

Degree Worksheet for the College of Arts and Sciences: 2023-2024

B.S. APPLIED MATHEMATICS with Biology Concentration

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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>

Credits Sem/Yr

	Credits Sem/Yr
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UNIVERSITY CORE REQUIREMENTS: ► FUNDAMENTAL CORE COURSES

Year 1: Understanding & Creating

Writing	Credits Sem/Yr
ENGL 101 Writing (fulfills 3 credits Writing Enriched)*	3 <input type="text"/>
Reasoning	
PHIL 101 Reasoning	3 <input type="text"/>
First Year Seminar	
Dept. 193	3 <input type="text"/>
Communication & Speech	
COMM 100 Communication & Speech	3 <input type="text"/>
Math	
MATH (must be above Math 100)	3 <input type="text"/>
Scientific Inquiry (2cr + 1cr lab)	
BIOL or CHEM or PHYS 104/104L (taken year 1 or 2)	3 <input type="text"/>

Year 2: Being & Becoming

Christianity & Catholic Traditions	Credits Sem/Yr
RELI (see approved list)**	3 <input type="text"/>
Philosophy of Human Nature	
PHIL 201 Philosophy of Human Nature	3 <input type="text"/>

Year 3: Caring & Doing

World/Comparative Religion	Credits Sem/Yr
RELI (see approved list)** (fulfills 3cr Global Studies)*	3 <input type="text"/>
Ethics	
PHIL 301 Ethics or RELI 330 Principles-Christian Morality	3 <input type="text"/>

Year 4: Imagining the Possible

Core Integration Seminar	Credits Sem/Yr
Dept. 432	3 <input type="text"/>

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

► BROADENING COURSES - see approved list**

Social & Behavioral Science	Credits Sem/Yr
	3 <input type="text"/>
Literature	
	3 <input type="text"/>
History	
	3 <input type="text"/>
Fine Arts & Design	
	3 <input type="text"/>

► REQUIRED COURSE DESIGNATIONS - see approved list**

*Writing Enriched	Credits Sem/Yr
	9 total <input type="text"/>
Social Justice	
	3 total <input type="text"/>
*Global Studies	
	6 total <input type="text"/>

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

B.S. APPLIED MATHEMATICS: with Biology Concentration

68 CREDITS

APPLIED MATHEMATICS

34 Credits

LOWER DIVISION

18 Credits

Course	Course Title	Credits	Grade
MATH 157	Calculus & Analytic Geometry I	4	<input type="text"/>
MATH 258	Calculus & Analytic Geometry II	4	<input type="text"/>
MATH 259	Calculus & Analytic Geometry III	4	<input type="text"/>
MATH 260	Ordinary Differential Equations	3	<input type="text"/>
CPSC 121	Computer Science I	3	<input type="text"/>

UPPER DIVISION

10 Credits

MATH 301	Fundamentals of Mathematics	3	<input type="text"/>
MATH 350	Numerical Methods	3	<input type="text"/>
MATH 413	Real Analysis I	3	<input type="text"/>
MATH 496	Comprehensive-Applied Math	1	<input type="text"/>

Select one of the following two courses:

3 Credits

MATH 335	Applied Linear Algebra	3	<input type="text"/>
MATH 339	Linear Algebra	3	<input type="text"/>

Select one of the following two courses:

3 Credits

MATH 321	Statistics for Experimentalists	3	<input type="text"/>
MATH 422	Mathematical Statistics	3	<input type="text"/>

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

BIOLOGY CONCENTRATION

34 Credits

11 Credits

CHEM 101/101L	General Chemistry+Lab	4	<input type="text"/>
BIOL 105/105L	Info Flow-Biological System+Lab	4	<input type="text"/>
BIOL 106	Energy Flow-Biological Systems	3	<input type="text"/>

Select one of the following three courses:

3 Credits

MATH 440	Foundations of Applied Math	3	<input type="text"/>
MATH 454	Partial Differential Equations	3	<input type="text"/>
MATH 462	Nonlinear Systems & Chaos	3	<input type="text"/>

Select two of the following three course options:

8 Credits

BIOL 205/205L	Physiology & Biodiversity+Lab	4	<input type="text"/>
BIOL 206/206L	Ecology+Lab	4	<input type="text"/>
BIOL 207/207L	Genetics+Lab	4	<input type="text"/>

Select two Biology 300-400 level electives:

6 Credits

BIOL		3	<input type="text"/>
BIOL		3	<input type="text"/>

Select two 400-level Math electives:

6 Credits

MATH		3	<input type="text"/>
MATH		3	<input type="text"/>

Cannot double count with another requirement.

Cannot use MATH 335, 339, 432, or 499 as MATH electives.

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A maximum of three (3) total credits from the following may be counted toward Math electives: MATH 365 (may be taken for credit only once), MATH 390, MATH 490, MATH 497.

Selection list for two Biology 300-400 level electives:

Cannot double count with another requirement.

BIOL 303 Population Ecology
BIOL 313 Animal Behavior
BIOL 323 Conservation Biology
BIOL 331 Parasitology
BIOL 333 Community Ecology
BIOL 334 Advanced Evolution
BIOL 335 Advanced Genetics: Selected Topics
BIOL 337 Developmental Biology
BIOL 338 Histology
BIOL 340 Field Botany
BIOL 341 Human Physiology
BIOL 343 Plant Community Ecology
BIOL 344 GIS & Ecological Techniques
BIOL 357 Principles of Wildlife Management
BIOL 360 Plant Biology
BIOL 367 Entomology
BIOL 371 Vertebrate Biology & Anatomy
BIOL 399 Advanced Topics
BIOL 403 Marine Biology
BIOL 420 Physiological Ecology
BIOL 441 Advanced Physiology
BIOL 451 Comparative Endocrinology

(other courses may be considered on a case-by-case basis)

Check the catalog for pre-requisites when selecting electives

BIOL 334, 337, and 451 are allowed as Biology electives, but require BIOL 205, 206, and 207 as pre-requisites.

Up to 2 credits may come from labs associated with any of these courses.