

Fall 2015

CSCI 5567

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University of New Orleans

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Bioinformatics I

CSCI 5567 Section 001

Fall Semester 2015

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Meets: 2:00PM - 2:50PM M,W,F in TBA
Literature Discussion section (50 min) TBA

Office Hours: TBA; other times by appointment only. Office Hours will be held in **Math 312**.

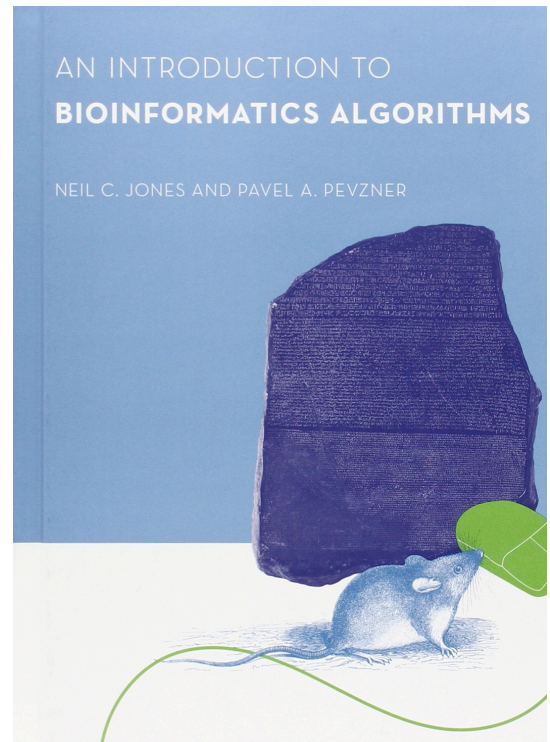
Prerequisite: CSCI 2125 and MATH 2314.

Text: **An Introduction to Bioinformatics Algorithms** by Jones and Pevzner.

Course Content:

An introductory course in the algorithms and theory used in bioinformatics with applications in computational genomics. These algorithms will be presented within the context of bioinformatics applications, but many are broadly applicable to other computational problems. Topics covered will include:

- Algorithms and Complexity
- Molecular Biology Primer
- Exhaustive Search
- Greedy Algorithms
- Dynamic Programming Algorithms
- Divide and Conquer Algorithms
- Graph Algorithms
- Combinatorial Pattern Matching
- Clustering and Trees
- Hidden Markov Models
- Randomized Algorithms



Grading:

Your grade will be calculated based on class projects and a midterm and final exam. The midterm will be worth 10% of the final grade, and the final exam will be worth 20%. Class projects will consist of 70%. There will be a large, final project worth twice as much as the others. Some of these projects may be team-based, and some individual. Team-based projects will be announced as such by the instructor.

All work is graded on a numerical (percentage) basis. The correspondence between numerical and letter grades is given as follows:

A: ≥ 90 ,
B: 80 - 89,
C: 70 - 79,
D: 50 - 69,
F: < 50 .

(4) It is expected that all homework will be turned in on time. Lateness penalties are:

- 1 day late - 10% off;
- 2 days late - 20% off;
- 3 days late - 40% off;
- >3 days late – not accepted

Note: We count school days (Sundays and holidays are not included).

(5) No make-ups for graded work (either tests or homework) will be given except for a legitimate (e.g., medical) reasons.

(6) Questions about the grading of student work should be raised within 72 hours of its return. After that time frame, issues raised will risk not being entertained.

(7) Students should retain all returned graded work, in case there are issues raised about the grade.

(8) The "I" grade (for Incomplete) is given only in exceptional circumstances, (e.g. missing the final exam because of a surgery).

Expected Outcomes:

Students who have completed this course will be well versed in the general applications of computational tools to bioinformatics problems, will be able to analyze a problem with respect to its complexity, and be able to choose and implement an appropriate algorithm for solving general bioinformatics problems. The graduate students will further be exposed to the primary literature from which current methods have been derived on a weekly basis, and will be responsible for attending literature discussion seconds on a weekly basis in addition to normal class time.

Academic Dishonesty:

Finally, we must call your attention to the University's policies regarding academic dishonesty (<http://www.uno.edu/studentaffairs/accountability.aspx>). Academic dishonesty includes cheating, plagiarism, and collusion. In particular, it includes "the unauthorized collaboration with another person in preparing an academic exercise" and "submitting as one's own any academic exercise prepared totally or in part for/by another." In the event of academic dishonesty, **the student will be assigned a grade of 0** on the exam or exercise, the student will be informed in writing of the action taken, and **a copy of this letter will be sent to the Assistant Dean for Special Student Services.**

Students with Disabilities:

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact their instructors and/or the Office of Disability Services to discuss their individual needs for accommodations.