

# Bioinnovation PSM

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## COLLEGE OF SCIENCE AND TECHNOLOGY

Learn more about the Professional Science Master's in Bioinnovation.

### About the Program

Bioinnovation entails identification, commercialization and dissemination of novel biological technologies, concepts and models. The primary objective of the Professional Science Master's (PSM) program in Bioinnovation is to develop a portfolio of knowledge and experience that allows individuals with a background in science, business, communication, law, and policy and regulation to pursue careers in such fast-growing fields as bioinformation, the environment, global health, pharmaceuticals and biotechnology, technology transfer and trade. The program offers:

- extensive biotechnology and biomedical background to challenge and complement traditional thinking and applications;
- review of the translational nature of biodiscoveries through classroom instruction and direct interaction with different bioindustry professionals, including scientists, lawyers, journalists and others; and
- development of team and matrix work routines and effective communication skills.

The Bioinnovation PSM program draws on the strengths of Temple faculty in the College of Science and Technology and the Fox School of Business and Management. Program development and implementation are executed by the PSM in Bioinnovation Steering Committee, which partners with Internal and External Advisory Board members and the Temple University Graduate School.

**Time Limit for Degree Completion:** 2 years

**Campus Location:** Main

**Full-Time/Part-Time Status:** The degree program can be completed on a full- or part-time basis. Most of the classes are offered in the evenings or on weekends to enable full-time working professionals to be enrolled in the program. International students are required to register as full-time students.

**Interdisciplinary Study:** The two-year program consists of a series of multi- and interdisciplinary core courses related to application of systems biology; dissemination of biodiscoveries; epigenetic and genetic applications in drug design and drug response; ethics, regulation and policy; feasibility assessment of innovative business ideas; innovation in biomodels and concepts; management and marketing for technologists; and research and commercialization of biomarkers and biotargets. Many of the courses are writing intensive and also provide students with opportunities to sharpen their oral presentation skills. All student research projects are developed with the cooperation of Temple faculty and members of our External Advisory Board under the guidance of the PSM in Bioinnovation Steering Committee.

**Accreditation:** Temple University is fully accredited by the Middle States Commission on Higher Education.

**Areas of Specialization:** Three areas of concentration are offered:

- Bioinnovation in Environment and Society
- Current Topics in Bioinnovation
- Implementation of Biodiscoveries in Health and Other Industries

**Job Prospects:** Official job placement is not offered, but prospects are good. The program is designed to help recent graduates obtain relevant employment as well as accelerate career advancement and/or allow career shift of currently employed professionals. Graduates of PSM programs are in high demand, which underscores the PSM as an attractive career path for those who do not wish to become academic researchers or pursue a doctorate.

**Non-Matriculated Student Policy:** Non-matriculated students may enroll in a total of three courses (9 credits) with permission of the instructor and the Biology Department.

**Financing Opportunities:** Financial assistance in the form of Research or Teaching Assistantships is not offered at this time.

### Admission Requirements and Deadlines

**Application Deadline:**

*Fall Priority Deadline:* March 1; December 15 international

*Spring Priority Deadline:* October 30

Applications submitted after the priority deadline will be considered for admission on a rolling basis. Applications are processed on a continual basis. Ordinarily, the applicant is informed of an admissions decision within four to six weeks of receipt of all supporting application documents.

APPLY ONLINE to this graduate program.

#### Letters of Reference:

Number Required: 2

**From Whom:** Letters should be obtained from college/university faculty or faculty who are familiar with the applicant's competency. If the applicant has an established career in a related field, the applicant's immediate supervisor should provide one of the letters.

**Coursework Required for Admission Consideration:** Applicants should have a solid background in one or more of the following fields: science, business, communication, law, and policy and regulation. The PSM in Bioinnovation Steering Committee may allow departures from course requirements upon review.

**Bachelor's Degree in Discipline/Related Discipline:** A baccalaureate degree in Biology, Chemistry, Business or Communication, or a Juris Doctor in Law (or foreign equivalent), is required. Non-STEM graduates are required to enroll in at least two Biology foundation courses, as recommended by the PSM in Bioinnovation Steering Committee, on a non-matriculated basis.

**Statement of Goals:** In up to 500 words, explain your interest in this specific program and what career goals you have. Describe your work and academic experiences with specific mentions of internships, course projects, or research. Share any other relevant information that you feel should be taken into consideration.

**Transcripts:** Unofficial transcripts are considered at the time of applying. Official transcripts are required when accepting the offer at the time of deposit. Official transcripts can be sent to [cst.gi@temple.edu](mailto:cst.gi@temple.edu)

#### Standardized Test Scores:

GRE: Optional

Applicants who earned their baccalaureate degree from an institution where the language of instruction was other than English, with the exception of those who subsequently earned a master's degree at a U.S. institution, must report scores for a standardized test of English that meet these minimums:

- TOEFL iBT: 90
- IELTS Academic: 6.5
- PTE Academic: 61
- Duolingo: 110

**Resume:** Current resume required.

**Interview:** May be required on a case-by-case basis.

**Transfer Credit:** Graduate credits from an accredited institution may be transferred into the Bioinnovation PSM program. The credits must be equivalent to coursework offered by the Biology Department at Temple University. A grade of "B" or better must have been earned for the credits to transfer. The PSM in Bioinnovation Steering Committee makes recommendations to the Department Chair for transferring credit on an individual basis. The maximum number of credits a student may transfer is 6.

## Program Requirements

#### General Program Requirements:

Number of Credits Required Beyond the Baccalaureate: 30

Required Courses:

Code	Title	Credit Hours
<b>Core Courses</b>		
BIOL 5226	Innovative Biomodels and Concepts	3
BIOL 5227	Biomarkers and Biotargets: Research and Commercialization	3
BIOL 5228	Epigenetics, Genetics: Applications in Drug Design and Drug Response	3
BIOL 5229	Systems Biology: Principles and Applications	3
BIOL 5239	Dissemination of Biodiscoveries and Virtual Reality in Medicine	3
BIOL 5505	Ethics Regulation and Policy in Biotechnology	3
SGM 5137	Entrepreneurial Thinking and New Venture Creation <sup>1</sup>	3
<b>Electives</b>		
Six credits of electives		6
<b>Capstone Course</b>		

BIOL 9995	Capstone Project <sup>2</sup>	3
<b>Total Credit Hours</b>		<b>30</b>

<sup>1</sup> With advisor approval, any recommended graduate-level introductory course offered by the Fox School of Business and Management may be substituted for SGM 5137.

<sup>2</sup> A total of 3 credits of BIOL 9995 is required for the PSM in Bioinnovation program. Students may start their capstone research project at any time with approval from their advisor.

## Proposed Progressive Coursework Outlined by Year:

Year 1		
Fall		Credit Hours
BIOL 5226	Innovative Biomodels and Concepts	3
BIOL 5227	Biomarkers and Biotargets: Research and Commercialization	3
SGM 5137	Entrepreneurial Thinking and New Venture Creation <sup>1</sup>	3
<b>Credit Hours</b>		<b>9</b>
Spring		
BIOL 5228	Epigenetics, Genetics: Applications in Drug Design and Drug Response	3
BIOL 5229	Systems Biology: Principles and Applications	3
BIOL 5239	Dissemination of Biodiscoveries and Virtual Reality in Medicine	3
<b>Credit Hours</b>		<b>9</b>
Year 2		
Fall		Credit Hours
BIOL 5505	Ethics Regulation and Policy in Biotechnology	3
BIOL 9995	Capstone Project <sup>2</sup>	1
Elective <sup>3,4</sup>		3
<b>Credit Hours</b>		<b>7</b>
Spring		
BIOL 9995	Capstone Project <sup>2</sup>	2
Elective <sup>3,4</sup>		3
<b>Credit Hours</b>		<b>5</b>
<b>Total Credit Hours</b>		<b>30</b>

<sup>1</sup> With advisor approval, any recommended graduate-level introductory course offered by the Fox School of Business and Management may be substituted for SGM 5137.

<sup>2</sup> A total of 3 credits of BIOL 9995 is required for the PSM in Bioinnovation program. Students may start their capstone research project at any time with approval from their advisor. These credits are shown in the plan of study as 1 credit taken in one academic term and 2 credits taken in a second academic term. Students may elect to distribute the 3 required credits over one, two or three terms, as their schedule allows.

<sup>3</sup> Students are required to take 6 credits of electives. These can be selected from the program's approved list of electives; any graduate course offered by the Fox School of Business and Management; or any other Temple University graduate-level course that aligns with the students' career goals.

<sup>4</sup> Electives are shown in the plan of study as 3-credit courses taken in two academic terms. If students choose to take electives that are fewer than 3 credits and additional time is needed to complete elective coursework, it is recommended that those elective credits be taken in the Spring term of Year 2.

## Approved Electives:

Code	Title	Credit Hours
BIOL 5234	Bioinnovation Seminar	1.5
BIOL 5235	Milestones in Clinical Translation of Biodiscoveries	1.5
BIOL 5236	Bioadvanced Screening in Health Disparity	1.5
BIOL 5403	Genomics	3
BIOL 5479	Biotechnology	3
SGM 5144	Creativity Unleashed: Harnessing Creativity to Solve Real-World Innovation Challenges	3
SGM 5148	Open Innovation and Managing Strategic Alliances	3

Or any other graduate-level course offered by the Fox School of Business and Management or any Temple University graduate-level course that aligns with the student's career goals

#### Culminating Event:

##### Capstone Project:

BIOL 9995 constitutes the capstone experience for the Bioinnovation PSM and requires the submission of a written project and oral presentation of the results.

## Accelerated Programs

Undergraduate students may opt to pursue an accelerated +1 program, enabling them to complete both a bachelor's degree and master's degree in less time than the traditional route.

The accelerated pathway for the Bioinnovation PSM is available to undergraduate students in the College of Science and Technology as well as qualified students pursuing a bachelor's degree at Temple University who have at least the equivalent of BIOL 1111 or BIOL 1112 completed with the approval of the department.

**Cohort Code:** XPSMBIOIN

**Minimum Cumulative GPA:** 3.25

## Graduate Courses Approved to Count for Both Undergraduate and Graduate Degrees

Code	Title	Credit Hours
BIOL 5226	Innovative Biomodels and Concepts	3
BIOL 5227	Biomarkers and Biotargets: Research and Commercialization	3
BIOL 5228	Epigenetics, Genetics: Applications in Drug Design and Drug Response	3
BIOL 5229	Systems Biology: Principles and Applications	3

## Suggested Academic Plan

Course	Title	Credit Hours
<b>Year 3</b>		
<b>Fall</b>		
BIOL 5226	Innovative Biomodels and Concepts	3
<b>Credit Hours</b>		<b>3</b>
<b>Spring</b>		
BIOL 5228	Epigenetics, Genetics: Applications in Drug Design and Drug Response	3
<b>Credit Hours</b>		<b>3</b>
<b>Year 4</b>		
<b>Fall</b>		
BIOL 5227	Biomarkers and Biotargets: Research and Commercialization	3
<b>Credit Hours</b>		<b>3</b>
<b>Spring</b>		
BIOL 5229	Systems Biology: Principles and Applications	3
<b>Credit Hours</b>		<b>3</b>
<b>Total Credit Hours</b>		<b>12</b>

## Admissions Criteria

Candidates for the +1 program must:

- apply during the spring semester of sophomore year or prior to the start of senior year.
- have completed at least one foundational Biology course.
- have a 3.25 undergraduate GPA before approval.
- have two faculty members submit a letter of recommendation to [cst.gi@temple.edu](mailto:cst.gi@temple.edu).
- complete the remaining credits for the master's degree in the year following undergraduate graduation.

**Application:** <https://cst.temple.edu/admissions/graduate-admissions>

## Contact Information

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Learn more about the accelerated program in Bioinnovation and other College of Science and Technology +1 programs.

## Contacts

### Program Web Address:

<https://www.temple.edu/academics/degree-programs/bioinnovation-psm-st-bioi-psm>

### Department Information:

Dept. of Biology  
255 Biology-Life Sciences Building  
1900 N. 12th Street  
Philadelphia, PA 19122-6078  
cst.psm@temple.edu  
215-204-0306

### Submission Address for Application Materials:

<https://cst.temple.edu/academics/graduate-programs/apply-now>

### Department Contacts:

*Program Co-Directors:*  
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