

Introduction to Computer Science and the Art of Programming

in co-operation with Harvard University and Yale University

This course teaches students how to think algorithmically and solve problems efficiently. Topics include abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development. Languages include C, Python, SQL, and JavaScript plus CSS and HTML. Problem sets inspired by real-world domains of biology, cryptography, finance, forensics, and gaming. Designed for majors and non-majors alike, with or without prior programming experience.

The course is based on a Massive Open Online Course (MOOC) from Harvard University and Yale University and is supervised by Prof. Dr. rer. nat. Dipl. Ing. Partsch. After a block event it's possible to join the course environmentally friendly, time-saving and comfortable from home.

Course Title	Introduction to Computer Science and the Art of Programming
Person in Charge	Prof. Dr. Gerhard Partsch
Type of Course	Combined lecture, seminar and colloquium with the use of a supervised Massive Open Online Course. Environmentally friendly participation via web conferencing from home.
Course Level	Level 1 – introduction course
Prerequisites	No prerequisites required
SWS / Lessons per week	4
Total Semester Hours	60 hrs lecture / 90 hrs independent / 150 hrs total
ECTS (Credits)	5
Course Assessment	E-portfolio and final programming project
Course Language	English
Name of Instructor	Prof. Dr. Gerhard Partsch
Course Objectives	<ul style="list-style-type: none"> • This course teaches students how to think algorithmically and solve problems efficiently. • Topics include abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development.
Course Content	<ul style="list-style-type: none"> • Scratch • C • Arrays

	<ul style="list-style-type: none"> • Algorithms • Memory • Data Structures • HTTP • Machine Learning • Python • SQL • JavaScript
Teaching Methods	<p>Combined lecture, seminar and colloquium with the use of a Massive Open Online Course (MOOC).</p> <p>Student-centered approach: Inquiry-based and cooperative Learning</p>
Textbook / Online Course	<p>Massive Open Online Course (MOOC) from Harvard University and Yale University</p> <ul style="list-style-type: none"> • CS50 Introduction to Computer Science
Miscellaneous	<ul style="list-style-type: none"> • The lecture starts with a block event • After the block event at the beginning of the course it's possible to join the lectures environmentally friendly, time-saving and comfortable from everywhere (e.g. from home) via web conferencing offered for free by Deggendorf Institute of Technology