

# IGPBS - BIOINFORMATICS & SYSTEMS BIOLOGY

## Graduate Committee

Dr. M. Jordan Rowley (Chair & Program Director), Dr. Dario Gherzi (Co-Chair), Dr. Su Chen, Dr. Jonathan Clayton, Dr. Kate Cooper, Dr. John Davis, Dr. Shibiao Wan

The IGPBS - Bioinformatics & Systems Biology (BISB) doctoral program is jointly administered by faculty at UNMC and UNO, two sister campuses with diverse and complementary strengths in areas such as genomics, bioinformatics, computer science, mathematics, statistics, systems biology, etc. The two campuses offer a vibrant learning environment and rich research resources including supercomputers for high-throughput data analysis tasks. The average time to graduate with a Ph.D. at UNMC is about 5 years. Upon degree completion, students from the BISB doctoral program will be well-positioned for a variety of career paths in the rapidly growing field of bioinformatics.

## General Requirements

- Completion of coursework.
- Completion of the comprehensive examination.
- Completion of a research project consistent with a Ph.D. level of achievement.
- Completion and successful defense of a doctoral dissertation.
- Concurrence of the mentor and the student's Supervisory Committee.

## PhD Curriculum

Code	Title	Credit Hours
GRAD 800	RESPONSIBLE CONDUCT IN RESEARCH TRAINING	0
IPBS 805	FUNDAMENTALS OF CELLULAR PROCESSES	3
IPBS 860	SUCCESS SKILLS FOR GRADUATE STUDENTS	1
BISB 815	TOOLS AND ALGORITHMS IN BIOINFORMATICS	3
BIOS 806	BIOSTATISTICS	3
ELECTIVE	(Course approved on by supervisory committee related to computer science, bioinformatics, or statistics.)	3
BISB 903	BIOINFORMATICS IN SCIENTIFIC PUBLICATIONS	1
BISB 970	SEMINAR	1
Select from one of the following:		
BIOS 815	BIOSTATISTICAL COMPUTING	
OR BMI 8540	(Foundations in Programming for Biomedical Informatics. This course is offered at the University of Nebraska Omaha. )	
OR PAMM 825	(Introduction to R Programming for Biomedicine)	

The above courses are required core curriculum, but these requirements can be waived if a student can document extensive expertise or previous comparable coursework. A basic programming course (in either Python or R) may also be required for students who lack

experience in programming. **Students must take one elective related to Computer Science, Bioinformatics, or Statistics approved by the supervisory committee. Students must take all courses prior to taking the comprehensive examination.** Students will also take BISB 896 during their Research Rotations and BISB 999 after fully joining a lab.

## Students Often Follow this Example Schedule:

### Fall Year 1

GRAD 800 Responsible Conduct in Research Training  
IPBS 860 Success Skills for Graduate Students  
IPBS 805 Fundamentals of Cellular Processes

### Spring Year 1

BIOS 815 OR PAMM 825 OR BMI 8540  
BIOS 806 Biostatistics

### Fall Year 2

BISB 815 Tools and Algorithms in Bioinformatics

### Spring Year 2

Elective (as approved by the supervisory committee)

## Other and Yearly Requirements:

While rotating: BISB 896 Research Other than Thesis (Rotation Research)

After rotations: BISB 999 Doctoral Dissertation (Research)

Every semester: BISB 970 Seminar

Every semester except the 1st: BISB 903 Bioinformatics in Scientific Publications

## MD/PhD Curriculum

Code	Title	Credit Hours
GRAD 800	RESPONSIBLE CONDUCT IN RESEARCH TRAINING	0
BIOS 806	BIOSTATISTICS	3
BISB 903	BIOINFORMATICS IN SCIENTIFIC PUBLICATIONS	1
BISB 970	SEMINAR	1
BISB 999	DOCTORAL DISSERTATION	1-9
Select from one of the following:		
BISB 815	TOOLS AND ALGORITHMS IN BIOINFORMATICS	
BIOS 815	BIOSTATISTICAL COMPUTING	
PAMM 825		
BMI 8540	(Foundations in Programming for Biomedical Informatics. This course is offered at the University of Nebraska Omaha.)	