

# College of Arts and Sciences 2024-2025 Degree Worksheet

## B.S. APPLIED MATHEMATICS with Physics 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

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### 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	<input type="text"/>
<i>Reasoning</i>		
PHIL 101 Reasoning	3	<input type="text"/>
<i>First Year Seminar</i>		
Dept. 193	3	<input type="text"/>
<i>Communication &amp; Speech</i>		
COMM 100 Communication & Speech	3	<input type="text"/>
<i>Math</i>		
MATH (must be above Math 100)	3	<input type="text"/>
<i>Scientific Inquiry (2cr + 1cr lab)</i>		
BIOL or CHEM or PHYS 104/104L (taken year 1 or 2)	3	<input type="text"/>

##### Year 2: Being & Becoming

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

##### Year 3: Caring & Doing

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

##### Year 4: Imagining the Possible

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

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

#### ► BROADENING COURSES - see approved list\*\*

	Credits	Sem/Yr
Social & Behavioral Science	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\*\*

	Credits	Sem/Yr
*Writing Enriched	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>

**Check for pre-requisites when selecting electives!**

MATH: 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.

### B.S. APPLIED MATHEMATICS: with Physics Concentration

**65 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"/>

##### 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"/>

##### 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.*

#### PHYSICS CONCENTRATION

**31 Credits**

**10 Credits**

PHYS 121/121L	Physics I + Lab	5	<input type="text"/>
PHYS 122/122L	Physics II + Lab	5	<input type="text"/>

##### Two of the following four courses:

**6 Credits**

MATH 417	Complex Variables	3	<input type="text"/>
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 200-300-400 level PHYS electives:

**6 Credits**

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

##### Select one 300-400 level Math elective:

**3 Credits**

MATH	3	<input type="text"/>
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##### Select two 400-level Math electives:

**6 Credits**

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

*Cannot double-count with another requirement.*

##### Options for Physics 200, 300, 400 Electives:

- PHYS 224 Modern Physics
- PHYS 321 Classical Mechanics
- PHYS 322 Electricity & Magnetism
- PHYS 323 Statistical Mechanics
- PHYS 324 Quantum Mechanics\*
- PHYS 424 Advanced Quantum Mechanics\*\*\*
- PHYS 451 Fields, Oscillations, and Relativity\*\*
- PHYS 452 Optics
- PHYS 453 Solid State Physics\*
- PHYS 454 Nuclear & Particle Physics\*
- PHYS 455 Cosmology & Astrophysics
- PHYS 456 Biophysical Systems and Modeling

\* PHYS 324, 453, & 454 require PHYS 224 as a pre-requisite

\*\* PHYS 451 requires PHYS 224, 321, & 322 as pre-requisites

\*\*\* PHYS 424 requires PHYS 324 as a pre-requisite