

Degree Worksheet for the College of Arts and Sciences: 2023-2024
B.S. APPLIED MATHEMATICS with Computer Science 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

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UNIVERSITY CORE REQUIREMENTS:

► **FUNDAMENTAL CORE COURSES**

Year 1: Understanding & Creating

		Credits	Sem/Yr
<i>Writing</i>			
ENGL 101 Writing	<i>(fulfills 3 credits Writing Enriched)*</i>	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	<i>(must be above Math 100)</i>	3	
<i>Scientific Inquiry (2cr + 1cr lab)</i>			
BIOL or CHEM or PHYS 104/104L	<i>(taken year 1 or 2)</i>	3	

Year 2: Being & Becoming

		Credits	Sem/Yr
<i>Christianity & Catholic Traditions</i>			
RELI	<i>(see approved list)**</i>	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	<i>(see approved list)** (fulfills 3cr Global Studies)*</i>	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
<i>Social & Behavioral Science</i>			
		3	
<i>Literature</i>			
		3	
<i>History</i>			
		3	
<i>Fine Arts & Design</i>			
		3	

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

		Credits	Sem/Yr
<i>*Writing Enriched</i>			
		9 total	
<i>Social Justice</i>			
		3 total	
<i>*Global Studies</i>			
		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: 64 CREDITS
with Computer Science Concentration

APPLIED MATHEMATICS

31 Credits

LOWER DIVISION

15 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	
CPSC 121	Computer Science I	3	

UPPER DIVISION

7 Credits

MATH 301	Fundamentals of Mathematics	3	
MATH 350	Numerical Methods	3	
MATH 496	Comprehensive-Applied Math**	1	

*(**Majors take fall semester of their final year)*

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.

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 three courses:

3 Credits

MATH 413	Real Analysis I	3	
MATH 437	Abstract Algebra I	3	
MATH 457	Number Theory and Cryptography	3	

COMPUTER SCIENCE CONCENTRATION

33 Credits

3 Credits			
MATH 351	Combinatorics & Graph Theory	3	

Select one of the following two courses:

3 Credits

CPSC 122	Computer Science II	3	
CPSC 222	Introduction to Data Science	3	

Select one of the following four courses:

3 Credits

CPSC 322	Data Science Algorithms	3	
CPSC 351	Theory of Computation	3	
CPSC 353	Applied Cryptography	3	
CPSC 450	Design & Analysis-Computer Algorithms	3	

Select three of the following six courses:

9 Credits

MATH 328	Operations Research	3	
MATH 421	Probability Theory	3	
MATH 423	Stochastic Processes	3	
MATH 425	Applied Statistical Models	3	
MATH 426	Experimental Design	3	
MATH 455	Chaos and Discrete Dynamical Systems	3	

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CPSC Elective Options:

- CPSC 223 Algorithm & Abstract Data Structures
- CPSC 224 Software Development
- CPSC 321 Database Management Systems
- *CPSC 322 Data Science Algorithms
- *CPSC 323 Machine Learning & Intelligent Systems
- *CPSC 324 Big Data Analytics
- CPSC 325 Data Science Project Lab
- CPSC 326 Organization of Programming Languages
- CPSC 331 UI/UX Design
- CPSC 332 Web Development
- CPSC 333 Mobile App Development
- CPSC 334 Linux and DevOps
- *CPSC 351 Theory of Computation
- *CPSC 353 Applied Cryptography
- CPSC 425 Computer Graphics
- CPSC 447 Computer Networks
- *CPSC 450 Design & Analysis-Computer Algorithms
- CPSC 475 Speech & Natural Language Processing

* (indicates the recommended elective choices)

Check the catalog for pre-requisites when selecting electives.

Select one CPSC 200-300-400 level elective:	3 Credits	
CPSC	3	<input style="width: 30px; height: 15px;" type="text"/>

Select one CPSC 300-400 level elective:	3 Credits	
CPSC	3	<input style="width: 30px; height: 15px;" type="text"/>

Select one 300-400 level Math elective:	3 Credits	
MATH	3	<input style="width: 30px; height: 15px;" type="text"/>

Select two 400-level Math electives:	6 Credits	
MATH	3	<input style="width: 30px; height: 15px;" type="text"/>
MATH	3	<input style="width: 30px; height: 15px;" type="text"/>

Cannot double-count electives with another requirement.

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.

For this Computer Science concentration only:

MATH 260 is optional, may be counted as a Math 300-400 level elective