

COURSE NUMBER: GENET 256. 3 CREDITS**Course Title:** Practical Bioinformatics**Course Director:** Ed Grabczyk, Ph.D.**Course Description:** This course will focus on the practical use of current bioinformatic tools to further biological research. It is not a computer science course and no programming skills are required. The primary focus will be on learning to use computational tools appropriately in order to obtain, analyze and publish biological data. Computers will be used live in class. Topics covered will be partly determined by the interests of the students.**Course Dates:** 1/11/12 - 5/10/12**Location and Times of Class:** 3:00-4:30 pm on Tuesdays and Thursdays in CSRB 665

Grading will be a combination of take-home assignments (50%), in class participation (25%) and a final project (25%).

Syllabus:

Week 1	Introduction to bioinformatics, database structure,
Week 2	Pubmed, myNCBI (Knapp), Database searches, Boolean logic
Week 3	RSS (Knapp), Advanced Browser & Javascript, Citation analysis & data visualization (Knapp), Lab databases
Week 4	RefWorks (Knapp), Local DNA manipulation tools
Week 5	NCBI DNA tools, NCBI Probes, Primer design
Week 6	Human Genome Project, HGP follow-up
Week 7	NCBI BLAST, BLAST variations
Week 8	High throughput sequencing, Genome Browsers
Week 9	Introduction to UCSC Genome Browser, UCSC hands on
Week 10	UCSC Genome Browser Advanced, UCSC Advanced hands on
Week 11	Encode Data, Transcription Factor Binding prediction
Week 12	Transcriptomics, GEO, Projects
Week 13	Proteomics I (Chou), Proteomics II (Chou)
Week 14	siRNA prediction tools, mfold, Knock-down efficacy, Projects
Week 15	Quantitative Visualization (Marrero), Data display for publication
Week 16	Projects, Final Project
Week 17	Review