within applied health research

Course number : 3032
Credits : 3.0
Date : 2018-04-02 -- 2018-05-01
Language : English
Level : Doctoral level
Responsible KI department : Department of Public Health Sciences
Specific entry requirements : Students must be familiar with the basics of qualitative and quantitative research before joining the course.
Purpose of the course : Health research problems are complex phenomena with multiple dimensions which are difficult to assess using quantitative or qualitative methodologies alone. Mixed-methods research is a methodology that combines both qualitative and quantitative research allowing the researcher a more comprehensive understanding of the issue under study. Mixed-methods pragmatic research designs provide strengths that offset the weakness of both quantitative and qualitative studies. This course will provide Ph.D students with the theoretical tools and practical experience to design, conduct and report mixed-methods studies in health research.
Learning outcomes : At the end of the course the students will: 1. Design a mixed-methods research question (s). 3. Apply different mixed-methods research designs to a health problem. 4. Write a mixed-methods research protocol. 5. Report the results of a mixed-method study. 6. Use mixed-methods to design and evaluate interventions studies. 7. Evaluate the quality of scientific manuscripts using mixed-methods designs.
Contents of the course : 1. Definitions of mixed-methods research. 2. Worldviews and mixed-methods research. 3. Writing a mixed-methods research protocol. 4. Choosing a mixed-methods design. 5. Integrating results in mixed-method studies. 6. Reporting and disseminating mixed-method studies. 7. Application of mixed-methods research in interventions studies. 8. Evaluating the quality of mixed-methods studies.
Teaching and learning activities : The course will start by discussing the quantitative and qualitative research designs and how both research paradigms can be combined to strengthen each other. The course will combine face-to-face lectures, online practical assignments/discussions, self-study and oral presentations. Face-to-face lectures and other activities will be conducted once a week for a period of five weeks. Once a week lectures will allow the students to reflect on the given material and to apply this new knowledge to the practical assignments. Practical assignments will be discussed with the group and feedback will be given.
Examination : Course assignments and take home examination. Both will be graded as fail or pass. In order to pass the course, the student need to pass the assignments and the take home examination. The course assignments will guide the students through the steps needed to design a mixed-methods protocol. Take home examination. The aim of the examination is to test the students on what they have learned over the duration of the course and how well they can apply it. The take home examination will consist on open ended questions where the students will appraise the quality of published mixed-methods studies and the structure of mixed-methods protocols among other topics. The take home exam will have to be submitted through the KI online learning platform one week after the end of the course.
Compulsory elements : Participation in the online practical assignments and discussion will be mandatory.
Number of students : 8 - 15
Selection of students : Eligible doctoral students, with required prerequisite knowledge, will be selected based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information :

Course responsible :
Mariano Salazar
Department of Public Health Sciences

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Contact person :
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Title : Imaging in neuroscience: with a focus on MEG and EEG methods

Course number : 3035
Credits : 1.5
Date : 2018-02-05 -- 2018-02-09
Language : English
Level : Doctoral level
Responsible KI department : Department of Clinical Neuroscience
Specific entry requirements : Background in medicine, biomedicine, biology, psychology, cognitive science, medical imaging, computational biology or similar.
Purpose of the course : The main purpose of the course is to provide the students with a solid understanding of the tools available to analyze brain activity data measured with magnetoencephalography (MEG) and electroencephalography (EEG). The students will develop the ability to critically review results provided by different methods, to select the most adequate tools and experimental designs to answer different questions and to compare their relative advantages.
Learning outcomes : After attending the course the student should be able to: 1) follow the usual preprocessing steps of MEG and EEG; 2) give an overview of different methods to analyze the data and explain when to use them; 3) conduct MEG and EEG analysis using several methods; 4) describe different aspects of experimental design to have in consideration when creating a MEG and EEG study; 5) give a brief overview of the usage of MEG and EEG to study brain function; 6) give a brief overview of other techniques to study brain function non-invasively and describe their relative merits and challenges.
Contents of the course : The course focuses on experimental design and analysis of MEG and EEG data. We will briefly introduce the basis of the MEG and EEG signal at a neural level, and how it is measured by the different sensor technologies applied in MEG and EEG. The data processing steps, before statistical analysis, will be explained. The application of general linear model analysis, parametric and nonparametric tests of MEG and EEG data will be explained, including correction for multiple comparisons. We will review experimental design considerations for developing MEG and EEG paradigms. The study of functional connectivity using MEG and EEG data will be introduced. Finally, we will also introduce machine learning techniques for functional data.
Teaching and learning activities : The students will attend lectures, implement different steps of the data preprocessing and analysis during the hands-on sessions, present and discuss results.
Examination : The learning outcomes will be assessed throughout the course during the hands-on sessions where the students have to perform data analyses. The students will also complete a more extensive assignment based on one of the hands-on sessions. In the final day of the course the students will present and discuss their assignments with the rest of the group.
Compulsory elements : All parts of the course are mandatory. Absence can be compensated for by completion of an assignment on the material covered in the missed course instance.
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) date for registration as a doctoral student (priority given to earlier registration date)
More information :

Course responsible :
Daniel Lundqvist
Department of Clinical Neuroscience

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Contact person :
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Title : Mouse necropsy

Course number : 3036
Credits : 1.0
Date : 2018-04-11 -- 2018-04-18
Language : English
Level : Doctoral level
Responsible KI department : Comparative medicine
Specific entry requirements : Students need to have completed a laboratory animal science course on how to carry out scientific procedures on mice i.e. EU Function A or equivalent course.
Purpose of the course : This two-day course will provide the students with the theoretical background of performing mouse necropsies, including procedures and methods to preserve organs and tissues for further morphological analysis. The course will primarily be practical. This should ultimately enable the students to perform complete mouse necropsies in a standardized and reproducible way.
Learning outcomes : After completion of this course, the participants of the course should 1) know how to carry out a necropsy in a mouse according to good veterinary and scientific practice, 2) understand the requirements needed to perform organ sampling through a standardized necropsy protocol. The practical learning outcomes based on a supervised training of mouse necropsies will provide the students with a basic knowledge to describe organ changes, how to document these and preserve the organs in such a way that further analysis can be performed on tissues that show a minimum of autolysis, thus providing optimal conditions for extracting useful information from mice.
Contents of the course : This course will provide a basic foundation to individuals who, perform research using experimental mouse models, and have to conduct a post-mortem examination to analyze morphological changes either due to experimental manipulation or due to introduced genetic changes. The course will provide a theoretical background to standardized mouse necropsies, sampling of organs, alternative ways of preserving these for further morphological analyses, as well as trimming of the organs and preparing these for sectioning for later evaluation using microscopy. A basic description of terms used to describe gross changes will be provided both in lectures and through recommended literature. The main part of the course will be devoted to practical necropsy training, where the participants will be actively supervised during the training.
Teaching and learning activities : The course will be based on pre-reading material on basic mouse anatomy and necropsy techniques, lectures on mouse necropsy, sample collection, tissue handling and fixation, practical demonstrations and individual practical training on such issues. Since the ultimate aim is to provide course participants with enough practical training to enable them to perform independent necropsies and tissue sampling this two day course will be split into 1+1 days with an intermittent period for personal training and reflection. In this way, participants will be given an intensive instruction and training during the first day, with a follow up providing feedback on an individual basis and more supervised training during the second day, which will follow after one week.
Examination : Practical assessments will be carried out by direct observation of skills and documentation of actions taken by learners during their training laboratory session. A short multiple choice question final written examination will also be held at the end of the course. A pass/fail criteria will be used as a global rate for this course.
Compulsory elements : All mouse necropsy sessions and active student participation are compulsory. Missed parts of the course as a consequence of a well-justified absence will need to be compensated after agreement with the course director e.g. with written assignment or in future course editions.
Number of students : 8 - 10
Selection of students : Selection will be based on the relevance of the course syllabus for the applicant's doctoral project (i.e. use of mouse models), which will be according to written motivation. If necessary, additional selection criterium will be used based on the date for registration as a doctoral student (priority given to earlier registration date).
More information : Face-to-face teaching will be held on April 11 and 18, 2018 between approx. 9am and 5pm. Location: Learning Lab, von Eulers väg 4A, 2nd floor. The main instructor of this course is Dr. Björn Rozell, DDS, PhD, DVM, Professor. This course is also recognized by the LAS E&T unit, Comparative Medicine, as a Continued Professional Development (CPD) activity in Laboratory Animal Science (LAS) for those working with mice as an experimental model.

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

Course number : 3037
Credits : 4.5
Date : 2018-02-26 -- 2018-04-13
Language : English
Level : Doctoral level
Responsible KI department : Department of Learning, Informatics, Management and Ethics
Specific entry requirements :
Purpose of the course : This course lays the foundation for the awareness of the potential of innovation and entrepreneurship. It will enhance your career opportunities inside and outside academia. The course will facilitate the discovery and identification of intellectual assets in the daily work. You will increase the awareness of the potential of innovation and entrepreneurship, by identifying opportunities for entrepreneurship in connection to research. In order to develop a business idea, whether in an economic or social context, you need to apply a number of business concepts. Relevant business tools will be introduced in order to develop a business idea stemming from research. The final step when exploring opportunities of entrepreneurship is to communicate and test your business idea on the market. For that purpose you will learn how to package an already developed business idea for introduction into the start-up world.
Learning outcomes : After the course, a doctoral student shall be able to; - demonstrate an understanding of the opportunities of innovation and entrepreneurship for utilisation of research, - discover and identify intellectual assets in their own research project, - explore the potential of different intellectual assets, - communicate a value proposition describing the need, approach, benefit and competition for identified intellectual assets, - assess their new skills and reflect on possible future effects, from ones individual perspective. - use design tools to gain an understanding for the user experience to develop solutions to user needs, - transform ideas into prototypes of products, services or processes, - use business tools such as business modelling to develop a potential business idea stemming from research, - assess their new skills and reflect on the possible future effects, from an organisational perspective. - identify and test the potential of a developed business idea, whether in an economic or social context, - package a business idea into a complete business plan, - communicate ("pitch") the business plan to people within the start-up world, such as potential investors, - assess their new skills and reflect on the possible future effects, from a societal perspective.
Contents of the course : Exploring entrepreneurial opportunities in research is a course divided into three modules. The first module begins with an introduction to entrepreneurship, what it is and how it can be used in the doctoral education. The doctoral students are then given a number of practical tools to identify intellectual assets within daily work to use in a minor innovation projects based on their own research. The second module begins with an introduction to prototyping using the design thinking approach. The doctoral students are then given a number of business tools to develop a business opportunity, stemming from their research, into a business model. The last module begins with an introduction to product road map followed by a comprehensive business plan. The doctoral students are then given a number of practical business tools to write and test a complete business plan of the developed idea.
Teaching and learning activities : Each of the three modules includes three mandatory days on KI Campus and two days for own work. The course days are usually Monday, Wednesday and Friday. The modules are separated with 2 week intervals. This course lays the foundation for development of an already identified business idea. It begins with an introduction to prototyping using the design thinking approach. The doctoral students are then given a number of business tools to develop a business opportunity, stemming from their research, into a business model. With the individual assignments the doctoral students are given the opportunity to take a closer look at the actual benefits of the new knowledge and put it into a larger context, with value for their own research and society. Learning activities consist of seminars and workshops as well as group and individual work.
Examination : The doctoral student is examined individually, on a written report, the design of a poster, the development of a prototype, business model and completion of a business plan.
Compulsory elements : Attendance is mandatory for all participants. The course director assesses if and in that case how absence can be compensated.
Number of students : 10 - 25
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Course days are Mondays, Wednesdays and Fridays, 9 in total.

Course responsible :
Samer Yammine
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Contact person :
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Title : Basic Immunology

Course number : 3038
Credits : 3.0
Date : 2018-01-16 -- 2018-03-08
Language : English
Level : Doctoral level
Responsible KI department : Department of Microbiology, Tumor and Cell Biologi
Specific entry requirements :
Purpose of the course : The student will learn basic concepts in Immunology and meet the Immunology faculty at Karolinska Institutet. This course is a good starting point for more advanced courses in Immunology.
Learning outcomes : To understand basic principles of innate and adaptive immunity and how different components of the immune system cooperate. To be able to relate, compare and understand experimental aspects of immune-related disease in a clinical perspective. To adapt knowledge gained of the function of the immune system by being able to analyze and discuss an immunological/clinical case (group project). To present the group project and discuss the results as well as work in pairs with clinical cases.
Contents of the course : The course is separated into two parts. In part 1 we discuss basic immunological mechanisms within the innate and adaptive immune response. In part 2 we apply the knowledge in clinical settings such as defence against infection, autoimmune and allergic disease or transplantation. Part 1: Introduction An overview of the immune system T cells B cells Antigen-presenting cells Innate vs adaptive immune responses Methods to study immune reactions. Part 2: Immune defence against bacterial and viral infections Primary immunodeficiencies Autoimmune disease Allergy Vaccination Clinical Immunology Transplantation Tumour Immunology Questions and discussions Presentation of projects.
Teaching and learning activities : The course is given full-time during a total of six days separated into two parts. The teaching is mainly in lecture/seminar form but also includes project work studying cases individually and pairwise, as well as in small groups. The group projects are then presented orally on the last day of the course. The project work requires studies between the two course parts, including meetings with mentors. Course literature (Abbas) and cases are handed out at the course start. An immunological quiz is connected to the different chapters in the book so that the student will be able to digest the relatively big material. The course is designed so that clinically active doctors will be better able to combine it with work in the clinic (Mondays and Fridays contain no scheduled course work) .The purpose of dividing the course into two parts is that the participants should have time to thoroughly study the literature from part 1 (fundamental immunological mechanisms) before teaching of the applied immunology in part 2 starts. Considering the substantial literature requirement plus the cases and project work, we estimate that an extra 32h of study is needed, which is not included in the schedule.
Examination : Web-based exam on the course content. Oral presentations of small-group project work. At this occasion special attention is given to that all students are actively participating. The clinical cases are examined by written reports.
Compulsory elements : Project work and attendance at the project presentation is compulsory as well as work with two clinical cases. In the case of absence a separate occasion is organized with presentation for the course organizers. The web-based exam is mandatory.
Number of students : 12 - 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) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course is divided into two sessions with 3 days of lectures each, January 16-18 and March 6-8 (Tuesday to Thursday). In between these days of lectures the students work on both a group project and an individual written assignment, including meetings with mentors and literature studies. Teachers include specialists in different fields of immunology including both basic and clinical researchers. We will use the Abbas "Basic Immunology" as the main course textbook, but literature also includes review papers, handouts etc. The texbook the book is free and is handed out at the course start. The course location is at the Department of Microbiology Tumor and Cell biology (MTC), Karolinska Institutet, Solna

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Course responsible :
Lisa Westerberg
Department of Microbiology, Tumor and Cell Biologi

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Contact person :
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Institutionen för mikrobiologi, tumör- och cellbiologi

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Mikael Karlsson
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Title : Aging Societies: Challenges and Opportunities

Course number : 3040
Credits : 3.0
Date : 2018-04-09 -- 2018-04-27
Language : English
Level : Doctoral level
Responsible KI department : Department of Neurobiology, Care Sciences and Society
Specific entry requirements :
Purpose of the course : This course approaches the challenges and opportunities of an aging population from a public health perspective. It focuses on the lifelong heterogeneous aging process, and health and welfare in old age. The course is relevant for PhD students in public health and health sciences, or students from other disciplines interested in aging research.
Learning outcomes : After completing this course students are expected to be able to: 1. Identify and discuss societal challenges and opportunities that arise from an aging population, and how they can be addressed. 2. Reflect on how these challenges and opportunities can be related to her/his research. 3. Reflect on key concepts and theories from the course, and apply them on her/his research.
Contents of the course : Life expectancy continues to increase around the world. Aging societies present societal and economic challenges, but older people are also a resource for society. The course addresses these topics and provides knowledge on key concepts and theories in the multidisciplinary field of aging research. Attention will be given to: - The demographic shift toward an aging society: what are the challenges and opportunities for public health? - Health trends and the interplay between morbidity and mortality in later life (e.g., compression and expansion of morbidity) - The third and fourth age - The heterogeneous aging process - Active, healthy, and successful aging - How health and health inequalities in old age are shaped by experiences and behaviors throughout the life course - Aging within health and social care systems what are the future challenges?
Teaching and learning activities : Different strategies for teaching and learning will be used, such as lectures, seminars based on selected readings, group discussions, as well as peer reviewing. The doctoral students´ proactive participation will be required.
Examination : To pass the course the student has to achieve the learning outcomes. This will be assessed through participation in mandatory seminars, an individual written assignment reflecting on the course content in relation to her/his own research and also written and oral reflection on a peers individual assignment.
Compulsory elements : Active participation in group work and seminars is mandatory. If a participant is absent because of unforeseen circumstances, the course directors assess if, and in that case how, absence can be compensated.
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be selected based on 1) date for registration as doctoral student (priority given to earlier registration date), and 2) the relevance of the syllabus for the applicant's doctoral project. To be considered, include a short description of current research.
More information : The course is extended over three weeks in order to promote reflection and reinforce learning. Lectures and seminars will be given the following dates: April 9, 11, 13, 16, 18, 20, 23, 26. The written assignment is to be handed in on April 27. The course will be held at the Aging Research Center (ARC), Gävlegatan 16.

Course responsible :
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Contact person :
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Title : Epidemiology I: Introduction to epidemiology

Course number : 3041
Credits : 1.5
Date : 2018-03-07 -- 2018-03-16
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements :
Purpose of the course : The aim of the course is to give an introduction to epidemiological theory and practice.
Learning outcomes : After successfully completing this course students are expected to be able to: -give examples of the contribution of epidemiology to science and discuss the importance of epidemiology as a research discipline. -estimate and in a general way interpret measures of disease occurrence and measures of association, and describe how a specific measure is governed by the study design. -explain strengths and weaknesses of common epidemiological study designs. -identify and explain possible sources of bias in epidemiological studies. -describe theoretical models for causation and discuss the principles of causal mechanisms. -apply knowledge of epidemiological concepts when critically reviewing scientific literature.
Contents of the course : The course gives an introduction to epidemiological theory and practice. It comprises basic principles regarding design, interpretation, and analysis of epidemiological studies. It introduces the concept of causation, concepts related to measures of disease occurrence and measures of association, common designs for epidemiological studies (with main focus on cohort studies), and the role of bias.
Teaching and learning activities : The course focuses on active learning, i.e. putting knowledge into practice and critically reflecting upon the knowledge, rather than memorising facts. Different strategies for teaching and learning will be used, such as lectures, group discussions and various forms of group exercises on selected topics.
Examination : To pass the course, the student has to show that the learning outcomes have been achieved. Assessments methods used are group assignments (formative assessments) along with an individual examination (summative assessment). The examination is viewed as contributing to the development of knowledge, rather than as a test of knowledge. Students who do not obtain a passing grade in the first examination will be offered a second chance to resubmit the examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered.
Compulsory elements : The individual examination (summative assessment) is compulsory.
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken.
More information : Course dates are March 7, 9, 12, 14 and 16. The course is extended over 2 weeks (but still five full course days) in order to promote reflection and reinforce learning. The individual examination (summative assessment) will be performed the last day of the course.

Course responsible :
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Title : Biostatistics I: Introduction for epidemiologists

Course number : 3042
Credits : 3.0
Date : 2018-04-04 -- 2018-04-24
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements :
Purpose of the course : The aim is to introduce classical statistical concepts and methods with emphasis on methods used in epidemiology and public health.
Learning outcomes : After successfully completing this course students should be able to: - define the concept of probability, laws of probability, and make simple probability calculations. - suggest a statistical distribution to describe a naturally occurring phenomenon and evaluate the appropriateness of the distribution given real data. - present appropriate descriptive statistics for an epidemiological study. - explain the difference between hypothesis testing and interval estimation and the relation between p-values and confidence intervals. - suggest an appropriate statistical test for a comparison of two groups, perform the hypothesis test using standard statistical software, and interpret the results. - estimate and interpret three alternative measures of association between binary exposures and binary outcomes and discuss the relative merits of each measure for a given research question. - explain the concept of confounding in epidemiological studies and demonstrate how to control/adjust for confounding using stratified analysis. - explain the basis of the linear regression model, fit a linear regression model using standard statistical software, assess the fit of the model, and interpret the results.
Contents of the course : The course introduces classical statistical concepts and methods with emphasis on methods used in epidemiology and public health. Topics covered include: the importance of statistical thinking; types of data (nominal, binary, discrete and continuous variables); data summary measures; contingency tables; graphical representations; notions of probability; probability models (distributions); principles of statistical inference; parameter estimation (mean, proportion (prevalence), incidence and ratios); concepts of confidence intervals and hypothesis tests; and a general introduction to correlation and linear regression models.
Teaching and learning activities : Lectures, exercises focusing on analysis of real data using statistical software, exercises not requiring statistical software, group discussions, literature review.
Examination : The course grade is based on the two written examinations. The course is divided into two parts, and each part will be examined separately. To pass the course, the student must pass both parts. Students who fail will be offered a re-examination within two months of the final day of the course. Students who fail the re-exam will be given top priority for admission the next time the course is offered. If the course is not offered during the following two academic terms then another re-examination will be scheduled within 12 months of the final day of the course.
Compulsory elements : The individual written examinations (summative assessments) are compulsory.
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). Give all information requested, including a short description of current research training and motivation for attending, as well as an account of previous courses taken. Prior knowledge in Stata software is strongly recommended.
More information : The course is extended over time in order to promote reflection and reinforce learning. The course will be held the dates April 4, 5, 6, 9 and 10 (week 1) and April 18, 19, 20, 23 and 24 (week 2). The individual examination will be performed as an in-class examination the last course day of each week.

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

Course number : 3043
Credits : 2.0
Date : 2018-01-24 -- 2018-01-31
Language : English
Level : Doctoral level
Responsible KI department : Department of Medical Epidemiology and Biostatistics
Specific entry requirements : Knowledge in epidemiology and biostatistics equivalent to "Epidemiology I: Introduction to epidemiology" and "Biostatistics I: Introduction for epidemiologists" or corresponding courses
Purpose of the course : This course focuses on the application of linear and logistic regression in the analysis of epidemiological studies.
Learning outcomes : After successfully completing this course you as a student are expected to be able to: - choose a suitable regression model for assessing a specific research hypothesis using data collected from an epidemiological study, fit the model using standard statistical software, evaluate the fit of the model, and interpret the results. - explain the concept of confounding in epidemiological studies and demonstrate how to control/adjust for confounding using statistical models. - apply and interpret appropriate statistical models for studying effect modification. - critically evaluate the methodological aspects (design and analysis) of a scientific article reporting an epidemiological study.
Contents of the course : This course focuses on the application of linear and logistic regression in the analysis of epidemiological studies. Topics covered include a brief introduction to models for continuous data and a more complete coverage of binary outcome data, univariable and multivariable models, interpretation of parameters for continuous and categorical predictors, flexible modeling of quantitative predictors, confounding and interaction, model fitting and model diagnostics.
Teaching and learning activities : Lectures, computer lab with exercises focusing on analysis of real data sets using statistical software, exercises not requiring statistical software, group discussions, literature review.
Examination : To pass the course, the student has to show that the learning outcomes have been achieved. The course grade is based on the individual written examination (summative assessment). The focus of the examination will be on understanding concepts and their application to analysis of epidemiological studies rather than mathematical detail. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course. Students who do not obtain a passing grade at the first two examinations will be given top priority for admission the next time the course is offered. If the course is not offered during the following two academic terms then a third examination will be scheduled within 12 months of the final day of the course.
Compulsory elements : The individual written examination (summative assessment).
Number of students : 8 - 25
Selection of students : Eligible doctoral students will be prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). Submit a completed application form. Give all information requested, including a short description of current research training and motivation for attending, and an account of previous courses taken.
More information : Course dates are: January 24, 25, 26, 29, 30 and 31. The course is extended over 2 weeks (but still 6 full course days) in order to promote reflection and reinforce learning. The individual examination will be performed as a take-home examination. Prerequisite knowledge in epidemiology and biostatistics equivalent to "Epidemiology I:Introduction to epidemiology" and "Biostatistics I: Introduction for epidemiologists" or corresponding courses. Prior knowledge in Stata software is strongly recommended.

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Title : Basic bioinformatics

Course number : 3044
Credits : 2.0
Date : 2018-04-16 -- 2018-04-24
Language : English
Level : Doctoral level
Responsible KI department : Department of Medicine, Solna
Specific entry requirements : Basic knowledge in molecular biology from undergraduate level.
Purpose of the course : The purpose of this course is to equip the students that work mainly in wet lab, with several bioinformatic tools commonly used in molecular biology and genetics.
Learning outcomes : By the end of the course the participants should be able to: - use the command line interface (a text-based means of interacting with a computer), - download from omics databases - know how to apply the basic principles for analyzing high-throughput sequencing data analysis and genome-wide association studies. - know how to perform logistic, linear regression and clustering analysis in python. - have the foundations to perform by themselves the taught data analysis techniques.
Contents of the course : High-throughput sequencing data analysis (RNA-seq, ChIP-seq and rare variant discovery), genome-wide association studies, genome browsers, plotting methods, logistic, linear regression and clustering in python.
Teaching and learning activities : The course consists primarily of hands-on computer exercises, and a limited number of lectures.
Examination : An individual project consisting of a practical exercise and a final seminar discussing each other's projects in small groups in line with the intended learning outcomes of the course.
Compulsory elements : Practical sessions are compulsory, unless stated they are not. Absence has to be compensated for in agreement with the course organizer. The examination is compulsory.
Number of students : 10 - 25
Selection of students : Wet lab students without prior bioinformatics experience are given priority, and secondarily date for registration as a doctoral student (priority given to earlier registration date).
More information :

Course responsible :
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Title : Computational modelling and data analysis for cognitive neuroscience

Course number : 3045
Credits : 1.5
Date : 2018-05-09 -- 2018-05-25
Language : English
Level : Doctoral level
Responsible KI department : Department of Neurobiology, Care Sciences and Society
Specific entry requirements : Background in medicine, biomedicine, biology, psychology, cognitive science, medical imaging, computational biology or similar.
Purpose of the course : The purpose of the course is to introduce doctoral students to computational techniques for modelling and analysing cognitive neuroscience data, giving them practical experience applying these tools so that they acquire enough understanding to enable them to 1) critically interpret the results of the studies in the field and 2) adapt them to new experimental paradigms for their own research.
Learning outcomes : After successful course completion, the students will be able to independently use software packages to analyse behavioural data from cognitive neuroscience experiments.
Contents of the course : The course will cover both theory-driven computational modelling and data-driven analysis approaches. Theory-driven approaches: Bayesian modelling; introduction to reinforcement learning; classical models for decision-making tasks (drift diffusion model, intertemporal choice). Data-driven approaches: supervised and unsupervised models in machine learning; classification and regression; dimensionality reduction; validation.
Teaching and learning activities : Lectures. Hands-on sessions with practical exercises.
Examination : Examination consists of a practical assignment where students will model and analyse behavioural data from a cognitive neuroscience experiment. The results will be reported and presented in front of the other students in the last session.
Compulsory elements : Attending the lectures and hands-on sessions is mandatory. Absence from a lecture may be compensated by writing an essay on the corresponding topic. The final examination (both presentation and assignment) is compulsory.
Number of students : 8 - 16
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : The course dates are: 9th, 16th, 18th, 23rd and 25th of May 2018, from 9:00 to 16:00. Previous experience with statistical analysis and R, python or a similar language are desirable.

Course responsible :
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Rita Almeida
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Title : Causal inference: emulating a target trial to assess comparative effectiveness

Course number : 3046
Credits : 1.5
Date : 2018-03-19 -- 2018-03-21
Language : English
Level : Doctoral level
Responsible KI department : The institute of Environmental Medicine
Specific entry requirements : Courses "Epidemiology I: Introduction to epidemiology", "Epidemiology II: Design of epidemiological studies", "Biostatistics I: Introduction for epidemiologists", "Biostatistics II: Logistic regression for epidemiologists", and either "Causal inference for epidemiological research" (course 2416) or "Causal Inference from observational data" (course 2462) or corresponding courses.
Purpose of the course : This course focuses on a general framework for the assessment of comparative effectiveness and safety research, which can be applied to both observational data and randomized trials.
Learning outcomes : After successful completion of this course, the student should be able to: - Formulate sufficiently well-defined causal questions for comparative effectiveness research - Specify the protocol of the target trial - Design analyses of observational data that emulate the protocol of the target trial - Identify key assumptions for a correct emulation of the target trial - Decide when g-methods are required for data analysis - Critique observational studies and randomized trials for comparative effectiveness research
Contents of the course : The course introduces students to a general framework for the assessment of comparative effectiveness and safety research. The framework, which can be applied to both observational data and randomized trials with imperfect adherence to the protocol, relies on the specification of a (hypothetical) target trial. The course explores key challenges for comparative effectiveness research and critically reviews methods proposed to overcome those challenges. The methods are presented in the context of several case studies for cancer, cardiovascular, renal, and infectious diseases.
Teaching and learning activities : Lectures and group sessions. Before the course, the student is required to study the course literature.
Examination : A written individual examination will be carried out after the course. The examination will require the evaluation of a published article on comparative effectiveness or safety. Students who do not obtain a passing grade in the first examination will be offered a second examination within two months of the final day of the course.

Compulsory elements : The individual written examination (summative assessment).
Number of students : 8 - 25
Selection of students : Eligible doctoral students, with required prerequisite knowledge, prioritized according to 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date). To be considered, submit a completed application form. Give all information requested, including a description of current research and motivation for attending, and an account of previous courses taken.
More information : Pre-course reading is required: Chapters 1-3 of the book: Hernán MA, Robins JM (2017).Hernán MA, Robins JM (2017). Causal Inference. Boca Raton: Chapman & Hall/CRC, forthcoming. The book can be downloaded (for free) from http://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/. The individual examination will be performed as a take-home examination.

Course responsible :
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Title : Understanding and fighting disease using structural biology

Course number : 3047
Credits : 3.0
Date : 2018-04-09 -- 2018-04-20
Language : English
Level : Doctoral level
Responsible KI department : Department of Biosciences and Nutrition
Specific entry requirements : The course will be limited to 12-14 participants decided by the course responsible persons
Purpose of the course : The course will first introduce X-ray crystallography, electron microscopy (EM) and nuclear magnetic resonance spectroscopy (NMR), the three main methodologies used to experimentally determine the three-dimensional structure of proteins. Doctoral candidates will then be introduced to molecular dynamics (MD) simulations, analyze how point mutations can cause diseases at the molecular level and gain a basic understanding of the structure-based drug design process.
Learning outcomes : By following this course, doctoral candidates will learn how the three-dimensional structure of proteins is determined, and how this information can be used to both understand human disease at the molecular level and facilitate the rational development of novel therapeutics. In particular, Ph.D. candidates will be able to understand the most important biochemical and biophysical properties of proteins and, based on this knowledge, learn to choose and apply protocols for expressing and purifying proteins for structural studies. Following the practicals, the candidates will also be able to bioinformatically analyze protein sequences and structures in order to predict their characteristics and functions. At the end of the X-ray crystallography module, Ph.D. candidates will be able to read a protein crystallization diagram; list the different crystallization techniques; understand diffraction basics; describe the data collection, processing and refinement procedures; explain the phase problem and its solution by experimental phasing or molecular replacement; validate crystal structures downloaded from the Protein Data Bank. The electron microscopy module of the course will provide an introduction to the basics of EM. This knowledge will provide a foundation for understanding the technique and its applications. At the end of the module, the candidates will be able to understand the basics concepts of EM and its differences from other structure determination techniques; list the advantages and limitations of EM for structure determination; describe the overall functioning and instrumentation of an electron microscope; explain the interaction of electrons with the sample and the process of image formation; understand the principles of 3D reconstruction from projection images; compare the process of model building in EM with other structure determination techniques. The NMR lecture will provide a basic overview of the information that one can obtain by spectroscopically probing the chemical environment of atomic nuclei. Doctoral candidates will understand how an NMR machine is built, what chemical shifts are, and what are the differences between 1-D, 2-D and 3-D NMR experiments. They will then be introduced to the concept of assignments, and how this can be combined with MD simulations to produce a set of molecular models consistent with distance restraints derived from experimental measurements. Towards this goal, an introduction to MD simulations will be given. Finally, the differences between NMR-derived models and those obtained by the other techniques will be discussed. Thus, at the end of the lecture, the PhD candidates will be able to list the advantages and limitations of all methods presented and compare protein structures obtained through these different approaches. After the last lecture, the doctoral candidates will be able to give recent examples describing how human mutations can cause diseases by affecting the structure of proteins and their ability to perform their biological function. They will also have gained a basic knowledge of how lead compounds/drugs bind to their molecular targets, and how structural biology can be of high medical relevance by allowing to optimize the affinity and specificity of this interaction.
Contents of the course : Theoretical: The lectures will open with an introduction to protein structure and function (1), followed by a presentation of protein expression and purification strategies (2). Then the theoretical background needed for understanding X-ray crystallography (3), EM (4) and NMR as well as MD simulations (5) will be given. At the end, we will go through examples of how gene mutations can lead to diseases and explain how knowledge of molecular structures can contribute to drug discovery (6). Practical: The Ph.D. candidates will work through six projects during the two weeks: (1) analysis of protein structure elements and properties using PyMOL; (2) protein purification; (3) protein structure determination by X-ray crystallography; (4) protein structure determination by EM; (5) comparison of protein structures obtained by X-ray crystallography, EM and NMR using PyMOL; (6) analysis of structure-function relationship for a selection of medically relevant proteins.
Teaching and learning activities : Lectures, laboratory work, presentation and discussion of current biomedically relevant research in the field of structural biology.
Examination : Reports from practical exercises and journal club-like presentations of scientific articles describing protein structure of biomedical interest. ILOs will be studied both theoretically and through practical exercises. Each ILO will be tested through questionnaires that have to be submitted in electronic form at the end of each day.
Compulsory elements : Seminar presentations and laboratory work are compulsory. If a Ph.D. candidate misses a practical exercise, they will be given a chance to complete it at another occasion set by the organizers.
Number of students : 8 - 10
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date).
More information : The course is given jointly by the doctoral programmes in Neuroscience, Development and regeneration, Metabolism and endocrinology and Tumor Biology and Oncology. See: http://ki.se/en/staff/doctoral-

programmes.

Course responsible :
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Title : Cellular Signalling

Course number : 3049
Credits : 1.5
Date : 2018-03-19 -- 2018-03-23
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.
Learning outcomes : After the course, the student: - should be able to show adaquate 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 - 15
Selection of students : Selection will be based on 1) the relevance of the course syllabus for the applicant's doctoral project (according to written motivation), 2) date for registration as a doctoral student (priority given to earlier registration date)
More information : Time: Monday to Friday, 9:00 - 16:00; Location: Novum, Karolinska Institutet Campus Flemingsberg. The evaluation report below is from the same course last year, but with a different course number.

Course responsible :
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