# The Hebrew University of Jerusalem

## Syllabus

# Introduction to Computer Science - 67101

*Last update 25-12-2023*

*HU Credits:* 7

*Degree/Cycle:* 1st degree (Bachelor)

*Responsible Department:* Computer Sciences

*Academic year:* 0

*Semester:* 1st and/or 2nd Semester

*Teaching Languages:* Hebrew

*Campus:* E. Safra

*Course/Module Coordinator:* Prof Aviv Zohar

*Coordinator Email:* avivz@cs.huji.ac.il

*Coordinator Office Hours:* see on the course website

*Teaching Staff:*

*Prof Aviv Zohar,*
*Dr. Mor Nitzan,*
*Dr. matan hofree,*
*Dr. Arie Schlesinger,*
*Mr. Noam caspi,*
*Mr. Matan Levy,*
*Dr. Amir Guy,*
*Mr. Adiel Asharov,*
*Ms. mor turgeman,*
*Ms. Ayelet Mizrahi,*
*Ms. yifat Haddad*

*Course/Module description:*
*Familiarity with Computer Science: Programming Python language and recognition of selected topics in computer science.*

*Course/Module aims:*
*Design and realization of selected algorithms from computer science in the Python language.*

*Learning outcomes - On successful completion of this module, students should be able to:*
*Design and realization of selected algorithms from computer science in the Python language. Write complete programs in Python.*

*Attendance requirements(%):*
*0*

*Teaching arrangement and method of instruction: Pre-recorded lectures, Frontal lectures, recitations and labs*

*Course/Module Content:*
*Material that was removed this year due to the war is marked [REMOVED]*

*1. functions, expressions, variables, types ,casting*

*2. Conditionals, Strings, parameter passing and return values*

*3. Loops (for, while), lists, slicing, debugging basics, nested lists/loops*

*4. Aliasing, scope, mutability, tuples, collections (set, dictionary), comprehension*

*5. Numeric algorithms, Runtime analysis (exponents, finding roots via binary search, sorting and more)*

*6. Recursion, run-time analysis of recursive functions O(nlogn sorting)*

*7. Object oriented programming*

*8. LinkedLists, trees.*

*9. Graphs, Exceptions.*

*10. [REMOVED] Backtracking*

*11. 2nd order functions, closure, decorators*

*12. [REMOVED] Event-driven programming, GUI*

*13. [REMOVED] Generators, iterators, unit testing, assert*

*Required Reading:*
*NA*

*Additional Reading Material:*
*NA*

*Grading Scheme:*
*Essay / Project / Final Assignment / Home Exam / Referat 50 %*
*Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 50 %*

*Additional information:*
*יינתן ציון מגן עבור השלמת מטלות במעבדה ובחנים מקוונים*