NIH MARC PROGRAM

DEVELOPING BIOINFORMATICS PROGRAMS FOR MINORITY INSTITUTIONS

**ESSENTIAL COMPUTING FOR BIOINFORMATICS**

Professor: Bienvenido Vélez, PhD

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Units: TBA

Day/Time: TBA

Description: This course provides a broad introductory discussion of essential computer science concepts that have wide applicability in the natural sciences. Particular emphasis will be placed on applications to Bioinformatics. The concepts will be motivated by practical problems arising from the use of bioinformatics research tools such as genetic sequence databases. Concepts will be discussed in a weekly lecture and will be practiced via simple programming exercises using Python, an easy to learn and widely available scripting language.

Objectives: To provide students with:

* Awareness of the mathematical models of computation and their fundamental limits
* Basic understanding of the inner workings of a computer system
* Ability to extract useful information from various bioinformatics data sources
* Ability to design computer programs in a modern high level language to analyze bioinformatics data.
* Experience with commonly used software development environments and operating systems
* Experience applying computer programming to solve bioinformatics problems

Prerequisites: Basic Biochemistry and Molecular Biology and undergraduate math.

Students: 25 students maximum

Textbook: How to Think Like a Computer Scientist: Learning with Python

Allen B. Downey

Green Tea Press (January 4, 2002)

**ISBN-10:** 0971677506 **ISBN-13:** 978-0971677500

Supplemental readings (will be provided by the Professor as needed):

Bioinformatics for Dummies 2nd edition – J-M Claverie, C Notredame - 2007