

Major Program Guide For: B.S. in Mathematics
Concentration: Data Science with additional major in Computer Science
Suggested Course Sequence
 (Updated January 9, 2023)

- Total Hours for Degree: 120
- This sequence assumes that students begin in Calculus I.
- Students may finish earlier if they attend summer school at WCU or another approved institution.

Freshman Year			
Fall	17	Spring	17
CS 150: Problem Solving & Programming I	4	CS 151: Problem Solving & Programming II	4
MATH 153: Calculus I	4	MATH 250: Introduction to Logic and Proof	3
MATH 270: Statistical Methods I	3	MATH 255: Calculus II	4
First-Year Seminar (consider MATH 19x or CS 191)	3	COMM 201: Foundations of Communication	3
Liberal Studies	3	ENGL 101: Writing and Rhetoric	3

NOTE: If a student is not beginning in Calculus I, see the department for a revised course sequence. General Electives must include a major or minor in another related field.

Sophomore Year			
Fall	17	Spring	15
CS 253: Software Development	3	CS 352: Organization of Programming Languages	3
CS 351: Data Structures and Algorithms	4	CS 364: Software Engineering	3
MATH 256: Calculus III	4	MATH 310: Discrete Structures	3
ENGL 202: Writing and Critical Inquiry	3	Liberal Studies	3
Liberal Studies	3	Liberal Studies	3

Junior Year			
Fall	16	Spring	16
CS 260: Computer Organization	3	CS 370: Operating Systems	3
CS 465: Computer Networking	3	CS 453: Database Systems	3
MATH 362: Linear Algebra I	3	MATH 472 Data Science/MATH 474 Stat. Modeling	3
MATH 475: Stat. Machine Learning/CS Elective	3	Liberal Studies	3
Liberal Studies (C5 Lab Science)	4	Liberal Studies (C5 Lab Science)	4

Upper Level Perspective (ULP): An approved Upper Level Liberal Studies Perspectives course is required in one of the Liberal Studies Perspectives categories.

Senior Year			
Fall	13	Spring	10
CS 466: Information Security I	3	CS 353: Social & Ethical Issues in Computing	2
CS 495: Capstone I	2	CS 496: Capstone II	2
MATH 475: Stat. Mach. Learning/CS Elective	3	MATH 472 Data Science/MATH 474 Stat. Modeling	3
MATH 479: Capstone: Seminar	2	Liberal Studies	3
Liberal Studies	3	(Add 2 hours if a student needs to be full-time.)	

In the first semester of the senior year, students must apply for graduation.

DOUBLE MAJOR IN MATHEMATICS AND COMPUTER SCIENCE
B.S. DEGREE, DATA SCIENCE CONCENTRATION FOR MATH
 January 2023

Student Name: _____
 Term/Year Entered: _____

- A. Liberal Studies (42 Hours): See Liberal Studies Requirement Completion Record.
 B. Core Math Courses (24 Hours): (Math majors must pass these with a C or better.)

Course/Number	Semester Taken	Grade/Semester Taken
MATH 153, Calculus I (4)	MATH 146 or placement	
MATH 255, Calculus II (4)	MATH 153	
MATH 256, Calculus III (4)	MATH 255	
MATH 250, Intro. to Logic & Proof (3)	MATH 140 or 153 or Dept. Head consent	
MATH 270, Statistical Methods I (3)	MATH 146 or MATH 153 or placement	
MATH 310, Discrete Structures (3)	MATH 250 or instructor permission	
MATH 362, Linear Algebra I (3)	MATH 153 AND MATH 250	

- C. Additional Required Courses for Data Science Concentration (19 hours): (CS majors must pass CS 150, 151 with C or better.)

Course/Number	Prerequisite/Corequisite	Grade/Semester Taken
CS 150, Problem Solving & Program. I (4)	MATH 130 or math placement	
CS 151, Problem Solving & Program. II (4)	CS 150; Coreq: MATH 146/153/255	
MATH 472, Data Science (3)	MATH 270 or MATH 370	
MATH 474, Intro. to Stat. Modeling (3)	MATH 270 or MATH 370	
MATH 475, Stat. Machine Learning (3)	MATH 270 or MATH 370	
MATH 479, Capstone: Seminar (2)	C or better in MATH 250; 75 hours	

- D. Additional Required Courses for Computer Science Major (34 hours): (CS majors must pass CS 253, 351 with C or better.)

Course/Number	Prerequisite/Corequisite	Grade/Semester Taken
CS 253, Software Development (3)	Passing of CS 151 with a C or better	
CS 260, Computer Organization (3)	CS 253	
CS 351, Data Structures & Algorithms (4)	Corequisites: CS 253 and MATH 255	
CS 352, Organ. of Program. Languages (3)	CS 253 and MATH 255	
CS 353, Profess. Ethics in Computing (2)	CS 351	
CS 364, Software Engineering (3)	Grade of C or better in CS 253	
CS 370, Operating Systems (3)	Corequisite: CS 352	
CS 453, Database Systems (3)	CS 253	
CS 465, Computer Networking (3)	CS 253	
CS 466, Information Security I (3)	Corequisite: CS 465	
CS 495, Capstone I (2)	CS major, 70 hours, C in CS 253 and 351	
CS 496, Capstone II (2)	CS 495	

- E. Required Natural Science Courses for Computer Science Major (8 hours):

Complete 8 hours selected from: BIOL 140 (Prin. of Biology I), BIOL 141 (Prin. of Biology II), CHEM 139 (Gen. Chemistry I), CHEM 140 (Gen. Chemistry II), PHYS 130 (Intro. Physics I) or PHYS 230 (Gen. Physics I), PHYS 131 (Intro. Physics II) or PHYS 231 (Gen. Physics II)

Course/Number	Prerequisite/Corequisite	Grade/Semester Taken

- F. Major Electives for Computer Science Major (6 hours):

MATH 475 (Stat. Machine Learning) counts for one elective. Choose three additional hours from CS courses numbered 300 or above.

Course/Number	Prerequisite/Corequisite	Grade/Semester Taken

- F. Electives: Enough hours to reach 120 total hours for the degree

Course/Number	Prerequisite/Corequisite	Grade/Semester Taken

Numbers of hours completed after:

Semester								
#Hours								

Note: For all programs, a minimum of 32 credit hours must be earned at WCU at the Junior/Senior level.