

Genomic Medicine: Pre-Medicine Track, B.S.

Learn more about the Bachelor of Science in Genomic Medicine: Pre-Medicine Track.

Develop a deep understanding of the role of the genomes of humans and pathogens in the development, prevention, and treatment of disease with the Bachelor of Science in Genomic Medicine. Scientific innovations and technologies allow us to collect genetic information at unprecedented size and scale. At the center of this advancement is the study of the genome. Information from thousands—and soon to be millions—of genomes is revealing the root causes of our genetic and infectious diseases. Due to the growing clinical emphasis on genomic medicine in medical colleges, students in the Genomic Medicine program will acquire a valuable basis for understanding and working with modern biological data. Graduates also gain a foundation in the life sciences that emphasizes the medical relevance of genomics, evolutionary biology, and informatics. This degree will prepare students for growing trends in research and medical careers focused on genomic medicine that use the power of changes in genes, proteins, and next generation technologies to make clinical diagnoses, treat patients, and understand diseases.

Blending psychology and sociology courses with an increased focus on coursework required by most medical schools—biochemistry, cell structure, and function, and bioinformatics or biostatistics—the Pre-Medicine Track prepares graduates for entry into medical school and STEM research careers in medicine.

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Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
 - MATH 0701 (4 s.h.) and/or ENG 0701 (4 s.h.), if required by placement testing.
 - All Temple students must take a minimum of two writing-intensive courses at Temple as part of their major. Following is a list of courses that can be used to satisfy the writing-intensive requirement: BIOL 2296, BIOL 3096, and BIOL 3396.
 - Students must complete the General Education (GenEd) requirements.
 - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
 - Students who complete CST majors typically receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
 - Students must satisfy general Temple University residency requirements.
2. College Requirements
 - 45 Upper Level (2000+) credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
 - 90 credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
 - First Year Seminar Requirement: All students in the College of Science & Technology (CST) are required to take a 1 credit first year seminar course, SCTC 1001 CST First Year Seminar. Other courses that fulfill this requirement may be found on the CST College Requirements page. Only one course in this category may count towards graduation.
3. Major Requirements for Bachelor of Science (85-87 s.h.)

At least 9 courses required for the major must be completed at Temple. At least 6 Biology courses must be completed at Temple.

Code	Title	Credit Hours
Biology		
BIOL 1111 or BIOL 1911	Introduction to Organismal Biology Honors Introduction to Organismal Biology	4
BIOL 2112 or BIOL 2912	Introduction to Cellular and Molecular Biology Honors Introduction to Cellular and Molecular Biology	4
BIOL 2296	Genetics (S)	4
BIOL 2512	(S)	3
BIOL 3096	Cell Structure and Function (F)	4
BIOL 3101	Evolution (F)	3
BIOL 3112	Fundamentals of Genomic Evolutionary Medicine (S)	3
BIOL 3511	(F)	3
Select one of the following:		3
BIOL 3212	Introduction to Bioinformatics and Computational Biology	
BIOL 3312	Biostatistics (F)	
BIOL 3396	Scientific Writing for Biology: The Art of Communicating (S)	3
Chemistry		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I (F)	
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II (S)	
Select one of the following:		4
CHEM 2201 & CHEM 2203	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I and Organic Honors Laboratory I (F)	
Select one of the following:		4
CHEM 2202 & CHEM 2204	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 2922 & CHEM 2924	Organic Chemistry for Honors II and Organic Honors Laboratory II (S)	
CHEM 3401	Applications of Biochemistry	3
Computer & Information Sciences		
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1068 or CIS 1968	Program Design and Abstraction Honors Program Design and Abstraction	
Genome Medicine Electives		
Select two of the following: ¹		6-8
BIOL 2233	Mammalian Anatomy (F)	
BIOL 3111	Genomics in Medicine (F)	
BIOL 3128	Genomics and Infectious Disease Dynamics (F)	
BIOL 3201	Human Genetics (F)	
BIOL 3211	Human Evolution	
BIOL 3212	Introduction to Bioinformatics and Computational Biology ²	

BIOL 3225	Evolutionary Genetics (S)	
BIOL 3232	Behavioral Genetics (F)	
BIOL 3241	Genomics and Evolutionary Biology of Parasites and Other Dependent Species (S)	
BIOL 3243	Parasitology	
BIOL 3265	Developmental Biology (F)	
BIOL 3301	Advanced Cell Biology (F)	
BIOL 3312	Biostatistics ²	
BIOL 3317	General Microbiology (S)	
BIOL 3324	Molecular Biology (F)	
BIOL 3325	Research Techniques in Molecular Biology (S)	
BIOL 3327	Immunology (S)	
BIOL 3328	Virology (F)	
BIOL 3329	Developmental Genetics	
BIOL 3334	Mammalian Physiology (S)	
BIOL 3356	Organization and Development of the Nervous System (S)	
BIOL 3358	Cellular and Molecular Neuroscience (S)	
BIOL 3361	Molecular Neuropharmacology	
BIOL 3363	Mammalian Development	
BIOL 3367	Endocrinology (F)	
BIOL 3368	Biology of Cancer (S)	
BIOL 3371	Cell Proliferation (S)	
BIOL 3373	Cell Signaling (S)	
BIOL 3374	Physical Biochemistry (S)	
BIOL 3380	Contemporary Biology	
BIOL 3403	Genomic Biology	
BIOL 4338	Epigenetics	
BIOL 4344	Research Techniques in Biochemistry (S)	
BIOL 4364	Biochemistry of Embryogenesis (F)	
BIOL 4365	Evolutionary Developmental Biology: Evo-Devo (S)	
BIOL 4366	Stem Cell Biology (F)	
BIOL 4375	General Biochemistry I (F)	
BIOL 4376	General Biochemistry II (F)	
CIS 2109	Database Management Systems	
CIS 2168	Data Structures	
CIS 3715	Principles of Data Science (S)	
CIS 4523	Knowledge Discovery and Data Mining	
MATH 3031	Probability Theory I	
MATH 3032	Mathematical Statistics (S)	
MATH 4033	Probability Theory II (F)	
Mathematics		
MATH 1041	Calculus I	4
or MATH 1941	Honors Calculus I	
Select one of the following:		4
MATH 1042	Calculus II	
or MATH 1942	Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
Physics		
PHYS 2021	General Physics I	4
or PHYS 2921	Honors General Physics I	
PHYS 2022	General Physics II	4
or PHYS 2922	Honors General Physics II	
Social Sciences		

PSY 1001 or PSY 1901	Introduction to Psychology Honors: Introduction to Psychology	3
Select one of the following:		3
SOC 1176 or SOC 1976	Introduction to Sociology Honors Introduction to Sociology	
SOC 1576	Introduction to Sociology for Health Professions	
Total Credit Hours		85-87

Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

1 Additional course prerequisites may be required.

2 Either BIOL 3212 or BIOL 3312 must be taken to satisfy degree requirements. The course not selected may be chosen as a Genomic Medicine Elective.

Suggested Academic Plan

Bachelor of Science in Genomic Medicine: Pre-Medicine Track

Requirements for New Students starting in the 2020-2021 Academic Year

Year 1		Credit Hours
Fall		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I (F)	
MATH 1041 or 1941	Calculus I	4
SCTC 1001	CST First Year Seminar	1
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1068 or 1968	Program Design and Abstraction	
ENG 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
Term Credit Hours		17
Spring		
BIOL 1111 or 1911	Introduction to Organismal Biology	4
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II (S)	
Select one of the following:		4
MATH 1042 or 1942	Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
Term Credit Hours		15
Year 2		
Fall		
BIOL 2112 or 2912	Introduction to Cellular and Molecular Biology	4
Select one of the following:		4
CHEM 2201 & CHEM 2203	Organic Chemistry I	

CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I (F)	
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
Select one of the following:		3
SOC 1176 or 1976	Introduction to Sociology	
SOC 1576	Introduction to Sociology for Health Professions	
Term Credit Hours		14
Spring		
BIOL 2512	(S)	3
BIOL 2296	Genetics [WI] (S)	4
Select one of the following:		4
CHEM 2202 & CHEM 2204	Organic Chemistry II	
CHEM 2922 & CHEM 2924	Organic Chemistry for Honors II (S)	
PSY 1001 or 1901	Introduction to Psychology	3
Term Credit Hours		14
Year 3		
Fall		
BIOL 3511	(F)	3
BIOL 3101	Evolution (F)	3
CHEM 3401	Applications of Biochemistry	3
PHYS 2021 or 2921	General Physics I	4
GenEd Breadth Course		3
Term Credit Hours		16
Spring		
BIOL 3112	Fundamentals of Genomic Evolutionary Medicine	3
BIOL 3396	Scientific Writing for Biology: The Art of Communicating [WI]	3
PHYS 2022 or 2922	General Physics II	4
Genome Medicine Elective ¹		3-4
Elective		3-2
Term Credit Hours		16
Year 4		
Fall		
BIOL 3096	Cell Structure and Function [WI] (F)	4
Select one of the following:		3
BIOL 3212	Introduction to Bioinformatics and Computational Biology	
BIOL 3312	Biostatistics (F)	
GenEd Breadth Course		3-4
GenEd Breadth Course		3
Elective		3-2
Term Credit Hours		16
Spring		
Genome Medicine Elective ¹		3-4
GenEd Breadth Course		3
GenEd Breadth Course		3
Elective		6-5
Term Credit Hours		15
Total Credit Hours:		123

Code	Title	Credit Hours
(F) - Fall only course		
(S) - Spring only course		
1	See the Genome Medicine Electives list under Requirements for course options.	