Duluth Campus

Integrated Biosciences Ph.D.

Swenson College of Science & Engineering
University of Minnesota Duluth

Link to a list of faculty for this program.

Contact Information:
Integrated Biosciences Graduate Program, University of Minnesota, 251 Swenson Science Building, 1035 Kirby Drive, Duluth, MN 55812 (218-726-6898; fax: 218-726-8152)
Email: ibs@d.umn.edu
Website: http://www.d.umn.edu/ibs

- Program Type: Doctorate
- Requirements for this program are current for Spring 2020
- Length of program in credits: 50
- This program requires summer semesters for timely completion.
- The Integrated Biosciences Ph.D. is an All-University program delivered on the Twin Cities and Duluth Campuses. The University of Minnesota Twin Cities is the degree granting authority for the Integrated Biosciences Ph.D. program in Duluth.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The all-university integrated biosciences graduate program offers study toward the doctor of philosophy (Ph.D.) degree. The program has three areas of emphasis: cell, molecular, and physiological (CMP) biology emphasis, chemical biology (CB) emphasis, and ecology, organismal, and population (EOP) biology emphasis.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.00.

A bachelor's degree or equivalent from an accredited college or university in the biological or physical sciences or a related field.

Other requirements to be completed before admission:
Recommended undergraduate courses for applicants pursuing the Ph.D. degree include one year each of chemistry, biology, physics, calculus, and advanced chemistry. One semester (minimum) of statistics is also recommended.

Additional recommended courses for students in the ecology, organismal, and population (EOP) emphasis include one year of calculus, one semester each of ecology and evolutionary biology, along with one course in two of the following subjects: genetics, cell biology, biochemistry.

Additional recommended courses for students in the cell, molecular, and physiological (CMP) emphasis include one year of organic chemistry plus one course in each of the following: genetics, cell biology and biochemistry.

Additional recommended courses for students in the chemical biology (CB) emphasis include one year of organic chemistry, plus one course in biochemistry and cell biology.

Applicants must submit their test score(s) from the following:

- GRE

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
- IELTS
  - Total Score: 6.5

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- MELAB
  - Final score: 80

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations(GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

26 credits are required in the major.
24 thesis credits are required.

This program may not be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Ph.D. Written Preliminary Examination-In addition to completing the curriculum for the major and internal related fields, students will be required to pass both a written and oral preliminary examination prior to completing the Ph.D. program. The preliminary written examination will be administered once the student has completed the majority of the required coursework. This will typically occur in the summer of the second year. The written examination will consist of a completed NIH or NSF grant application for the student's proposed research project. The project will be evaluated by the Thesis Examining Committee, which will also serve as the student's Final Oral Examining Committee to provide continuity of advice during the length of the student's research program.

Ph.D. Oral Preliminary Examination-The oral preliminary examination will be administered within two months of the successful completion of the preliminary written examination. The examination will be administered by the graduate faculty according to University regulations and all students will be required to pass the oral examination to continue in the Ph.D. program.

Ph.D. Final Oral Defense-It is anticipated that most students will complete the requirements for the Ph.D. degree within five years. The final oral defense will be conducted by the graduate faculty according to University regulations. It will consist of a public seminar presented by the student.

Required Coursework (13 cr)

IBS 8011 - Integrated Biological Systems I (3.0 cr)
IBS 8012 - Integrated Evolutionary Processes (2.0 cr)
IBS 8013 - Integrated Biological Systems II (3.0 cr)
IBS 8030 - IBS Research Club (1.0 cr)
IBS 8099 - The Biological Practitioner (1.0 cr)
STAT 4060 - Introduction to Biostatistics (3.0 cr)
or STAT 5411 - Analysis of Variance (3.0 cr)
or STAT 5511 - Regression Analysis (3.0 cr)
IBS 8980 *{Inactive}*(2.0 cr)
or IBS 8993 - Integrated Biosciences Graduate Seminar (2.0 cr)

Thesis (24 cr)

Must be taken for 24 credits
IBS 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Electives (13 cr)

Take 13 or more credit(s) from the following:
- IBS 8020 *{Inactive}*(1.0 cr)
- IBS 8094 - Rotations (1.0 cr)
- IBS 8101 - Cellular Biochemistry (3.0 cr)
- IBS 8102 - Cell, Molecular and Developmental Biology (3.0 cr)
- IBS 8103 - Comparative Animal Physiology (3.0 cr)
- IBS 8201 - Ecological Processes (2.0 cr)
- IBS 8202 - Chemical Biology (3.0 cr)
- IBS 8203 - Methods in Molecular Biosciences (2.0 cr)

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