BISC 478 : Computational Genome Analysis

Time: 9:00 – 10:20 am TTh, Room: MCB 301
Discussion 4-4:30 TuTh, Room: MCB 301

Instructors

Professor Steven Finkel	Phone: 821-1498	Email: sfinkel@usc.edu	
Professor **Fengzhu Sun**	Phone: (213)740-2413	Email: fsun@usc.edu	TTH:10:30-12:30
Professor Michael Waterman	Phone: (213)740-2408	Email: msw@usc.edu	MW: 9-11
Professor Jasmine Zhou	Phone: (213)740-7055	Email: xjzhou@usc.edu	TTh: 12-2

TA: Mike Mehan

Book: Computational Genome Analysis: An Introduction. (Deonier, Tavare, Waterman, Springer 2005)

Course Content

This course provides an introduction to the computational side of molecular biology, with an emphasis on genome analysis. Experimental biology is becoming increasingly computer intensive. In some laboratories, such as those doing genome and other large sequencing projects, fully half of the work is done on a computer. In others the role of the computer is subtle, but is there nonetheless. This course introduces biology students to the basics of computational and statistical thinking within the context of biology, so that the relevance and importance is immediately evident.

Grading

There are homework assignments (10%), in-class quizzes (20%), and three examinations (two mid-terms and one final, 23% pts each). Short in-class quizzes will occur each week (after week 1) in which there is not a mid-term or review. Each examination will cover one-third of the content. All examinations will occur as scheduled below. There will be no make-up examinations, mid-terms or quizzes. Note particularly that university regulations strictly regulate the final examination date and time. Homework submitted for grading is to be the independent work of each individual student.

	BISC478	**Computational Genome Analysis**	
	Date	**Topic**	**Lecturer**
Wk. 1	1/9/07	Introduction to Genomes (Ch1, all)	SF
	1/11/07	Words/ An Introduction to Probability, 1 (Ch2; 2.1-2.3.3)	MSW
Wk. 2	1/12/07	Words/ An Introduction to Probability, 2 (Ch2; 2.3.4-2.5)	MSW
	1/18/07	Words/ An Introduction to Probability, 3 (Ch2; 2.6-2.9)	MSW
Wk. 3	1/23/07	Words/ An Introduction to Statistics, 1 (Ch3; 3.1-3.2)	MSW
	1/26/07	Words/ An Introduction to Statistics, 2 (Ch3; 3.3-3.4.1)	MSW
Wk. 4	1/30/07	Words/ An Introduction to Statistics, 3 (Ch3; 3.4.2-3.6)	MSW

	2/01/07	Physcial Mapping-1 (Ch4; 4.1-4.4)	MSW
Wk. 5	2/06/07	Physcial Mapping-2 (Ch4; 4.5)	MSW
	2/08/07	**Examination I**	
	2/13/07	Genome Rearrangements (Ch5;5.1-5.2)	Sun
	2/15/07	Genome Rearrangements (Ch5;5.3-5.4)	Sun
Wk. 7	2/20/07	Sequence Alignments (Ch6;6.1-6.2)	Sun
	2/22/07	Sequence Alignments (Ch6;6.3-6.4)	Sun
Wk. 8	2/27/07	Sequence Alignments (Ch6;6.6-6.8)	Sun
	3/01/07	FASTA and BLAST (Ch7;7.1-7.2,7.5)	Sun
Wk. 9	3/07/07	FASTA and BLAST (Ch7;7.3-7.4)	Sun
	3/09/07	Sequence Assembly (Ch8;8.1-8.2)	Sun
	3/13/07	Spring Break	
	3/15/07	Spring Break	
Wk. 10	3/20/07	Sequence Assembly (Ch8;8.3-8.4)	Sun
	3/22/07	**Examination II**	Sun
Wk. 11	3/27/07	Signals in DNA (Ch9; 9.1-9.2)	Zhou
	3/29/07	Signals in DNA (Ch9; 9.3-9.4)	Zhou
Wk. 12	4/03/07	Clustering (Ch10; 10.1-10.3)	Zhou
	4/05/07	Clustering (Ch10; 10.4)	Zhou
Wk. 13	4/10/07	Clustering (Ch10; 10.5)	Zhou
	4/12/07	Gene Expression (Ch11; 11.1-11.3)	Zhou
Wk. 14	4/17/07	Gene Expression (Ch11; 11.4)	Zhou
	4/19/07	Gene Expression (Ch11; 11.5)	Zhou
Wk. 15	4/24/07	Trees (Ch12)	Zhou
	4/26/07	Review	Zhou
	5/08/07	**Final examination (Tue, 8:00-10:00 am, MCB301)**	