Graduation Requirement 2019

Guidelines for Bio Ph.D. Program

Passed by Bio program committee and retrospectively applied to the first batch of students 4/17/2006.
Revised by Bio program committee 6/11/2013.
Revised by Bio program committee 3/28/2014.
Revised by Bio program committee 2/10/2015.
Revised by Bio program committee 11/18/2015.
Revised by Bio program committee 9/6/2016.
Revised by Bio program Academic Committee 6/28/2019.

(This document is only applicable to students who are admitted of TIGP Bio program of Academic Sinica from **2019**.)

I. Course Requirements, Credit Requirements and Time Limitation

1. Required Courses and credits:

(1) Seminar: 6 semesters; 1 credit per semester. (Does not consider as graduation credits)

(2) Student Presentation: 4 semesters ;1 credit per semester. (Has to fulfill within the first 3 years)

(3) Lab Rotation: 2 semesters; 0 credit per semester.

(4) *Research Thesis:

NCTU Students: 2 semesters, 1credit per semester (offered by NCTU only)

(5) *Research Thesis Proposal:

NTU Students: 1semester with 0 credit (offered by NTU and has to be fulfilled 1 semester prior to graduation)

2. Core Courses (I) and credits: (Required)

(1) Basic Molecular Biology I (B1): 1 semester; 3 credits per semester.

(2) Biological Computing I (C1): 1 semester; 3 credits per semester.

(3) Fundamental Statistical Methods in Bioinformatics (S1): 1 semester; 3 credits.

(4) Programming (Python) (P1): 1 semester; 2 credits.

3. Core Courses Courses (II) and credits : (Mandatory)

(1) Basic Molecular Biology II (B2): 1 semester; 3 credits per semester.

(2) Advanced Algorithms (C2): 1 semester; 3 credits per semester

(3) Statistical Methods in Bioinformatics (S2): 1 semester; 3 credits.

4. Elective Courses and credits:

Any other courses (offered by TIGP or partner universities) that are approved by the Curriculum Committee of BP.

5. For students with a Master's degree, 24 credits are required.

6. For students with a Bachelor's degree, 30 credits are required (24 credits need to be Ph.D. level courses).

7. The duration of Ph.D. study needs to be at least three years and at most seven years, starting from the date of registration with their university.

II. Thesis Advisor

1. Students need to find a thesis advisor, and hand in the "Thesis Advisor Form" to the program committee before the end of first year. When changing thesis advisors, students need to hand in the "Form for Changing Thesis Advisor" to the program committee.

2. Student can only select thesis advisors from the core faculties of the TIGP Bio program. Core faculties are faculties from collaborating universities and institutes of Academia Sinica who are involved in this program, and have been approved by the program committee.

III. Qualifying Exam

Students need to pass the TIGP Bio's qualifying exam before the end of their second year; those who fail to do so will be expelled from the program. Applications are available at the beginning of February every year.

*TIGP Bio's qualifying exam: written qualifying exam could be waived for students whose course grade is 90/100 or higher.

a. qualifying exam score for the waived subject will be **70**/100.
b. student can still choose to take the written exam and use it as exam score.
c. student who is qualified for waiving of Qualifying Exam could choose

either of above two options as exam score after taking Qualifying Exam. The score couldn't be changed once the choice is made.

IV. Advancement to Candidacy Status

Students obtain the Ph.D. candidacy status if they fulfill the following requirements:

1. Complete required courses and credits.
2. Pass TIGP Bio's qualifying exam.
3. Students registered with National Chiao Tung University are required to complete their oral examination along with their thesis proposal examination, and submit all supporting documents before the end of their third year.

V. Thesis Proposal

Students registered with National Tsing Hua University are required to pass their thesis proposal examination administered by their thesis advisory committee before the end of their fourth year.

VI. Defense

1. Prerequisites

(1) Have advanced and maintained the candidacy status.

(2) In principle, students should publish at least two bioinformatics-related papers in any international journal or conference. The journal, conference, content and quality of the paper, or any other special circumstances will be assessed by the TIGP Bio program committee. Students should be the first author of the aforementioned papers; TIGP Bioinformatics and the university with which the student is registered must be listed in the affiliation section of the papers. *

*The pre-requisite for Publications also can be fulfilled if a bioinformatics-related paper is published with the following conditions:

A. Be the first author of the paper.

B. TIGP Bioinformatics and the university with which the student is registered must be listed in the affiliation section of the paper.

C. The Impact Factor of the aforesaid journal/conference has to be greater than 4 in one of the past 3 years of which paper is published (Excluding the published year).

*NTHU students are required to have 2 papers (minimum 1 first-author paper) to be qualified for applying Oral Defense.

(3) Students registered with National Tsing Hua University and National Chiao Tung University need to pass one of the following English proficiency test:

*TOEFL: 550 PBT, 213 CBT, 79 IBT

*GEPT (NTHU only): high-intermediate level certificate

*IELTS (NTHU only): above 6.0

*TOEIC: above 750.

(4) Thesis should be approved by the student's advisor before being reviewed.

2. Application Procedure

PhD candidates should follow the calendar set by the university with which the student is registered when applying for Defense Examination. Students should have application form, transcript, and thesis manuscript ready two weeks before the date of defense, and hand them in to the TIGP Bio office for review by the TIGP Bio program committee. Once the Defense Committee members have been approved by the TIGP Bio program committee, students should hand in the three abovementioned documents along with the approved form to the "Office of Academic Affairs" of the student's university.

3. Defense Committee must consist of 5 to 9 members, and the list of members should be approved by the TIGP Bio program committee; the advisor of the student shall not be the chair of the committee. The qualifications of the committee members should follow the regulations of the university with which the student is registered.

4. The grade received is the average of the scores given anonymously by all the Defense Committee members present, and is based on the contents of the dissertation and the performance on the defense examination. The scores are given only once, with 70 out of 100 being the passing grade. If one third of the committee members regard the student as failing the exam, the student does not pass the exam.

5. Students who fail their defense may re-apply in the following semester or academic year, before the end of the stipulated duration of their Ph.D. program. The student can only have one chance for re-examination. Failure of the defense for the second time will result in expulsion from the Ph.D. program.

VII. Other rules and regulations

1. Applications for registration, suspension, resumption, and graduation should follow the rules and regulations of the university with which the student is registered. Students should hand in a photo copy of the aforementioned application form to the TIGP Bio office.

2. Any rules or regulations that are not mentioned in these guidelines will be handled in accordance with the rules and regulations of the university with which the student is registered.

VIII. These guidelines and other future amendments are effective immediately after approval by the TIGP Bio program committee.

修業章程 [2019 年度後(含)入學者適用]

中央研究院國際研究生學程生物資訊學學程與
國立清華大學生物資訊與結構生物研究所、
國立交通大學生物資訊及系統生物研究所、
國立陽明大學生物醫學資訊研究所、
國立台灣大學生醫電子資訊學研究所
合辦國際研究生學程修業辦法

95 年 4 月 17 日國際研究生學程生物資訊學學程之教師會議通過過並溯至第一屆入學新生適用
102 年 6 月 11 日國際研究生學程生物資訊學學程之教務委員會會議修訂通過
103 年 3 月 28 日國際研究生學程生物資訊學學程之教務委員會會議修訂通過
104 年 2 月 10 日國際研究生學程生物資訊學學程之教務委員會會議修訂通過
104 年 11 月 18 日國際研究生學程生物資訊學學程之教務委員會會議修訂通過
105 年 09 月 06 日國際研究生學程生物資訊學學程之教務委員會會議修訂通過
108 年 06 月 28 日國際研究生學程生物資訊學學程之教務委員會會議修訂通過

一、課程、學分及修業年限規定

（一）必修科目及學分：

1. Seminar: 六學期，每學期 1 學分。(必修，但不列入畢業學分計算)

2. Student Presentation:四學期(限前三年內修畢)，每學期 1 學分。

3. Lab Rotation: 二學期，每學期 0 學分。

4. Basic Molecular Biology I (B1): 一學期，每學期 3 學分。

5. Biological Computing (C1): 一學期，每學期 3 學分。

   (NCTU Students: Sequencing technology and high-throughput data analysis)

6. Fundamental Statistical Methods in Bioinformatics (S1): 一學期，每學期 3 學分。

(NCTU Students: Machine Learning in Computational Biology)

7. Programming （Python）(P1)：一學期，2 學分。

8. *Research Thesis 論文研究:

   交大學生必修，二學期，每學期 1 學分，由學校開課; 台大學生必修，於第四學年起至畢業，每學期 1 學分，由學校開課。

9. * Research Thesis Proposal 論文提案審查:

   一學期，每學期 0 學分。(僅台大學生必修-限畢業前一學期修課，由學校開課)

（二）必選課程及學分：

1. Basic Molecular Biology II (B2) ：一學期，3 學分。

2. Advanced Algorithms (C2): 一學期，3 學分。

3. Advanced Statistical Methods in Bioinformatics (S2)：一學期，3 學分。

（三）選修課程及學分:

經由本學程課程委員會核可之其他中研院國際研究學程或合作大學所開設之課程。

（四）以碩士學位攻讀博士者，需修滿 24 學分。

（五）以學士學位逕修讀博士學位者，需修滿 30 學分，其中含博士班課程至少 24 學分。

（六）本學程博士班修業年限以三至七年為限。

二、指導教授之選定

（一）學生必須於第一學年結束前選定指導教授，簽署「指導教授同意書」，送交教務委員會。學生更換指導教授時，需由新指導教授另簽署「更換指導教授同意書」，送交教務委員會。

（二）學生限選擇本學程中核心教師為指導教授。核心教師係指中央研究院負責本學程之各所參與學程之研究人員及本學程合作大學之研究所參與學程之教師，並經本學程教務委員會通過之師資。

三、博士候選人資格考筆試

學生必須在第二學年結束前通過資格考筆試；未於期限內通過者，應予退學。每年二月初開放資格考申請。

1. 學生必須在第二學年結束前通過資格考筆試，每年二月初開放資格考申請，每人以考試兩次為限，未通過者應令退學。

2. 考試科目：Basic Molecular Biology I (B1)、Biological Computing (C1)、 Fundamental Statistical Methods in Bioinformatics (S1)，三科總分達 210 分以上通過; 未於期限內通過者，自成績公布後下個月起扣除全額獎助金，並於學期結束時退學。

3. 資格考成績將送交教務委員會討論後決定。

4. 本辦法適用於 2019 年 9 月後入學學生。

註:「博士候選人資格考筆試」除依上述規定通過筆試外，若課程成績優異者（達 90/100 分以上），可選擇該科免考「資格考筆試」。符合本項辦法之學生:

(1) 該科「資格考成績」直接以 70 分計算，
(2) 亦可選擇以該科「資格考筆試成績」來計算。
(3) 可於「資格考」考試結束後選擇對其利之成績做為該科「資格考」最後成績，但選定後則不可變更。

四、博士候選人資格考核

學生完成下列規定者，取得博士候選人資格：

（一）完成必修與必選科目，且修滿規定之學分數。

（二）通過博士候選人資格考筆試。

（三）完成資格考筆試後，由指導教授邀請三位以上成員組成資格考委員會，舉辦「論文計畫書口試」，並須於入學四年內通過口試。學籍在國立交通大學者，必須於入學後三年內完成資格考口試，並繳交博士論文研究計畫及初步成果之書面報告，或加上其他成為候選人值得參考之書面資料，未能通過者，得於一年內再補考一次，仍不及格者，應令退學；學籍在國立台灣大學者，於通過資格考後需提出論文計畫審查，由審查委員就論文計畫內容進行口試，每人以考試兩次為限，未通過者應令退學。

（四）學生通過以上考核，取得博士候選人資格之後，自第五學年起，須於每學年結束前提出「年度進度報告」。以團體方式舉行審查，審查委員會由教務委員或核心教師組成。

五、博士學位考試

（一）應考資格

1. 通過博士候選人資格考核。

2. 原則上需發表兩篇生物資訊相關之論文於國際學術期刊、國際學術會議論文集；發表之期刊、學術會議之水準及論文內容之認定，或特殊情況，須經教務委員會通過。上述論文發表，該生需為第一作者，並將國際研究生學程生物資訊學學程及隸屬學校等相關資訊列於作者之單位機構。**(註一)**

3. 學籍在國立清華大學及國立交通大學者，需通過英文能力認定。下列辦法得任選一種：

＊托福成績達 PBT550 分、CBT213 分、IBT79 分。

＊通過「全民英檢中高級」複試。（限清大）

＊IELTS（雅思）成績達 6.0 以上。（限清大）

＊TOEIC（多益）成績達 750 分以上。

4. 學位論文初稿需經指導教授初審通過，同意提付審查。

（二）申請程序

博士學位候選人，應於學校行事曆規定期限內，填妥申請表格，附歷年成績單、論文初稿，於口試日期至少兩週前，向本學程及各相關研究所提出學位考試申請。由指導教授、本學程召集人及各相關研究所所長審查後，另檢附審查通過之該生考試委員名冊，一併交各大學教務處辦理。

（三）博士學位考試置委員五至九人，需經教務委員會同意；其中一位擔任主席，指導教授不得擔任主席。學位考試委員資格，依各大學博士班研究生學位考試實施辦法規定辦理。

（四）博士論文考試成績，以論文內容及口試成績綜合評定，以全體出席委員評定分數平均決定之，評定以一次為限，以一百分為滿分，七十分為及格。如有三分之一以上委員評定不及格者，即以不及格論。

（五）論文考試不及格者，如修業期限尚未屆滿，得申請重考一次。申請重考學生仍須於修業期限內，且學校行事曆規定期間，填寫申請書，經指導教授、本學程召集人及各校之相關研究所所長核可後，始得重考。重考以一次為限；仍不及格者，應令退學。

七、其他修習學程有關規定

（一）學生註冊、休學、復學、退學、畢業及離校手續依各大學規定辦理，並繳交相關資料影印本給學程助理存查。

（二）本辦法如有未盡事宜，依各大學其他有關規定辦理。

八、本辦法經本學程教務委員會通過後實施，修正時亦同。

註一、

施行細則:

有關應考資格之「論文」資格部分，除原規定外，若學生已發表一篇生物資訊相關之論文，且該論文符合下列所有條件者，亦可提出申請:

1.該生必須為第一作者,

2.以本學程及合作大學名義發表,

3.該期刊於發表前三年內(不含發表當年度)，其中至少有一年度之 IF 須達 4 分以上 (含 4 分)。