Bioinformatics and Systems Biology Graduate Program

2024-25 Projected Course Offerings — Updated February 6, 2025

This is a tentative schedule. Departments may change or cancel the quarter(s) in which their courses are offered. Refer to the Schedule of Classes each quarter for an active listing.

Patterns of typical quarters and alternating years are subject to change. Don't rely on them for future years.

Projected schedules not yet available are highlighted in pink. Wait for the Schedule of Classes or contact the department or instructor for info.

		Summer	Fall	Winter	Spring
BIOINFORMATICS AND SYSTEMS BIOLOGY CORE COURSES AND SEMINARS					
Core Classes for BISB Track					
Bioinformatics II: Introduction to Bioinformatics Algorithms (BENG 202/CSE 282)				X	
Bioinformatics III: Genomics, Proteomics, and Network Biology (BENG 203/CSE 283)					X
Bioinformatics IV: Statistical Methods in Bioinformatics (MATH 283)			X		
For the fourth core class, choose one of					
CSE 280A: Algorithms in Computational Biology				X	
CSE 284: Personal Genomics for Bioinformaticians [Not offered 2024-25; next will be in 2025-26]					
ECE 208: Computational Evolutionary Biology					X
BNFO 286/MED 283: Network Biology and Biomedicine				X	
Seminars for BISB Track					
BNFO 281: Seminar in Bioinformatics and Systems Biology			X	X	X
BNFO 283: Bioinformatics Student Research Talks			X	X	X

		Summer	Fall	Winter	Spring
BIOMEDICAL INFORMATICS CORE COURSES AND SEMINARS					
Core Classes for BMI Track					
Bioinformatics II: Introduction to 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		
For the fourth core class, choose one of					
CSE 280A: Algorithms in Computational Biology				X	
CSE 284: Personal Genomics for Bioinformaticians [Not offered 2024-25; next will be in 2025-26]					
ECE 208: Computational Evolutionary Biology					X
BNFO 286/MED 283: Network Biology and Biomedicine				X	
Bioinformatics III: Genomics, Proteomics, and Network Biology (BENG 203/CSE 283)					X
Seminars for BMI Track					
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

		Summer	Fall	Winter	Spring
OTHER REQUIREMENTS (BOTH TRACKS)					
BNFO 294: Scientific Ethics [Must register on both Tritonlink and ethics.ucsd.edu]	*	X	X	X	
Scientific Ethics Refresher every 4 years thereafter [No course number; register on ethics.ucsd.edu]	*	X	X	X	
BNFO 298: Research Rotation	*	X	X	X	
BNFO 299: Graduate Research	*	X	X	X	
BNFO 500: Teaching Assistantship	*	X	X	X	
* For summers, contact the Graduate Coordinator to record ethics/rotations/research/TAs, in lieu of course credit					

	Summer	Fall	Winter	Spring
BIOLOGY ELECTIVES				
Elective BIO-1: Biochemistry				
BENG 230A: Biochemistry		X		
CHEM 209: Macromolecular Recognition		X		
CHEM 213A: Structure of Biomolecules and Biomolecular Assemblies		X		
CHEM 213B: Biophysical Chemistry of Macromolecules			X	
CHEM 216: Chemical Biology		X		
Elective BIO-2: Molecular Genetics				
BICD 100: Genetics	SU1,2	X	X	X
BGGN 206A: Concepts of Reasoning and Experimentation (CORE) I		X		
BGGN 220: Graduate Molecular Biology (4 units) [Not listed 2024-25]				
BGGN 223: Graduate Genetics (4 units) [Not listed 2024-25]				
Elective BIO-3: Cell Biology				
BICD 110: Cell Biology	SU2	X	X	X
BICD 130: Embryos, Genes, and Development [Not listed 2024-25]				
BGGN 222: Graduate Cell Biology [Still on the books, possibly discontinued]				
CHEM 221 / BGGN 230: Signal Transduction				X

COMPUTER SCIENCE/MATH/STATISTICS ELECTIVES				
Elective CS-1: Algorithms				
CSE 101: Design and Analysis of Algorithms	SU1	X	X	X
CSE 200: Computability and Complexity [Not listed 2024-25]				
CSE 202: Algorithm Design and Analysis		X	X	
CSE 280A: Algorithms in Computational Biology [Also a core option; may not be used as both core and elective]			X	
Bioinformatics III: Genomics, Proteomics, and Network Biology (BENG 203/CSE 283) [Core for BISB, Elective CS-1 for BMI]				X
MATH 261A: Probabilistic Combinatorics and Algorithms [Offered odd years in fall]		FA25		
Elective CS-2: Machine Learning and Data Mining				
BNFO 285/BENG 285/ECE 204: Statistical Learning in Bioinformatics				X
CSE 250A: Principles of Artificial Intelligence: Probabilistic Reasoning and Learning		X		X
CSE 251A. Machine Learning: Learning Algorithms [Renumbered from CSE 250B]			X	
CSE 251B. Deep Learning [Renumbered from CSE 253]			X	X
CSE 255: Data Mining and Predictive Analytics [Not listed 2024-25]				
CSE 258: Recommender Systems and Web Mining		X		
ECE 208: Computational Evolutionary Biology [Also a core option; may not be used as both core and elective]				X
Elective CS-3: Mathematics and Statistics				
ECE 271A: Statistical Learning I		X		
MATH 274: Numerical Methods for Physical Modeling		X		
MATH 280A: Probability Theory		X		
MATH 281A: Mathematical Statistics		X		
MATH 281B: Mathematical Statistics			X	
MATH 281C: Mathematical Statistics				X
MATH 282A: Applied Statistics I		X		
MATH 282B: Applied Statistics II			X	
MATH 284: Survival Analysis				?
PHYS 210A: Equilibrium Statistical Mechanics (5 units)				X
PHYS 210B: Nonequilibrium Statistical Mechanics		X		

	Summer	Fall	Winter	Spring
SYSTEMS BIOLOGY ELECTIVES				
Elective SB-1: Biological Systems				
BENG 211: Systems Biology and Bioengineering I: Biological Components [Not listed 2024-25]				
BENG 212: Systems Biology and Bioengineering II: Large-Scale Data Analysis			X	
BENG 227: Transport Phenomena in Living Systems				X
BNFO 286/MED 283: Network Biology and Biomedicine			X	
Elective SB-2: Kinetic Modeling				
BENG 125: Modeling and Computation in Bioengineering	SU2			X
BNFO 284: Nonlinear Dynamics in Quantitative Biology [Possibly discontinued]				
PHYS 276: Quantitative Molecular Biology			X	
CHEM 220: Regulatory Circuits in Cells [Possibly discontinued]				

BIOMEDICAL INFORMATICS ELECTIVES				
Elective BMI-1: Biomedical Informatics				
MED 263: Bioinformatics Applications to Human Disease (4 units)			X	
MED 264: Principles of Biomedical Informatics (4 units) [Core for BMI, elective for BISB]		X		
MED 265: Informatics in Clinical Environments (4 units) [Alternate years]				X
MED 267: Modeling Clinical Data and Knowledge for Computation (4 units)				X
MED 268: Statistics Concepts for Biomedical Research (4 units) [Not offered 2024-25]				
MED 276: Grant Proposal Writing Practicum (2 units) [Alternate years]				SP26
MED 277: Introduction to Biomedical Natural Language Processing (4 units)		X		

QUANTITATIVE BIOLOGY ELECTIVES				
Elective QBIO-1: Quantitative Biology				
BENG 226: Foundations of Bioengineering I: Tissue and Cell Properties				X
BENG 235: Molecular Imaging and Quantitation in Living Cells				X
BGGN 214: Introduction to Q-Biology [May be applied to BIO area elective requirement]		X		
BNFO 262/BIOM 262/BGGN 237: Quantitative Methods in Genetics			X	
MAE 263: Experimental Methods in Cell Mechanics				?
PHYS 273: Information Theory and Pattern Formation in Biological Systems [Not listed 2024-25]				
PHYS 274: Stochastic Processes in Population Genetics [Not listed 2024-25]				
PHYS 275: Biological Physics		X		
PHYS 277: Physics of the Cell				X
SIOB 242C: Marine Biotechnology III: Introduction to Bioinformatics				X