

J. no	Title	Course leader	Learning outcomes	Offered in Semester
Graduate School Health course offer 2027				
The course list may be subject to minor changes				
Others, not in cooperation with a department				
A1000	Health - Welcome to the PhD study	Mia Maychrzak	Welcome presentations followed by a 2 hour crash course is a 360-degree checkup on GDPR, data storage solutions, information/cyber security, and research data management..	Spring/fall
A1001	Time and Project Management: Using the IPTO to Communicate with your Supervisors	Constance Kampf	At the end of the course, the participants will be able to revise their IPTO planning tool and integrate key decision points together with their supervisors. In addition, they will have learned how to make connections between the high-level planning in the IPTO, and planning rhythms in their weekly and daily work. Finally, they will build a vocabulary for discussing progress with their supervisors which allows for considering progress separately from content.	Spring/fall
A1001	Time and Project Management: Using the IPTO to Communicate with your Supervisors / ONLINE	Constance Kampf	At the end of the course, the participants will be able to revise their IPTO planning tool and integrate key decision points together with their supervisors. In addition, they will have learned how to make connections between the high-level planning in the IPTO, and planning rhythms in their weekly and daily work. Finally, they will build a vocabulary for discussing progress with their supervisors which allows for considering progress separately from content.	Spring/fall
A1002	Time and Project Management: Risk and Coordinating your daily work with the big picture	Constance Kampf	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 and remove bottlenecks and risks in the second half of the PhD. Participants will also develop familiarity with Kanban boards as a means of documenting research progress and coordinating Kanban structure with research needs that change over time.	Spring/fall
A1003	PhD to Post Doc: Networking, Grantseeking & Interdisciplinarity for a research career after the PhD (both part-time & full-time research)	Constance Kampf	At the end of the course, the participants will be able to reconsider their PhD completion plan, recognizing opportunities that lay groundwork for a successful part-time or full-time research career. They will also have developed a strategic plan for changing their networks, engaging in interdisciplinarity, and laying groundwork for grant seeking as their career progresses.	Spring
A1004	Getting the most out of your PhD – a career perspective	Vibeke Broe	• Understand the importance of working strategically with their professional development • Apply principles of goal setting to support the achievement of academic and career-related objectives • Integrate career thinking into their PhD work and planning	Spring/fall
A1005	Preparing for Career Transitions	Vibeke Broe	• Evaluate their professional development and identify key competences to further develop during the remainder of their PhD. • Analyse and compare relevant career options in relation to their skills, interests, and values. • Apply basic career planning tools, including networking and information gathering. • Formulate personal criteria for a meaningful and sustainable working life.	Spring/fall
A103	Basic Course in Written English	Morten Pilegaard	• 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	• 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 Overgaard	• Apply linear and logistic regression models to analyze continuous and binary outcomes. • Interpret and critically evaluate the output from regression analyses. • Assess model assumptions, understand the consequences of assumption violations, and apply appropriate methods to address potential problems. • Use transformations of predictors, including restricted cubic splines for flexible modeling of continuous variables. • Evaluate collinearity among predictors and identify influential observations. • Develop regression models using a model-building strategy based on pre-specification, appropriate model complexity, and subject-matter knowledge. • Communicate the main results, assumptions, and limitations of regression analyses clearly in scientific papers and academic reporting.	Fall
A137	Literature search in medical databases (Language English)	Annette Balle Sørensen	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 Copyright, Open Access, and Predatory Journals. 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
A148	Qualitative Research: Phenomenology	Sanne Angel	• The student will have engaged in critically evaluate literature and practice in phenomenological analysis. • The student will have hands-on experience with analysis from analysing own (or another set) data with a phenomenological approach. • The student will have discussed own and co-participants' choices and considerations. • The student will describe a plan for analyzing own qualitative data/material with reference to the literature.	Spring
A227	Research presenter - Educational Informatics	Ander Schram	• Apply key presentation techniques to structure and deliver engaging research presentations. • Utilise rhetorical strategies to enhance clarity, impact, and audience engagement. • Present scientific posters and oral research talks with confidence and professionalism. • Effectively use feedback to improve presentation skills.	Spring
A253	Prepare yourself on the movement from a PhD in Health to a career in non-academia	Vibeke Broe	• Develop career competences that support informed and reflective career decision-making. • Identify and map transferable skills acquired through doctoral training. • Explain and communicate the value of their skills in academic and non-academic contexts. • Reflect on and evaluate potential career pathways and directions. • Apply career-related tools and insights to the presentation and marketing of their skills in different professional contexts. • Describe key characteristics of common career pathways for researchers, including typical employer expectations for PhD graduates	Fall
A293	PhD-student as supervisor for undergraduate students – how and when?	Iris Maria Pedersen	Discuss and reflect on requirements and responsibilities of the different supervisor and co-supervisor roles, Provide feedback to undergraduate students' products in a way that facilitates the undergraduate students' learning process, Align expectations and interests with students and co-supervisors, and Take measures to balance supervisor control and undergraduate student independence.	Spring/fall
A294	University teaching for Health PhD students	Katrin Heimann	1. Describe characteristics of core principles of good university teaching, including constructive alignment, and apply it for active and student-centered as well as differentiated learning. 2. Discuss chances and challenges of student groupwork and sketch helpful ways of group formation and facilitation. 3. List principles of feedback literacy and design feedback criteria for peer feedback 4. Design and teach a learning activity in a specific lesson, adhering to principles of good university teaching. 5. Apply criteria specific peer-feedback to colleagues on teaching. 6. Reflect on your role and identity as university teacher and discuss how reflective practice may enhance motivation and teaching quality.	Spring/fall

A297	Advanced R	Tahereh Gholipourshahraki	• Configure RStudio to improve coding efficiency. • Use Git for version control and track changes in code. • Apply advanced R programming concepts to write clearer and more maintainable code. • Manipulate and visualize data using the tidyverse and R Markdown. • Develop, document, and share their own R package on GitHub.	Fall
A315	Introduction to managing Research Data, FAIR principles, and Open Access	Anne Vils Mead	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 various search strategies for finding research data	Spring/fall
A325	How to Communicate your PhD research	Lise Wendel Eriksen	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. Understanding of research communication using own social media platforms and specifically LinkedIn Knowledge of responsible research communication and insight into what can be communicated, to whom and when.	Spring/fall
A331	Artificial intelligence for scientific and academic writing	Morten Pilegaard	• Knowledge about AI tools for enhancing academic writing in English • Knowledge about common pitfalls in using AI for text generation and optimisation purposes • Knowledge about ethical considerations and legal issues when using AI • Ability to use a selection of AI tools for academic text production in conformity with current conventions, principles and practices in academic genres and particular scientific text types • Ability to use AI tools to restructure sentences, optimise word choice, improve cohesion and coherence, and ensure grammatical correctness and fluency • Ability to use AI tools for plagiarism detection.	Spring/fall
A334	Become a productive and joyful researcher	Jens Larsen	• Learn how to create a more productive and joyful writing praxis. • Learn how to deal with stress related to writing your thesis • Learn how to create writing goals, and overcome writers block. • Learn how to use storytelling to develop your text. • Learn how to create your own academic writing group.	Spring/fall
A337	AI for advanced scientific and academic writing	Morten Pilegaard	• Apply advanced AI prompting strategies, including well-structured multi-step prompts, to complex scientific writing tasks. • Use AI to effectively respond to reviewer critiques and resubmit their papers. • AI-assist the synthesis of 3-4 published papers and other context materials into a cohesive PhD thesis, larger scientific work or grant applications. • Efficiently draft and edit larger scientific texts, such as scientific papers and funding proposals. • Perfect their writing through personalised feedback on their scientific work. • Maintain academic integrity while engaging extensively in AI-assisted writing.	Fall
A340	Basic R	Tahereh Gholipourshahraki	• Navigate RStudio and work with the Console, Script, and Environment panes. • Install and manage R packages from CRAN. • Set up a project directory and save reproducible scripts. • Import, explore, and manipulate datasets in R. • Understand and apply basic data structures, including vectors, lists, and data frames. • Use control structures, loops, and simple functions. • Conduct descriptive analyses and create basic visualisations. • Use introductory dplyr and tidyverse tools for data wrangling	Spring/fall
A88	Systematic Literature Search (Research-year)	Janne Lytoft Simonsen	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

Department of Biomedicine				
B100	Laboratory Animal Science	Thea Thougard Johansen	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
B112	Clinical assessment of insulin resistance and other metabolic parameters	Esben Søndergaard	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	Fall
B116	Advanced course in Laboratory Animal Science	Martin K. Thomsen	• 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
B226	Molecular Immunology	Thomas Vorup-Jensen	As there is no examination, the intention is that the student picks topics of interest from the presented talks. Some of these may be helpful in bringing the student further into understanding immunology as a toolbox for explaining physiological or pathophysiological phenomena, including those involved with the student's own PhD project. Past experiences suggest that a broad range of backgrounds permit the student to follow the course at a fully acceptable level.	Spring
B244	Genome Engineering	Yonglun Luo	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 analyse 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	Graduate neuroscience course	Mai Marie Holm	Participants will develop 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.	Spring

B288	Host pathogen interactions – from basic microbiology and immunology to medicine	Trine Mogensen	Have achieved a theoretical background and ability to discuss current knowledge in some aspects of basic cell biology, immunology, microbiology and microbiome related to human host-microbe 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 host-interacting mechanisms can have host-detrimental consequences, including the pathogenesis of infectious diseases and the medical implications hereof.	Spring
B299	Advanced Flow Cytometry	Morten Nørgaard Andersen	(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
B329	PhD course in Biomedical Innovation	Jane Palsgaard Pedersen	After the course, the students will know about different routes to take their innovative research projects, the steps necessary to form a spin-out company, how to communicate and pitch your project to investors or collaborators.	Spring
B341	From Numbers to Knowledge: Measurement Theory in the Biomedical Sciences	Klaus Eyer	Explain core concepts and principles of measurement theory and their implications for biomedical research. Distinguish between nominal, ordinal, interval, and ratio scales and evaluate their suitability in a given study. Identify and critically analyse the measurement framework underpinning their own and others' research. Compare human reflection and AI-assisted analysis in measurement-related decision-making. Communicate complex measurement-theoretical concepts clearly in oral and written formats.	Fall
B342	Integrative Post-GWAS Methods: Advanced Statistics, Functional Genomics, and Machine Learning	Ditte Demontis	- Understand the key principles and applications of GWAS and post-GWAS analyses. - Identify likely causal variants in associated genomic loci. - Link variants to genes using genomic proximity and functional evidence. - Integrate genetic findings with functional genomics data. - Perform tissue, and pathway-level enrichment analysis. - Connect genetic signals to relevant biological contexts, including specific cell types. - Understand the basics of PRSs in disease risk prediction - Perform disease prediction using pre-trained machine learning models.	Fall
B69	Flow cytometry	Charlotte Christie Petersen	Understanding the physics behind flow cytometry Understanding the applications and limitations of flow cytometry Practical knowledge and experience with flow cytometry experiment design Understanding essential flow cytometry controls Awareness of common (and not so common) pitfalls Hands-on, practical experience with data analysis Ability to critically evaluate flow cytometry results Requirements for publication of flow cytometry experiments	Spring/fall
Department of Clinical Medicine				
C116	Advanced course in Laboratory Animal Science – Porcine models in biomedical research	Birgitte Saima Kousholt	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	- Understanding of the principles of proteomics and metabolomics methodologies, with focus on mass spectrometry (MS)/45 based proteomics. - 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

C155	Epidemiology I - Basic Principles of Epidemiology	Ulrik Schiøler Kesmodel	- 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	Spring/fall
C160	Investigator-initiated Clinical Trials and GCP	Birgitte Olrik Schlemmer	- 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
C177	Introduction to Clinical Epidemiology	Deirdre Cronin Fenton	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
C204	Basic and practical course in quantitative immunoassays	Mette Bjerre	The participants obtain theoretical knowledge and practical skills required for development, troubleshoot, and validation of ELISA and TRIFMA assays.	Fall
C205	The talented Researcher	Kamille Smidt Rasmussen	By the end of the course, you should have learned about and strengthened your awareness of your own strengths and challenges to enhance leadership in both work and your everyday life. You should have strengthened your project management skills 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. After the course, participants will also have the opportunity to attend a series of follow-up workshops aimed at supporting their individual project management and further development of their PhD projects.	Spring/fall
C214	Registries, databases and other electronic data sources in clinical research	Signe Sørup	- 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	Preparation and critical reading of meta-analysis	Inger Mechlenburg	- 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	Introduction to Research Training in Health Sciences	Rikke Katrine Jentoft Olsen	Introduction to basic, clinical, qualitative and epidemiological research Gain knowledge on writing research protocols Gain knowledge on writing successful applications Introduction to ethics and regulations in animal and clinical research How to make an oral presentation Reflections on beginning a research career: navigating student-supervisor relationships	Fall
C243	How to get published	Søren Dinesen Østergaard	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 Databases	Deirdre Cronin Fenton	1. Identify and design a clinical epidemiologic research study using the Danish Clinical Cancer Databases – comparing and contrasting study designs 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 or R 5. Evaluating study findings, interpreting, and reporting study findings	Spring
C267	Introduction to Fluorescence Microscopy	Lene Niemann Nejsum	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
C291	Introduction to psychiatric epidemiology	Katherine Musliner	• 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 the 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.	Spring
C305	What is research? Ontology, epistemology and methodology	Rune Dall Jensen	• 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	Spring
C307	Bacterial implant and bone infections	Mats Bue	• Describe the aetiology of implant and bone infections • Exemplify why bone infections are difficult to treat • Identify relevant preclinical models • Describe basic aspects and understanding of antibiotic treatment • Acquire knowledge regarding state-of-the-art microbiological and histopathological analysis • Plan, develop and present future relevant studies on bacterial infections in implants and bone	Spring
C308	Applied Machine Learning in health Sciences	Peter Mondrup Rasmussen	• 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. • Apply unsupervised- and supervised machine learning techniques in real-world data analysis.	Spring/fall

C309	The science of stress and resilience	Karen Johanne Pallesen	• Present a neurobiological definition of stress and distinguish between stressors, stress, and stress reactions. • Describe the neurobiological underpinnings of restoration (rest–digest), mobilization (fight–flight), immobilization (freeze), shutdown, and prosocial states. • Explain stress reactions from an evolutionary perspective. • Describe preconscious mechanisms and processing modes in the nervous system that drive stress and stress reactions, including: ◦ Energy budgeting ◦ Predictive coding ◦ Interoception and emotion • Describe the pathways through which stress-related sensations may develop into symptoms and stress-related disorders, including anxiety, depression, cardiovascular disease, metabolic disorders, and chronic pain conditions. • Explain stress accumulation and the principles of Allostatic Load Theory. • Describe the role of sociality and social relationships in stress regulation. • Describe Polyvagal Theory, including its main postulates, potential usefulness, and areas of consensus and controversy. • Explain individual differences in stress sensitivity and resilience. • Describe the impact of childhood and adult trauma on stress sensitivity. • Present a neurobiological definition of resilience. • Identify characteristics of resilient individuals and factors that protect against long-term stress. • Describe features of modern society that may contribute to excessive stress and challenge human health and functioning. • Describe the three main categories of interventions – top-down, bottom-up, and contextual –and provide examples of each. • Discuss how schools, workplaces, and clinical practice may benefit from insights from the science of stress and resilience.	Spring
C312	Retire statistical significance: a world beyond p<0.05	Morten Schmidt	• To define point estimates, confidence intervals, and p-values. • To identify mistaken inferences due to misinterpretations of significance tests. • To recognize the clinical context's importance in interpreting effect estimates. • To apply Apps to aid in the interpretation of effect estimates. • To evaluate treatment effects considering both systematic and random errors. • To reflect on the approach to data interpretation in your research environments.	Fall
C316	Patient reported outcomes (PRO) in clinical research	Annette De Thurah	• have received an overall introduction to the concept of PRO data, and the implications of using PRO data in clinical research • be able to select PRO instruments and evaluate their quality • be able to design, analyze, report and interpret PROs in clinical research	Spring
C319	Introduction to neurodegenerative diseases and disease models	Nathalie Van Den Berge	(1) explain the pathophysiology of common neurodegenerative disorders (what 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)	Jan Rosner	• Describe peripheral and central mechanisms involved in neuropathic pain. • Explain current approaches for clinical phenotyping, including pain biomarkers and sensory profiling. • Evaluate treatment options from pharmacological therapies to neuromodulation. • Critically appraise clinical trials in neuropathic pain research. • Translate mechanistic insights into clinical contexts.	Spring
C327	How to secure funding for your research	Anders Schram	• Clarity and conciseness in grant writing • Alignment between project proposals and fund objectives • Considerations related to impact and outcomes • Budget transparency • Structuring and framing a grant application narrative	Spring/fall

C332	The Cardiovascular Research Tool Box: From lab to clinical trial	Stephan Lange	• The students should be able to reflect and discuss the critical aspects in designing and interpreting basic, epidemiological, and clinical studies within cardiovascular research. • The students should get an overview of pre-clinical models for investigating cardiovascular disease, an overview of epidemiological research platforms, and clinical trial governance. • The students should learn critical appraisal of scientific texts within basic, epidemiological and clinical cardiovascular research • The students will gain knowledge and experience for conduct their own cardiovascular studies, and the course will provide an overview of available consulting services at the University.	Spring
C335	Hemodynamics and assessment	Mads Dam Lyhne	• Enhanced understanding of biophysics and cardiac and vascular function • Understanding of ultrasound and how it can be used to assess cardiac function and large vessels including volume status • Knowledge on invasive strategies (right heart catheterization and pressure-volume loop recordings) for cardiac and hemodynamic evaluation • Knowledge on imaging techniques (especially MR) for cardiac and hemodynamic evaluation • Knowledge on hemodynamic changes from mechanical ventilation • For all methods mentioned, the ability to discuss pros and cons for each method; its potential use in humans and animal models; and interpretation of the data provided by each method • Possibility to discuss both others' research projects and participants' own research projects' methodology • Inputs to their own dissertation's part on hemodynamic methodology	Spring
C336	Measuring socioeconomic position in epidemiological and clinical research	Cathrine Fonnesbech Hjorth	• Demonstrate a broad understanding of social epidemiology, including key concepts and frameworks relevant to socioeconomic differences in health, diseases and disease outcomes. • Identify and evaluate data sources and variables from the Danish registries, recognizing their strengths, limitations, and potential pitfalls in measuring socioeconomic position. • Design a clinical epidemiologic research study addressing a specific research question, utilizing data from the Danish registries. This includes: - o Selection of appropriate data sources and variables. - o Outlining data cleaning processes and analytical strategies. • Apply and interpret measures of socioeconomic differences, including total and direct associations, in the context of clinical epidemiological studies. • Identify and assess potential sources of bias and error. • Critically evaluate study findings, ensuring appropriate interpretation, reporting, and contextualization of results.	Fall
C338	Hands-on practical approach to Cochrane systematic reviews with focus on bias analysis	Alma Becic Pedersen	Day 1: Building and executing search strategy using Covidence software Be introduced to the Cochrane Handbook for Systematic reviews and the Cochrane Library Apply a predefined research question to develop and execute a search strategy in at least two relevant databases (e.g., PubMed and Embase) Learn to use Covidence software to manage the studies selection process Extract key data from individual studies Day 2: Risk of Bias Assessment Assess the risk of bias in individual study results using RoB2 tool Understand the seven domains of RoB2 tool, including: random sequence generation, allocation sequence concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome, selective outcome reporting, and other sources of bias. Present and interpret the results of the risk of bias assessment, including visual presentation using f.eks. forest plots	Spring

C343	Electronic Health Records in Clinical, Epidemiological, and Biomedical Research	Lars Hennig Pedersen	Knowledge: Describe EHR structure and heterogeneity; understand legal and ethical frameworks; identify sources of bias. Skills: Design EHR-based studies; assess data quality and coding; address confounding, selection bias, and missing data; apply basic principles of data extraction including NLP. Competencies: Critically appraise EHR-based research; translate findings into clinically relevant insights; develop a research protocol using EHR data.	Fall
C47	Magnetic Resonance	Lotte Bonde Bertelsen	• General overview of the principles of magnetic resonance imaging and spectroscopy for applications in biomedical research • Outline of magnetic resonance for assessing organ functionality and diseases. • General overview of hyperpolarized magnetic resonance imaging and spectroscopy applied in cells, animals, and humans.	Spring
C03	Biomedical Isotope Technique	Søren Baarsgaard Hansen	• Describe the various types of radioactive decay, the physical properties of the emitted radiation, and the most relevant mechanisms of interaction between radiation and matter. • Describe common methods for production of artificial radionuclides and labeled substances for use in research or medicine. • Explain the mode of operation of different types of detectors for measuring ionizing radiation and radioactivity. • Explain basic dosimetry concepts as well as the most important biological processes at the cell and tissue level, which lead to radiation damage. • Select and use appropriate equipment for measurement of ionizing radiation under various conditions, both for analytical purposes and for monitoring workplace radiation and contamination levels. • Apply common statistical principles for optimization of counting efficiency and estimation of measurement uncertainty. • Perform simple dose calculations for external and internal exposure to radioactive sources in various situations. • Assess the need for appropriate radiation shielding and other	Fall
CBP250	Responsible Conduct of Research	Thomas Damgaard Sandahl et al.	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
Department of Public Health				
P1050	Basic Biostatistics - part 1	Erik Thorlund Parner	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 5. Make simple calculations of sample sizes for the planning of a comparative study	Spring/fall
P1050	Basic Biostatistics - part 2	Erik Thorlund Parner	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
P130	Statistical analysis of time to event data (Survival analysis)	Erik Thorlund Parner	Document and handle data needed for a statistical analysis of time-to-event data Select an appropriate statistical model for a given research question and assess model assumptions Conduct statistical analyses using the selected model Present and interpret statistical results in relation to the underlying scientific question Perform basic sample size calculations for planning comparative studies	Spring

P126	Linear mixed effects models and repeated measurements (4+2 dage)	Bo Martin Bibby	1. Process data for a statistical analysis of repeated measurements. 2. Choose a relevant statistical model for a given research question and evaluate the assumptions behind the linear mixed effects model or repeated measurement analysis. 3. Perform linear mixed effects analysis, variance component analysis or repeated measurement analysis based on the chosen model. 4. Describe the results from 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	• 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
P169	Collecting qualitative research data	Sanne Angel	• The student will have engaged in critically evaluate literature and practice in phenomenological analysis. • The student will have hands-on experience with analysis from analysing own (or another set) data with a phenomenological approach. • The student will have discussed own and co-participants' choices and considerations. • The student will describe a plan for analyzing own qualitative data/material with reference to the literature.	Spring
P231	Developing complex interventions in Public Health	Knud Ryom	• 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-approaches (e.g. co-creation) • Insight in contextual elements that can influence successful change • Overview of different complex intervention evaluation strategies.	Spring
P237	An introduction to causal directed acyclic graphs (DAGs)	Cecilia Høst Ramlau-Hansen	• 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
P255	Introductory course in questionnaire technique and clinimetrics	Henrik Hein Lauridsen	• Understand the concepts of conceptualisation and operationalisation • Be familiar with the key concepts in questionnaire research • Know the basics of questionnaire design and item writing • Have basic knowledge of developing a new measurement instrument • Be able to find and select appropriate outcome measures • Be able to translate and culturally adapt an international questionnaire into Danish • Have a basic understanding of the COSMIN taxonomy • Have a basic understanding of the measurement properties of validity, reliability, responsiveness and interpretation • Know the requirements for evaluating questionnaires for risk of bias	Fall

P264	Public and patient involvement in health research	Jeanette Funderup	- Summarise the theory and practice of patient and public involvement in health research in the research cycle - Assess different approaches of patient and public involvement in health research relevance and applicability in various study designs - Take an analytical and critical view on the processes and potential outcomes of patient and public involvement in health research - Plan, apply, and evaluate patient and public involvement in health research in own study	Fall
P265	Qualitative data analysis: Using NVivo	Annesofie Lunde Jensen	- Create projects. - Describe units of analysis relevant for the student's own project. - Critically identify elements (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. - Analyze data, visualize data analysis, and make different kinds of queries. - Be able to explain and visualize the data analysis that the students use in their own PhD projects. - Know how to build models and make different kinds of graphic presentations and diagrams.	Fall
P281	Causal Inference in Health Sciences	Anne Gaml-Sørensen	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
P284	Conducting a systematic review – Scoping review, Quantitative evidence synthesis, Qualitative evidence synthesis and mixed study reviews	Merete Bjerrum	- Specify research topic using PCC, PICO/ PECOS and PICO - Search strategy - Assess quantitative and qualitative studies using relevant tools - Extract and pool the extracted data - Synthesize extracted data - Assess summarized data - Present a protocol for a scoping review, a quantitative evidence synthesis, a qualitative evidence synthesis and a mixed study review	Fall
P285	Introduction to register-based research	Oleguer Plana-Ripoll	- 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
P302	Evaluating complex interventions in Public Health	Knud Ryom	- 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
P339	Implementation Science and Implementation Practice	Nanna Rolving	The course aims to equip participants with both knowledge and practical tools for running an implementation project from A to Z. Thus, participants will learn about a broad aspect of implementation science theories, models and frameworks, but also about the practical tools to conduct implementation processes. The course is very much a hands-on course, where participants will practice application of the different methods and tools both in the class room, but also in practice in their own setting between course days.	Fall
P98	Epidemiology II	Christina Catherine Dahm	- 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	Spring/fall