Course Module Description

General module information Title: Programming for Services Type: Course module Language of instruction: English ECTS points: 5 ECTS Period: 1 September 2022 — 31 January 2023
Placement 1st semester, M.Sc. in Service Systems Design
Module coordinator Georgios Triantafyllidis (coordinator), Judi Stærk Poulsen (secretary)
Academic content and relationships to other modules/semesters The formal study plan description of the module can be found here: https://moduler.aau.dk/course/2022-2023/MSNSSDM1204?lang=da-DK The course provides students with the knowledge and competencies required to develop programs needed for service designing (e.g. data visualization, machine learning, use of API to access a resource within another application or service, cloud web services). In this context, the course focuses on basic and advanced programming skills to enable students use programming as a tool in service designing. Topics covered may include the following: - Intro to IT (computer architecture, how internet works, computer security, media technology)   - Intro to programming (Python basics)   - Advanced Programming (using Python notebooks: JupyterLab and/or Colab)   - Programming data visualization (Python's matplotlib)   - Programming machine learning (Python's numpy, scipy, Lobe)   - Programming with online data (JSON, API services) in Python   - Cloud web services (eg Amazon Web services)   After each one of the basic topics covered in the course, assignments (exercises) will be given to the students for further work.
Objectives and learning goals By completing the course, students will have the basic knowledge and skills required for using programming as a tool for service designing.
Extent and expected workload Lectures: about 2 ECTS Assignments and mini-project: about 2.5 ECTS Examination preparation: about 0.5 ECTS
Pre-requisites for participation See the module description (find the link above) for any further detail on pre-requisites. **Examination** Modality and duration: Individual written exam based on a mini-project submitted at a deadline and then graded. The mini-project contains the development of a program related to topics from the course (eg develop a program using an API service to get data and visualize information or use machine learning programming techniques to predict outcomes). Assessment: In accordance with the 7-point grading scale Pre-approved aids: All relevant literature and material Prerequisites for participation: In order to be able to attend the examination, each individual student must submit the mini-project (with the written documentation), as well as the assignments (exercises) after each one of the topics of the course.

Further detail on the exam: The exam hand-in will be graded based on the quality of the program, as well as the efficient use of the programming techniques employed.