THE PRE-PROFESSIONAL NON-THESIS MASTER OF SCIENCE (M.S.) DEGREE

Indiana University-Purdue University Indianapolis (IUPUI)
School of Science
Department of Biology
www.biology.iupui.edu

The Department of Biology at Indiana University-Purdue University Indianapolis (IUPUI) offers a unique and innovative one-year Master of Science degree program to prepare college graduates for application to professional schools in areas related to the life and health sciences. The program is designed for recent graduates who have applied to professional schools, but need to upgrade their credentials in order to meet the very competitive standards for admission. In addition, the program accommodates the working professional who has decided to return to the academic setting in order to retool for a change in career direction. In either case, successful completion of this rigorous one-year program will provide evidence of strong motivation, excellent preparation, and the ability to withstand the heavy workload typical of professional degree programs.

The program is suitable for students who seek careers in:

• Allopathic medicine
• Osteopathic medicine
• Dentistry
• Veterinary medicine
• Podiatry
• Pharmacy
• Optometry
• Physician assisting
• Law

ABOUT THE EXPERIENCE

The program was instituted to serve a large number of students who were unsuccessful in their first applications to professional schools. They were previously advised to take more courses to improve their academic records and reapply. This resulted in random course taking and no credential for those who were not admitted in subsequent years. In response, the Department of Biology constructed a coherent program that increased the course load typically taken by students and offered a Purdue University Master of Science degree upon the completion of one academic year of work.

The academic experiences within the program include high content lecture courses, seminars, and courses combining both instructional approaches. Students study the fundamental principles of several life sciences disciplines, many of which are related to the areas of student career interest. Students also have extensive exposure to the primary literature and the opportunity to develop skills in critical analysis. Advanced communications skills are developed through scientific writing and public
presentations. Students will write research papers, grant proposals, and literature critiques and will be responsible for organizing and delivering oral presentations in many of their classes.

PROGRAM PHILOSOPHY

The program has been designed to be academically challenging while producing a well-trained, modern biologist. The program is not designed to mimic the curriculum of any professional school. The "challenge" element of the program is intended to demonstrate commitment and the ability to achieve under rigorous academic conditions while the "biologist" element provides multiple career opportunities to those students who do not move forward in their original career objective. To accomplish this latter objective, students are required to have several essential experiences in their undergraduate degrees or within the program. These include:

- Genetics
- Biochemistry
  - Molecular Biology (Senior or Graduate level)
  - Immunology
  - Plant Cell/Molecular Biology

PROGRAM STRUCTURE

The pre-professional M.S. is a full-time program requiring 30 credit hours of coursework to be taken over one academic year. Because all courses are 3 credit hours, students will register for 5 courses per semester. Students may begin in January or August, although entering in August will have the most favorable sequence of courses. There are no set requirements beyond meeting the five areas presented earlier and the student's curriculum is established in consultation with the Graduate Advisor. Courses beyond the required areas are chosen from the Biology graduate offerings. For students with strong backgrounds in Biology, all courses selected are at 50000 or 60000 level. For students with degrees in other disciplines and less preparation in Biology, up to two 3 credit hour advanced, undergraduate courses may be used in the program. This option is used with students who do not have Genetics or Biochemistry on their records. Students must maintain a GPA of 3.0 to remain in good graduate standing.
GRADUATE COURSES (2011--12)

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<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>50700 Principles of Molecular Biology</td>
<td>51600 Molecular Biology of Cancer</td>
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<td>55000 Plant Molecular Biology</td>
<td>54000 Biotechnology</td>
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<td>55600 Physiology I</td>
<td>56100 Immunology</td>
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<td>55900 Endocrinology</td>
<td>56400 Molecular Genetics &amp; Development</td>
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<td>56600 Developmental Biology</td>
<td>55900 Endocrinology</td>
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<td>69700 Topics: Sensory Systems</td>
<td>56800 Regenerative Biology &amp; Medicine</td>
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<td>69700 Topics: Cell &amp; Molecular Bone Biology</td>
<td>57100 Developmental Neurobiology</td>
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<td>69700 Topics: Immune Disorders</td>
<td>69700 Topics: Microbial Genetics</td>
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<td>69700 Topics: DNA Mutagenesis, Recombination, Genomics</td>
<td>69700 Topics: Stem Cell Biology</td>
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<td>69700 Topics: Microbial Pathogenesis</td>
<td>69700 Topics: Advanced Topics in Cell Biology</td>
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<td>69700 Topics: Cell Biology</td>
<td>69700 Topics: Epigenetics</td>
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ADMISSIONS PROCEDURE AND REQUIREMENTS

Students must have earned a Bachelor of Arts or Bachelor of Science degree from an accredited college or university. The application for admission is on-line only and can be accessed from the Department of Biology home page (http://www.biology.iupui.edu). Applicants must submit TWO copies of transcripts from all institutions attended, three letters of recommendation (at least two must come from full-time science professors), and scores from the Graduate Record Exam (GRE) (General test only). The recommendations can be submitted at the on-line application site or can be sent to the Department of Biology. Transcripts and GRE scores should be sent to the Department of Biology. Students must have a minimum undergraduate GPA of 3.0 including a science GPA of 3.0. Additional minimum requirements are a verbal plus quantitative GRE of 1000, including a verbal score of 400 or higher on the old GRE exam given prior to August 1, 2011. For those taking the GRE exam after this date, a verbal score not less than 146, a quantitative score of not less than 145 and a total score of 295 will be required. Conditional admission (those with GPAs below 3.0) may be granted in special cases where the most recent work shows significant improvement, where graduate programs have subsequently been completed, where key undergraduate courses have been retaken with improved results, and where other factors that the Committee may regard as showing very strong potential for success are in place. Students are encouraged to apply for early admission and applications must be submitted by July 15 (December 1 for January admission) for fall admission. Applications received later will be considered but the availability of all courses cannot be guaranteed.

Applicants are expected to have a science background that will allow them to successfully complete graduate courses in Biology. The minimum background includes chemistry through organic chemistry, one year of physics, and 16 credit hours of biology coursework specifically designed for biology majors. The latter typically means a year of freshman biology and two
upper level courses. Relevant upper level courses listed in preferential order: genetics, cell biology, molecular biology and biochemistry but also acceptable are microbiology, immunology, developmental biology, and physiology.

**PROGRAM DATA**

The program has enrolled from 14 to 88 students per year since its inception in fall 1993. The program has seen significant growth in recent years. Admission is granted on a rolling basis. As of spring 2010, over 700 students have received the pre-professional M.S. There are now more than 350 students who have been admitted to medical schools and approximately 80 others who have been admitted to other professional schools. A five-year survey of students who were not admitted to professional school showed that 88% found employment in areas relevant to their education in the M.S.

**FINANCIAL AID**

There is no Department-level support for this program but students are welcome to apply for financial aid administered by the university. Financial aid is need-based as determined by the Free Application for Federal Student Aid (FAFSA). Applicants are considered for the Subsidized and Unsubsidized Federal Stafford Loans and work study. More information can be obtained at 317-274-4162 or at finaid@iupui.edu.

**ABOUT THE UNIVERSITY**

The IUPUI campus enrolled nearly 31,000 students in the fall of 2010 making it one of the top 50 enrolling campuses in the U.S. The university has existed since 1969 and since has become known as an emerging model for urban public education. The campus is also the leader in the state in external funding for research and other special programs with nearly $400 million in 2009-2010. IUPUI is the most comprehensive university in the state with over 180 degree programs. The campus combines the professional schools of medicine, dentistry, law and nursing with major undergraduate schools in science, liberal arts and engineering.

**LOCATION**

The IUPUI campus is located about three blocks from downtown Indianapolis. Indianapolis is the capital of Indiana and has been cited as a model for urban revitalization. It is the nation’s twelfth largest city with a metro-area population of about 1.4 million people. Beyond the city itself, the Indianapolis metropolitan area
includes rolling countryside, farms, suburban communities and many beautiful wooded parks, including Eagle Creek Park and Nature Preserve, which is one of the largest city parks in the country. The city also has twenty-two museums (including a world-renowned children’s museum), a zoo and botanical garden adjacent to campus, international violin and piano competitions, a world-class symphony, ballet companies, and the famous Indy 500 auto race. Indianapolis is also the home of the NBA Indiana Pacers, the NFL Indianapolis Colts, and minor league teams in baseball and hockey.

**IMPORTANT CONTACTS**

Hard copies of application documents (transcripts, GRE scores, and perhaps letters) or other correspondence should be sent to:

Department of Biology, IUPUI  
723 West Michigan Street, SL 306  
Indianapolis, IN 46202

For answers to questions about the program contact:

Graduate Secretary  
317-274-0577  
biograd@iupui.edu

Dr. M. Bard, Graduate Director  
317-274-0577  
mbard@iupui.edu