J.nr.	Titel	Course leader	ECTS	Learning outcomes	Semester
Graduate School Health course offer 2024					
B69	Flow cytometry	Charlotte Christie Petersen	3,5	1. Understanding the physics behind flow cytometry 2. Understanding the applications and limitations of flow cytometry 3. Practical knowledge and experience with flow cytometry experiment design 4. Understanding essential flow cytometry controls 5. Awareness of common (and not so common) pitfalls 6. Hands-on, practical experience with data analysis 7. Ability to critically evaluate flow cytometry results 8. Requirements for publication of flow cytometry experiments In contrast to most basic flow cytometry courses and online resources, this intensive training course teaches key concepts by derivation from "first principles". The course thus covers the progression from the basic physics of light and fluorescence, through fluorochrome chemistry, spectral overlap and compensation, and antibody panel design, experiment design, flow cytometry controls, and data analysis. On the instrumentation side, the course provides a detailed understanding of the core components in modern flow cytometers, thus covering light detection principles, fluidics, optics and signal processing. Data analysis and compensation is taught by a "hands-on" approach via practical computer exercises with FlowJo software and generic, raw flow cytometry data files (participants are encouraged to bring their own PC and data, if relevant). Advanced data analysis approaches (clustering, dimensionality reduction, tSNE and more) are presented in the last part of the course. In addition, guidelines for publishing flow cytometry data will be covered.	Spring/Fall

B100	Laboratory Animal Science	Thea Thougaard Johansen	5	The participants should obtain basic knowledge about the Laboratory animal science, which will make it possible for them to participate in research contributing to the humane use of laboratory animals ensuring high standards of animal welfare and quality in the performing, evaluating and reporting of laboratory animal experiments. •Insight into Danish legislation concerning animals used for scientific purposes, the ethical aspects working with laboratory animals as well as the principles of the 3 Rs •Basic insight into the biology of laboratory animal, including normal/abnormal behaviour, housing, breeding, welfare and feeding •Basic insight into occupational health and safety when working with laboratory animals •Practical experience with handling and euthanizing laboratory animals as well as minimally invasive injections and blood sampling techniques •Basic knowledge of anaesthesia for minor procedures in common laboratory animals	Spring/Fall
B116	Advanced course in Laboratory Animal Science	Martin K. Thomsen	5	•Advanced insight into Danish and International legislation concerning animals used for scientific purposes, the ethical aspects of working with laboratory animals as well as the principles of the Three Rs. •Detailed knowledge of different aspects of ethics and the Three Rs in relation to both ethical and welfare issues raised by the use of animals in scientific procedures. •Knowledge of experimental design concepts, possible causes and elimination of bias, statistical analysis and information about where expertise can be found to assist with procedure, design, planning and the interpretation of results. •Insight into the use of animal models in biomedical research and their benefits and limitations. •Insight into the importance of standardization of environmental, microbiological factors and use of humane endpoints. •Knowledge about advanced experimental procedures such as microsurgery, anaesthesia, analgesia and euthanasia in rodent laboratory animals. •Write an application for a procedure to the Danish Ministry of Health.	Fall
B178	53th Sandbjerg Summer Meeting on Membrane Transports	Jeppe Prætorius	2,2	1.Networking with national and international peers of your research area 2.Practice oral presentation skills and in depth discussion of scientific questions 3.Update your knowledge on new biological concepts 4.In depth discussion of technological/method approaches to study your scope of questions.	Spring

B226	Molecular Immunology	Thomas Vorup-Jensen	2,5	The objective of this course is to provide you with an introduction to select topics in current immunology. This means that researchers from Aarhus University will update you on some of their preferred research interest. Far from giving a comprehensive introduction to immunology, the course aims to provide you with an idea about current methodologies, topics, and, not at least, principle investigators with research interests that could potentially help you on with your own project. The course will also include two talks by employees in companies with research interests in inflammation and immunology. This is a chance to follow how basic research findings are implemented in commercial products and strategies.	Spring
B246	Graduate neuroscience course	Mai Marie Holm	5,4	Participants will get a thorough theoretical knowledge within all areas of neuroscience. The course is structured according to the esteemed advanced level textbook entitled “Neuroscience” by Purves et al. published by Sinauer Associates, Inc. and all sections will be dealt with. The book will form the fundamental basis of the course, however not all specific details will be discussed. Participants are expected to obtain the book and prepare the relevant chapters before the sessions. Emphasis will be put on most interesting areas, as evaluated by the lecturers and their research profile. Topics include; Electrical Signals of Nerve Cells, Synaptic Transmission and Plasticity, Animal Models in Neuroscience, The Sensory System, Pain, Motor Control, Brain Development, Novel Treatment Principles in Neurological and Psychiatric Diseases, Neural Circuits, Repair and Regeneration, Sleep, Speech and Language, Emotions, Neurogenetics and Memory. Additionally, lecturers will present selected data from their own research to provide the most up-to-date techniques and knowledge. Selected reviews and original papers will be used, where relevant, to complement the book.	Spring
B273	Advanced In-vivo Optical Imaging Techniques	Euginio Gutierrez		The students should be able to understand the basis of different techniques, to learn their pitfalls, disadvantages and advantages, and to plan research projects that include these techniques	Spring
B288	Host pathogen interactions – from basic microbiology and imn	Trine Mogensen	2,4	Have achieved a theoretical background and ability to discuss current knowledge in some aspects of basic cell biology, immunology, and microbiology related to human host-pathogen interactions, have obtained some insight into the methodologies used to investigate these and how to interpret data, and finally have gained perspectives on how these basic mechanisms translate into the pathogenesis of infectious diseases and the medical implications hereof.	Spring

B299	Advanced Flow Cytometry	Marianne Hokland	2,9	(i) How to design and optimize a flow cytometry experiment. (ii) How to select the optimal flow cytometry related methodology. (iii) Which controls to include (e.g. data quality controls, negative/positive controls, compensation and FMO controls – and how to interpret the results. (iv) How to analyze flow cytometry data including critically evaluation of the experimental results. (v) How to include high-dimensional data analysis tools (e.g. tSNE) (vi) How to present flow cytometry data for publication.	Spring
B322	Principles of Neural Organization	Sadegh Nabavi	3	• Have a good grasp of the limitations and advantages of small and large nervous systems. • Know the constrains that nervous systems face and how they evolved within these constrains. • Perceive brain design and function as an information processing entity. • Describe the basic principles that the brain uses to achieve a superior computational power while keeping the energy consumption in check. • Identify some fundamental principles shared by all systems and circuits within the brain. • Analyze, review and constructively criticize papers in the relevant fields.	Spring
BPC250	Responsible Conduct of Research	TBA	1	• Be familiar with the Danish Code of Conduct for Research Integrity as well as Aarhus University guidelines and Health standards of Responsible Conduct of Research • Be able to understand and discuss principles of research integrity and	Spring/ Fall
Public Health					
P98	Epidemiology II	Christina Catherine Dahm	4,2	• Advanced insight into epidemiological study design • Advanced insight into design and evaluation of epidemiological studies • Insight into DAGs • Insight into strategies for analyzing epidemiological data • Practical experience with analyses of epidemiological data	Fall
P126 (4 + 2 days)	Analysis of variance and repeated measurements	Bo Martin Bibby	4 day course 2,4 + 2 day course 1,2	measurements. 2. Choose a relevant statistical model for a given research question and evaluate the assumptions behind the ANOVA or repeated measurement analysis. 3. Perform ANOVA, variance component analysis or repeated measurement analysis based on the chosen model. 4. Describe the results of the statistical analysis, and discuss the results in relation to the scientific question. 5. Be aware of the limitations of the statistical methods presented in the course.	Fall

P155	Epidemiology I - Basic Principles of Epidemiology	Bodil Hammer Bech	2,5	between prevalence and incidence •Define the following epidemiologic measures of association; relative risk, risk ratio, odds ratio, and rate ratio, risk difference and excess risk, including attributable risk and population attributable risk •Define and describe strengths, weaknesses, and main applications of the designs; ecological, cross-sectional, follow up, case-control and intervention studies •Define selection bias, information bias and confounding and be aware that evaluating the direction and strength of a possible bias or confounding is essential •Learn to think along the lines that, when faced with data from an analytic epidemiologic study showing an association (or no association), this might reflect; random error, bias (systematic error), including selection bias or information bias, or confounding, or, if all other possibilities seem unlikely, causality	Fall
P169	Collecting qualitative research data	Sanne Angel	2,6	•The student will have knowledge of principles of more qualitative approaches and qualitative methods in general •The student will be able to judge the different methods' relevance to study designs •The student will have knowledge about the different form of data collection •The student will have collected data in form of field observation and interviews	Spring
P231	Developing complex interventions in Public Health	Knud Ryom	2,1	•Insight into complex interventions based on the UK Medical Research Council Model •Skills for working with program theory and logic models •Insight in developing complex interventions addressing co-production, co-creation and PPI •Insight in contextual elements that can influence successful change •Overview of different complex intervention evaluation strategies.	Spring
P237	Which covariates to adjust for: An introduction to causal direct	Cathrine Carlsen Bach		•To understand the basic anatomy of directed acyclic graphs (DAGs) •To draw and apply DAGs for selection of covariates to account for confounding •To draw and apply DAGs to illustrate potential selection bias •To draw and apply DAGs to illustrate potential information bias •To draw and apply signed DAGs to estimate the potential direction of bias in a research projec	Spring

PBC250	Responsible Conduct of Research	TBA	1	Be familiar with the Danish Code of Conduct for Research Integrity as well as Aarhus University guidelines and Health standards of Responsible Conduct of Research •Be able to understand and discuss principles of research integrity and responsible conduct of research •Be able to identify, analyse and discuss cases of scientific misconduct and questionable research practices in the grey zone between misconduct and poor science •Know where to seek advice concerning responsible conduct of research	Spring/ Fall
P255	Introductory course in questionnaire technique and clinimetrics	Henrik Hein Lauridsen	2	•Have knowledge about conceptualisation and operationalisation •Know the most important concepts related to questionnaire research •Know the basics of how to design a questionnaire and write items •Have basic knowledge in how to develop a new measurement instrument •Have the skills to find and select the most appropriate outcome measure •Have the skills to translate an international questionnaire into Danish •Have basic knowledge of the COSMIN taxonomy •Have basic knowledge of the measurement properties of validity, reliability, responsiveness and interpretation •Know the requirements for a evaluating a questionnaire for risk of bias	Fall
P256	Advanced course in questionnaire technique and clinimetrics	Henrik Hein Lauridsen	2	•Have the skills to complete the process of developing a new measurement instrument •Have basic knowledge about item reduction and factor analysis •Know how to perform a field test •Be able to define, determine and interpret the measurement properties of a) validity, b) reproducibility, c) responsiveness and d) interpretation •Have an overview of the benefits of modern psychometric methods such as IRT and Rasch analyses •Be able to explain the basics of Rasch analysis	Fall

P265	Qualitative data analysis: Using NVivo	Annesofie Lunde Jensen	3,3	The students will learn how NVivo supports the qualitative study process from the beginning to the end. Having completed this course, the student will be able to use NVivo's most important functions: •Create projects. •Describe units of analysis relevant for the student's own project. •Critical identify element (sources and cases) as a foundation for making queries. •Create memos, annotations, and links. •Know how to use NVivo together with bibliographic software such as EndNote and RefWorks. •Code data in relation to different types of qualitative data analysis techniques. •Analyse data, visualise data analysis and make different kinds of queries. •Be able to explain and visualise the data analysis the students use in their own PhD-project. •Know how to build models and make different kinds of graphic presentations and diagrams.	Fall
P272	GIS in Health Sciences	Jörg Schullehner	3	• Describe the basic concepts of GIS • Identify the different types of spatial data • Retrieve spatial data from open sources and own surveys and load them into a GIS program • Design and apply simple spatial analyses and evaluate their results • Present spatial data in appropriate maps	Fall
P281	Causal Inference in Health Sciences	Cecilia Ramlau-Hansen	3,4	•Introduction to the potential outcome framework and counterfactuals •Assumptions for causal inference •Introduction to and practical experience with g-methods •Introduction to and practical experience with causal interaction analysis •Introduction to and practical experience with causal mediation analysis	Spring

P301	How to design and conduct your PhD study to be family-focuse	Karin Piil	2,6	1. Understand the basic characteristics of a theory-driven family-focused research approach and dialogue based on the Calgary family assessment and intervention models. 2. Gained individual and collective experiences and reflections of how to transform the theory and models into excellence in healthcare. 3. Understand, discuss and argue for the central methodological considerations. 4. Identify appropriate family-focused qualitative and quantitative data sources for research. 5. Describe and argue for the choice of patient-reported outcome and caregiver-reported outcome. 6. Identify strengths and limitations of a family-focused approach 7. Understand and apply family-focused values across cultures and in vulnerable families 8. Present the family-focused PhD study in a concise and structured format with attention to an interprofessional excellence in clinical healthcare.	Spring
P302	Evaluating complex interventions in Public Health	Helle Terkildsen Maindal	2,1	Insight into evaluation of complex interventions based on the UK Medical Research Council Model • Overview of different complex intervention evaluation strategies • Insight into evaluating complex interventions using quantitative research designs • Insight into evaluating complex interventions using qualitative and mixed methods research designs	Spring
P310	How to design and conduct a qualitative content analysis in a c	Cecilie Nørby Lyhne	3,3	• Knowledge on the background, theoretical foundation and the potential of content analysis. • Describe the main steps in conducting a qualitative content analysis. • Design a plan for using qualitative content analysis in your own study, including: formulate specific research questions, specify the plan of conduct including the analytical steps to be performed in your study, and discuss own and co-participants' choices and considerations focusing on the validity and reliability of the analysis. • Apply strategies to strengthen the quality of studies using qualitative content analysis, focusing on validity, reliability, transparency, and transferability in conducting and presenting a qualitative content analysis. • Discuss methodological issues in qualitative content analysis, including methodological reflections in relation to own project designs and plans for analyzing own data material.	Spring

P1050	Basic Biostatistics - part 1	Erik Thorlund Parner	2,4	2. Chose a relevant statistical model for a given research question and evaluate the assumptions of the statistical analysis 3. Perform a statistical analysis based on the chosen model 4. Describe the results of the statistical analysis, and discuss the results in relation to the scientific question 5. Make simple calculations of sample sizes for the planning of a comparative study	Spring/Fall
P1050	Basic Biostatistics - part 2	Erik Thorlund Parner	3,9	1. Document and handle data needed for a statistical analysis 2. Chose a relevant statistical model for a given research question and evaluate the assumptions of the statistical analysis 3. Perform a statistical analysis based on the chosen model 4. Describe the results of the statistical analysis, and discuss the results in relation to the scientific question	Spring/Fall
P324	Advanced GIS in Health Sciences	Jibran Khan	5	• Understand and explain the basic methodologies and conceptual models of the contents of a geographic database • Explain the different geographical data formats • Explain the principles of transformation between different geodesic reference system • Explain concepts and estimation methods within advanced spatial analysis and modelling • Account for auto-correlation in geographic data • Visualize the geographic data using advanced 2D and 3D mapping tools • Carry out advanced interpolation with geographic data • Carry out and present advanced statistical analysis of interpolated spatial data • Perform spatial auto-correlation analysis with geographic data • Create a spatial database, import, export data and query data from it • Create programming scripts spatial GIS analysis	Fall

Clinfo

C47/26	Magnetic Resonance	Steffen Ringgaard	3,6	• General overview of the underlying principles in magnetic resonance imaging and spectroscopy with relevance for applications in biomedical research • Outline of magnetic resonance applied in research on organ functionality and diseases. • General overview of hyperpolarized magnetic resonance imaging and spectroscopy applied in cells, animals, and humans.	Spring
C116	Advanced course in Laboratory Animal Science – Porcine mode	Birgitte Saima Kousholt	5	The course will, in unison with the basic course in laboratory animal science, qualify participants to apply for and obtain licence to perform animal experiments in Denmark.	Spring

C142	Proteomics and protein profiling	Johan Palmfeldt	afv.svar	•Understanding of the principles of proteomics methodologies, and how the different methods can be combined •Knowledge of the value of protein analysis in biomedical research, including advantages and limitations •Acquired practical experience in 1) lab work in protein analysis and 2) software tools used to analyze proteomics data with regard to MS spectra, protein modifications, pathway analysis etc. •To be able to interpret, discuss and critically assess proteomics data •To be able to design studies on protein analysis and proteomics (type of sample, procedures, instruments etc.)	Spring
C151	Clinical Research	Morten Bøttcher	2,3	Enable to course participant to conduct clinical research	Spring
C155	Epidemiology I - Basic Principles of Epidemiology	Ulrik Schiøler Kesmodel	2,5	•Define epidemiologic measures of occurrence and explain the difference between prevalence and incidence •Define the following epidemiologic measures of association; relative risk, risk ratio, odds ratio, and rate ratio, risk difference and excess risk, including attributable risk and population attributable risk •Define and describe strengths, weaknesses, and main applications of the designs; ecological, cross-sectional, follow up, case-control and intervention studies •Define selection bias, information bias and confounding and be aware that evaluating the direction and strength of a possible bias or confounding is essential •Learn to think along the lines that, when faced with data from an analytic epidemiologic study showing an association (or no association), this might reflect; random error, bias (systematic error), including selection bias or information bias, or confounding, or, if all other possibilities seem unlikely, causality	Spring
C160	Investigator-initiated Clinical Trials and GCP	Birgitte Olrik Schlemmer	2,9	•Explain and implement the legal, regulatory and good practice framework – The principles of GCP, national regulations, application to the authorities •Illustrate and relate to the organization of the study - sponsor, investigator, contracts and agreements, delegation of responsibilities, training, internal and external communication •Discuss and assess on what's important in the conduct of the study including ethical issues – informed consent, enrolment, essential documents in Trial Master File, biological samples, study monitoring, •End of trial issues •Explain and implement the process in safety monitoring and reporting •Explain and apply the data-management process from CRF preparation, data collection, data analysis, clinical study report and publication	Spring

C171	Introduction MATLAB with examples from Health Science	Irene Klærke Mikkelsen	4,2	•The MATLAB program in general including editor, command window, and help •MATLAB data structures including matrices, cells and structs •Generic programming principles including loops, conditions, functions •MATLAB graphics for plotting and vitalization of data •MATLAB Debugging capability	Fall
C177	Introduction to Clinical Epidemiology	Deirdre Cronin Fenton	3,7	The course includes lectures and exercises on the following: 1)Providing a broad knowledge and understanding of clinical epidemiology 2)Designing a clinical epidemiology study 3)Understanding measures of disease frequency, effect and association, and which are appropriate to each study design 4)Assessing study validity, including identifying various biases and sources of error in epidemiological studies 5)Interpreting clinical epidemiology research papers	Spring
C190	Image diagnostic methods for evaluation of the musculoscelet	Maiken Stilling	1	•Understand the most common radiologic methods •Understand the basic background for methods (physics, instruments) •Characterize risks of the methods •Understand the advantages and disadvantages/imitations of the methods •Obtain inspiration to new methods in research projects	Fall
C204	Basic and practical course in quantitative immunoassays	Mette Bjerre	2,2	The participants obtain theoretical knowledge and practical skills required for development, troubleshoot, and validation of ELISA and TRIFMA assays.	Fall
C214	Registries, databases and other electronic data sources in clinical research	Signe Sørup	2,7	•List the Danish registries and other secondary data sources most often utilized in clinical research •Identify relevant Danish registries and other secondary data sources based on the research question •Describe the data structure as well as some specific pitfalls of working with Danish registries and other secondary data sources •Compare the content of different Danish registers and other secondary data sources and evaluate their usefulness for clinical epidemiological research questions •Assess the strength and weaknesses of the use of Danish registries and other secondary data sources in clinical epidemiology •Design and execute a validation study of some of the content of a Danish Register or another secondary data source. •Design a clinical epidemiological study using Danish registers and/or other	Spring

C229	Preparation and critical reading of meta-analysis	Inger Mechlenburg	1,6	•Carry out a meta-analysis based on the quantitative results of a systematic review, interpret the results and provide a clinical guideline based on the meta-analysis •Describe the statistical assumptions, the chosen methods and the results of the meta-analysis •Assess the quality of meta-analyses	Spring
C243	How to get published	Søren Dinesen Østergaard	3	1.Have a basic knowledge of most aspects of the publication process in health research 2.Have improved their writing skills 3.Have learned how to perform peer-review	Fall
C245	Cancer Epidemiology using the Danish Clinical Cancer Databas	Deirdre Cronin Fenton	3,7	The course includes lectures, exercises and computer labs on the following: 1.Identify and design a clinical epidemiologic research study using the Danish Clinical Cancer Databases – comparing and contrasting study designs in order to suitably address a research question 2.Identifying and ascertaining data from the Clinical Cancer Databases 3.Assessing study validity and implementing validity checks 4.Data analysis including data cleaning and implementing survival analysis using Stata 5.Evaluating study findings, interpreting and reporting study findings	Spring
C254	An introduction to Good Manufacturing Practice (GMP)	Dirk Bender	2,1	•Be familiar with basic principles and terms of GMP and its impact in Danish legislation •Be able to understand specific challenges arising from GMP •Know where to seek advice concerning further development of GMP skills	Fall
C262	Get ready to work with Biostatistics	Eva Greibe	1,9	•How to test for assumptions for basic statistical tests •How to perform basic statistical tests •How to present results in tables •How to perform a sample size calculation	Spring/Fall
C262	Get ready to work with Biostatistics (Research Year)	Eva Greibe	1,9	•How to test for assumptions for basic statistical tests •How to perform basic statistical tests •How to present results in tables •How to perform a sample size calculation	Spring
C267	Introduction to Fluorescence Microscopy	Lene Niemann Nejsum	3,9	The students will obtain basic knowledge of different fluorescence microscopy techniques, sample preparation, image acquisition and image analysis. This should enable students to prepare samples for fluorescence microscopy, choose the appropriate microscope setup, acquire images, analyse images and generate publication figures. This will enable students to participate in research projects involving fluorescence microscopy.	Spring

C285	Introduction to register-based research	Julie Werenberg Dreier	3,5	• Describe commonly used Danish health registers and how they can be used in research • Identify different epidemiological designs used to investigate register data • Discuss strengths and limitations of register data • Describe how other sources of data, such as genetic data, cohort data and survey data can complement data in the registers • Perform simple data management tasks using artificial register data • Plan their own research using registers or to critically read publications from register-based studies	Fall
C305	What is research? Ontology, epistemology and methodology	Rune Dall Jensen	3,1	Upon completion of this course, the students will be able to: • Describe the fundamental concepts and positions in the philosophy of science • Articulate the research implications of the various philosophical positions on science • Position one's research project in a philosophy of science discourse • Formulate research questions, based on various epistemologies	Fall
C308	Applied Machine Learning in health Sciences	Peter Mondrup Rasmussen	3,5	A student who has met the objectives of the course will be able to: • Describe main steps involved in typical machine learning analyses, including data preparation, data modeling, model evaluation, and result dissemination. • Describe the mathematical and statistical principles in supervised- and unsupervised machine learning. • Describe basic and advanced methods for predicting continuous- and discrete outcomes (regression and classification). • Describe procedures for model building, model selection and model evaluation. • Identify relevant machine learning techniques to solve research-based problems. • Design and implement a solution strategy to solve research-based problems. • Apply unsupervised- and supervised machine learning techniques to their own data. • Disseminate the analysis result and account for the solution strategy and analysis results as necessary for publication in scientific journals.	Spring

C309	The science of stress and resilience	Karen Johanne Pallesen	3,2	After this course, participants should be able to: •Define stress and distinguish between stressors, stress and stress responses. •Describe the signaling pathways of the fight-flight/mobilization, freeze and calm-connect responses/states. •Describe the signaling pathways of well-being and resilience. •Place freeze, fight-flight and calm-connect states in the context of evolutionary biology. •Describe automatized processing modes in the nervous system that make fight-flight “first choice” even in the absence of threats or real danger. •Describe the signaling pathways of commonly experienced stress symptoms such as increased heart rate, sweaty palms and “the mind going blank”. •Explain individual variation in stress sensitivity and resilience. oHow can childhood trauma predispose to life-long heightened stress sensitivity, and how can a safe childhood make you stress resilient? •Explain the link between long-term stress and oCardiovascular diseases oMetabolic diseases: metabolic syndrome, diabetes oAnxiety and depression oFunctional somatic syndromes oAutoimmune diseases •Explain the appearance of the stress epidemic oWhat are the particulars of modern societies and ways of living that produce excessive stress? Are adolescents especially exposed to stressors, - or sensitive to stress? •Present arguments why and how schools, work places and clinical practices could potentially benefit from insights into the science of stress and resilience.	Spring
C316	Patient reported outcomes (PRO) in clinical research	Annette De Thurah	2,6	By the end of this course the students will •Have received an overall introduction to the concept of PRO and the implication of using PRO data in clinical research •Be able to select PRO instruments, and evaluate it’s quality •Be able to design, analyse, report and interpret PROs in clinical research	Spring

C317	Introduction to Machine Learning for Health Research	Oleguer Plana-Ripoll	4,1	•Discuss the scenarios where machine learning can or cannot enhance epidemiologic research and practice •Assess ethical dilemmas that may arise when data-driven tools (i.e. derived from patterns in data without human direction) are used for public health •List and describe various learning algorithms and approaches to evaluate their performance •Evaluate the appropriateness of using machine learning for specific research questions, using current examples from the scientific literature •Demonstrate ability to utilize analytic tools that promote reproducibility •Analyze public health data by applying learning algorithms and evaluating the resulting models •Compare different machine learning approaches to address common challenges in epidemiologic research	Spring
C319	Introduction to neurodegenerative diseases and disease models	Nathalie Van Den Berge and Caroline Cristiano Real Gregório	8	cells and regions are affected and potential mechanisms of disease progression); (2) demonstrate a critical understanding of the methods of investigation and (differential) diagnosis; (3) critically evaluate the different in vivo and in vitro disease models available, be able to judge the advantages and disadvantages; (4) critically discuss the management options available for patients with neurodegenerative disorders, as well as potential future disease-modifying treatment options; (5) critically appraise the scientific literature on the clinical and research aspects of neurodegenerative diseases.	Fall

C326	Mechanisms, Clinical Presentation, and Treatment of Neuropathic Pain (online)	Pall Karlsson	5	• By the end of this course, students will have developed a comprehensive knowledge and conceptual understanding of the theoretical foundations of pain, including neuropathic pain, its classification, and the underlying mechanisms involved. • Students will be able to describe different pain phenotypes. They will also gain skills in interpreting research data related to pain phenotypes. • Students will acquire in-depth knowledge of the mechanisms involved in the generation, transmission, and modulation of pain signals, with a specific focus on neuropathic pain. Specifically, students will develop the ability to critically evaluate experimental and clinical research findings pertaining to pain mechanisms as part of research projects or ongoing studies. • This course will enable students to design research studies aimed at investigating pain and neuropathic pain. Students will gain skills in formulating research questions, selecting appropriate methodologies, and analyzing and interpreting data. • Students will develop a comprehensive understanding of current treatment approaches for pain, including both pharmacological and non-pharmacological interventions. • Students will be able to critically appraise current controversial issues in the field of neuropathic pain research, and critically discuss them in an academic discourse.	Spring

Other

A88	Systematic Literature Search (Research-year)	Janne Lytoft Simonsen	0,7	At the end of the course, the participants will be able to build a systematic search strategy and select relevant information sources and search terms. Furthermore, participants will be able to navigate common medical databases and be familiar with the concept of reference management software in general and EndNote in particular.	Spring/Fall
A103	Basic Course in Written English	Morten Pilegaard	2	•Knowledge about guidelines and conventions governing the structuring of clinical research papers. •Knowledge of principles of cohesion and thematic structure in research papers. •Knowledge of some of the main differences between English and Danish syntax and grammar. •Ability to describe typical structural and linguistic features of poster, abstract and paper. •Ability to trace errors of syntax and grammar in English-language texts.	Spring/Fall

A125	Advanced Course in Written English	Morten Pilegaard	2	•Ability to use existing guidelines and conventions governing the structuring of clinical research papers. •Ability to analyse and describe typical structural and linguistic features of poster, abstract and paper. •Ability to apply principles of cohesion and thematic structuring in own texts. •Ability to analyse and produce select text types. •Ability to trace and correct errors of composition and grammar in English-language texts.	Spring/Fall
A127	Linear regression models for continuous and binary data	Morten Frydenberg	3,6	•Confidently read and understand the output of a regression analysis •Understand and evaluate the assumptions behind the model •Work with regression models that include interaction/effect modification •Communicate the main results of a regression analysis and the assumptions	Fall
A132	PhD Supervision (supervisors)	Mette Krogh Christensen	0	The quality of PhD students' education is partly dependent on the PhD supervisor's competencies as a supervisor. The aim of this course in PhD supervision is to expand the participants' repertoire of supervision strategies and methods to provide a flexible approach to supervision, strengthen their reflections on practices, roles, and relationships in the supervision process, and share experiences and new knowledge for advancing PhD supervisors' competencies.	Spring/Fall
A137	Literature search in medical databases (Language English)	Annette Balle Sørensen	0,7	•To enable the participants to perform qualified searches, systematic as well as citation searches, in relevant medical databases. •To introduce the participants to methods of scientific quality measurements, thus enabling them to understand the basic principles of research evaluation. •To present an overview of different aspects related to research publication such as Open Access, ORCID, Forskerportalen.dk, Copyright etc. •To introduce the basic concept of reference management programs in general and – if requested – to make the participants familiar with the specific reference management program EndNote	Spring/ Fall
A227/28	Research presenter - Educational Informatics	Louise Maria Gamborg	3,8	•Apply skills in Rhetorics for preparing and delivering research presentations with a focus on producing and presenting effective talks and posters •Use reflective skills when in engaging in academic discussions and evaluating performance in academic presentations •Apply principles for giving and receiving feedback	Spring/Fall

A253	Prepare yourself on the movement from a PhD in Health to a career in non-academia	Vibeke Broe	4,5	•Identify transferable skills achieved during doctoral training •Explain the value of these skills within as well as outside of academia •Reflect on their own possible career path •Apply the different aspects of the course when marketing their skills in different situations •Furthermore, the participants should gain an understanding of common career areas for researchers, and the requirements companies have when employing PhDs.	Fall
A291	Introduction to Psychiatric Epidemiology	Katherine Musliner	2,7	Demonstrate knowledge of basic concepts psychiatric epidemiology and its relevance for public health. Discuss common study designs used in psychiatric epidemiology, including cohort, case-control and register-based designs, as well as methods for integrating biological and socio-demographic perspectives in psychiatric epidemiology. Describe main type of data sources and measurements used in psychiatric epidemiology and explain their strengths and weaknesses. Explain the applications of these methods for the study of etiology, treatment, and outcome in psychiatric disorders. Describe, on a broad level, the current knowledge of the main adult and child psychiatric disorders based on psychiatric epidemiologic research and identify areas in need of further research. Independently evaluate psychiatric epidemiology studies from scientific	Spring
A293	PhD-student as supervisor for undergraduate students – how and when?	Mette Krogh Christensen	3,8	•Discuss and reflect on requirements and responsibilities of the different supervisor and co-supervisor roles, •Provide feedback to undergraduate students' written or oral presentation in a way that facilitates the undergraduate students' learning process, and •Acquire knowledge about undergraduate students' expectations and interests to balance supervisor's control and undergraduate students' control of their projects.	Spring/ Fall

A294	The Reflective Teacher	Kamilla Pedersen	2,4	• Describe the characteristics of student-centred teaching and learning. • Describe the characteristics of reflective practice of teaching. • Identify, evaluate, and reflect on teaching elements in their own teaching in order to enhance student learning. • Provide peer-feedback in teaching. • Plan, conduct and evaluate a specified lesson including give reasons for learning outcomes, student activities and teacher role in the lesson. • Develop a first draft towards a teaching portfolio	Spring
A315	Introduction to managing Research Data, FAIR principles, and Open Access	Anne Vils Møller	0,3	• Will understand the basic principles of RDM • Will know the different aspects of the research data lifecycle • Will know what constitutes a data management plan and be familiar with templates and specific tools for writing their own data management plan • Will know about FAIR principles and how to make their own datasets as FAIR as possible • Will know the different models of OA: gold, green, hybrid • Will be aware of potential OA requirements of funders	Spring
A1000	Health - Welcome to the PhD study	Mia Maychrzak		The Graduate School of Health wishes to welcome all newly enrolled PhD students to the PhD programme, and to give PhD students the opportunity to meet and interact with fellow PhD students and AU representatives from fields relevant during the PhD programme.	Spring/ Fall
A1001	Do you manage your time well? Using project and time management to avoid stress (after 6 months) Ny titel: Time and Project Management I: Using the IPTO to communicate with your supervisors and keep the overview in a dynamic PhD context (after 6 months)	Constance Kampf	1	At the end of the course, the participants will be able to revise their IPTO planning tool and integrate key decision points into it. In addition, they will have learned how to make connections between the high-level planning in the IPTO, and more detailed planning in their daily work. Finally, they will build a vocabulary for discussing progress with their advisor which allows for considering progress separately from content.	Spring/ Fall
A1002	Reality check - can I really do that much? Time and Project Management after the midterm evaluation Ny titel: Time and Project Management II: Considering Risk & Coordinating your daily work with the big picture (IPTO) (after 6 months)	Constance Kampf	1,4	At the end of the course, the participants will be able to reconsider their PhD completion plan, reflecting on how to use a two-level approach to planning and controlling progress. In addition, students will reflect on how to remove bottlenecks and risks in the second half of the PhD.	Spring/ Fall
A1003	From PhD to PostDoc	Constance Kampf	5,5	At the end of the course, the participants will be able to reconsider their PhD completion plan, reflecting on how to use a two-level approach to planning and controlling progress. In addition, students will reflect on how to remove bottlenecks and risks in the second half of the PhD.	Spring/ Fall

A1004	Getting the most out of your PhD – a career perspective	Vibeke Broe	0,3	Understand why and how to work with the professional development How to work with goal setting and how to achieve goals Understand how to incorporate career thinking in your PhD	Spring
A1005	Preparing for Career Transitions	Vibeke Broe	0,3	•Know how you can set direction for your future work life during your PhD •Know how to explore your options •Understand the factors that should influence your career decision process •Remember that you should take control of your own career planning and development	Spring
A325	How to Communicate your PhD Research	Lise Wendel	0,8	•Insight into presentation techniques and communicative tools, to make complex knowledge understandable, interesting and relevant to the outside world. •Experience in communicating and conveying their own PhD research . •Knowledge of journalists' working methods and priorities as well as the researcher's own role and rights as an expert in a media context. •Knowledge of responsible research communication and insight into what can be communicated, to whom and when.	Spring/ Fall