POLITEHNICA University of Bucharest (**UPB**)
Faculty of Engineering and Management of Technological Systems (**IMST**)
Study Programme: Industrial Engineering (**IE**)
Form of study: Licence (Bachelor)

COURSE SPECIFICATION

Course title:	Computer Programming 1	***Semester:***	I
Course code:	UPB.06.F.01.O.004	***Credits (ECTS):***	6

Course structure	Lecture	Seminar	Laboratory	Project	Total hours
Number of hours per week	2		2	2	6
Number of hours per semester	28		28	28	84

Lecturer	Lecture	Seminar / Laboratory / Project
Name, academic degree	Catalin Gheorghe Amza, Professor	Gabriel Dan Tasca, Lecturer
Contact (email, location)	catalin.amza@upb.ro, CE210-212, CK105	gabi.tasca@gmail.com, CE210-212, CK105

Course description:

The course intends to be an introduction to computer programming for 1st year students, regardless of their high-school major. This subject is aimed at students with no programming experience. It aims to provide students with an understanding of the role computers can have in solving industrial engineering problems. It also aims to help students, to feel confident of their ability to write small programs that will allow them to to solve some engineering problems. The students will use the Pascal programming language and Matlab environment.The course will present to studentsvarious concepts related to computer systems, operating systems, programming languages, problem solving and reasoning, pseudocode, algorithms and programming techniques of beginner/medium level.This course also introduces the fundamental concepts of procedural programming. Topics include data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging. Furthermore, the course offers an introduction to the historical context of computing and programming languages and an overview of computer science:the concept and properties of algorithms; algorithms and problem-solving; the role of algorithms in the problem-solving process; implementation strategies for algorithms; debugging strategies; fundamental programming constructs: syntax/semantics of a higher-level language; variables, types, expressions, and assignment; simple I/O; conditional and iterative control structures; functions and parameter passing; primitive data types; arrays; records; strings; testing and debugging strategies; history of computing and computers; social impact of computers and the Internet; copyrights, intellectual property, and software piracy.

Seminar / Laboratory / Project description:

The laboratory work will familiarise the students with the Matlab envinroment and with the design and implementation of various algorithms for solving engineering problems. Furthermore, the students will learn how to create computer programs using a high-level programming language

(Pascal) to solve engineering problems. The students will be able to use a visual programming envinroment to create the graphical user interface and use the editor and debugger features.
The project will be the results of the team work of two or three students. They will have to design a solution to an engineering problem and implement it using a high-level programming language.

Intended learning outcomes:

- A broad and robust understanding of computer science and programming
- How to think algorithmically and solve programming problems efficiently
- Concepts like abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development
- How to write small programs in a high-level programming language to solve industrial engineering problems
- Familiarity in a number of programming environments, including Pascal and HTML
- How to develop and present a final programming project to your peers

Assessment method:	% of the final grade	Minimal requirements for award of credits
Written exam	20%	10%
Report / project		
Homework	20%	10%
Laboratory	60%	30%
Other		

References:

- C.G. Amza, C. Petriceanu, G. Tasca, Courseware notes –IMST faculty e-learning platform
- C.G., Amza, V.I. Paun, C., Petriceanu, C., Radu, Computer programming, EdituraPrintech, Bucuresti, 2007
- http://www.tutorialspoint.com/matlab/

Prerequisites:	***Co-requisites*** ***(courses to be taken in parallel as a condition for enrolment):***
This course is aimed at students with little or no prior programming experience, but a desire to understand computational approaches to problem solving. Since computer programming involves computational modes of thinking, the student should have mathematical aptitudes.	Not the case

Additional relevant information:

Date: 06/07/2016
Professional degree, Surname, Name: Professor, Amza, Catalin Gheorghe