

INTRODUCTION TO PROGRAMMING

IE University

Professor: **ROBERT DAVID POLDING**

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Degree course: FIRST

Semester: 2^o

Category: COMPULSORY

Number of credits: 3.0

Language: English

PREREQUISITES

- A computer capable of running the latest version of Windows 10 or macOS Catalina (it must be fully up to date before coming to class). Computers that are out-of-date will not be acceptable.
- iPads and mobile devices are not sufficient to be able to take this course.
- Enough disk space to be able to install the software for the class (PyCharm and Python). For more information, see <https://www.jetbrains.com/help/pycharm/installation-guide.html>.

SUBJECT DESCRIPTION

Have you ever wondered how a computer works? Or how to develop the software your new start-up company needs?

Computers are one of the most configurable machines we humans have invented since the dawn of time yet most of its users are constrained to uses designed by others (third party software). In this course you will learn how to code computer programs that will allow you to expand your computer's functionality up to its full potential.

Knowing how to code is not something reserved for engineers or experts, everyone can write their own programs and if you combine your acquired business knowledge with the ability to write great software programs you could unleash a new set of opportunities for your career and boost your performance as an entrepreneur. If you are interested in knowing how to code software programs this course is for you.

This is a course for beginners! Students joining this course do not need to have any previous coding experience as the course is designed for students learning how to code for the first time.

OBJECTIVES AND SKILLS

The main objectives that the student will get are the following ones:

- Develop a logical thinking by carrying out programs
- Be able to solve real problems through the use of programming languages
- Get strong capabilities in programming with Python

In this course you will learn programming terminology and will obtain a solid grasp of the basic mechanics of programming. This includes:

- Introduction to problem solving for programming (i.e., "how to think about solving the problem" including techniques such as pseudo-code or flowcharts)
- Understand object-oriented programming and its importance in writing business software applications
- You will be able to write fully functional console or GUI python programs
- Basics of data science tasks in Python

METHODOLOGY

The course is mainly a practical hands-on course. During the sessions we will mix theoretical lecturing with practical assignments. The course is designed for you to always have a laptop with you in class so you can code directly the exercises during the sessions. Approximately 50% of the time in the sessions we will have class discussions and theoretical lecturing together with small exercises to be completed during the session.

Additionally, you will have individual coding assignments that will help you reflect on what we have learned in class.

Finally you will develop a group project in order for you to familiarize with the concept of group programming as most of the real life software projects are implemented by a group of programmers so it is good for you to be familiar with organizing work and interacting with other coders.

The last grade component will be your final exam during the last session.

Teaching methodology	Weighting	Estimated time a student should dedicate to prepare for and participate in
Lectures	21.33 %	16 hours
Discussions	10.67 %	8 hours
Exercises	46.67 %	35 hours
Group work	10.67 %	8 hours
Other individual studying	10.67 %	8 hours
TOTAL	100.0 %	75 hours

EVALUATION CRITERIA

1. Class participation – discussion

You are expected to attend every class and participate in the discussions and class activities (games, etc.). The basic criteria in grading your participation are: a) your presence in each session, b) your (quality) contributions to the group discussion c) submission of in-class activities. Lively discussions in the classroom are always encouraged, however, make sure that you provide constructive comments which contribute to the learning experience of the whole class.

2. Group assignment

A major part of this course's learning experience consists of a group project which will be focusing on designing and implementing an algorithmic solution to a business problem. The definition of the problem as well as the main requirements will be provided to you during the sessions, so that you have only to focus on designing and implementing the best solution. Remember, creativity is always rewarded!

3. Final exam

At the end of the course you will have to pass an individual exam.

PROFESSOR BIO

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Dr Robert Polding

Dr Polding holds a PhD and MSc in Information Systems from The University of Sheffield and a BSc (Hons) in Media Science from Sheffield Hallam University. Research interests include customer centricity, e-commerce, web applications, apps, RFID augmented and mixed reality, and database technologies. Lecturer in digital anthropology, database design, management information systems, project management, programming and big data. Previous jobs include working as a company director, project manager, programmer and journalist.

OTHER INFORMATION

OFFICE HOURS - CONTACT INFORMATION

- Office hours: Live tutorials available by previous appointment.
- Contact details: e-mail: rpolding@faculty.ie.edu