

# Introduction to Computing Programming for Scientists and Engineers: A New Teaching Approach for Future High-School Mathematics Professors (preliminary observations)

Christian Servin, Eric Freudenthal, Ali Jalal-Kamali, Tanja Magoc

Contact: [efreudenthal@utep.edu](mailto:efreudenthal@utep.edu)

## Abstract

Introduction to Computing Programming for Scientists and Engineers is an introductory computer science course for students majoring the fields of science and engineering. The objective is to introduce basics of programming through multimedia, and then use these programming techniques to examine basic mathematical concepts such as functions, lines, and curves. One of the objectives of this course is to defocuses syntax and involves students in analyzing mathematical concepts systems, which are frequently not deeply understood by students attending science and engineering courses.

This course aims at attracting more non-computer science majors into computing disciplines and providing students with a deeper understanding real-life situations. The programming language used in this course is *Jython* – a Java/Python-based programming language that allows students work more quickly and integrate their systems more effectively. During the past six weeks, we have taught this course with controlled lessons plans developed by the Media-Propelled introduction to Computational Thinking (iMPaCT) team <sup>1</sup>.

During this time, several observations were identified in students' preparation, i.e., 1) Lack of fundamental math concepts, 2) Memorization than understanding, 3) Predisposition to conventional teaching method. In this talk, we will discuss the objective of this course, several novel observations, our approach to address challenges with their respective achievements.

---

<sup>1</sup>iMPaCT: <http://sites.google.com/site/computationalsystems/Home>