

**BIOMEDICAL SCIENCES GRADUATE PROGRAM'S
CORE CURRICULUM:**

Students starting their degree Summer 2012 and after

FIRST YEAR CURRICULUM

Summer	Autumn	Spring
Laboratory Rotation IBGP 7930 (credit hours vary)	Biomedical Sciences Survey IBGP-7000 (6 credit hours) Research Techniques and Resources IBGP-8050 (4 credit hours) Laboratory Rotation IBGP 7930 (4 credit hours)	Research Problems IBGP-7040 (4 credit hours) Biomedical Research Ethics Pharmacology-7510 (2 credit hours) Laboratory Rotation IBGP 7930 (total of 8 credit hours 2, 7-week rotations)

SECOND YEAR CURRICULUM:

Summer	Autumn	Spring
Biostatistics PH-BIO 6280 (3 credit hours)	Fundamentals of Grant Writing-1 IBGP-7070 (2 credit hours)	Fundamentals of Grant Writing-2 IBGP-7080 (2 credit hours)
Dissertation Research IBGP 8999 *(credit hours vary)	Dissertation Research IBGP 8999 *(credit hours vary)	Dissertation Research IBGP 8999 *(credit hours vary)
	Area of Interest or Elective Course**	Area of Interest: Elective Course**

*The number of dissertation credit hours is determined by each individual student's situation. This depends on: how many credit hours are necessary for full-time status, how many credit hours are allowed for each term, and how many credit hours the student is registering for in other courses. **Students need to keep in mind that they will need at least 34 credit hours in IBGP 8999 and a total of 80 credits hours to graduate.**

****Elective courses:** 10 credit hours must be in elective courses. These courses may be in IBGP or in other departments such as MVIMG, Neuroscience, Pharmacology, Pathology, MCB courses (It may also be in an Area of Research Emphasis) Students do not have to register for elective courses each term, they may take them as their schedule allows.

CURRICULUM SUBSEQUENT TO SECOND YEAR:

Summer	Autumn	Spring
<p>Dissertation Research IBGP 8999 *(credit hours vary)</p> <p>Area of Interest or Elective Course**</p>	<p>Dissertation Research IBGP 8999 *(credit hours vary)</p> <p>Area of Interest or Elective Course**</p>	<p>Dissertation Research IBGP 8999 *(credit hours vary)</p> <p>Area of Interest or Elective Course**</p> <p>***IBGP Senior Seminar IBGP 7972 (1 credit hour)</p>

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*****IBGP 7972-** Senior Student Seminar: 1 credit hour. *Due to limited space, please contact the IBGP office in advance to be placed on a priority list for this required course.*

Additional Requirements for Those Pursuing the Computational Biology & Bioinformatics Research Specialization:

Required Courses

In addition to the core curriculum, students must complete the following courses:

- **BMI 5730 (3 credits)** Introduction to Bioinformatics Introduces students to basic topics of bioinformatics including sequence analyses, proteomics, microarrays, regulatory networks, sequence and protein databases. Recommended background in molecular biology and computer science.
- **BMI 5710 (3 credits)** Introduction to Clinical Informatics. A survey of biomedical informatics theories and methods employed in the design, implementation and management of clinical information systems.

Students will also complete at least one of the following or its equivalent:

- **BMI 5720** - Imaging Informatics
- **BMI 5740** - Introduction to Research Informatics
- **BMI 7830** - Systems Biology
- **CSE 5441** - Introduction to Parallel Computing
- **CSE 5431** - Systems III: Introduction to Operating Systems
- **CSE 5433** - Operating System Laboratory
- **CSE 5421** - Introduction to Database Systems
- **CSE 5461** - Computer Networking and Internet Technologies*
- **CSE 5331** - Foundations II: Data Structures and Algorithms**
- **CIS 6441** - Parallel Computing
- **CSE 5242** - Advanced Database Management Systems
- **CSE 5542** - Real-Time Rendering
- **CSE 5545** - Advanced Computer Graphics
- **CSE 6331** - Algorithms
- **CSE 5243** - Introduction to Data Mining
- **ECE 7868** - Pattern Recognition and Machine Learning
- **ECE 7005** - Information Theory
- **ECE 7866** - Computer Vision
- **STAT 6410** - Design and Analysis of Experiments
- **STAT 6450** - Applied Regression Analysis
- **STAT 6560** - Applied Multivariate Analysis
- **STAT 6570** - Applied Bayesian Analysis
- **STAT 6625** - Statistical Analysis of Genetic Data
- **STAT 7620** - Elements of Statistical Learning

Seminars

Due to the interdisciplinary nature of Bioinformatics; relevant seminars are given through Biomedical Informatics, CIS, Biomedical Engineering, and Biomedical Sciences. To receive the designation of Graduate Specialization in Biomedical Informatics students will be required to register for a total of at least 4 credit hours (i.e., 4 semesters) in these relevant seminars approved by the student's advisor.