



Exchange programme Vrije Universiteit Amsterdam

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit Amsterdam - 2024-2025

Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please [visit the exchange programmes webpages](#).

Computational Thinking

Course Code	X_400475
Credits	3
Period	P2
Course Level	100
Language Of Tuition	English
Faculty	Faculty of Science
Course Coordinator	dr. A. Bhulai
Examiner	dr. A. Bhulai
Teaching Staff	L.H. Rekker MSc, dr. A. Bhulai
Teaching method(s)	Lecture, Practical

Course Objective

Knowledge and understanding:

at the end of the course, students will be familiar with basic knowledge of some solution strategies (e.g., guess and check, modeling, formulas,) and algorithms (search algorithms, sorting algorithms, and graph algorithms) to solve problems. Students will also have knowledge of creating algorithms.

Applying knowledge and understanding:

students will be able to implement basic solutions strategies, search algorithms, sorting algorithms, and graph algorithms.

Making judgements:

students will be able to choose the right solution strategy and apply that to solve problems.

Communication skills:

students will be able to write a project report and give an oral presentation of their project to peers.

Learning skills:

students will be trained in analyzing problems, translating algorithms to flowchart, and writing pseudocodes to implement algorithms.

Course Content

There are various strategies to solve everyday problems. Often a problem can be solved in different ways and there is not always a "best way". However, sometimes one way is more efficient than the other, or you find one approach easier or more pleasant than the other.

In this course, you will be acquainted with different solution strategies (such as modeling, formulas, guess and check) and algorithms (such as search algorithms, sorting algorithms and graph algorithms) to solve problems. You will learn to solve problems by reasoning and by using knowledge from other disciplines. In the practical sessions, you will use Python as a tool to resolve various problems using the different solution strategies and algorithms that have been discussed in the course. Since there are many ways to solve a problem, you will also start thinking about developing algorithms yourself. In this course, we encourage your problem solving and algorithmic thinking, as well as your creative and innovative skills. At the end of the course, you will work together with some other students in a group on a project. You will conclude the project with a short presentation.

Additional Information Teaching Methods

(video) lectures, practical sessions, project, presentations, self-study

Method of Assessment

The final grade is based on the individual practicum assignments (45%), group project assignment (40%), and two supervised quizzes on campus (15% together).

For all these three parts separately, the average grade should be at least a 5.5 to pass the course.

During the project presentations, questions are asked that are taken into account during the grading of the project. This means that grades within a group may vary from person to person.

You CANNOT redo the practical assignments or the project if you have not passed them or if you have not completed them. If the average grade of the practical assignments or the project is less than 5.5, you fail the course and must do the course again next year.

Literature

Syllabus and video lectures

Additional Information Target Audience

Bachelor Artificial Intelligence - year 1

Additional Information

This course revolves around self-study with video lectures in combination with class sessions (once per week) for deepening understanding and practical sessions (once per week).

Custom Course Registration

For this course, please enroll for the module, via VUweb. The faculty will enroll you for the other teaching methods.

Students will be placed in a practicum group in Canvas to participate in the practical sessions.

Recommended background knowledge

Basic knowledge of the Python programming language is recommended to participate in this course. A little mathematical understanding may be to your advantage.