PHYSIOLOGY AND MATHEMATICS MAJOR (B.SC.) (79 CREDITS)

Offered by: Physiology (Faculty of Science)
Degree: Bachelor of Science
Program credit weight: 79

Program Description

The physiology and mathematics major program is an interdisciplinary program that integrates the world of physiology with mathematics. It explores the relationship between Physiological systems and the quantitative principles underpinning them. Physiology covers topics from cellular function to organ systems and behaviour. Mathematics delves into the basis of pure and applied mathematics with a focus on developing analytical, computational and problem-solving skills with an emphasis on nonlinear dynamics.

Degree Requirements — B.Sc.

This program is offered as part of a Bachelor of Science (B.Sc.) degree.

To graduate, students must satisfy both their program requirements and their degree requirements.

- The program requirements (i.e., the specific courses that make up this program) are listed under the Course Tab (above).
- The degree requirements—including the mandatory Foundation program, appropriate degree structure, and any additional components—are outlined on the Degree Requirements page.

Students are responsible for ensuring that this program fits within the overall structure of their degree and that all degree requirements are met. Consult the Degree Planning Guide on the SOUSA website for additional guidance.

Note: For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

Required Courses (70 credits)

Bio-Physical Sciences Core

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Course	Title	Credits
BIOL 219	Introduction to Physical Molecular and Cell Biology.	4
BIOL 395	Quantitative Biology Seminar.	1
MATH 222	Calculus 3.	3
MATH 223	Linear Algebra.[1]	3
MATH 247	Honours Applied Linear Algebra.[1]	3
MATH 315	Ordinary Differential Equations.[2]	3
MATH 323	Probability.	3
MATH 325	Honours Ordinary Differential Equations.[2]	3

[1] Students may take either MATH 223 Linear Algebra. or MATH 247 Honours Applied Linear Algebra..
[2] Students may take either MATH 315 Ordinary Differential Equations. or MATH 325 Honours Ordinary Differential Equations..

Physiology and Mathematics Core

Expand allContract all

Course	Title	Credits
BIOL 309	Mathematical Models in Biology.	3
BMDE 519	Biomedical Signals and Systems.	3
MATH 242	Analysis 1.	3
MATH 243	Analysis 2.	3
MATH 248	Honours Vector Calculus.[1]	3
MATH 314	Advanced Calculus.[1]	3
MATH 317	Numerical Analysis.	3
MATH 319	Partial Differential Equations .	3
MATH 324	Statistics.	3
MATH 326	Nonlinear Dynamics and Chaos.	3
MATH 437	Mathematical Methods in Biology.	3
PHGY 209	Mammalian Physiology 1.	3
PHGY 210	Mammalian Physiology 2.	3
PHGY 212	Introductory Physiology Laboratory 1.	1
PHGY 213	Introductory Physiology Laboratory 2.	1
PHGY 312	Respiratory, Renal, and Cardiovascular Physiology.	3
PHGY 313	Blood, Gastrointestinal, and Immune Systems Physiology.	3
PHGY 461D1	Experimental Physiology.	4.5
PHGY 461D2	Experimental Physiology.	4.5

[1] Students may take either MATH 248 Honours Vector Calculus. or MATH 314 Advanced Calculus..

Complementary Courses (9 credits)

3 credits, one of:

Expand allContract all

Course	Title	Credits
COMP 204	Computer Programming for Life Sciences.	3
COMP 250	Introduction to Computer Science.	3

3 credits, one of:

Expand allContract all

Course	Title	Credits
PHGY 311	Channels, Synapses and Hormones.	3
PHGY 314	Integrative Neuroscience.	3

3 credits, one of:

Expand allContract all

Course	Title	Credits
PHYS 413	Physical Basis of Physiology.	3
PHYS 519	Advanced Biophysics.	3