

# Bioinformatics and Systems Biology Graduate Program

2015-16 Projected Course Offerings

*Please note: Departments may change or cancel the quarter(s) in which their courses are offered.  
Refer to the schedule of classes for an active listing. The next quarter's schedule is posted Friday of 5th week.*

	Summer	Fall	Winter	Spring
<b>BIOINFORMATICS AND SYSTEMS BIOLOGY CORE COURSES AND SEMINARS</b>				
Bioinformatics II: Introduction for Bioinformatics Algorithms (BENG 202/CSE 282)			X	
Bioinformatics III: Genomic Analysis (BENG 203/CSE 283)				X
Bioinformatics IV: Statistical Methods in Bioinformatics (MATH 283)		X		
BNFO 285: Statistical Learning			X	
BNFO 281: Bioinformatics and Systems Biology Seminar		X	X	X
BNFO 283: Bioinformatics Student Research Talks		X	X	X
<b>BIOMEDICAL INFORMATICS CORE COURSES AND SEMINARS</b>				
Bioinformatics II: Introduction for Bioinformatics Algorithms (BENG 202/CSE 282)			X	
MED 264: Principles of Biomedical Informatics (BMI students take this instead of BENG 203/CSE 283)		X		
Bioinformatics IV: Statistical Methods in Bioinformatics (MATH 283)		X		
BNFO 285: Statistical Learning			X	
MED 262: Current Trends in Biomedical Informatics (BMI students take this instead of BNFO 281)		X	X	X
BNFO 283: Bioinformatics Student Research Talks		X	X	X
<b>OTHER REQUIREMENTS</b>				
Choose one: SOMI 226 or BIOM 219. Scientific Ethics (must register on both Tritonlink and ethics.ucsd.edu)		X		X
BNFO 298: Research Rotation	*	X	X	X
BNFO 299: Graduate Research	*	X	X	X
BNFO 500: Teaching Assistantship	*	X	X	X
* For summer rotations/research/TAs, contact the Graduate Coordinator to arrange for credit				

<b>BIOLOGY ELECTIVES</b>				
<b>Elective BIO-1: Biochemistry</b>				
BENG 230A: Biochemistry		X		
CHEM 209: Macromolecular Recognition		X		
CHEM 213: Chemistry of Biological Macromolecules				X
CHEM 216: Chemistry of Enzyme Catalyzed Reactions			X	
<b>Elective BIO-2: Molecular Genetics</b>				
BICD 100: Genetics	SU2	X	X	X
BGGN 220: Graduate Molecular Biology (6 units)		X		
BGGN 223: Graduate Genetics (6 units)				X
<b>Elective BIO-3: Cell Biology</b>				
BICD 110: Cell Biology	SU1	X	X	X
BICD 130: Embryos, Genes, and Development			X	
BGGN 222: Graduate Cell Biology (6 units)			X	
BGGN 230/CHEM 221: Signal Transduction			X	
<b>COMPUTER SCIENCE/MATH/STATISTICS ELECTIVES</b>				
<b>Elective CS-1: Algorithms</b>				
CSE 101: Design and Analysis of Algorithms		X	X	X
CSE 200: Computability and Complexity			X	
CSE 202: Algorithm Design and Analysis		X	X	X
CSE 280A: Algorithms in Computational Biology			X	
MATH 261A: Probabilistic Combinatorics and Algorithms (offered odd years in fall)		X		
<b>Elective CS-2: Machine Learning and Data Mining</b>				
CSE 250A: Artificial Intelligence: Search and Reasoning		X		
CSE 250B: Artificial Intelligence: Learning			X	
<b>Elective CS-3: Mathematics and Statistics</b>				
MATH 274: Numerical Methods for Physical Modeling		X		
MATH 280A: Probability Theory		X		
MATH 281A: Mathematical Statistics		X		
MATH 281B: Mathematical Statistics			X	
PHYS 210A: Equilibrium Statistical Mechanics (5 units)				X
PHYS 210B: Equilibrium Statistical Mechanics		X		
<b>SYSTEMS BIOLOGY ELECTIVES</b>				
<b>Elective SB-1: Biological Systems</b>				
BENG 211: Systems Biology and Bioengineering I: Biological Components		X		
BENG 212: Systems Biology and Bioengineering II: Network Reconstruction			X	
BENG 227: Biomedical Transport Phenomena				X
<b>Elective SB-2: Kinetic Modeling</b>				
BENG 125: Modeling and Computation in Bioengineering				X
BNFO 284: Nonlinear Dynamics in Quantitative Biology (approved but not yet offered)				
PHYS 276: Quantitative Molecular Biology			X	
CHEM 220: Regulatory Circuits in Cells			X	
<b>BIOMEDICAL INFORMATICS ELECTIVES</b>				
<b>Elective BMI-1: Biomedical Informatics</b>				
MED 263: Bioinformatics Applications to Human Disease			X	
MED 268: Statistics Concepts for Biomedical Research		X		
MED 269: Clinical Decision Support Systems at the Point of Care				X
MED 273: Communicating Biomedical Informatics (offered even years in winter)			X	
MED 277: Introduction to Biomedical Natural Language Processing (proposed new course, may or may not be approved in time for FA15)		?		
<b>The following BMI-1 electives are not 4 units:</b>				
MED 265: Introduction to Clinical Environments (2 units)			X	
MED 267: Modeling Clinical Data and Knowledge for Computation (offered even years in fall; next is FA16) (2 units)		FA16		
MED 276: Grant Proposal Writing Practicum (offered odd years in spring; next is SP17) (2 units)				SP17