

Planning of the NDHU Institute of Biotechnology PhD Program

Approved and modified by the department/institute meetings (Sep 26, 2006; Oct 21, 2008)

Curriculum Planning

The goal of the PhD program of the NDHU Institute of Biotechnology is to cultivate the advanced scientists in biotechnology. As the designed curriculum indicates that the courses of basic life sciences and biotechnologies are included, and biomedicine, bioinformatics, biological resources and patent/intellectual property training are also considered. For the partial fulfillment of the PhD program, 40 credit hours are required which includes 28 credits of mandatory courses and 12 credits of optional courses (Up to 6 credits of PhD courses offered by other universities or other departments can be substituted).

Planned Curriculum

Course	Mandatory or Optional	Credit	Class	Instructor
Advanced Molecular Cell Biology	M	3	PhD I	Professors
Research Methodologies in Biotech	M	3	PhD I	Professors
Frontiers of Life Science (Seminar Series)	M	1	PhD/MS program	Professors
Advancement of Biochemical Technology (Seminar Series)	M	1	PhD/MS program	Professors
Seminar (I, II)	M	2 x 1	PhD I	Professors
Thesis Research (I*, II, III, IV, V, VI)	M	6 x 3	PhD I, II, III	Professors
Advanced Biochemistry	O	3	PhD/MS program	Peng
Advanced Plant Molecular Biology	O	3	PhD/MS program	Lin, Chou
Biopesticide	O	1	PhD/MS program	Peng
Bioinformatics	O	3	PhD/MS program	Shiuan
Core Technologies in Stem Cell	O	3	PhD/MS program	Chiou
Neural Biology	O	3	PhD/MS program	Osborne

Plant Chemistry and Ecology	O	3	PhD/MS program	Chou
Protein Engineering	O	3	PhD/MS program	Peng, Shiuan
Scientific Writing in English	O	3	PhD/MS program	Osborne
Special Topics in Biochemical Engineering	O	3	PhD/MS program	Chiou
Special Topics in Biosensors and Bioelectronics	O	3	PhD/MS program	Wu
Special Topics in Biomedical Sciences	O	3	PhD/MS program	Hwang, Cheng
Special Topics in Bioindustry	O	3	PhD/MS program	Wu, Weng
Special Topics in Cellular Signal Transduction	O	3	PhD/MS program	Weng, Hsu
Stem Cell Tissue Engineering	O	3	PhD/MS program	Chiou
Tumor Biology	O	3	PhD/MS program	Hsu

Suggested Courses from Other Departments

Course	Requirement or Elective	Credit	Department	Instructor
Biophysics	O	3	Physics	Kou
Advanced Biochemistry	O	3	Chemistry	Tai
Drug Design	O	3	Chemistry	Leong
Nuclear Magnetic Resonance	O	3	Chemistry	Chien
Mass Spectrometry	O	3	Chemistry	Ho
Nano-Material Science	O	3	Chemistry	Lo

Remarks:

1. The curriculum structure emphasizes to establish a knowledgeable and wide vision student, as well as a moral-integrated scientist. In the first year, the Advanced Molecular Cell Biology and the Research Methodologies in Biotechnology serve for the students' basic knowledge enrichment. In addition to the core courses, two seminar series are required: Frontiers of Life Sciences and the Advancements of Biochemical Technology.
2. To establish the students' independent research ability, the Thesis Research I-VI are planned in the curriculum. The Thesis Research I is a Lab Rotation purpose that

assists mutual comprehension between students and faculties. Every first-year student is required to have three laboratory orientation, a written report and an oral presentation in the end of the semester to the Advisory Committee.

Admission to the PhD Program

The application of the PhD program will be processed on May and December each year. To consider the application process is completed, all materials including MS transcript, MS thesis, and two recommendation letters should be submitted to the university. An oral interview related to basic knowledge and MS thesis work will then be conducted. Admission issued will be based on the followings: (1) Basic knowledge in the fields of bioscience and biotechnology. (2) Research experience and problem-solving capability. (3) Clear motivation and career goal. (4) Feasibility of doing the proposed research at NDHU.

Other than the above, undergraduates and on-going MS students can also apply for the PhD program during every July. The admission criteria are mainly: (1) Compatibility of the current research to the level of a MS thesis work. (2) The value and potential of the proposal.

Students with international status should earn the admission through the coordination of the university and the international programs offered by the Ministry of Education.

Organization and Function of the PhD Committees

1. Advisory Committee

The committee (consisting of five faculties, among them, one third should be from other institutions) is organized by the dissertation advisor and the institute director,. The committee should advise the PhD student regarding the course work, the qualifying examination, and the content and progress of research.

2. Dissertation Defense Committee

The committee includes five to seven faculties (one third of them should be from other institutions), is organized by the dissertation advisor and the institute. The members of the committee can also serve in the advisory committee.

Requirements for Graduation (Receiving the PhD Degree)

The institute offers the PhD degree to students who have fulfilled the following three parts, other than the 40 credit hours that required by the institute.

(1) PhD Qualifying Examination

The PhD qualifying examination will be held every year. The PhD students should pass the PhD qualifying exam within three years of study. The qualifying exam constitutes two parts: the written test and the oral defense. The syllabus for written test covers the materials of bioscience and biotechnology, as well as the methodologies. The oral defense should be the student's research proposal and related up-dated knowledge. The advisory committee should orient both examinations.

PhD student fulfilled the PhD Qualifying Examination has the PhD candidate status. Those who failed the qualifying exam (either the written or the oral exam) during the 3rd year, may retake the exam(s) (and only retake once) during the following year. Any failure to the examination(s) again, one should resign from the Institute without any objection.

(2) Language Capability Examination

Each PhD candidate has to earn the certificate of either the National English Examination (the mid-high grade, offered by the Taiwan government), or the TOEFL examination (score 525 on paper-based test or score 200 on computer-based test or score 70 on internet-based test), or other equivalent English Language Examinations (the details can be worked out by the advisory committee). Native English-speaking students can waive this examination.

(3) Research Achievement

The PhD candidate has to publish a SCI paper as first author with impact factors higher than 50% in one's research fields, and a second SCI paper, first author as well, that is submitted regardless of the impact factor. The details can be worked out by the advisory committee.