

B.S. Applied and Computational Math Program Sheet

(120 SH Required to Complete Degree)

Note: DS = Mathematics of Data Science and Machine Learning Option, SC = Applied Differential Equations and Scientific Computing Option, AS = Actuarial Science Option

Part 1: Foreign Language Requirement

Complete a foreign language at an elementary II level or above. Students who have completed three years of language in high school with at least a 'C' average have satisfied this requirement. Consult your advisor.

Part 2: General Education Competency Requirement

Students must complete each of the competencies listed below. In addition, students must complete three of the competencies a second time excluding First Year (FY) and Writing (W1,W2,W3). Non-MAT courses in this section count towards the 40 credit requirement in Part 3 (General Education Exploration). Please note, some classes offered by the university satisfy multiple competencies simultaneously.

Competency	Comp1	Compe2	
First Year (FY)	MAT 150		
Creative Process (CP)	For specific competencies met within each option, please see specific program sheet		
Critical Thinking (CT)			
Oral Communication (OC)			
Health and Wellness (HW)			
Scientific Inquiry (SI)			
Intercultural Competence (IC)			
Information Literacy (IL)			
Writing Course (W1)		WRT 101	
Writing Intensive II (W2)			
Writing Tier III (W3)		MAT 453	
Quantitative Reasoning (QR)	MAT 181	MAT 182	
Culminating Experience (CE)	MAT 453		

Part 3: General Education Exploration incl Cognates

You need to complete a total of 40 credits outside your major. Count the non-MAT courses from part 2 and the following courses towards these 40 credits.	Credits:
WRT 101 - Composition I: Habit of Writing	3
DS Option Cognates:	
PHI 227 - Ethics in Computing (IL, W2)	3
CS 140 - Introduction to Programming (Python)	4
DS Exploration Credit Total (Incl non-MAT Competencies)	40
AS Option Cognate	
CS 143 - Visual BASIC	3
AS Exploration Credit Total (Incl non-MAT Competencies)	40
SC Option Cognate	
CS 140 - Introduction to Programming (Python)	4
PHY 110 - General Physics I (Calculus)	4

SC Exploration Credit Total (Incl non-MAT Competencies)	40
Part 4: Major Requirements	
A minimum of 23 credits of the major requirements must be taken at WCSU. A Minimum GPA of 2.0 is required for your major requirements.	
All Option Areas Must Take:	Credits:
MAT 141 - Foundational Discrete Math	3
MAT 150 - Math Seminar I (FY)	0.5
MAT 151 - Math Seminar II	0.5
MAT 181 - Calculus I (QR)	4
MAT 182 - Calculus II (QR)	4
MAT 207 - Proofs	3
MAT 222 - Introductory Statistics	3
MAT 272 - Linear Algebra	3
MAT 281 - Calculus III	4
MAT 282 - Ordinary Differential Equations	3
MAT 322 - Probability	3
MAT 332 - Applied Linear Algebra and Math of Machine Learning	3
MAT 380 - Math Modeling with Symbolic and Scientific Computations	3
MAT 383 - Introduction to Mathematical Analysis	3
MAT 453 - Senior Seminar (CE,W3) (OR SIS with Project) (OR Senior Thesis) (OR Internship)	3
SH Subtotal of Common Classes for all Options	43
DS Option Must Take:	Credits:
MAT 422 - Statistics for Data/Actuarial Science and Machine Learning	3
MAT 470 - Applications of Machine Learning and Wavelets	3
DS Option Pick One of	
MAT 468 - Partial Differential Equations	3
MAT 469 - Numerical Methods for Ordinary and Partial Differential Equations (OPDEs)	
DS Option Total MAT Credits in Major	52
AS Option Must Take:	Credits:
MAT 329 - Actuarial Mathematics	3
MAT 422 - Statistics for Data/Actuarial Science and Machine Learning	3
AS Option Pick One of	Credits:
MAT 468 - Partial Differential Equations	3
MAT 469 - Numerical Methods for Ordinary and Partial Differential Equations (OPDEs)	
MAT 470 - Applications of Machine Learning and Wavelets	
AS Option Total MAT Credits in Major	52
SC Option Must Take:	Credits:
MAT 468 - Partial Differential Equations	3
MAT 469 - Numerical Methods for Ordinary and Partial Differential Equations (OPDEs)	3
MAT 470 - Applications of Machine Learning and Wavelets	3
SC Option Total MAT Credits in Major	52
Part 5: Application Area (Option Area Specific Courses)	

<i>DS Option Must Take:</i>	Credits:
CS 172 - Intermediate Java Programming	3
CS 205 - Data Modeling and Database Design	4
CS 250 - Introduction to Data Structures, Algorithms and Complexity	3
CS 303 - Introduction to Data Science with Python	4
DS Option Total Application Area Credits	14
DS Option Total Credits excl Electives	106
<i>AS Option must take:</i>	Credits:
ACC 201 - Financial Accounting	3
ECO 211 - Principles of Macroeconomics (CT)	3
ECO 213 - Principles of Microeconomics (CT)	3
FIN 310 - Principles of Finance (QR)	3
AS Option Total Application Area Credits	12
AS Option Total Credits excl Electives	104
<i>SC Option Must Take: (Select one sequence of courses)</i>	Credits:
Sequence CHE (Lectures only): CHE 110 - General Chemistry I, CHE 111 - General Chemistry II , CHE 300 - Physical Chemistry I, CHE 301 - Physical Chemistry II	12
Sequence MTR: PHY 111 - General Physics II (Calculus), MTR 310 - Atmospheric Thermodynamics , MTR 311 - Atmospheric Dynamics, MTR 340 - Mesoscale Meteorology and Numerical Forecasting	13
SC Option Total Application Area Credits	12--13
SC Option Total Credits excl Electives	104-105
Part 6: Free Electives (14-16 SH)	Credits:
DS Option Total Free Elective Credits	14
AS Option Total Free Elective Credits	16
SC Option Total Free Elective Credits	15-16
Total Semester Hours	Credits:
DS Option	120
AS Option	120
SC Option	120