TIGP Bio 2015 Spring Syllabus

Programming (Python) (P1)

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| Place: Room 108, New Building of the Institute of Information Science, Academia Sinica.  Time: Friday, 10:00am-12:00pm  Chair: Dr. Wu, Kun-Pin (BP)  Dr. Wang, Chih-Yu (SNHCC)  Outline:  This course introduces basic aspects of programming language and its application in bioinformatics. First, fundamental programming techniques in Python are introduced. After that, this course focuses on the practical implementation of programs to analyze various biological data. The use of existing available resources from the Internet is also incorporated. Finally, the students implement bioinformatics projects (i.e., motif finding, pattern matching, sequence alignment, biomedical database analysis, etc.)  Lecturers: SHNCC-Dr. Wang, Chih-Yu; Dr. Chen, Kung;  BP-Dr. Wu, Kun-Pin; Dr. Wang, John; Dr. Tsai, Huai-Kuang/ Dr. Lin, Chan-Hsien (Eric).  Textbook: Introduction to Computation and Programming Using Python (revised and expanded edition) by John V. Guttag, 2013, The MIT Press (滄海圖書代理)  TA: Jerome Penaflor Panibe (杰羅姆)  Office hours: by appointment  Grades: Midterm exam 25%. Final exam 30%. Homework 35%. Class performance (10%) | | | |
| Week | Date | Topics/Brief Description | Lecturers |
| 1 | **2015/02/24**  **(Tue)** | Introduction to Python  **12:00-14:00** | Dr. Wu, Kun-Pin |
| 2 | 2015/03/06 | Basic Elements of Python I | Dr. Wu, Kun-Pin |
| 3 | 2015/03/13 | Basic Elements of Python II | Dr. Wu, Kun-Pin |
| 4 | 2015/03/20 | Basic statements I: branching programs and inputs | Dr. Wang, John |
| 5 | 2015/03/27 | Basic statements II: iterative programs | Dr. Wang, John |
| 6 | **2015/04/01**  **(Wed)** | Functions: scope rules and passing arguments | Dr. Wang, John |
| 7 | 2015/04/10 | Modules, Files, and Structured Types | Dr. Wang, Chih-Yu |
| 8 | 2015/04/17 | Exception handling | Dr. Wang, Chih-Yu |
| 9 | 2015/04/24 | Review week |  |
| 10 | 2015/05/01 | Midterm exam |  |
| 11 | 2015/05/08 | Introduction to Biopython | Dr. Lin, Chan-Hsien (Eric) |
| 12 | 2015/05/15 | Regular expressions | Dr. Lin, Chan-Hsien (Eric) |
| 13 | 2015/05/22 | Object-oriented programming: classes | Dr. Lin, Chan-Hsien (Eric) |
| 14 | 2015/05/29 | Data analysis toolbox | Dr. Chen, Kung |
| 15 | 2015/06/05 | Data analysis toolbox,  Web programming | Dr. Chen, Kung |
| 16 | 2015/06/12 | Web programming | Dr. Chen, Kung |
| 17 | **2015/06/17**  **(Wed)** | Review week |  |
| 18 | 2015/06/26 | Final exam |  |