Course Package

Health - 1A

Name module	Health – 1A
Educational programme	MSc Health Sciences
Period	First block of the first semester (block 1A)
Study load	15 ECTS
Study Adviser	A.H Prins

Health			
block 1A	**block 1B**	**block 2A**	**block 2B**
Health Economic Modeling (5 EC)			
Stakeholder preference elicitation and decision support (SPECS) (5 EC)			
Data Science (5 EC)			

Required preliminary knowledge: Basic knowledge in Economics. Basic knowledge of Excel and Statistics. Knowledge of organization of healthcare.

Health Economic Modeling
Students will learn the basic concepts of systematic reviews and evidence synthesis. They will learn and present about different types of health economic models, and how these can be used for decision making in healthcare. Particular attention is paid to patient-level models as means to accurately reflect real-world clinical practice.
Grading is based on a practical assignment in which student further develop and populate a patient-level simulation model, and interpret the corresponding results, and on the presentation of a value dossier, in which evidence is combined to present the potential added value of a new healthcare innovation.

The modules are tentative and subject to change. Please check the website regularly.

Stakeholder preference elicitation and decision support (SPECS)
Healthcare decisions are complex and involve trade-offs between multiple, often conflicting, objectives, in which the perspectives of multiple stakeholders have to be taken into account. On the patient level of health care, the patient and doctor aim to make shared decisions in the best interest of the patient. On the organizational level, hospitals have to make difficult decisions to ensure high quality and efficient health care. On the societal level, new innovations that are introduced to the market have to be assessed with regard to their benefits and potential harms, and the government has to decide how much of the health care budget they are willing to spend on these innovations. Using structured, explicit approaches to analyze these decisions can improve the quality of decision making. A set of techniques, known under the collective heading multiple criteria decision analysis (MCDA), are useful for this purpose. MCDA methods are increasingly used in health care on the patient, organizational and societal level. In this course, the student will be introduced to a range of available techniques, and acquire skills to use these techniques and analyze their results, while taking into account the specific requirements of the context. Students will be familiarized with the use of MCDA in portfolio management, benefit-risk assessment (BRA), health technology assessment (HTA), and shared decision making (SDM), will learn about the potential of MCDA techniques for individual preference elicitation and group decision support and will use MCDA techniques to design an study and analyze a health care decision of their own choosing.

Data Science
Data Science is the emerging interdisciplinary field that lies at the intersection of computer science, statistics, visualization and the social sciences. Scientific and economic progress is increasingly powered by our capabilities to explore big data sets. Data scientists dig for value in data by analyzing for instance texts, application usage logs, and sensory data. They are the driving force behind the successful innovation of Internet companies like Google, Twitter, and Yahoo. There is an increasing need for data scientists and big data engineers seen in job advertisements. The need for data scientists and big data analysts is apparent in almost every aspect of our society, including computer science, medicine, physics, and the humanities.

The goal of the course Data Science is to teach several data science skills needed in various phases of data analysis projects. The course concept is geared towards *self study* in an assignment & project-driven manner, i.e., it is designed to offer a rich environment for flexible, effective, and efficient self study with ample guidance and supervision. The course is assessed with a project that takes about half of the course. There are several projects offered from which the student can choose. A project is composed of a real-world data set and a *challenge*, i.e., what knowledge can potentially be extracted from the data or what the project owner wants to do with the data. The data science skills are offered as *technical topics* from which the student has to choose two. The projects indicate which technical topics provide the necessary skills for doing the project, so the choice for project and technical topics should be coherent.