Stony Brook University

Becoming a Biology Teacher

Three Routes to New York State Certification

Stony Brook University offers three programs registered and approved by the New York State Education Department for individuals seeking New York State certification to teach biology in secondary schools, grades 7 - 12:

> The **undergraduate** route to certification requires completion of a Bachelor of Science in Biology with the Teacher Preparation option. (See page 2)
>
> The **graduate** route to certification requires completion of the Master of Arts in Teaching Biology degree, as well as completion of an undergraduate degree in biology (or the equivalent of a Stony Brook University undergraduate biology degree). (See page 5)
>
> The **combined** route to certification in which students obtain both the Bachelor of Science in Biology and Master of Arts in Teaching Biology degrees in five years. (See page 8)

The Stony Brook program is aligned with the standards of the National Science Teachers Association (NSTA), National Council for Accreditation of Teacher Education (NCATE), the National Educators Association (NEA) Code of Ethics, Interstate New Teacher Assessment and Support Consortium (INTASC), and the National Board for Professional Teacher Standards (NBPTS).

Undergraduates: For advisement, contact a Biology Advisor:
Kelsie Poe (kelsie.poe@stonybrook.edu), (631) 632-8543, or
Rachel Pilero (rachel.pilero@stonybrook.edu), (631) 632-8571
at the Biology Undergraduate Program Office, Biology Learning Laboratories Building.
Graduates: For advisement, contact MAT Biology Advisor, Dr. Zuzana Zachar at (631) 632-8970 or Zuzana.Zachar@stonybrook.edu
Science Education Program: The Director of Science Education is Dr. Keith Sheppard, Keith.Sheppard@stonybrook.edu, (631) 632-2989, and the Assistant Director of Science Education is Dr. Linda Padwa, Linda.Padwa@stonybrook.edu , (631) 632-9750.

Undergraduate Biology Teacher Preparation Program
Degree and Certification Requirements

The undergraduate biology teacher preparation program requires the completion of a biology major and secondary education minor. The undergraduate program requires over 65 science credits and includes a strong foundation in biology, chemistry, physics, and mathematics. Laboratory work comprises a significant portion of these credits, and an exhibition of written expression is required.

NOTE: Biology majors preparing for New York State Teacher Certification must take a total of **36 credits** of biology, which is 4 credits more the standard biology major.

All applicants to the Biology Teacher Preparation Program must:

- Apply to the program during second semester of sophomore year.
- Have taken at least 3 science lab courses.
- Achieve a 3.0 cumulative GPA.
- Contact the biology major advisor for a transcript review and to plan a course of study.
- Contact one of the science education program advisors for an interview (see front page for details).
- Fill out the Teacher Preparation Undergraduate Application Form (see https://www.stonybrook.edu/commcms/dtale/admissions/undergraduate.php). Attach an unofficial copy of your transcript(s) from all colleges and universities that you have attended, three letters of reference (at least two from university faculty) regarding your potential to become a teacher, and your essay. Submit all documents for approval by the Science Education Program Director.
- Declare a Teacher Preparation option by submitting the "Declaration of Major/Minor Form" with TP to the Registrar. Forms are available at the Registrar's Office, the Undergraduate Biology advisor's office in the Biology Learning Laboratories Building, and the Science Education Program Office, Life Sciences 061.
- Students should declare the major as soon as possible to be eligible for NYS Math and Science Teaching Incentive Scholarships. This declaration requires adding ED/TP to the first major on the major declaration form.

Content Courses for Interdisciplinary Biology Teacher Preparation Option

A. Biology Core Courses:

1. _____BIO 201, 202, 203 – Fundamentals of Biology (see note 2)
2. _____BIO 204 and BIO 205 or BIO 207 – Fundamental of Scientific Inquiry in the Biological Sciences

B. Courses Required in Related Fields:

1. _____ Calculus**:** MAT 125 & 126 or MAT 131, 132 or MAT 141, 142 or MAT 171, or AMS 151 & 161 or level 8 or 9 on the Mathematics Placement Examination.
2. _____ **General Chemistry:** CHE 129, 130 & 132, or CHE 131 & 132, or CHE 141 & 142; or Molecular Science course CHE 152
3. _____ **General Chemistry Laboratory:** CHE 133 & 134, or CHE 143 & 144; or Molecular Science course CHE 154
4. _____ **Organic Chemistry:** CHE 321, and either CHE 322 or 326; or Molecular Science courses CHE 331 and CHE 332
5. _____ **Organic Chemistry Laboratory:** CHE 327 or CHE 383
6. _____ Physics **with Lab:** PHY 121/123 & PHY 122/124* or PHY 125 & 126 & 127 & Labs PHY 133 & 134, or PHY 131/133 & 132/134 or PHY 141 & 142
7. _____ **Statistics & Probability:** AMS 110 or AMS 310 or BIO 211
8. _____ **Earth and Space Sciences**: One course in a geoscience area, e.g., GEO 102/112 or GEO 122. See advisor.

* As of Fall 2017, the lecture and lab courses PHY 121/123 and PHY 122/124 have been combined. PHY 121 and PHY 122 are conducted as lecture/lab courses (4 credits each course).

C. Advanced Courses:

Advanced Lecture Courses:

Students must complete at least one advanced course in each of the following areas of biology.

Area I - _____ **Biochemistry, Molecular and Cell Biology:** BIO 310, 314, 316, 320, 361, 362, 368; AMS 333; BME 304, 404; CHE 346; EBH 302, 370; HBM 320 (not for credit in addition to BIO 315)

Area II - _____**Neurobiology and Physiology:** BIO 317, 328, 332, 334, 337, 338, 339; 347, 369; BCP 401; BME 301, 303; EBH 316

Area III - _____**Organisms:** BIO 315, 325, 340, 341, 343, 344, 348, 380; MAR 370, 375, 376, 377, 380

Area IV - _____**Ecology and Evolution:** BIO 301, 321, 336, 350, 351, 353, 354, 358, 371, 383, 385, 385, 386; ENS 311 (not for credit in addition to BIO 386); MAR 301,
302 (not for credit in addition to MAR 301), 303, 315, 320, 366, 373, 384, 386, 388; ANP 304*, 306*, 325*, 350*, 360*, 391*; (*taken abroad: Madagascar or Turkana Basin); EBH 359, 380

D. Study in Depth:

Students should select **one** additional Advanced Lecture course in any Area.

Advanced Laboratory Courses: Two advanced laboratory courses chosen from any of the four areas below. (NOTE: Only one course may be chosen from each area below. Four (4) credits and at least two (2) semesters of independent biology research with the same sponsor (BIO 486, BIO 487, BIO 489) may replace one upper division laboratory course. Internship courses cannot be used to satisfy the advanced laboratory requirement.)

Area I - _____ BIO 311, 312, 364, 365, 511, 515
Area II - _____ BIO 335
Area III - _____ BIO 327, 340, 341, 343, 344, 366, 380; MAR 380
Area IV - _____ BIO 319, 352, 356, 367, 371; MAR 301, 303, 305, 320, 388; EBH 381; ANP 305*,ANP 306*, ANT 304* (* taken abroad: Madagascar or Turkana Basin)

Upper Division Writing Requirement: Students must fulfill the Upper Division Writing Requirements for the degree in Biology. See the Biology website or a Biology advisor for details.

Undergraduate Teaching Practicum in College Biology
All biology majors seeking secondary biology teaching certification are recommended to take BIO 475/476.

Biology Electives

Advanced biology lecture, laboratory, readings and independent research courses, should be taken as needed, to achieve a minimum of 36 credits. (See notes 2 and 3.)

Notes:

1. The Undergraduate Biology Studies Committee must approve requests for waivers of major requirements. Biology majors must meet the major requirements of the bulletin of their latest matriculation date.
2. All biology courses intended for the biology major (and the additional BIO credits needed for New York State Teacher Certification) must be passed with a grade C or higher.
3. A grade of S for readings and research courses applies to the Biology Major requirements within the following credit limitations: four credits of biology independent research (BIO 486, 487, 489) and two credits of tutorial readings (BIO 444, 446, 447, 449) may be applied toward the major.

E. Required Professional Studies in Education Courses:

____PSY 327 Middle Childhood/Adolescent Development
____SSE 350 Foundations in Education
____LIN 344 Language Acquisition and Literacy Development
____CEF 347 Introduction to Special Education
____SCI 410 Pedagogy and Methods in Science Education I
____SCI 449 Field Experience I (co-requisite SCI 410)
____SCI 420 Pedagogy and Methods in Science Education II

____SCI 450 Field Experience II (co-requisite SCI 420)
____SCI 451 Supervised Student Teaching 7 – 9 (*See Note 4)*
____SCI 452 Supervised Student Teaching 10 – 12 (*See Note 4*)
____SCI 454 Student Teaching Seminar (*See Note 4*)

Note 4:

- Prior to admission to student teaching, candidates will be interviewed by a committee to assess their ability to speak extemporaneously about both biology concepts and pedagogical issues. Candidates who are not successful in this interview will be counseled in order to remedy deficiencies. Upon completion of the remediation another interview will be held. In the event that a candidate is unable to satisfy the interview component, the candidate will not advance to student teaching.
- Seventy-five days of student teaching are required. Dependent on the semester and public school vacation schedules, student teaching may extend beyond the university semester calendar. Student teaching is divided into two placements of approximately equal duration, one in a middle school/junior high school and the other in a high school.

F. Field Experience:

Field Experience sites for all teacher candidates are arranged through SCI 449 and SCI 450. Assignments and details are distributed in SCI 410 and SCI 420. New York State requires 100 hours of field experience in secondary schools prior to student teaching. Each teacher candidate is required to obtain 15 hours of field experience that includes a focus on understanding the needs of students with disabilities. These hours will be noted on the Field Experience Time Sheets from SCI 449, SCI 450, or a combination of both. While earning these field experience hours, teacher candidates will be encouraged to observe inclusion (integrated co-teaching) classes in their certification area and other special education classroom situations as available.

G. State Tests, Mandated Seminars and Fingerprinting:

- All teacher candidates must be fingerprinted at the start of SCI 410.
- Prior to student teaching, candidates must complete four mandated seminars, *Training in Child Abuse Recognition, Substance Abuse Education, School Violence and Intervention,* and *Dignity for All Students* (DASA). For details and to register for the seminars on campus, see http://www.sunysb.edu/spd/career/tworkshops.html

New York State examinations required for teacher certification are:

- Educating All Students Test (EAS)
- Content Specialty Test (CST) in biology [Note: It is a program requirement that candidates with a score lower than 220 on any sub-section of the CST must pass an alternate exam on the concepts of that section which will be administered by departmental faculty.]
- For further information about the NYSTCE testing program, visit their website at http://www.nystce.nesinc.com/

It is recommended that candidates take the EAS upon completion of PSY 327, CEF 347 and LIN 344, and take the CST upon completion of biology courses required for the major.

H. Language Requirement:
New York State certification requires at least six credits of college level study of a foreign language. Satisfaction of SBU's DEC Entry Skill 3/SBC/LANG fulfills this requirement.

I. Professional Portfolio:
The Professional Portfolio is presented and defended at the conclusion of student teaching. It includes many performance indicators of standards-based teaching competencies.

J. General Science Certification:
To qualify for the General Science (7-12) certification, candidates must complete a minimum of 18 semester hours in two or more sciences other than biology.

Master of Arts in Teaching Biology

Admission requirements: BS/BA degree in biology (including two semesters chemistry, two semesters organic chemistry, two semesters physics, at least one semester of calculus, and one semester of statistics); GPA of 3.0 overall.

Application: The faculty advisor for the MAT in Biology program is Dr. Zuzana Zachar, email: zuzana.zachar@stonybrook.edu ; 631-632-8970. For application materials log on to (https://www.stonybrook.edu/commcms/spd/graduate/matscience)

Courses:
The program consists of 44 credits as follows: 15 credits content courses, 20 credits pedagogy and methods courses, 9 credits student teaching.

A. Required Core Science Courses:

Five courses from the following list:
_____ BIO 511 Topics in Biotechnology
_____ BIO 520 Topics in Molecular Genetics
_____ BIO 521 Laboratory Science Curriculum Development
_____ BIO 542 Model Systems for the Living Environment
_____ BIO 558 Biological Basis of Human Evolution and Behavior
_____ CEB 505 History of the Long Island Environment
_____ CEB 551 Polymerase Chain Reaction: Theory and Practice
_____ CEB 554 Current Topics in Immunology
_____ CHE 593 Chemical Demonstrations

In addition, you may choose a content course from one of the Masters or PhD programs in Marine Science, Genetics, Molecular & Cellular Biology and Ecology & Evolution. The MAT Biology director's approval is required prior to registration for courses within these programs.

Candidates are required to complete a course in one of the geosciences prior to graduation.

B. Required Professional Studies in Education Courses:
____CEE 505 Education: Theory and Practice

____CEE 565 Human Development
____CEE 594 Language Acquisition and Literacy Development
____CEF 547 Principles and Practices of Special Education
____SCI 510 Pedagogy and Methods in Science Education I
____SCI 549 Field Experience I (co-requisite SCI 510)
____SCI 520 Pedagogy and Methods in Science Education II
____SCI 550 Field Experience II (co-requisite SCI 520)
____SCI 551 Supervised Student Teaching 10 – 12 (*See Section H below*)
____SCI 552 Supervised Student Teaching 7 – 9 (*See Section H below*)
____SCI 554 Student Teaching Seminar (*See Section H below*)

C. Field Experience:
Field Experience sites for all teacher candidates are arranged through SCI 549 and SCI 550. Assignments and details are distributed in SCI 510 and SCI 520. New York State requires 100 hours of field experience in secondary schools prior to student teaching. Each teacher candidate is required to obtain 15 hours of field experience that includes a focus on understanding the needs of students with disabilities. These hours will be noted on the Field Experience Time Sheets from SCI 549, SCI 550, or a combination of both. While earning these field experience hours, teacher candidates will be encouraged to observe inclusion (integrated co-teaching) classes in their certification area and other special education classroom situations as available.

D. State Tests, Mandated Seminars and Fingerprinting:
- All teacher candidates must be fingerprinted during SCI 510.
- Prior to student teaching, candidates must complete four mandated seminars, *Training in Child Abuse Recognition, Substance Abuse Education, School Violence and Intervention,* and *Dignity for All Students* (DASA). For details and to register for the seminars on campus, see http://www.sunysb.edu/spd/career/tworkshops.html

New York State examinations required for teacher certification are:
- Educating All Students Test (EAS)
- Content Specialty Test (CST) in biology [Note: It is a program requirement that candidates with a score lower than 220 on any sub-section of the CST must pass an alternate exam on the concepts of that section which will be administered by departmental faculty.]
- For further information about the NYSTCE testing program, visit their website at http://www.nystce.nesinc.com/

It is recommended that candidates take the EAS upon completion of CEE 565, CEF 547 and CEE 594, and take the CST during SCI 510.

E. Language Requirement:
New York State certification requires 6 credits of a foreign language or its equivalent. (Satisfaction of SBU's DEC Entry Skill 3/SBC LANG fulfills this requirement.) Bilingual students may satisfy this requirement by taking the CLEP exam in foreign language. (http://www.collegeboard.com/student/testing/clep/ex_foreign.html)

F. Professional Portfolio:
The Professional Portfolio is presented and defended at the conclusion of student teaching. It includes many performance indicators of standards-based teaching competencies.

G. Student Teaching:
Prior to admission to student teaching, candidates will be interviewed by a committee to assess their ability to speak extemporaneously about both biology concepts and pedagogical issues. Candidates who are not successful in this interview will be counseled in order to remedy deficiencies. Upon completion of the remediation another interview will be held. In the event that a candidate is unable to satisfy the interview component, the candidate will not advance to student teaching.

Seventy-five days of student teaching are required. Dependent on the semester and public school vacation schedules, student teaching may extend beyond the university semester calendar. Student teaching is divided into two placements of approximately the same duration, one in a middle school/junior high school and the other in a high school.

H. Middle Level Extension
Candidates who wish to qualify to teach grades 5 and 6 in a middle school setting may obtain an extension to their grades 7-12 certification by completing two additional courses, CEE 601 Early Adolescent Development and CEE 602 Middle Child Education-Instruction. Information about these courses can be found on the SPD website (www.stonybrook.edu/spd).

I. General Science Certification
To qualify for the General Science (7-12) certification, candidates must complete a minimum of 18 semester hours in two or more sciences other than biology.

Five-Year BS/MAT Biology Teacher Preparation Program

Degree and Certification Requirements

The BS/MAT program in Biology Education is based upon the completion of a combined BS in Biology and Master of Arts in Teaching in Biology. It is possible to complete both degrees in 5 years (instead of 5 ½ years) because of credit sharing between the programs. This program requires a combination of the courses that are required for each of the individual degree programs.

Applicants to the BS/MAT Biology Teacher Preparation Program must:

- Have taken at least 4 science lab courses
- Contact a Biology advisor in the Biology Undergraduate Program Office, Kelsie Poe (kelsie.poe@stonybrook.edu) or Rachel Ulysse (rachel.ulysse@stonybrook.edu) for a transcript review and to plan a course of study
- Achieve a cumulative GPA of 3.00 and a GPA of 3.00 in science courses
- Apply for the combined program during junior year
- Complete the BS/MAT application (https://www.stonybrook.edu/commcms/spd/graduate/ba_mat.php).
    - SPD Student Application/Information Sheet
    - Three (3) letters of recommendation
    - Official transcript from each college or university attended
    - Application Essay
    - Any additional items required by SPD
- Submit application prior to SPD deadline as posted on the SPD website (www.stonybrook.edu/spd)

Upon entry to the program, candidates must declare a Teacher Preparation option along with their Undergraduate major by submitting the "Declaration of Major/Minor Form" with ED/TP to the Registrar. Forms are available at the Registrar's Office, the Undergraduate Biology advisor's office in the Biology Learning Laboratories Building, and the Science Education Program Office, Life Sciences 061.

Number of semesters of full-time study required for program completion at the undergraduate and graduate levels.

Students should apply to the combined BS/MAT program during their fifth or sixth semester of study. The first six semesters of the program are full-time study at the undergraduate level. Semesters seven and eight will include a mix of undergraduate and graduate courses. Semesters nine and ten will consist of graduate courses only. Candidates will generally advance to Graduate status during their eighth semester.

Note: The two degrees are conferred only when the entire combined degree program has been completed. Both degrees are conferred together unless the student elects to exit the combined degree program and receive only a BS in Biology. Students must maintain a B average in their graduate courses. Students who are unable to maintain a B average in their graduate courses will be encouraged, while in Semester 8 of their studies, to leave the program and graduate with a BS degree in Biology.

Biology BS/MAT Sample Course Sequence

	UG	G			UG	G
semester 1 (Fall)				**semester 6 (Spring)**		
CHE 129/130 or CHE 131	4			PHY 122	4	
CHE 133	1			BIO Upper Division	3	
MAT 125	3			Bio lab Upper Division	3	
SBU 101	1			DEC/SBC	3	
DEC/SBC	3			GEO 102/112	4	
DEC/SBC	3					
semester 2 (Spring)				**semester 7 (Fall)**		
CHE 132	4			Bio Upper Division	3	
CHE 134	1			Bio lab Upper Division	3	
MAT 126	3			Grad 1		3
BIO 201 or 202	3			LIN 344	3	
DEC/SBC	3			CEE 505		3
SBU 102	1					
semester 3 (Fall)				**semester 8 (Spring)**		
CHE 321	3			DEC/SBC	3	
BIO 201 or 202 or 203	3			CEF 547		3
BIO 204	2			Grad 2		3
CHE 327 or AMS 110/BIO211	2 or 3			SCI 510		3
DEC/SBC	3			SCI 549		1
DEC/SBC	3			DEC/SBC	3	
semester 4 (Spring)				**semester 9 (Fall)**		
CHE 322	3			SCI 520		3
CHE 327 or AMS 110/BIO211	2 or 3			SCI 550		1
BIO 201 or 202	3			CEE 565		3
BIO Upper Division	3			Grad 3		3
BIO 205 or 207	2			Grad 4		3
DEC/SBC	3			Grad 5		3
semester 5 (Fall)				**semester 10 (Spring)**		
PHY 121	4			SCI 551		3
BIO Area Elective	3			SCI 552		3
BIO Area III or IV	3			SCI 554		3
DEC/SBC	3					
DEC/SBC	3					

Note: If BIO 358 is taken as an undergraduate, BIO 558 may not be taken as a graduate course.

The above listing of courses provides a suggested sequence for coursework. There is a degree of flexibility in the order of courses, but any deviation from the above without permission of the program advisor may lead to a delay in completion of the program.

A student wishing to complete the five-year combined program is strongly encouraged to consult with the Biology advisor for individualized guidance in course selection.

Additional Requirements

Student Teaching:
Seventy-five days of student teaching are required. Depending on the semester and public school vacation schedules, student teaching may extend beyond the university semester calendar. Student teaching is divided into two placements of approximately equal duration, one in a middle school/junior high school and the other in a high school.

Prior to admission to student teaching, candidates will be interviewed by a committee to assess their ability to speak extemporaneously about both biology concepts and pedagogical issues. Candidates who are not successful in this interview will be counseled in order to remedy deficiencies. Upon completion of the remediation another interview will be held. In the event that a candidate is unable to satisfy the interview component, the candidate will not advance to student teaching.

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- For further information about the NYSTCE testing program, visit their website at http://www.nystce.nesinc.com/.

It is recommended that candidates take the EAS upon completion of pSY 327/CEE 565, CEF 347/547 and LIN 344/CEE 594, and take the CST during SCI 510.

Language Requirement:
New York State certification requires at least six credits of college level study of a foreign language. Satisfaction of SBU's DEC Entry Skill 3/SBC/LANG fulfills this requirement.

Professional Portfolio:
The Professional Portfolio is presented and defended at the conclusion of student teaching. It includes many performance indicators of standards-based teaching competencies.

Middle Level Extension

Candidates who wish to qualify to teach grades 5 and 6 in a middle school setting may obtain an extension to their grades 7-12 certification by completing two additional courses, prior to graduation. The courses are: CEE 601 Early Adolescent Development and CEE 602 Middle Child Education-Instruction. Information about these courses can be found on the SPD website (www.stonybrook.edu/spd).

General Science Certification
To qualify for the General Science (7-12) certification, candidates must complete a minimum of 18 semester hours in two or more sciences other than biology.