

COMP 7295/8295: Bioinformatics Algorithms – Spring 2016
Instructor: Dr. Vinhthuy Phan (vphan@memphis.edu, 901-678-1535)

Time & Location: TR 9:40AM – 11:05AM, Dunn Hall 107.

Office hours: Monday 10AM or by appointment

Prerequisites: There are no specific requirements; although it's recommended students possess basic problem solving skills such as those learned in COMP 7712 or COMP 6030.

Main Topics:

- Programming in Python (Python 3, Sublime Text 3)
- Fundamental concepts in molecular biology (Zien).
- Fundamental concepts in algorithms (Pevzner).
- Dynamic programming: Sequence alignment (Smith/Waterman)
- Dynamic programming: RNA structure prediction (Nusinov)
- Iterative improvement: DNA regulatory motif finding (DNA Motif slides)
- Greedy method: Building phylogenetic tree (PhyloTree UCLA), and hierarchical clustering.
- Divide & conquer: linear-time suffix array construction (Karkkaiken)
- String search: BWT (Burrows), FM index (Ferragina)
- Graph algorithms: DNA sequencing (Compeau)
- Probabilistic Models & DP: Hidden Markov models

Grading scheme:

	COMP 7295	COMP 8295
• In-class participation:	30%	30%
• Homework:	30%	20%
• Project and presentation	40%	50%

Plagiarism or cheating behavior in any form is unethical and detrimental to proper education and **will not be tolerated**. All work submitted by a student (projects, programming assignments, lab assignments, quizzes, tests, etc.) is expected to be a student's own work. The plagiarism is incurred when any part of anybody else's work is passed as your own (no proper credit is listed to the sources in your own work) so the reader is led to believe it is therefore your own effort. Students are allowed and encouraged to discuss with each other and look up resources in the literature (including the internet) on their assignments, but **appropriate references must be included for the materials consulted**, and appropriate citations made when the material is taken verbatim.

If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor's discretion) a failing grade in the course. The course instructor may also decide to forward the incident to the University Judicial Affairs Office for further disciplinary action. For further information on U of M code of student conduct and academic discipline procedures, please refer to: <http://www.people.memphis.edu/~jaffairs/>