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 **202300150** (5 EC)			
Stakeholder preference elicitation and decision support (SPECS) **202300145** (5 EC)			
Data Science **202300200** (5 EC)			

Required preliminary knowledge: Basic knowledge in Economics; Basic knowledge of Excel and Statistics; Knowledge of organization of healthcare; Students are a little bit familiair with R (Rstudio), or willing to look at some youtube video's and get acquainted with the R programming and topics before the first quartile (all on youtube).

202300150 - **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.

202300145 - **Stakeholder preference elicitation and decision support (SPECS)**

Enhancing Healthcare Decision-Making through Stakeholder Preferences and Multiple Criteria Decision Analysis

Making decisions in healthcare is a complex task that involves balancing various objectives, such as improving quality of life and survival of patients, while containing costs. Multiple stakeholders perspectives, including that of patients, clinicians, policy makers and the public, must be considered when making these decisions.

Healthcare decisions are made at different levels:

a. In a doctor's office, decisions are aimed at benefiting the patient, preferably with their active involvement to make sure that decisions align with their preferences, wants and needs.

b. Hospitals and healthcare organizations make decisions to ensure high-quality, efficient, and financially sustainable healthcare.

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

c. At a societal level, the introduction of new medical devices and pharmaceuticals requires assessment of their benefits, risks, and the need for reimbursement, all within the constraints of a limited healthcare budget.

d. To enhance the quality of decision-making, structured and explicit approaches are recommended. Multiple Criteria Decision Analysis (MCDA) methods provide a framework for structuring decision processes, offering transparency and validity to decision makers and external stakeholders. Health preference methods (HPM) are methods to qualitative and/or quantitatively elicit preferences and values from different stakeholders, so they can be explicitly incorporated in the decision process. Both these methods are increasingly used in healthcare to support decision-making at the patient, organizational, and societal levels. They allow for the incorporation of information from health technology assessment (HTA) and other sources of evidence or knowledge.

e. The course "Stakeholder Preference Elicitation and Decision Support" introduces students to a range of techniques for eliciting stakeholder preferences and integrating them into decision-making using MCDA. Students will develop the skills needed to elicit preferences from stakeholders, analyse and visualize the data, and interpret and report the findings.

Key topics covered in the course include:

a. The use of MCDA and HPM in portfolio management, benefit-risk assessment (BRA), health technology assessment (HTA), and shared decision making (SDM).

b. Understanding the potential of MCDA and HPM for both individual preference elicitation and group decision support.

c. Applying MCDA and HPR in the evaluation of a technology from a stakeholder perspective and within the decision context of the students own choosing.

d. By gaining proficiency in HPM and MCDA, students will be equipped to contribute to more informed and effective healthcare decision-making processes.

201400174 - **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.