

# Degree Worksheet for the College of Arts and Sciences: 2021-2022

## B.S. APPLIED MATHEMATICS - 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

	Credits Sem/Yr
	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: 61 CREDITS

#### Computer Science 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 231	Discrete Structures	3	
CPSC 121	Computer Science I	3	

##### UPPER DIVISION

**13 Credits**

MATH 301	Fundamentals of Mathematics	3	
MATH 339	Linear Algebra	3	
MATH 350	Elementary Numerical Analysis	3	
MATH 437	Abstract Algebra	3	
MATH 496	Comprehensive-Applied Math	1	

##### 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.

#### COMPUTER SCIENCE CONCENTRATION

**27 Credits**

##### One of the following four courses:

**3 Credits**

MATH 440	Foundations of Applied Math	3	
MATH 457	Number Theory & Cryptography	3	
MATH 454	Partial Differential Equations	3	
MATH 462	Nonlinear Systems & Chaos	3	

##### Mathematics 300-400 Level Electives:

**6 Credits**

MATH		3	
MATH		3	

##### Mathematics 400 Level Electives:

**6 Credits**

MATH		3	
MATH		3	

A minimum of 9 credits must be from the Math electives list; cannot double-count with another requirement.

MATH 260	Ordinary Differential Equations*
MATH 328	Operations Research
MATH 341	Modern Geometry
MATH 351	Combinatorics & Graph Theory
MATH 360-363	Selected Topics
MATH 413	Real Analysis I*
MATH 414	Real Analysis II
MATH 417	Complex Variables
MATH 421	Probability Theory
MATH 423	Stochastic Processes
MATH 438	Abstract Algebra II
MATH 450-453	Selected Topics
MATH 454	Partial Differential Equations
MATH 457	Number Theory & Cryptography
MATH 459	Topology
MATH 462	Nonlinear Systems & Chaos
MATH 498A/498B	Thesis I/II

**6 Credits**

CPSC 122	Computer Science II	3	
CPSC 223	Algorithms/Abstract Data Structures	3	

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CPSC 300-400 Level Electives:		6 credits
CPSC	3	
CPSC	3	

CPSC 310-319 Special Topics  
CPSC 321 Database Management Systems  
CPSC 326 Organization of Programming Languages  
CPSC 351 Theory of Computation  
CPSC 353 Applied Cryptography  
CPSC 360 Introduction to Robotics  
CPSC 410-414 Advanced Topics  
CPSC 425 Computer Graphics  
CPSC 427 Artificial Intelligence  
CPSC 447 Computer Networks  
CPSC 450 Design & Analysis-Computer Algorithms  
CPSC 475 Speech & Natural Language Processing  
(CPSC 321, 351, 353, and 450 are the recommended elective choices)

\* MATH 260 can count as Math 300-400 level elective  
and MATH 413 can count as Math 400-level elective  
for this concentration only.

***Check the catalog for pre-requisites when selecting electives.***