

# Economics, Master Programme, 120 credits

In semester three, you have optional courses 30 credits, see the [programme syllabus](#) for more information.

The School of Business and Economics offers a guaranteed seat on the following optional courses, provided that you meet the prerequisites within the course syllabus, and that the application is received on time. Each [course syllabus](#) states the prerequisites that you need to fulfil by the time the course begins to partake in the course. Please read the course syllabus before you apply.

## Optional course package 1: Big Data Analysis and Economic Policy

### 4NA099 Advanced statistical data Analysis, 7,5 credits

To analyse practical statistical problems, the course links analytical and numerical methods. It consists of smaller projects, each of which improves active problem solving skills with computers. The projects aim at deepening the understanding of statistical methods, such as sampling distributions. Data visualization is an important part of the course. The projects are performed using the statistical packages SPSS, SAS, R, but other programs such as Excel, STATA, Ox may also be treated.

### 4NA098 Advanced Statistical Learning, 7,5 credits

The course aims to provide deeper understanding of different types of statistical models and machine learning-related concepts. The course deals with several case studies and practical examples to be able to apply machine learning methods to applications in different areas.

### 4NA019 Advanced Economic Policy Analysis using Big Data, 15 credits

The course is divided in two equal parts. The first part focuses on how to apply economic and statistical tools to analyze public policy. This includes discussions of why markets fail and the rationale for government interventions, a brief review of policy evaluation methods, and how to translate the results from these methods to do cost-benefit analysis of various policies. These issues are illustrated by in class going through detailed examples from research studies that evaluate public policies (e.g., in health, education, criminal justice, environment, and family policy). Since the course includes writing a term-paper, the lectures will also contain discussions of how to generate research ideas. The second part of the course concerns the practical use of software to analyze large datasets to evaluate public policy. This includes computational issues when dealing with big data, how to collect relevant data, survey and experimental design, and measurement error. These issues are illustrated by discussing in class research related to these issues.

## Optional course package 2: Financial analytics

### 4NA099 Advanced statistical data Analysis, 7,5 credits

To analyse practical statistical problems, the course links analytical and numerical methods. It consists of smaller projects, each of which improves active problem solving skills with computers. The projects aim at deepening the understanding of statistical methods, such as sampling distributions. Data visualization is an important part of the course. The projects are performed using the statistical packages SPSS, SAS, R, but other programs such as Excel, STATA, Ox may also be treated.

### 4NA098 Advanced Statistical Learning, 7,5 credits

The course aims to provide deeper understanding of different types of statistical models and machine learning-related concepts. The course deals with several case studies and practical examples to be able to apply machine learning methods to applications in different areas.

#### 4NA014 Financial Risk Analytics, 7,5 credits

Data-driven modelling and decision-making has been recently gained attention in the finance industry. The Financial Risk Analytics course focuses on analytical techniques involved in financial risk assessment. The course includes two main topics; (i) the probability theory, no-arbitrage pricing, discrete, as well as continuous-time models and their applications in pricing financial derivatives, and (ii) time-series methods, e.g., GARCH and EVT, used to model risk measures such as Value-at-Risk (VaR) and Expected Shortfall (ES). Statistical software such as R programming is used for the applications. After taking this course, students will be able to apply and implement appropriate financial risk analytic techniques that will aid them in their professional career as financial or risk analyst.

#### 4NA015 Advanced Topics in Analytical Finance, 7,5 credits

The course provides students with the analytical tools and latest research in finance. Several areas are considered including asset pricing and cross-sections of returns, investment and portfolio optimization, sustainable finance, dependency structure and copulas, and machine learning. Throughout the course, students will get familiar with various quantitative methods in Finance and use statistical software such as R programming. The course prepares students to write an analytical thesis in Finance at the advanced level.

### **Optional course package 3: Advanced Business Analytics**

#### 4NA099 Advanced statistical data Analysis, 7,5 credits

To analyse practical statistical problems, the course links analytical and numerical methods. It consists of smaller projects, each of which improves active problem solving skills with computers. The projects aim at deepening the understanding of statistical methods, such as sampling distributions. Data visualization is an important part of the course. The projects are performed using the statistical packages SPSS, SAS, R, but other programs such as Excel, STATA, Ox may also be treated.

#### 4NA098 Advanced Statistical Learning, 7,5 credits

The course aims to provide deeper understanding of different types of statistical models and machine learning-related concepts. The course deals with several case studies and practical examples to be able to apply machine learning methods to applications in different areas.

#### 4NA035 Advanced Data Visualization, 7,5 credits

Today, we live in a world where the advanced data storage and computing resources enable the production, processing, and storage of an exponentially growing volumes of data. Data have become ubiquitous and pervasive in almost all areas of human activity, i.e., business, finance, medicine, science, etc. Therefore, learning from data has become essential in research, administration, and business, etc. One way to learn from the data is through data visualization. Those with the skills to create engaging and effective data visualizations have the power to communicate detailed data insights and findings to the audiences of different backgrounds, leading to actionable insights for strategic decision-making. Data visualization also provides a concise and interactive way to present the unique and special attributes hidden in data. This course focuses on the application of different visualization methods. It consists of a few of projects, each designed to give students the skills and the ability to apply different visualization techniques. It also provides students with alternative ways of dealing with complex data structures that may not follow the standard data storage approaches and the advanced knowledge in the visualization of statistical models. All the projects will be carried out using R programming software, but other software such as Python, SAS, STATA may also be used. This course will give to students a competitive edge in the job market.

#### 4NA036 Advanced Data-driven decision making, 7,5 credits

This course is designed to equip students with the knowledge and skills necessary to make informed, data-driven decisions in a variety of professional and personal contexts. Through a blend of theoretical concepts, practical exercises, and case studies, students will develop a comprehensive understanding of the role and utilization of data in decision-making processes. To that end, the course also leverages recent advances in business analytics, including 'big data' and machine learning, at an advanced level.

### **Optional courses within Entrepreneurship**

#### 4FE147 Sustainability, entrepreneurship and social change, 7,5 credits

The course offers advanced theoretical perspectives on and applications of sustainability, entrepreneurship and social change to contemporary societal dilemmas, challenges and possibilities.

#### 4FE148 Entrepreneurship as process and practice, 7,5 credits

The course addresses different theoretical perspectives on entrepreneurship as a process, practice and method across all sectors of society.

#### 4FE149 Entrepreneurship and context, 7,5 credits

The course deals with perspectives on entrepreneurial processes and entrepreneurship in its various contexts. By seeing these differences in the terms of context, opportunities as well as limitations are observed. The course also deals with methodological perspectives on the study of entrepreneurship and its context.

#### 4FE150 Entrepreneurship and social change, 7,5 credits

The course provides in-depth knowledge of different perspectives on the role of entrepreneurship in society and its links to social change. Critical perspectives are introduced and discussed, as well as, opportunities and limitations of entrepreneurship as a tool for social change.

### **Optional course within Business Administration**

#### 4FE070 Corporate Governance, 15 credits

The focus of this course, which integrates previous knowledge, is on corporate governance, meaning the general governing of corporations through owners, management, auditors, as well as through regulation, accounting and capital markets. The course delves into questions such as how owners and managements act, the meaning of financial accounting and auditing, norms and the development of norms within the area of accounting and auditing as well as the function of the financial market. A particular interest is shown towards the international development, the difference between various corporate governing systems and the effects of globalization and capital markets. Risk and risk management is also a significant aspect brought up in the course.