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

Year 2: Being & Becoming

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

Year 3: Caring & Doing

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

Year 4: Imagining the Possible

	Credits	Sem/Yr
Core Integration Seminar		
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: 77 CREDITS
with BIOLOGY & STATISTICS DOUBLE 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*

Course		Course Title	Credits	Grade
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*

Course		Course Title	Credits	Grade
MATH	335	Applied Linear Algebra	3	
MATH	339	Linear Algebra	3	

Select one of the following two courses: — *3 Credits*

Course		Course Title	Credits	Grade
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 and STATISTICS DOUBLE CONCENTRATION — 43 Credits

14 Credits

Course		Course Title	Credits	Grade
MATH	421	Probability Theory	3	
CHEM	101/101L	General Chemistry + Lab	4	
BIOL	105/105L	Info Flow-Biological Systems + Lab	4	
BIOL	106	Energy Flow-Biological Systems	3	

Select one of the following two courses: — *3 Credits*

Course		Course Title	Credits	Grade
MATH	425	Applied Statistical Models	3	
MATH	426	Experimental Design	3	

Select one of the following three courses: — *3 Credits*

Course		Course Title	Credits	Grade
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*

Course		Course Title	Credits	Grade
BIOL	205/205L	Physiology & Biodiversity + Lab	4	
BIOL	206/206L	Ecology + Lab	4	
BIOL	207/207L	Genetics + Lab	4	

B.S. APPLIED MATHEMATICS
with BIOLOGY & STATISTICS DOUBLE CONCENTRATION
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Select two Biology 300-400 level electives:		6 Credits	
BIOL		3	
BIOL		3	

Selection list for 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)

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

Check the catalog for pre-requisites when selecting electives

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Select one 300-400 level Math elective:		3 Credits	
MATH		3	
Cannot double-count with another requirement			

Select two Statistics electives:		6 Credits	
MATH		3	
		3	

Cannot double-count with a course used elsewhere.
At least one course must be MATH.

MATH Electives:
Cannot use MATH 335, 339, 432, or 499 as MATH electives.
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 Statistics electives:
Cannot double-count with a requirement used elsewhere

MATH 422 Mathematical Statistics
MATH 423 Stochastic Processes
MATH 426 Experimental Design
ECON 355 Regression Analysis
ECON 451 Econometrics
ECON 452 Time Series Analysis
CPSC 322 Data Science Algorithms
CPSC 323 Machine Learning & Intelligent Systems
CPSC 324 Big Data Analytics
PHYS 323 Statistical Mechanics
PSYC 450 Advanced Statistics in Psychology
*Or any course with significant probability or statistics content with the **prior** approval of the Math Department Chair.*

ALL of these courses have pre-requisites, and may require courses outside of the concentration to be taken.