Genomic Medicine Certificate

Overview

Offered by the Department of Biology, the **Certificate in Genomic Medicine** program is designed with maximum flexibility to accommodate students with different backgrounds and interests, including medicine, science, technology, and public health. Two core classes and 6 to 8 credits of related elective courses are required. This certificate is available to all undergraduate students and professional non-degree-seeking students.

Campus Location: Main

Program Code: ST-GCMD-CERT

Undergraduate Contact Information

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Learn more about the undergraduate certificate in Genomic Medicine.

Certificate Requirements

Prerequisites

Students desiring a Certificate in Genomic Medicine must have already completed the following or have equivalent industry experience:

Code	Title	Credit Hours
BIOL 1111	Introduction to Organismal Biology	4
or BIOL 1911	Honors Introduction to Organismal Biology	
Select one of the following:		4
BIOL 1112	Introduction to Biomolecules, Cells and Genomes	
or BIOL 1912	Honors Introduction to Biomolecules, Cells and Genomes	
BIOL 2112	Introduction to Cellular and Molecular Biology	
or BIOL 2912	Honors Introduction to Cellular and Molecular Biology	
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 2211 & CHEM 2213	Organic Chemistry for Majors I and Organic Majors Laboratory I (F)	
CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I and Organic Honors Laboratory I (F)	
MATH 1022	Precalculus	4
Total Credit Hours		**24**

Required Courses

Students desiring a Certificate in Genomic Medicine must complete the following courses:

Code	Title	Credit Hours
Biology		
BIOL 3111	Genomics in Medicine (F)	3
BIOL 3112	Fundamentals of Genomic Evolutionary Medicine (S)	3
Genomic Medicine Electives		
Select two from the following: [1]		6-8
ANTH 3743	Human Biology of Modern Populations	
ANTH 3746	Human Reproduction: Evolutionary Perspectives	
ANTH 3772	Evolutionary Medicine	
ANTH 3796	Methods in the Study of Evolution	
ANTH 4796	Biocultural Adaptations in Human Populations	
ANTH 4798	Seminar in Human and Primate Evolution	
BIOL 2207	Genetics (S) [2]	
BIOL 2297	Research Techniques in Genetics (S) [2]	
BIOL 2512	Genomic Foundations of Medicine (S)	
BIOL 3101	Evolution (F)	
BIOL 3113	Genome Analytics	
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	
BIOL 3225	Evolutionary Genetics (S)	
BIOL 3241	Genomics and Evolutionary Biology of Parasites and Other Dependent Species (S)	
BIOL 3352	Systems Neuroscience	
BIOL 3368	Biology of Cancer (S)	
BIOL 3379	Biotechnology	
BIOL 3403	Genomic Biology	
BIOL 3511	Pathophysiology of Genomic Medicine (F)	
CHEM 3401	Applications of Biochemistry	
CHEM 3405	Physical Chemistry of Biomolecules (S)	
CHEM 4401	Biochemistry I	
CIS 1051	Introduction to Problem Solving and Programming in Python	
or CIS 1951	Honors Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1068	Program Design and Abstraction	
or CIS 1968	Honors Program Design and Abstraction	
CIS 2033	Computational Probability and Statistics	
CIS 3223	Data Structures and Algorithms	
CIS 3308	Web Application Programming	
CIS 3715	Principles of Data Science (S)	

CIS 4330	Current Topics in Information Science & Technology	
CIS 4331	Principles of Database Systems (F)	
CIS 4517	Data-Intensive and Cloud Computing (S)	
CIS 4523	Knowledge Discovery and Data Mining	
CIS 4526	Foundations of Machine Learning (F)	
ECE 3522	Stochastic Processes in Signals and Systems	
ECE 3822	Engineering Computation II	
ECE 4532	Data and Computer Communication	
EES 4696	Vertebrate Paleontology and Taphonomy (F)	
EPBI 3101	Introduction to Epidemiology	
EPBI 3102	Introduction to Research Methods	
HIM 3101	Health Record Documentation	
HIM 3106	Pathophysiology	
HIM 3111	Statistics and Research in Health Care	
HIM 3113	Healthcare Database Design and Development	
HIM 3203	Electronic Health Record Systems	
HIM 3208	International Classification of Diseases	
HIM 4101	Health Informatics: Infrastructure and Standards	
HIM 4121	Healthcare Data Analytics	
MATH 3031	Probability Theory I	
MATH 3032	Mathematical Statistics (S)	
MATH 3043	Numerical Analysis I (F)	
MATH 3046	Differential Equations with Computer Lab (S)	
MATH 4033	Probability Theory II (F)	
MATH 4043	Applied Mathematics (F)	
PSY 3003	Advanced Undergraduate Statistics	
SOC 3201	Statistical Methods in Sociology	
SOC 3525	Urban Health	
SOC 3559	Health and Reproduction	
SOC 4002	Data Analysis	
STAT 3501	Statistics for Engineers	
STAT 3502	Regression and Predictive Analytics	
STAT 3503	Applied Statistics and Data Science	
STAT 3504	Time Series and Forecasting Models	
STAT 3506	Nonparametric and Categorical Data Analysis	

| **Total Credit Hours** | | **12-14** |

Code	**Title**	**Credit Hours**

(F) - Fall only course

(S) - Spring only course

[1]

Many of these courses require additional prerequisites and/or possible co-requisites.

[2]

BIOL 2207 has a co-requisite of BIOL 2297.

Residency Requirements: At least 2 courses required for the certificate must be completed at Temple.