B.S. APPLIED MATHEMATICS - Biology Concentration

COLLEGE of ARTS & SCIENCES
Language Requirement

All students who major in the College of Arts & Sciences are required to demonstrate competence in a second language. For complete details: https://www.gonzaga.edu/college-of-arts-sciences/about/information-for-students/language-requirement-information

UNIVERSITY CORE REQUIREMENTS:

► FUNDAMENTAL CORE COURSES

Year 1: Understanding & Creating

Writing
ENGL 101 Writing (fulfills 3 credits Writing Enriched)*

REASONING
PHIL 101 Reasoning

First Year Seminar
Dept. 193

Communication & Speech
COMM 100 Communication & Speech

Math
MATH (must be above Math 100)

Scientific Inquiry (2cr + 1cr lab)
BIOL or CHEM or PHYS 104/104L (taken year 1 or 2)

Year 2: Being & Becoming

Christianity & Catholic Traditions
RELI (see approved list)**

Philosophy of Human Nature
PHIL 201 Philosophy of Human Nature

Year 3: Caring & Doing

World/Comparative Religion
RELI (see approved list)** (fulfills 3cr Global Studies)*

Ethics
PHIL 301 Ethics or RELI 330 Principles-Christian Morality

Year 4: Imagining the Possible

Core Integration Seminar
Dept. 432

NOTE: some courses have pre-requisites, check the catalog carefully!

► BROADENING COURSES - see approved list**

Social & Behavioral Science

History

Fine Arts & Design

► REQUIRED COURSE DESIGNATIONS - see approved list**

*Writing Enriched

Social Justice

*Global Studies

**for list of approved RELI, Broadening & Designated courses, see:
https://my.gonzaga.edu/academics/undergraduate-programs/general-degree-requirements-procedures/university-core

APPLIED MATHEMATICS

Biology Concentration

LOWER DIVISION

Course       Course Title
MATH 157 Calculus & Analytic Geometry I 
MATH 258 Calculus & Analytic Geometry II
MATH 259 Calculus & Analytic Geometry III
MATH 260 Ordinary Differential Equations
CPSC 121 Computer Science I

UPPER DIVISION

Course       Course Title
MATH 301 Fundamentals of Mathematics
MATH 339 Linear Algebra
MATH 350 Elementary Numerical Analysis
MATH 413 Real Analysis I
MATH 499 Comprehensive

One of the following two courses:

MATH 321 Statistics for Experimentalists
MATH 422 Mathematical Statistics

If MATH 422 is chosen, then one MATH 400 level elective must be replaced by a MATH 300 level elective.

BIOLOGY CONCENTRATION

Year 2: Being & Becoming

Mathematics 400 Level Electives:

MATH

MATH 454 Partial Differential Equations
MATH 462 Nonlinear Systems & Chaos

(BIOLOGY CONCENTRATION 34 Credits)

ONE OF THE FOLLOWING THREE COURSES:

MATH 428 Operations Research
MATH 341 Modern Geometry
MATH 351 Combinatorics & Graph Theory
MATH 360-363 Selected Topics
MATH 414 Real Analysis II
MATH 417 Complex Variables
MATH 421 Probability Theory
MATH 437 Abstract Algebra I
MATH 438 Abstract Algebra II
MATH 450-453 Selected Topics
MATH 454 Partial Differential Equations
MATH 457 Number Theory & Cryptography
MATH 459 Topology
MATH 462 Nonlinear Systems & Chaos
MATH 498A/498B Thesis I/II

11 Credits

BIOLOGICAL SCIENCES:

CHEM 101/101L General Chemistry/Lab
BIOI 105/105L Info Flow-Biological System/Lab
BIOI 106 Energy Flow-Biological Systems

Two of the following three courses:

BIOI 205/205L Physiology & Biodiversity/Lab
BIOI 206/206L Ecology/Lab
BIOI 207/207L Genetics/Lab

8 Credits

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Biology 300-400 Level Electives: 6 Credits

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<th>Course Title</th>
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<td>BIOL 313</td>
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<td>BIOL 323</td>
<td>Conservation Biology</td>
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<td>BIOL 451</td>
<td>Comparative Endocrinology</td>
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*Other courses may be considered on a case-by-case basis*

*Check for pre-requisites when selecting electives*