

J.nr.	Title	Course leader	ECTS	Learning outcome	Semester/ number of courses
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Currently, the proposal is subject to changes

BIOMED

B69/31,32	Flow cytometry	Charlotte Christie Petersen	2,3	<ol style="list-style-type: none"> 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 	Spring / fall
B100/43,44	Laboratory animal science	Thea Thougard Johansen/Astrid Gerd Holtet	2,0	<p>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.</p> <ul style="list-style-type: none"> • 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
B112/13	Clinical assessment of insulin resistance and other metabolic parameters	Niels Jessen	1,0	<ul style="list-style-type: none"> · Understanding for the use and limitations of state of the art methods in metabolism research · Insight into tissue specific mechanisms underlying dysmetabolic conditions · Understanding for the signaling mechanisms linking insulin receptor to glucose uptake · Introduction into animal models and in vitro models for dysmetabolic conditions · Introduction into novel methods to assess substrate metabolism in humans 	Spring
B178/13	52th Sandbjerg Meeting on Membrane Transport	Jeppe Prætorius	1,8	<p>Networking with national and international peers of your research area Practice oral presentation skills and in depth discussion of scientific questions Update your knowledge on new biological concepts In depth discussion of technological/method approaches to study your scope of questions.</p>	Spring
B199/	DACRA Summer Meeting	Christian Aalkjær		Find more information here	Spring
B226/10	Molecular Immunology	Thomas Vorup-Jensen	1,2	<p>Based on the selected examples presented in the course, a the student should</p> <p>Receive a better understanding of how functions of the immune system is studied at the molecular level Understand the connection between molecular mechanisms and immunodeficiencies Understand the connection between molecular mechanisms and chronic inflammation disorders and how to treat them Receive a better understanding of the connection between cancer and functions of the immune system, including cancer therapy Be able to better contemplate quantitative aspects of molecular mechanisms and functions of the immune system</p>	Spring
B244/08	Genome engineering	Yonglun Luo	2,4	<p>With the completion of this Genome Engineering course, PhD students are expected to</p> <ol style="list-style-type: none"> 1. Acquire a systematic knowledge on CRISPR gene editing technology, progresses, and applications 2. Know how to design the CRISPR gRNA for gene knockout 3. Learn how to design the donors for gene knockin 4. Independently select the best CRISPR system and strategy for a gene editing project 5. Independently analyze and interpret CRISPR gene editing results 6. Know the concept, resources and potential of CRISPR data science 7. Understand the progresses, but also remaining challenges, in CRISPR gene therapy 	Spring

B246/08	Graduate neuroscience course	Mai Marie Holm	6	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
BPC250/	Responsible Conduct of Research	Various course leaders	1,0	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	4 x spring / 3 x fall
B273/05	Advanced In-vivo Optical Imaging Techniques	Ina Maria Schiessl	4	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
B288/04	Host pathogen interactions – from basic microbiology and immunology to medicine	Trine Mogensen og Holger Brüggemann	1,3	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
B299/03	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
B116/20	Advanced course in Laboratory Animal Science	Martin Kristian Thomsen	2,6	<ul style="list-style-type: none"> 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
CLINFO					
C47/25	Magnetic Resonance	Steffen Ringgard og Christoffer Laustsen	1,8	<ul style="list-style-type: none"> 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 studies of organ functionality and diseases General overview of hyperpolarized magnetic resonance imaging and spectroscopy applied in cells, animals and humans 	Spring

C116/20	Advanced course in Laboratory Animal Science - Experimental surgical techniques in swine	Birgitte S. Kousholt	2,6	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
C119/	Datamanagement & Stata	Jakob Hjort	0,6	<ul style="list-style-type: none"> • Handle research data in a way that live up to legal- as well as basic scientific requirements • Relate to the basic principles of data documentation • Relate to Stata's user-interface and basic functionalities • Use Stata's build-in help system • Build well-structured command-files ("do-files") to enhance transparency and reproducibility 	3 x spring / 3 x fall
C142/15	Proteomics and protein profiling	Johan Palmfeldt	3,2	<p>Understanding of the principles of proteomics methodologies, and how the different methods can be combined</p> <p>Knowledge of the value of protein analysis in biomedical research, including advantages and limitations</p> <p>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.</p> <p>To be able to interpret, discuss and critically assess proteomics data</p> <p>To be able to design studies on protein analysis and proteomics (type of sample, procedures, instruments etc.)</p> <p>The participant should be able to reflect on/discuss</p>	Spring
C151/13	Clinical Research	Morten Böttcher		<ol style="list-style-type: none"> 1) Selection of study design 2) Power sample calculations 3) Collaboration with the ethics committee and legal advicers 4) Data management including new GDRP regulation 5) Good Clinical Practice GCP and Good Laboratory Practice (GLP) 	Spring
C155/29	Epidemiology I - Basic principles of epidemiology	Ulrik Schiøler Kesmodel	1,8	<p>By the end of the course the student should be able to:</p> <ul style="list-style-type: none"> • 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
C160/14	GCP and investigator-initiated Clinical Trials	Birgitte Olrik Schlemmer	1,4	<p>Explain and implement the legal, regulatory and good practice framework – the principles of GCP, national regulations, application to the authorities</p> <ul style="list-style-type: none"> • 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
C177/12	Introduction to Clinical Epidemiology	Deidre Cronin Fenton	3,2	<ul style="list-style-type: none"> • Providing a broad knowledge and understanding of clinical epidemiology • Designing a clinical epidemiology study • Understanding measures of disease frequency, effect and association, and which are appropriate to each study design • Assessing study validity, including identifying various biases and sources of error in epidemiological studies • Interpreting clinical epidemiology research papers 	Spring

C205/22, 23	The Talented Researcher	Kamille Smidt Rasmussen	2,2	By the end of the course you should have learned about and strengthened your awareness of own strengths and challenges to enhance leadership in both work and your everyday life. You should have strengthened your project management skills in order to better control and plan your project and PhD-education with respect to deliverables, milestones and schedules. As a specific outcome, all participants will have a plan with deliverables, milestones, and schedules for their PhD project.	Spring/fall
C219/04	What is pain and how should it be measured?	Lene Baad-Hansen, Pål Karlsson og Francesca Fardo	1,2	<ul style="list-style-type: none"> • Learn about the basic neurobiology and physiology of pain • Be knowledgeable on methods for evaluation of pain • Be knowledgeable on evaluation of psychological factors influencing pain • Obtain knowledge on neurophysiological correlates of pain • Obtain knowledge on human experimental and animal pain models 	Spring
C214/11	Registries, databases and other electronic data sources in clinical research	Signe Sørup	2,5	<p>After completion of this course, participants are expected to:</p> <ul style="list-style-type: none"> • 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 secondary data sources 	Spring
C229/10	Preparation and critical reading of meta-analysis	Inger Mechlenburg	0,6	<p>After the course, the students will have competence to:</p> <ul style="list-style-type: none"> • 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
C236/23,24	Introduction to Research Training in Health Sciences	Kresten Krarup Keller	0,7	<p>Introduction to basic, clinical, quantitative and epidemiological research</p> <p>Gain knowledge on writing research protocols</p> <p>Gain knowledge on writing successful applications</p> <p>Introduction to structured literature search</p> <p>Reflections on student-supervisor relationships</p> <p>Introduction to ethics and regulations in animal and clinical research</p>	Spring/fall
C245/08	Cancer Epidemiology using the Danish Clinical Cancer Databases	Deidre Cronin Fenton	3,2	<ol style="list-style-type: none"> 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
C262/	Get ready to work with biostatistics	Eva Greibe	0,8	<ul style="list-style-type: none"> • 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/2 x fall
C262/19	Get ready to work with biostatistics - Talent + RY	Eva Greibe	0,8	<ul style="list-style-type: none"> • 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
C267/06	Introduction to Fluorescence Microscopy	Lene Niemann Nejsum	2,8	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, analyze images and generate publication figures. This will enable students to participate in research projects involving fluorescence microscopy.	Spring

C283/05	Extracellular vesicles – an introduction	Peter Nejsum	2,6	<ul style="list-style-type: none"> • Describe EVs, their origin and cargo • Describe different EV isolation methods and their pros and cons • Describe the most common characterization techniques for EVs • Describe how to characterize EV composition • Discuss what to consider during collection and isolation of EVs from various types of samples • Discuss how to explore EV function • Isolate and characterize EVs 	Spring
C290/02	Principles and approaches to digital image processing and analysis	Lene Niemann Nejsum	1,8	<p>The course will cover:</p> <ul style="list-style-type: none"> Fundamentals of Digital Images Basic Principles of Image Processing Fourier Transformation Object Segmentation Machine-learning and Object Segmentation Object-based Colocalization Intensity-based Measurement and Analysis Tracking Biological Changes and Movement 	Spring
C295/02		Jakob Skou Pedersen	3,2	<ul style="list-style-type: none"> • To understand the principles and central concepts of Bayesian statistics • Be able to translate and formalize simple scientific questions to Bayesian models • Be able to perform Bayesian statistical analysis in R and Stan • To understand and apply a range of inference methods 	Spring
C304/03	The biology and characteristic of circulating cell free DNA and circulating tumor DNA in health and disease	Claus Lindbjerg Andersen	1,0	<ul style="list-style-type: none"> • The necessary knowledge needed to avoid, or at least control for, biases introduced by pre-analytical processing. • Basic understanding of the pros and cons of present state-of-the-art methods and technologies used to analyse cell free DNA (cfDNA) and ctDNA. To enable the student to choose the method/technology best suited in a given situation. • Knowledge about the clinical situations where ctDNA may potentially be used to guide clinical decision making • Knowledge about pros and cons of different cfDNA/ctDNA trial designs. • To qualify the student to design and conduct their own cfDNA/ctDNA study 	Spring
C308/02	Applied machine learning in health sciences	Peter Mondrup Rasmussen	4	<p>A student who has met the objectives of the course will be able to:</p> <ul style="list-style-type: none"> • 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 particular 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

C309/02, 03	The science of stress and resilience	Karen Johanne Pallesen	1,3	<p>After this course, participants should be able to:</p> <ul style="list-style-type: none"> • Present definitions of stress and major stress theories • Describe the signalling pathways of the fight-flight response • Explain the psychophysiological processes that correspond to commonly experienced stress symptoms such as increases in heart rate, sweaty palms and “the mind going blank” • Describe the signalling pathways of the freeze response • Describe current insight into the neurobiological foundations of resilience • Place fight/flight, freeze, and resilience in the context of evolution and explain why stress has become a big problem in modern societies • Give examples of observed associations between personality traits and stress threshold • Give examples on the association between genes and individual variation in stress/resilience • Explain how environmental/social factors can affect the stress threshold of the individual person, or alternatively, raise resilience • Explain how trauma (severe and/or long-term stress) can “lock” victims in fight-flight-freeze mode, simultaneously blocking processes involved in safe social engagement • Explain other mechanisms that link ongoing stress to somatic and psychiatric diseases (heart disease, diabetes, anxiety, and depression). • Explain the processes that lead from long-term stress to inflammation. Why is this insight critical? • Explain how different stress reduction methods exert their effects (the psychophysiological mechanisms) • Discuss how clinical practice may benefit from scientific insights into the biology of stress 	Spring/fall
C316/02	Patient reported outcomes (PRO) in clinical research	Annette De Thurah	1,8	<ul style="list-style-type: none"> • 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
C317/01	Introduction to Machine Learning for Health Research	Oleguer Plana-Ripoll	2,1	<ul style="list-style-type: none"> • 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
C318/01	Qualitative Methodologies in a Quantitative World: A PhD workshop on relations, methodology and reflections	Signe Vogel	0,8	<p>The course wishes to engage with PhD-students who are producing or have produced qualitative data (e.g. interviews, observations, participations etc.) and discuss how these aspects of their work relates to their own position and their chosen theoretical framework. Wishing to establish the link between the concrete fieldwork and more abstract theoretical and methodological assumptions, the course takes its starting point in two questions: 1) What was/is my own position vis-à-vis my research participants in my fieldwork? 2) How do my methodological reflections establish the premises for producing qualitative material?</p>	Spring
C104/22	From Gene to Function – Molecular Analysis of Disease Genes	Peter Bross	1,5	<ul style="list-style-type: none"> • Assessment of effects of gene variations • Protein folding, trafficking, and biogenesis and their disturbances in diseases • Methods for experimental investigations of effects of gene variations • Design and interpretation of cellular and in vitro experiments • Design and interpretation of energy metabolism assays (Seahorse) 	Fall
C171/14	Introduction MATLAB with examples from Health Science	Irene Klærke Mikkelsen	2,8	<p>After completion of the course, the student should be able to understand and be able to use:</p> <ul style="list-style-type: none"> • 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

C190/07	Image diagnostic methods for evaluation of the musculoskeletal system	Maiken Stilling	0,9	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	1,2	The participants obtain theoretical knowledge and practical skills required for development, troubleshoot, and validation of ELISA and TRIFMA assays.	Fall
C243/09	How to get published	Søren Dinesen Østergaard	3,0	<ul style="list-style-type: none"> • Have a basic knowledge of all aspects of the publication process • Have improved their writing abilities • Have learned how to perform peer-review 	Fall
C253/08	Prepare yourself on the movement from a PhD in Health to a career in non-academia	Vibeke Broe	2,1	<ul style="list-style-type: none"> • Verify their 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
C254/08	An introduction to Good Manufacturing Practice (GMP)	Dirk Bender and Anja P. Einholm	1,2	<ul style="list-style-type: none"> • 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
C279/05	Personalised Medicine	Deirdre Cronin Fenton	1,0	<ol style="list-style-type: none"> 1. Define "personalised medicine" in disease diagnosis and treatment 2. Enumerate "omics" and how "omics" can be utilized in routine clinics 3. Describe the role of epigenetics in personalized medicine 4. Understand molecular pathology approaches as a tool in personalised medicine 5. Compare and contrast clinical epidemiology approaches to personalised medicine 6. Describe "big data" approaches to assess the effectiveness of precision medicine 7. Identify ethical issues related to personalised medicine in clinical practice and in clinical epidemiologic research 	Fall
C285/05	Introduction to register-based research	Oleguer Plana-Ripoll	2,1	<ul style="list-style-type: none"> • 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
C296/04	Applying clinical epidemiological methods and Danish databases to study chronic disease	Christian F. Christiansen, Deirdre Cronin Fenton, Mette Nørgaard, Reimar W. Thomsen	2,1	The course includes lectures, exercises and computer labs on the following: <ul style="list-style-type: none"> • Identify and design a clinical epidemiologic research study using the Danish databases and registries – comparing and contrasting study designs in order to suitably address a research question • Identifying and ascertaining data from the Danish databases and registries • Assessing study validity and implementing validity checks • Data analysis including data cleaning and implementing survival analysis using Stata • Evaluating study findings, interpreting and reporting study findings 	Fall
C305/03	What is research? Ontology, epistemology and methodology	Rune Dall Jensen	2,0	At the end of the course, students should be able to: <ul style="list-style-type: none"> • 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
C306/02	Clinical and epidemiological aspects of nutrition and obesity	Jens Meldgaard Bruun og Sigrild Bjerre Gribsholt	1,5	Insight into study designs and conduct of clinical research including nutrition and exercise interventions <ul style="list-style-type: none"> • Insight into study designs and conduct of obesity and nutritional epidemiology • Insight into mental aspects of overweight and obesity • Ability to evaluate clinical and epidemiological studies on exercise, nutrition, and overweight and obesity 	Fall
C311/02	Cardiovascular data sources and data quality in Denmark: potential and pitfalls	Morten Schmidt	0,4	By the end of the course the student will have an overview of cardiovascular data sources in Denmark, insights into their data quality, and tools to access data quality in their own research.	Fall

PUBLIC HEALTH

P169/13	Collecting qualitative research data	Sanne Angel	2,3	<ul style="list-style-type: none"> 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
P216/06	Nutritional epidemiology	Christina Cathrine Dahm	1,8	<ul style="list-style-type: none"> Insight into study designs in nutritional epidemiology Insight into design and conduct of nutritional epidemiological studies Insight into strategies for analyses of nutritional epidemiological data Ability to evaluate nutritional epidemiological studies 	Spring
P224/07	Quantitative exposure assessment in occupational and environmental epidemiology	Vivi Schlünssen, Annett Dalbøge	1,9	<ul style="list-style-type: none"> Understand basic concept of exposure and exposure variability Understand the theory of bias and random error, within and between person variability, and attenuation of exposure-response Perform random effect analyses to estimate determinants of exposure and understand implications for within and between person variability Understand the construction and applications of job Exposure matrices for exposure assessment Based on the above skills be able to design exposure assessment strategies for different types of exposure in occupational and environmental cohort studies Evaluate advantages and drawbacks for different exposure metrics in epidemiological studies 	Spring
P225	GRASPH summer school	Grethe Elholm		More information online when open for registration	Spring
P237/08	Which covariates to adjust for: An introduction to directed acyclic graphs	Cathrine Carlsen Bach	1,7	<ul style="list-style-type: none"> 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 project 	Spring
P281/05	Causal Inference in Health Science	Cecilia Høst Ramlau-Hansen	4,1	<ul style="list-style-type: none"> 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
P301/03	How to design and conduct your PhD study to be family-focused (online)	Anne Brødsgaard og Karin Piil	1,2	<p>A student who has met the objectives of the course will be able to:</p> <ul style="list-style-type: none"> Understand the basic characteristics of family-focused approach and dialogue Understand, discuss and argue for the central methodological considerations Identify appropriate family-focused qualitative and quantitative data sources for research Describe and argue for the choice of patient-reported outcome and caregiver-reported outcome Identify strengths and limitations of a family-focused approach in research Understand and apply family-focused values across cultures and in vulnerable families Present the family-focused PhD study in a concise and structured format 	Spring
P302/03	Evaluating complex interventions in Public Health	Helle Terkildsen Meildahl/Knud Ryom	2,0	<ul style="list-style-type: none"> 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
P310/02	How to design and conduct a qualitative content analysis in a qualitative study or a systematic review	Cecilie Nørby Thisted	2,7	<p>Knowledge on the background, theoretical foundation and the potential of content analysis.</p> <p>Describe the main steps in conducting a qualitative content analysis.</p> <p>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.</p> <p>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.</p> <p>Discuss methodological issues in qualitative content analysis, including methodological reflections in relation to own project designs and plans for analyzing own data material.</p>	Spring

P1050/39, 40	Basic Biostatistics - part 1	Erik Parner	2,4	Document and handle data needed for a statistical analysis Chose a relevant statistical model for a given research question and evaluate the assumptions of the statistical analysis Perform a statistical analysis based on the chosen model Describe the results of the statistical analysis, and discuss the results in relation to the scientific question Make simple calculations of sample sizes for the planning of a comparative study	Spring/fall
P1050/39, 40	Basic Biostatistics - part 2	Erik Parner	2,8	Document and handle data needed for a statistical analysis Chose a relevant statistical model for a given research question and evaluate the assumptions of the statistical analysis Perform a statistical analysis based on the chosen model Describe the results of the statistical analysis, and discuss the results in relation to the scientific question	Spring/fall
P98/24	Epidemiology II	Christina C. Dahm	3,3	<ul style="list-style-type: none"> Advanced insight into epidemiological study design Advanced insight into design and evaluation of epidemiological studies Insight into DAGs Insight into strategies for analysing epidemiological data Practical experience with analyses of epidemiological data 	Fall
P155/30	Epidemiology I - Basic Principles of Epidemiology	Bodil Hammer Bech	1,8	<p>By the end of the course the student should be able to:</p> <ul style="list-style-type: none"> 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. 	Fall
P231/09	Developing complex interventions in Public Health	Knud Ryom	2,0	<ul style="list-style-type: none"> 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 	Fall
P255/08	Introductory course in questionnaire technique and clinimetrics	Henrik Hein Lauridsen	2,0	<ul style="list-style-type: none"> 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 Know the requirements for questionnaire validation 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 and methodology with focus on validity and reproducibility Have basic knowledge in how to develop a new measurement instrument 	Fall
P264/05	Public and patient involvement in health research	Annesofie Lunde Jensen	2,3	<p>Summarise the theory and practice of patient and public involvement in health research in the research cycle</p> <p>Assess different approaches of patient and public involvement in health research relevance and applicability in various study designs</p> <p>Take an analytical and critical view on the processes and potential outcomes of patient and public involvement in health research</p> <p>Plan, apply, and evaluate patient and public involvement in health research in own study</p>	Fall

P265/08	Qualitative data analysis: Using Nvivo	Annesofie Lunde Jensen	1,2	<p>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:</p> <p>Create projects Describe units of analysis relevant for the students owns 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 Ph.D.-project Know how to build models and make different kinds of graphic presentations and diagrams</p>	Fall
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Other

A88/82, 83	Systematic Literature Search (Research-year)	Janne Lytoft Simonsen	0,3	<p>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.</p>	Spring/fall
A103/	Basic Course in Written English	Morten Pilegaard	2,6	<ol style="list-style-type: none"> 1) Knowledge about guidelines and conventions governing the structuring of clinical research papers. 2) Knowledge of principles of cohesion and thematic structure in research papers. 3) Knowledge of some of the main differences between English and Danish syntax and grammar. 4) Ability to describe typical structural and linguistic features of poster, abstract and paper. 5) Ability to trace errors of syntax and grammar in English-language texts. 	4 x Spring/ 3 x fall
A125/55	Advanced Course in Written English	Morten Pilegaard	2,6	<ol style="list-style-type: none"> 1) Ability to use existing guidelines and conventions governing the structuring of clinical research papers. 2) Ability to analyse and describe typical structural and linguistic features of poster, abstract and paper. 3) Ability to apply principles of cohesion and thematic structuring in own texts. 4) Ability to analyse and produce select text types. 5) Ability to trace and correct errors of composition and grammar in English-language texts. 	3 x spring/2 x fall
A227/	Research presenter - Educational Informatics	Simone Brendstrup og Peter Musaeus	1,7	<ul style="list-style-type: none"> • Apply skills in Rhetorics for preparing and delivering research presentations with a focus on producing and presenting effective talks and posters • Use reflective skills in evaluating performance in academic presentations • Apply principles for giving and receiving feedback 	Spring/fall
A137/	Literature search in medical databases (PhD)	AU Library/Annette Balle Sørensen	0,3	<ul style="list-style-type: none"> • 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 a brief 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. 	2 x spring/1 x fall
A148/15	Qualitative Analysis in a Phenomenological study	Peter Musaeus	2	<ul style="list-style-type: none"> • Critically evaluate literature and practice in Phenomenological research qualitative analysis. • Write a plan for the analysis with reference to the literature. • Analyse your own data from a phenomenological perspective (e.g. which step do you follow?) and discuss own and co-participants' choices and considerations. • Describe a plan for analyzing their qualitative data/material. • Compare strength and weakness in an empirical phenomenological versus hermeneutical-phenomenological analysis. 	Spring

A291/03	Introduction to Psychiatric Epidemiology	Isabell Brikell	1,5	<ul style="list-style-type: none"> • 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 literature. <p>Upon completion of the course, the participant will be able to:</p>	Spring
A294/06	The reflective teacher	Kamilla Pedersen	2,4	<ul style="list-style-type: none"> • 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 <p>Will understand the basic principles of RDM</p>	Spring
A315/02	Introduction to Research Data Management, FAIR principles, and Open Access	Anne Vils/Annette Balle Sørensen	0,2	<ul style="list-style-type: none"> • 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/fall
A1000/	Welcome to the PhD study	Forskeruddannelsen	0	<p>Introduction event for all newly enrolled PhD students at Health, Aarhus University.</p> <p>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.</p>	2 x spring/2 x fall
A127/18	Linear regression models for continuous and binary data	Morten Frydenberg	2,7	<ul style="list-style-type: none"> • Apply both linear normal and binary regression methods • 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 behind these as a part of a paper 	Fall
A293/06	The PhD-student as supervisor for undergraduate students – how and when?	Mette Krogh Christensen	2,0	<p>By the end of the course, the participants can:</p> <ul style="list-style-type: none"> • 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 	Fall