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

B.S. APPLIED MATHEMATICS
with PHYSICS and STATISTICS DOUBLE 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

Writing	Credits	Sem/Yr
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

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

Year 3: Caring & Doing

World/Comparative Religion	Credits	Sem/Yr
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

Core Integration Seminar	Credits	Sem/Yr
Dept. 432	3	

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

▶ BROADENING COURSES - *see approved list***

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

▶ REQUIRED COURSE DESIGNATIONS - *see approved list***

*Writing Enriched	Credits	Sem/Yr
	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: 74 CREDITS
with Physics & 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

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

One of the following two courses: — *3 Credits*

MATH 335	Applied Linear Algebra	3
MATH 339	Linear Algebra	3

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.

PHYSICS & STATISTICS CONCENTRATION — 40 Credits

3 Credits

MATH 421	Probability Theory	3

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

MATH 425	Applied Statistical Models	3
MATH 426	Experimental Design	3

10 Credits

PHYS 121/121L	Physics I + Lab	5
PHYS 122/122L	Physics II + Lab	5

Select <u>two</u> of the following four courses: — *6 Credits*

MATH 417	Complex Variables	3
MATH 440	Foundations of Applied Math	3
MATH 454	Partial Differential Equations	3
MATH 462	Nonlinear Systems & Chaos	3

Select two 200-300-400 level PHYS electives: — *6 Credits*

PHYS		3
PHYS		3

Select one 300-400 level Math elective: — *3 Credits*

MATH		3

Select one 400-level Math elective: — *3 Credits*

MATH		3

Cannot double-count with another requirement.

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Physics 200, 300, 400 Electives Options:

PHYS 205 Modern Physics
PHYS 301 Intermediate Mechanics
PHYS 306 Electricity & Magnetism
PHYS 307 Optics
PHYS 402 Advanced Mechanics
PHYS 407 Electricity & Magnetism II
PHYS 409 Nuclear & Particle Physics*
PHYS 415 Cosmology & Astrophysics
PHYS 450 Statistical Physics
PHYS 464 Intro to Quantum Physics*

** (PHYS 409 & 464 require PHYS 205 as a pre-requisite)*

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.

Check for pre-requisites when selecting electives!

Select two Statistics electives: ***6 Credits***

MATH	3	
	3	

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

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