4+1 MATHEMATICS BS/ DATA ANALYTICS MS

Curriculum

Undergraduate Requirements - Mathematics (BS)

MATHEMATICS MAJOR

Code	Title	Credits
MAT 111	Calculus I	4
MAT 112	Calculus II	4
MAT 211	Calculus III [1]	4
MAT 219	Linear Algebra [1]	4
MAT 222	Differential Equations	3
or DAT 211	Advanced Statistics with R	
MAT 230	Logic, Set Theory, and Proofs	4
MAT 311	Abstract Algebra	4
MAT 321	Real Analysis	4
MAT 380	Mathematics Seminar	1
MAT 381	Mathematics Seminar	1
MAT 480	Mathematics Seminar	1
Select one of the following:		3
MAT 312	Topics in Algebra	
MAT 352	Probability & Statistics II	
MAT 421	Complex Analysis	
CSC 111 & 111L	Introduction to Programming and Introduction to Programming Laboratory [1]	4
Choose one of the following:		3-4
PHY 223 & 223L	General Physics for Physical Science Majors I and General Physics for Physical Science Majors I Laboratory	
Any one Economics (ECO) class		
Electives: Any four additional 300 or 400-level mathematics courses [2]		12-16
Total Credits		**56-61**

[1] For students enrolled in the Mathematic BS/Data Analytics 4+1 Program:
- Taking MAT 211 and MAT 219 automatically waives MAT 500
- CSC 111 & CSC 111L waives CSC 511 & CSC 511L

[2] For those with concentration in another area (double majors or MAT major with a minor in another area), up to two courses may be waived from the four-elective requirement.

Graduate Requirements - Data Analytics(MS)

Code	Title	Credits
Foundation Courses (can be waived at the program director's discretion)		
BAN 609	Business Analytics & Forecasting	3
CSC 511 & 511L	Introduction to Programming and Introduction to Programming Lab	3
CSC 512 & 512L	Data Structures and Algorithms and Data Structures and Algorithms Lab	3
Summer		
MAT 500	Topics in Applied Mathematics [1]	4
DAT 500	Interactive Graphical Case Studies in Big Data	1
Elective (Domain specific) [1]		3
Fall		
DAT 511	Data Stewardship: Preparation, Exploration and Handling of Big Data	3
CSC 610 & 610L	Database Management and Database Management Lab	3
or ISB 340	Database Management Systems	
or ISB 610	Database Management Systems	
DAT 521	Applied Integrative Projects in Data Analytics I	3
Elective (Domain Specific) [1]		3
Spring		
DAT 512	Statistical Approaches to Big Data	3
DAT 514	Data Mining and Machine Learning	3
DAT 515	Visualization and Presentation of Advanced Analytics	3
DAT 522	Applied Integrative Projects in Data Analytics II	3
Total Credits		**41**

[1] Up to 10 credits of coursework (from those noted) may be waived by the program director based on a student's preparation and experience.

Domain Courses

Students will take at least two domain courses drawn from the courses below. Students may apply to the program director to take graduate level courses drawn from other domain areas, or more advanced courses for which they have adequate preparation.

Code	Title	Credits
Business and Finance Domain		
ACC 505	Financial Accounting	
ECO 503	Statistics for Managers with Excel	
FIN 608	Corporate Finance	
FIN 617	Portfolio Analysis	
FIN 619	Financial Modeling	
FIN 620	Investment Management	
FIN 623	Fixed Income Securities	
FIN 628	Derivative Securities	

Roadmap

Recommended Undergraduate Semester Schedule for Major Course

Freshman	
Fall	**Spring**
MAT 111	MAT 112
PHY 223 & 223L (or ECO Course)	CSC 111 & 111L [1]
Sophomore	
Fall	**Spring**
MAT 211 [2]	MAT 219 [2]
MAT 230	DAT 211
Junior	
Fall	**Spring**
MAT 321	MAT 380

MAT elective	MAT elecitvie
	MAT elective
Senior	
Fall	**Spring**
MAT 311	MAT 480
MAT 381	MAT restricted elective [3]
MAT elective	CSC 512 & 512L
DAT 511 or BAN 609	

1 CSC 111 and CSC 111L waive CSC 511 & CSC 511L
2 Taking MAT 211 and MAT 219 waives MAT 500
3 Select one of the following:
MAT 312 (odd year spring)
MAT 352 (even year fall)
MAT 421 (even year spring)