Introduction to Programming Language (BIL-100E)

1. Teaching Staff

Instructor & Teaching Assistants:

Instructor: Assc. Prof. Halil Bayraktar   Office: MOBGAM-308
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Course Website: <u>Lecture slides python</u>

 Online Course

 (14 Lectures)

2. Course Format and Goals.
i) What are the course objectives?

This is an introductory Phyton programming course. It provides basic skills of programming to students with no prior programming experience. You will understand the use of basic computational and numeric methods for solving life science, health and bioengineering problems. The main focus is to learn developing new programs in Python and explore date to answer important science questions.

Upon on successful completion of this course, you will have a sufficient knowledge for coding, algorithm development and data visualization techniques.

Besides we hope that you will analyze and apply these methods to solve various biology/genetics problems. We would like to see you using the fundamental principles of computation and coding for quick and effective analysis of your data.

ii) Synopsis

This course introduces fundamental basic concepts in computer programming and scientific computation. Topics in coding, variables, coding, variables, operators, conditional structures, genome and image analysis will be introduced.

We will examine fundamental rules of coding in Python. We will also draw on our knowledge of coding and apply it to various measurements related to life science, drug discovery and health. The course is not hard but does take a lot of time. You should always be working problems and do a lot of practices. Your ultimate goal is to understand the coding and how to apply its principles to new problems.

LEARNING OBJECTIVES
At the end of this course the student will be able to:

1. Write a program and evaluate it
2. Acquire basic coding skills to analyze data
3. Enhance skills of transition from raw information to presented data.

4. Use operators for computation
5. Understand data analysis in biology, genetics, and health.

iii) Prerequisites:

Knowledge of introductory calculus, high school level linear algebra or equivalent is assumed. Students are also expected to have some knowledge of biology and other life sciences.

3. Course information:

During the semester, updated course information can be found at Ninova and https://b2lab.wordpress.com/courses/python-2/. Changes will be announced during lectures, please do not miss any class (see below for attendance policy).

Week	Topics
1	Introduction to Programming and Phyton
2	Python User Interface - Programming Environment
	Data Types, Variable, Mathematics, Arithmetic
	Indexing
3	Linear Coding-Variable, Number, Operators, Format (2)
	Array of variable,
	Boolen Expression and Operators,
4	Strings, Functions
5	Iterations, Loops, (for and while)
	Decision Control
6	Conditional Structures (if, elif)
7	Image processing
	PIL and Skimage Library
	Matplotlib library
8	Image processing (2)
	Filtering and Object Counting
9	Numpy/Matplotlib
	Image processing
10	Objects oriented programming
	Graphic animations (pygame)

11	Objects oriented programming
12	Advance Topics
13	Advance Topics
14	Advance Topics

4. Exam dates:

There will be mid-term exams and a final exam. Exam dates will be determined and announced in class and by the Registrar's Office.

Midterm exams and final exam: to be announced

If a student miss an exam because of an unavoidable circumstance and have a legimite excuse, you must return us an official documentation that explains this absence and contact with the course instructor within 3 days after the excuse period is completed to arrange for a make-up exam. No make-up will otherwise be given. If approved, make-up exams will be given at the end of the semester, date will be announced later and will include all topics covered throughout the semester.

5. Books and Reading Assignments:

The following resources are useful to review key concepts in using Phyton and programming. You can also find different examples online for practice. You can also check ITU library for reserved books.

a) You can check documents available in https://www.python.org. or https://python-forum.io

6. Important Policies:

To attend a final exam, average of midterm exams should be higher than %30. Otherwise no final exam will be given regardless of your first and second midterm exam and you will automatically receive VF grade.

a) **GRADING:** The final grade of the student will be calculated according to the following percentages:

Midterm exam 1:	30 %
Midterm exam 2:	30 %
Final exam:	40 %

b) **ATTENDANCE:** Attendance will be taken through a Google documents. You will also sign the attendance sheet at the end of lecture. It is better not to miss any classes and attend all lectures.

It is your responsibility to find out what was covered in class on days you miss (whether it be class material, notes, an assignments, or a change in the schedule). Class attendance are an important part of the course and they are mandatory. Regular attendance in class, punctuality for lectures and in homework assignments will be taken into positive consideration in determining the final grades of borderline students.

c) **Classroom Behavior:** Follow the list of behaviors for continued enrollment in this class that implies the acceptance of the following four agreements:

1. In class, be positive, willing, and prepared.
2. Come to lectures on time.
3. Don't give leaving cues.
4. Be honest, respectful and true.

7. Special Accommodations

If you are in need of some kind of special accommodation (due to a learning or physical disability, special life circumstances, or something else), please let me know and bring me appropriate supporting documentation as soon as possible. if you are waiting on documentation, but know you need accommodation, email or talk to me immediately.

9. Academic Honesty

In case of any form of academic dishonesty, "0" grade will be given for the exam or assignments and ITU Disciplinary Action Committee investigation will be conducted.

10. Collaboration, Plagiarism and Cheating

Collaboration is important for studying and working in your class or research. You will learn hot you work with your classmates throughout the semester. We encourage you taking a step to study with other students in class. However, we strongly expect that you must come up with your own solutions. I wrote down below the some of the most frequently asked question and answers about collaboration:
a) It is not acceptable that you look at your classmate's homework and copy it down. This is called plagiarism, which is prohibited in academics. You are not allowed that you can simply copies the work done by another classmate.
b) You compare your answers with a classmate, but you should not copy it how the other student solve the problem, write or submit their homework, you should not use other's ideas and code.
c) Can you get help from your classmate when you have a hard time on class material? Yes you can, but you should make sure that you understand how to solve the problem independently. It is acceptable that someone explains to you how to approach it,
d) It is not acceptable to use other's homework solutions from Google, Yahoo vs.

Good luck in your class.