

PHYSIOLOGY AND PHYSICS MAJOR (B.SC.) (82 CREDITS)

Offered by: Physiology (Faculty of Science)

Degree: Bachelor of Science

Program credit weight: 82

Program Description

This program provides a firm foundation in physics, mathematics, and physiology. It is appropriate for students interested in applying methods of the physical sciences to problems in physiology and allied biological sciences.

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 (76 credits)

Bio-Physical Sciences Core

Expand allContract all

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 325	Honours Ordinary Differential Equations.	3
PHYS 329	Statistical Physics with Biophysical Applications.	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 Physics Core

Expand allContract all

Course	Title	Credits
BMDE 519	Biomedical Signals and Systems.	3
MATH 248	Honours Vector Calculus. ¹	3
MATH 314	Advanced Calculus. ¹	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
PHYS 230	Dynamics of Simple Systems.	3
PHYS 232	Heat and Waves.	3
PHYS 241	Signal Processing.	3
PHYS 257	Experimental Methods 1.	3
PHYS 258	Experimental Methods 2.	3
PHYS 339	Measurements Laboratory in General Physics.	3
PHYS 340	Majors Electricity and Magnetism.	3
PHYS 346	Majors Quantum Physics.	3

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

Complementary Courses (6 credits)

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