

BIOINF 800.8 (Module C): Bioinformatics and Systems Biology:

Lectures: Tuesdays 4:00-5:30 (March 18 – April 8, four weeks)
2062 Palmer Common

Labs: 2:00 – 4:00 PM, Mondays or Thursdays
2036 Palmer Common

Module C Director: Matthias Kretzler (Internal Medicine)

Course Director (for Module A-C): George Zhang (EEB)

“1 credit. Statistical analysis of microarray and other gene expression data. Analysis of protein-protein interactions, pathways and networks. Modeling and simulation of systems and networks. Example applications from translational medicine and cell biology”

Cited from: http://www.bioinformatics.med.umich.edu/bgp_courses/bioinf-800.008

Lecture (C1): Introduction to Systems Biology

Instructor: Dr. Brian Athey

Time: March 18 (Tuesday), 4:00 – 5:30 PM

Topics:

Multidimensional data integration across disciplines

Structure of systems biology team science

Tools for systems biology

Lab (C1) (Led by **Dr. Jeff de Wet**): To be defined by B. Athey

Instructor: Dr. de Wet

Time: 2:00 – 4:00 PM, March 20 (Thursday) or March 24 (Monday)

Topics:

Lecture (C2): Computational biology - Modeling and simulation:

Instructor: TBA

Time: 25 March (Tuesday), 4:00 – 5:30 PM

Topics: Integrating genomic sequences, gene expression data and literature:

Lab (C2): Multidimensional data integration

Instructor: Dr. de Wet

Time: 2:00 – 4:00 PM, March 27 (Thursday) or March 31 (Monday)

Topics:

Integrating multiple data sources in interaction networks:

Promoter module based transcriptional network generation

Lecture (C3): Application of Systems Biology to Translational Medicine.

Instructor: Dr. Matthias Kretzler

Time: April 1 (Tuesday), 4:00 – 5:30 PM

Topics:

Integrating genome wide data sets with high-resolution clinical phenotypes, molecular marker definition, regulatory network generation in patient samples

Lab (C3): Applying NCBI Resources to systems biology I

Instructor: Dr. de Wet

Time: 2:00 – 4:00 PM, April 3 (Thursday) or April 7 (Monday)

Topics:

Protein-protein interactions, Pathways and Networks – MiMI and its source databases; KEGG, PIR, HPRD; representations of data as graphs

Lecture (C4): Application of Systems Biology to Cell Biology

Instructor: Dr. Deborah Gumicio

Time: April 8 (Tuesday), 4:00 – 5:30 PM

Topics:

Defining regulatory networks in cell biological and developmental processes, experimental design and execution of cell biology studies for systems biology approaches.

Lab (C4) (Led by Dr. de Wet): Applying NCBI Resources to systems biology II

Instructor: Dr. de Wet

Time: 2:00 – 4:00 PM, April 10 (Thursday) or April 14 (Monday)

Topics: Exploring pathways at KEGG, interactions at MiMI, visualizing graphs with Cytoscape (using Anuj Kumar's data integration exercise)