MATHEMATICAL DATA SCIENCES (BS)

Education, Democracy, and Social Change

Mathematical Data Sciences is an interdisciplinary mathematics program that emphasizes computer science, experimentation, and data collection. Mathematics provides students with methods and theory that live at the heart of problem solving and data analysis in the physical sciences, engineering, and innovative industries. Combining mathematics with computer science gives students the practical skills necessary to employ their theoretical mathematics knowledge and develop algorithms to address problems in the real world. Students in Mathematical Data Sciences will also complete 16 to 23 credits in an enrichment option of their choice. The enrichment option gives students experience in a particular field where mathematics and computer science can be applied, and the background to properly implement their skills.

Degree Requirements

Course	Title	Credits
Major Requireme	nts	
CS 2370	Introduction to Programming	4
CS 2381	Data Structures and Intermediate Programming	4
CS 3221	Algorithm Analysis	4
CS 3600	Database Management Systems	4
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
MA 2560	Calculus II (QRCO)	4
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 3355	Introduction to Mathematical Modeling (TECO)	4
MA 3540	Calculus III	4
MA 3600	Differential Equations with Linear Algebra	4
MA 4510	Introduction to Analysis	3
Complete one co	urse from the following:	3
MA 3280	Regression Analysis	
MA 3500	Probability and Statistics for Scientists	
Complete one co	urse from the following:	3-4
CS 4520	CyberEthics (DICO,WRCO)	
CJ 3157	Society, Ethics, and the Law (DICO)	
General Educatio education/)	n (https://coursecatalog.plymouth.edu/general-	27-36
Option Requirem	ents	30-41
Complete one of	the following required options:	
Biology		
Chemistry		
Criminal Justic	ce	
Physical Meter	orology	
Psychology		
Weather Analy	sis	
Total Credits		120

Biology Option of BS in Mathematical Data Sciences

Through the Mathematical Data Sciences major with the Biology option, students learn fundamental biology and chemistry, and then focus on genetics and conservation. This degree prepares students for a career or graduate study in computational bioinformatics, genomics, neurobiology, and other interdisciplinary biology and mathematics fields.

Course	Title	Credits
Option Requirem	ents	
BI 1110	Biological Science I (TECO)	4
BI 1120	Biological Science II	4
BI 3060	Genetics	4
BI 3240	Conservation (DICO,GACO)	3
BI 4980	Biology Seminar	2
CH 2335	General Chemistry I (QRCO)	4
General Education education/)	n (https://coursecatalog.plymouth.edu/general-	
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https:// coursecatalog.ply general- education/#CTDI		3-4
PPDI (https:// coursecatalog.ply general- education/ #PPDI)	Past and Present Direction	3-4
SSDI (https:// coursecatalog.ply general- education/ #SSDI)	Self and Society Direction /mouth.edu/	3-4
	e from CTDI, PPDI, SSDI) (https:// /mouth.edu/general-education/) ¹	4-8
WECO (https:// coursecatalog.ply general- education/ #WECO)	Wellness Connection /mouth.edu/	3-4
Elective		14-17
Total Credits		59-70

¹ Directions should total 16 credits because SIDI is waived for BS Mathematical Data Sciences, Biology Option.

Chemistry Option of BS in Mathematical Data Sciences

Through the Mathematical Data Sciences major with the Chemistry option, students learn general chemistry and organic chemistry. Students then can choose to further study organic chemistry or to instead focus on instrumentation or quantum mechanics. This degree prepares students for a career or graduate study in analytical chemistry, forensics, and other interdisciplinary chemistry and mathematics fields.

Course	Title	Credits
Option Requirem	ents	
CH 1050	Laboratory Safety	1
CH 2335	General Chemistry I (QRCO)	4
CH 2255	Techniques in Laboratory	3
CH 2340	General Chemistry II	4
CH 3370	Organic Chemistry I	4
Choose one cours	se from the following:	4
CH 3550	Instrumental Analysis (TECO,WRCO)	
CH 3380	Organic Chemistry II	
CH 3465	Physical Chemistry: Quantum Mechanics and Spectroscopy	
General Educatio education/)	n (https://coursecatalog.plymouth.edu/general-	
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https:// coursecatalog.ply general- education/#CTDI		3-4
PPDI (https:// coursecatalog.ply general- education/ #PPDI)	Past and Present Direction ymouth.edu/	3-4
SSDI (https:// coursecatalog.ply general- education/ #SSDI)	Self and Society Direction y	3-4
	se from CTDI, PPDI, SSDI) (https:// ymouth.edu/general-education/) ¹	4-8
GACO (https:// coursecatalog.ply general- education/ #GACO)	Global Awareness Connection	3-4
WECO (https:// coursecatalog.ply general- education/ #WECO)	Wellness Connection ymouth.edu/	3-4
Elective		15-18
Total Credits		62-74

¹ Directions should total 16 credits because SIDI is waived for BS Mathematical Data Sciences, Chemistry Option.

Criminal Justice Option of BS in Mathematical Data Sciences

Criminal Justice is an inherently interdisciplinary field, and the Mathematical Data Sciences major with the Criminal Justice option prepares students for the analytical aspect of Criminal Justice. Students have a choice of electives that prepare them for a career in law, government agencies, and private industries. Future career possibilities include criminologist, criminal intelligence analyst, forensic scientist, and criminal investigator.

Course	Title	Credits
Option Requirement	ents	
CJ 3025	Forensic Science	4
CJ 2090	Criminal Law	4
Choose two cours	ses from the following:	12
CJ 2025	Police and society	
CJ 2080	Crime and Criminals	
CJ 3005	Criminal Investigation	
CJ 3015	Cybercrime	
CJ 3405	Homeland Security	
General Education education/)	n (https://coursecatalog.plymouth.edu/general-	
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https:// coursecatalog.ply general- education/#CTDI)		3-4
PPDI (https:// coursecatalog.ply general- education/ #PPDI)	Past and Present Direction	3-4
SSDI (https:// coursecatalog.ply general- education/ #SSDI)	Self and Society Direction /mouth.edu/	3-4
	e from CTDI, PPDI, SSDI) (https:// /mouth.edu/general-education/) ¹	4-8
GACO (https:// coursecatalog.ply general- education/ #GACO)		3-4
WECO (https:// coursecatalog.ply general- education/ #WECO)	Wellness Connection /I	3-4
Elective		14-17
Total Credits		61-73

¹ Directions should total 16 credits because SIDI is waived for BS Mathematical Data Sciences, Criminal Justice Option.

Physical Meteorology Option of BS in Mathematical Data Sciences

Meteorology is an inherently interdisciplinary field. Through the Mathematical Data Sciences major with the Physical Meteorology option, students learn fundamental physics and atmospheric science. Students choose an elective that focuses on the physics of either

atmospheric motions or precipitation and solar radiation. This degree

prepares students for a career or graduate study in meteorology, physical meteorology, and applied mathematics.

Course	Title	Credits
Option Requirem	ents	
PH 2510	University Physics I	4
PH 2520	University Physics II	4
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
MT 3230	Atmospheric Thermodynamics	3
Choose one cours	se from the following:	3
MT 4310	Dynamic Meteorology I	
MT 4410	Atmospheric Physics	
General Educatio education/)	n (https://coursecatalog.plymouth.edu/general-	
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https:// coursecatalog.ply general- education/#CTDI		3-4
PPDI (https:// coursecatalog.ply general- education/ #PPDI)	Past and Present Direction /mouth.edu/	3-4
SSDI (https:// coursecatalog.ply general- education/ #SSDI)	Self and Society Direction	3-4
	e from CTDI, PPDI, SSDI) (https:// /mouth.edu/general-education/) ¹	4-8
	Wellness Connection	3-4
Elective		16-19
Total Credits		57-68

¹ Directions should total 16 credits because SIDI is waived for BS Mathematical Data Sciences, Physical Meteorology Option.

Psychology Option of BS in Mathematical Data Sciences

Through the Mathematical Data Sciences major with the Psychology option, students learn general, cognitive, and learning psychology, and then focus on psychological measurement. This degree prepares students for a career or graduate study in psychology, quantitative psychology, neuroscience, market research, and other interdisciplinary psychology and mathematics fields.

Course	Title	Credits
Option Require	nents	
PS 2015	Introduction to General Psychology	4

PS 3210	Learning	4
PS 3220	Cognitive Psychology	4
PS 4440		3
General Education education/)	h (https://coursecatalog.plymouth.edu/general-	
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https:// coursecatalog.ply general- education/#CTDI)		3-4
PPDI (https:// coursecatalog.ply general- education/ #PPDI)	Past and Present Direction	3-4
SSDI (https:// coursecatalog.ply general- education/ #SSDI)	Self and Society Direction mouth.edu/	3-4
•	e from CTDI, PPDI, SSDI) (https:// mouth.edu/general-education/) ¹	4-8
GACO (https:// coursecatalog.ply general- education/ #GACO)	Global Awareness Connection mouth.edu/	3-4
WECO (https:// coursecatalog.ply general- education/ #WECO)	Wellness Connection	3-4
Elective		16-18
Total Credits		58-69

¹ Directions should total 16 credits because SIDI is waived for BS Mathematical Data Sciences, Psychology Option.

Weather Analysis Option of BS in Mathematical Data Sciences

Meteorology is an inherently interdisciplinary field. Through the Mathematical Data Sciences major with the Weather Analysis option, students learn fundamental physics and atmospheric science. Students then have a choice of electives that focus on weather and instrumentation. This degree prepares students for a career or graduate study in meteorology, weather analysis, insurance analysis, and other fields in meteorology and applied mathematics.

Course	Title C	redits
Option Requireme	ents	
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
MT 2250	Introduction to Weather Analysis and Forecasting	g 4
MT 3230	Atmospheric Thermodynamics	3
PH 2510	University Physics I	4

MT 3725	Instruments and Observations in Meteorology	3
General Education education/)	n (https://coursecatalog.plymouth.edu/general-	
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
CTDI (https:// coursecatalog.ply general- education/#CTDI)		3-4
PPDI (https:// coursecatalog.ply general- education/ #PPDI)	Past and Present Direction mouth.edu/	3-4
SSDI (https:// coursecatalog.ply general- education/ #SSDI)	Self and Society Direction	3-4
· · · · · · · · · · · · · · · · · · ·	e from CTDI, PPDI, SSDI) (https:// /mouth.edu/general-education/) ¹	4-8
WECO (https:// coursecatalog.ply general- education/ #WECO)	Wellness Connection	3-4
Elective		15-22
Total Credits		56-71

¹ Directions should total 16 credits because SIDI is waived for BS Mathematical Data Sciences, Weather Analysis Option.

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

Required Options in this Major

Complete One Option

Biology Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for as an odd start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4

MA 2550	Calculus I (QRCO)	4
IS 1115	Tackling a Wicked Problem	4
EN 1400	Composition	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
WECO (https:// coursecatalog.plymo general-education/ #WECO)	Wellness Connection L	4
CTDI (https:// coursecatalog.plymo general-education/ #CTDI)	Creative Thought Direction uth.edu/	4
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
BI 1110	Biological Science I (TECO)	4
CH 2335	General Chemistry I (QRCO)	4
	Credits	16
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
BI 1120	Biological Science II	4
BI 4980	Biology Seminar	2
Year Three Fall	Credits	14
MA 3355	Introduction to Mathematical Modeling (TECO)	4
CS 3600	Database Management Systems	4
BI 3060	Genetics	4
	om CTDI, PPDI, SSDI) (https://	4
coursecatalog.plymo	uth.edu/general-education/)	
Spring	Credits	16
CS 3221	Algorithm Analysis	4
PPDI (https:// coursecatalog.plymo general-education/ #PPDI)	Past and Present Direction uth.edu/	4
Elective		8
Year Four Fall	Credits	16
MA 4510	Introduction to Analysis	3
BI 3240	Conservation (DICO,GACO)	3
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3-4

SSDI (https:// coursecatalog.plyr general-education #SSDI)		3-4
	Credits	12-14
Spring		
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
Elective		11
	Credits	14
	Total Credits	120

Biology Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for as an even start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
SSDI (https:// coursecatalog.plymor general-education/ #SSDI)	Self and Society Direction	3-4
CTDI (https:// coursecatalog.plymor general-education/ #CTDI)	Creative Thought Direction uth.edu/	3-4
CTDI (https:// coursecatalog.plymor general-education/ #CTDI)	Creative Thought Direction	4
	Credits	17-19
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
BI 1110	Biological Science I (TECO)	4
CH 2335	General Chemistry I (QRCO)	4
	Credits	16
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4

	Total Credits	120
	Credits	10
Electives		6
	from CTDI, PPDI, SSDI) (https:// nouth.edu/general-education/)	4
Spring		
	Credits	13-15
Elective		3-4
CAMS Ethics cours	e	3-4
BI 3240	Conservation (DICO,GACO)	3
Fall MA 3355	Introduction to Mathematical Modeling (TECO)	4
Year Four Fall		
	Credits	15
Elective		8
CS 3221	Algorithm Analysis	4
CAMS Math elective	e	3
Spring		
	Credits	16
	nouth.edu/general-education/)	4
	from CTDI, PPDI, SSDI) (https://	4
CS 3600 BI 3060	Database Management Systems Genetics	4
MA 3355	Introduction to Mathematical Modeling (TECO)	4
Year Three Fall		
	Credits	16
CH 2340	General Chemistry II	4
BI 1120	Biological Science II	4

Chemistry Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for an odd start year.

Course Year One	Title	Credits
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4

SSDI (https:// coursecatalog.plymo general-education/ #SSDI)	Self and Society Direction	4
CTDI (https:// coursecatalog.plymor general-education/ #CTDI)	Creative Thought Direction uth.edu/	4
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
PPDI (https://	Past and Present Direction	4
coursecatalog.plymo general-education/ #PPDI)	uth.edu/	
Directions (choose fro	om CTDI, PPDI, SSDI) (https://	4
coursecatalog.plymo	uth.edu/general-education/)	
	Credits	16
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
GACO (https://	Global Awareness Connection	4
coursecatalog.plymo	L	
general-education/ #GACO)		
WECO (https:// coursecatalog.plymor general-education/ #WECO)	Wellness Connection uth.edu/	4
	Credits	16
Year Three		
Fall		
MA 3355	Introduction to Mathematical Modeling (TECO)	4
CS 3600	Database Management Systems	4
CH 2335	General Chemistry I (QRCO)	4
CH 1050	Laboratory Safety	1
Elective		3
	Credits	16
Spring		
MA 3600	Differential Equations with Linear Algebra	4
CH 2340	General Chemistry II	4
CH 2255	Techniques in Laboratory	3
CS 3221	Algorithm Analysis	4
Elective		3
Year Four Fall	Credits	18
MA 4510	Introduction to Analysis	3
CH 3370	Organic Chemistry I	4
CS 4520	CyberEthics (DICO,WRCO)	3-4
or CJ 3157	or Society, Ethics, and the Law (DICO)	

Elective		3-4
	Credits	13-15
Spring		
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
CH 3550 or CH 3380 or CH 3465	Instrumental Analysis (TECO,WRCO) or Organic Chemistry II or Physical Chemistry: Quantum Mechanics and Spectroscopy	4
Elective		3-4
	Credits	10-11
	Total Credits	120

Chemistry Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for an even start year:

Course Year One Fall	Title	Credits
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
WECO (https:// coursecatalog.plymo general-education/ #WECO)	Wellness Connection L	4
CTDI (https:// coursecatalog.plymo general-education/ #CTDI)	Creative Thought Direction uth.edu/	4
	Credits	15
Year Two Fall		
MA 3600	Differential Equations with Linear Algebra	4
GACO (https:// coursecatalog.plymo general-education/ #GACO)	Global Awareness Connection ι	3-4
CH 2335	General Chemistry I (QRCO)	4
CH 1050	Laboratory Safety	1
Elective		3
Spring	Credits	15-16
MA 3540	Calculus III	4

	Total Credits	120
	Credits	13-16
CS 3221	Algorithm Analysis	4
Elective		9-12
Spring	Credits	14-16
Elective		3-4
CS 3600	Database Management Systems	4
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3-4
MA 3355	Introduction to Mathematical Modeling (TECO)	4
Fall		
Year Four	Credits	16
Elective	Que lite	1
	Programming	
or CH 3465 CS 2381	or Physical Chemistry: Quantum Mechanics and Spectroscopy Data Structures and Intermediate	4
CH 3550 or CH 3380	Instrumental Analysis (TECO,WRCO) or Organic Chemistry II	4
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
MA 3600	Differential Equations with Linear Algebra	4
Spring	Credits	15
SSDI (https:// coursecatalog.plymo general-education/ #SSDI)	Self and Society Direction	4
PPDI (https:// coursecatalog.plymo general-education/ #PPDI)		4
CS 2370	Introduction to Programming	4
Year Three Fall MA 4510	Introduction to Analysis	3
	Credits	16
Elective		1
CH 2255	Techniques in Laboratory	3
CH 2340	General Chemistry II	4
	om CTDI, PPDI, SSDI) (https:// outh.edu/general-education/)	4

Criminal Justice Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for an odd start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
WECO (https:// coursecatalog.plymo general-education/ #WECO)	Wellness Connection	4
CTDI (https://	Creative Thought Direction	4
coursecatalog.plymo general-education/ #CTDI)	uth.edu/	
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
PPDI (https://	Past and Present Direction	4
coursecatalog.plymo general-education/ #PPDI)		·
,	Credits	12
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
SSDI (https://	Self and Society Direction	4
coursecatalog.plymo general-education/ #SSDI)		
	om CTDI, PPDI, SSDI) (https:// uth.edu/general-education/)	4-8
	Credits	16-20
Year Three Fall		
MA 3355	Introduction to Mathematical Modeling	4
	(TECO)	
CS 3600	Database Management Systems	4
CJ 2090	Criminal Law	4
GACO (https:// coursecatalog.plymo general-education/ #GACO)	Global Awareness Connection uth.edu/	4
	Credits	16
Spring		
MA 3600	Differential Equations with Linear Algebra	4

	Total Credits	120
	Credits	12-13
Elective		5-6
or CJ 3015 or CJ 3025 or CJ 3405	or Cybercrime or Forensic Science or Homeland Security	
CJ 2080 or CJ 2025 or CJ 3005	Crime and Criminals or Police and society or Criminal Investigation	4
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
Spring	Credits	13-15
Elective	• !!:	3-4
or CJ 3015 or CJ 3025 or CJ 3405	or Cybercrime or Forensic Science or Homeland Security	2.4
CJ 2080 or CJ 2025 or CJ 3005	Crime and Criminals or Police and society or Criminal Investigation	4
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3-4
MA 4510	Introduction to Analysis	3
Year Four Fall		
	Credits	16
Elective		4
or CJ 3405 CS 3221	or Homeland Security Algorithm Analysis	4
or CJ 2025 or CJ 3005 or CJ 3015 or CJ 3025	or Police and society or Criminal Investigation or Cybercrime or Forensic Science	
CJ 2080	Crime and Criminals	4

Criminal Justice Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for an even start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4

CJ 2090 GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500 CJ 2080 or CJ 2025 or CJ 3005 or CJ 3015 or CJ 3025 or CJ 3405 Elective	Criminal Law Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists Crime and Criminals or Police and society or Criminal Investigation or Cybercrime or Forensic Science or Homeland Security Credits	4 15 4 3 4 6 17
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500 CJ 2080 or CJ 2025 or CJ 2025 or CJ 3005 or CJ 3015 or CJ 3025 or CJ 3405	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists Crime and Criminals or Police and society or Criminal Investigation or Cybercrime or Forensic Science	4 15 4 3 4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500 CJ 2080 or CJ 2025 or CJ 3005 or CJ 3015 or CJ 3025	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists Crime and Criminals or Police and society or Criminal Investigation or Cybercrime or Forensic Science	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500 CJ 2080 or CJ 2025 or CJ 3005	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists Crime and Criminals or Police and society or Criminal Investigation	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500 CJ 2080 or CJ 2025	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists Crime and Criminals or Police and society	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500 CJ 2080	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists Crime and Criminals	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280 or MA 3500	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for Scientists	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis or Probability and Statistics for	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600 MA 3280	Global Awareness Connection Credits Differential Equations with Linear Algebra Regression Analysis	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring MA 3600	Global Awareness Connection Credits Differential Equations with Linear Algebra	4
GACO (https:// coursecatalog.plymou general-education/ #GACO) Spring	Global Awareness Connection	4
GACO (https:// coursecatalog.plymou general-education/ #GACO)	Global Awareness Connection	4
GACO (https:// coursecatalog.plymou general-education/	Global Awareness Connection	4
GACO (https:// coursecatalog.plymou general-education/	Global Awareness Connection	
GACO (https://	Global Awareness Connection	
CJ 2090	Criminal Law	-
		4
CS 3600	Database Management Systems	4
MA 4510	Introduction to Analysis	3
Year Three Fall		
	Credits	16
coursecatalog.plymou	ith.edu/general-education/)	
	om CTDI, PPDI, SSDI) (https://	4
general-education/ #SSDI)		
coursecatalog.plymou		4
SSDI (https://	Programming Self and Society Direction	4
CS 2381	Data Structures and Intermediate	4
MA 3540	Calculus III	4
Spring		
0	Credits	16
coursecatalog.plymou	ith.edu/general-education/)	
•	om CTDI, PPDI, SSDI) (https://	4
coursecatalog.plymou general-education/ #PPDI)	ıth.edu/	
PPDI (https://	Past and Present Direction	4
CS 2370	Introduction to Programming	4
MA 3600	Differential Equations with Linear Algebra	4
Fall		
Year Two		
,	Credits	15
coursecatalog.plymou general-education/ #CTDI)	ith.edu/	
	Creative Thought Direction	4
CTDI (https://		
coursecatalog.plymou general-education/ #WECO) CTDI (https://		

Physical Meteorology Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for an odd start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
CTDI (https:// coursecatalog.plymo general-education/ #CTDI)	Creative Thought Direction L	4
PPDI (https:// coursecatalog.plymo general-education/ #PPDI)	Past and Present Direction uth.edu/	4
	Credits	15

MA 3600	Differential Equations with Linear Algebra	
CS 2370	Introduction to Programming	
PH 2510	University Physics I	
SSDI (https:// coursecatalog.plymou general-education/ #SSDI)	Self and Society Direction	
Spring	Credits	1
MA 3540	Calculus III	
CS 2381	Data Structures and Intermediate Programming	
PH 2520	University Physics II	
GACO (https:// coursecatalog.plymou general-education/ #GACO)	Global Awareness Connection uth.edu/	3-
	Credits	15-1
Year Three Fall		
MA 3355	Introduction to Mathematical Modeling (TECO)	
CS 3600	Database Management Systems	
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	
WECO (https:// coursecatalog.plymou general-education/ #WECO)	Wellness Connection	
	Credits	1
Spring		
CS 3221	Algorithm Analysis	
MT 3230	Atmospheric Thermodynamics	
MA 3600	Differential Equations with Linear Algebra	
Elective		
Year Four Fall	Credits	1
MA 4510	Introduction to Analysis	
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3
	Dynamic Meteorology I	
MT 4310 or MT 4410	or Atmospheric Physics	
MT 4310 or MT 4410 Elective	or Atmospheric Physics	4
or MT 4410	Credits	4 13-1

Elective		10
	Credits	16
	Total Credits	120

Physical Meteorology Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for an even start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
CTDI (https:// coursecatalog.plymou general-education/ #CTDI)	Creative Thought Direction	4
PPDI (https:// coursecatalog.plymou general-education/ #PPDI)	Past and Present Direction uth.edu/	4
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
PH 2510	University Physics I	4
SSDI (https:// coursecatalog.plymou general-education/ #SSDI)	Self and Society Direction	4
	Credits	16
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
PH 2520	University Physics II	4
GACO (https:// coursecatalog.plymou general-education/ #GACO)	Global Awareness Connection uth.edu/	3
Year Three Fall	Credits	15
MA 4510	Introduction to Analysis	3
CS 3600	Database Management Systems	4

MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
WECO (https:// coursecatalog.plymo general-education/ #WECO)	Wellness Connection ou	3
	Credits	13
Spring		
CS 3221	Algorithm Analysis	4
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
MT 3230	Atmospheric Thermodynamics	3
MA 3600	Differential Equations with Linear Algebra	4
Elective		3
Year Four Fall	Credits	17
MA 3355	Introduction to Mathematical Modeling (TECO)	4
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3-4
MT 4310 or MT 4410	Dynamic Meteorology I or Atmospheric Physics	3
Elective		0-2
Elective		3
	Credits	13-16
Spring		
	rom CTDI, PPDI, SSDI) (https:// outh.edu/general-education/)	3-4
Elective		12
	Credits	15-16
	Total Credits	120

Psychology Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for as an odd start year.

Course Year One	Title	Credits
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4

CTDI (https:// coursecatalog.plymou general-education/	Creative Thought Direction	4	Spring MA 3280 or MA 3500	Reg
#CTDI)				9
PPDI (https:// coursecatalog.plymou general-education/ #PPDI)	Past and Present Direction uth.edu/	4	WECO (https:// coursecatalog.plymo general-education/ #WECO)	We outh.e
	Credits	15	Elective	
Year Two				Cre
Fall				Tot
MA 3600	Differential Equations with Linear Algebra	4		
CS 2370	Introduction to Programming	4	Psychology Option o	of BS
SSDI (https:// coursecatalog.plymou general-education/ #SSDI)	Self and Society Direction uth.edu/	4	Check all course des schedule. Course ser Please use the follow	queno
,	om CTDI, PPDI, SSDI) (https://	3-4		ving a
	uth.edu/general-education/)		Course	Titl
	Credits	15-16	Year One	
Spring			Fall	
MA 3540	Calculus III	4	MA 2450	Ma
CS 2381	Data Structures and Intermediate	4	MA 2550	Cal
	Programming		EN 1400	Cor
PS 2015	Introduction to General Psychology	4	IS 1115	Tac
•	om CTDI, PPDI, SSDI) (https:// uth.edu/general-education/)	4	Spring	Cre
oodiocoddiog.prymot	Credits	16	MA 2700	Intr
Year Three				(WF
Fall			MA 2560	Cal
MA 3355	Introduction to Mathematical Modeling (TECO)	4	CTDI (https:// coursecatalog.plyme	Cre ol
CS 3600	Database Management Systems	4	general-education/	
PS 3210	Learning	4	#CTDI)	De
GACO (https:// coursecatalog.plymou general-education/ #GACO)	Global Awareness Connection	3-4	PPDI (https:// coursecatalog.plymo general-education/ #PPDI)	Pas outh.e
	Credits	15-16		Cre
Spring			Year Two	
MA 3600	Differential Equations with Linear Algebra	4	Fall	D.(
PS 3220	Cognitive Psychology	4	MA 3600 CS 2370	Diff
CS 3221	Algorithm Analysis	4	Directions (choose f	Intr
Elective		4	coursecatalog.plym	
	Credits	16	SSDI (https://	Sel
Year Four Fall			coursecatalog.plym general-education/	οι
MA 4510	Introduction to Analysis	3	#SSDI)	
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3-4	Spring	Cre
PS 4440		3	MA 3540	Cal
Elective	Credits	4-6 13-16	CS 2381	Dat Pro
			PS 2015	Intr

Spring		
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
NECO (https:// coursecatalog.plymo general-education/ #WECO)	Wellness Connection outh.edu/	3
Elective		7-8
	Credits	13-14
	Credits Total Credits	13-14 120
Psychology Option of		
Check all course desc	Total Credits	120
Check all course desc chedule. Course seq	Total Credits f BS in Mathematical Data Sciences criptions for prerequisites before planning	120

Year One Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
FN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring	oreans	10
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
CTDI (https:// coursecatalog.plymo general-education/ #CTDI)	Creative Thought Direction L	4
PPDI (https:// coursecatalog.plymo general-education/ #PPDI)	Past and Present Direction uth.edu/	4
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
•	om CTDI, PPDI, SSDI) (https:// uth.edu/general-education/)	4
SSDI (https:// coursecatalog.plymo general-education/ #SSDI)	Self and Society Direction L	4
	Credits	16
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
CS 2381 PS 2015		4

	Total Credits	120
	Credits	13
Elective		9
Spring MA 3600	Differential Equations with Linear Algebra	4
	Credits	14-16
Elective		4-6
PS 4440		3
or CJ 3157	or Society, Ethics, and the Law (DICO)	J
	Introduction to Mathematical Modeling (TECO) CyberEthics (DICO,WRCO)	4
Year Four Fall	Credits	15
coursecatalog.plymou general-education/ #WECO)		4
PS 3220	Cognitive Psychology	4
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
CS 3221	Algorithm Analysis	4
Spring	Credits	15
coursecatalog.plymou general-education/ #GACO)		4
PS 3210	Learning	4
CS 3600	Database Management Systems	4
Fall	Introduction to Analysis	3
Year Three	Credits	16

Weather Analysis Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for as an odd start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16

Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
CTDI (https:// coursecatalog.plymou general-education/ #CTDI)	Creative Thought Direction	4
PPDI (https:// coursecatalog.plymou general-education/ #PPDI)	Past and Present Direction uth.edu/	4
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
PH 2510	University Physics I	4
SSDI (https:// coursecatalog.plymou general-education/ #SSDI)	Self and Society Direction	4
	Credits	16
Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
	om CTDI, PPDI, SSDI) (https://	3-4
	uth.edu/general-education/)	
GACO (https:// coursecatalog.plymou general-education/ #GACO)	Global Awareness Connection uth.edu/	3-4
	Credits	14-16
Year Three		
Fall		
MA 3355	Introduction to Mathematical Modeling (TECO)	4
CS 3600	Database Management Systems	4
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
MT 2250	Introduction to Weather Analysis and Forecasting	4
Elective		3
	Credits	18
Spring MA 3600	Differential Equations with Linear Algebra	4
MT 3230	Atmospheric Thermodynamics	3
CS 3221	Algorithm Analysis	4
WECO (https:// coursecatalog.plymou general-education/ #WECO)	Wellness Connection	3-4
Elective		3
	Credits	17-18

Year Four		
Fall		
MA 4510	Introduction to Analysis	3
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3
MT 3725	Instruments and Observations in Meteorology	3
Elective		3-4
	Credits	12-13
Spring		
MA 3280 or MA 3500	Regression Analysis	3
01 MA 3500	or Probability and Statistics for Scientists	
Elective		8
		8

Weather Analysis Option of BS in Mathematical Data Sciences

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

Please use the following sequence for as an even start year.

Course	Title	Credits
Year One		
Fall		
MA 2450	Mathematical Reasoning	4
MA 2550	Calculus I (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
	Credits	16
Spring		
MA 2700	Introduction to Mathematical Proof Writing (WRCO)	3
MA 2560	Calculus II (QRCO)	4
CTDI (https:// coursecatalog.plymor general-education/ #CTDI)	Creative Thought Direction	4
PPDI (https:// coursecatalog.plymor general-education/ #PPDI)	Past and Present Direction uth.edu/	4
	Credits	15
Year Two		
Fall		
MA 3600	Differential Equations with Linear Algebra	4
CS 2370	Introduction to Programming	4
PH 2510	University Physics I	4
SSDI (https:// coursecatalog.plymor general-education/ #SSDI)	Self and Society Direction	4
	Credits	16

Spring		
MA 3540	Calculus III	4
CS 2381	Data Structures and Intermediate Programming	4
Directions (choose fro	om CTDI, PPDI, SSDI) (https://	3-4
	uth.edu/general-education/)	
GACO (https:// coursecatalog.plymor general-education/	Global Awareness Connection uth.edu/	3-4
#GACO)		
	Credits	14-16
Year Three		
Fall		
MA 4510	Introduction to Analysis	3
CS 3600	Database Management Systems	4
MT 2000	Fundamentals of Meteorology and Climatology (GACO)	3
MT 2250	Introduction to Weather Analysis and Forecasting	4
Elective	lorcouoting	3
	Credits	17
Spring		
MA 3600	Differential Equations with Linear Algebra	4
MT 3230	Atmospheric Thermodynamics	3
MA 3280 or MA 3500	Regression Analysis or Probability and Statistics for Scientists	3
WECO (https://	Wellness Connection	3-4
coursecatalog.plymo		
general-education/ #WECO)		
Elective		3
	Credits	16-17
Year Four Fall		
MA 3355	Introduction to Mathematical Modeling (TECO)	4
CS 4520 or CJ 3157	CyberEthics (DICO,WRCO) or Society, Ethics, and the Law (DICO)	3-4
MT 3725	Instruments and Observations in Meteorology	3
Elective		3-4
	Credits	13-15
Spring		
CS 3221	Algorithm Analysis	4
Elective	o	8
	Credits	12
	Total Credits	120

Learning Outcomes

- · An ability to apply acquired knowledge, appropriate to the discipline, to solve problems.
- An ability to function effectively on teams to accomplish a common goal.

- An understanding of professional, ethical, legal, security, and social issues and responsibilities.
- · An ability to communicate effectively with a wide range of audiences.
- An ability to apply current theory, practice, and skills in the design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices.

Career Pathways

A major in mathematical data sciences is a good preparation for a variety of careers based in the utilization of data. Plymouth State's mathematical data sciences program provides student with sufficient background in mathematical theory, computer skills, and an applied discipline to be able work with the vast quantities of data in the modern business world. Students are prepared for and various types of industry positions, or to pursue graduate work or research.

Sample Jobs include, but are not limited to: Mathematical Scientist, Actuary, Game Designer, Supply Chain Analyst, Retirement Plan Designer, Numerical Analyst, Financial Planner, Data Base Manager, Cryptologist, Forensic Analyst, Computer Research Scientist, Physician, Information Scientist, Bioinformatician, Quality Control Analyst, Economist, Information Systems Analyst, Robotics Engineer, Cost Estimator, Epidemiologist, Software Engineer, Risk Analyst, Claims Specialist, Controller, Quantitative Pharmacologist, Forecast Analyst, Environmental Scientist, Data Engineer, Auditor, Budget Analyst, Systems Modeler, Methods Developer, Scientific Consultant, Underwriter, Geomagnetic Engineer, Forest/Fisheries Scientist, Mathematical Biologist, Modeler

See the U.S. Department of Labor Outlook for a complete list.

Useful Skills for Jobs in the Mathematics Fields:

- · Accuracy and attention to detail
- · Strong mathematical and computer skills
- · Proficiency in analytical reasoning
- · Facility with data and large quantities of information
- · Strong organization and communication skills