

Degree Worksheet for the College of Arts and Sciences: 2022-2023 B.S. APPLIED MATHEMATICS with 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>

	Credits	Sem/Yr

UNIVERSITY CORE REQUIREMENTS:

► FUNDAMENTAL CORE COURSES

Year 1: Understanding & Creating

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

Year 2: Being & Becoming

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

Year 3: Caring & Doing

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

Year 4: Imagining the Possible

	Credits	Sem/Yr
<i>Core Integration Seminar</i> Dept. 432	3	

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

► BROADENING COURSES - see approved list**

	Credits	Sem/Yr
Social & Behavioral Science	3	
Literature	3	
History	3	
Fine Arts & Design	3	

► REQUIRED COURSE DESIGNATIONS - see approved list**

	Credits	Sem/Yr
*Writing Enriched	9 total	
Social Justice	3 total	
*Global Studies	6 total	

**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: 68 CREDITS with Biology Concentration

APPLIED MATHEMATICS

34 Credits

LOWER DIVISION

18 Credits

	Course	Course Title	Credits	Grade
	MATH 157	Calculus & Analytic Geometry I	4	
	MATH 258	Calculus & Analytic Geometry II	4	
	MATH 259	Calculus & Analytic Geometry III	4	
	MATH 260	Ordinary Differential Equations	3	
	CPSC 121	Computer Science I	3	

UPPER DIVISION

10 Credits

MATH 301	Fundamentals of Mathematics	3	
MATH 350	Numerical Methods	3	
MATH 413	Real Analysis I	3	
MATH 496	Comprehensive-Applied Math	1	

Select one of the following two courses:

3 Credits

MATH 335	Applied Linear Algebra	3	
MATH 339	Linear Algebra	3	

Select one of the following two courses:

3 Credits

MATH 321	Statistics for Experimentalists	3	
MATH 422	Mathematical Statistics	3	

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	
BIOL 105/105L	Info Flow-Biological System+Lab	4	
BIOL 106	Energy Flow-Biological Systems	3	

Select one of the following three courses:

3 Credits

MATH 440	Foundations of Applied Math	3	
MATH 454	Partial Differential Equations	3	
MATH 462	Nonlinear Systems & Chaos	3	

Select two of the following three course options:

8 Credits

BIOL 205/205L	Physiology & Biodiversity+Lab	4	
BIOL 206/206L	Ecology+Lab	4	
BIOL 207/207L	Genetics+Lab	4	

Select two Biology 300-400 level electives:

6 Credits

BIOL	3	
BIOL	3	

Select two 400-level Math electives:

6 Credits

MATH	3	
MATH	3	

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.