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