M.S. in Data Science

Degree Requirements

The curriculum consists of 15 credits of required coursework, with an additional 3 credits of track-specific required course and 12 credits of electives and/or thesis research.

The core courses provide the foundation of the Data Science principles and require an undergraduate degree in a technical field (a degree with at least four semesters of college-level Math) for preparation. Students with a non-technical undergraduate degree will be required to complete additional modules

Program Core		
CS 540	Database and Information Retrieval	3
DS 540	Data Mining	3
DS 544	Data Visualization	3
DS 615	Data Modeling	3
MA 506	Probability and Statistical Inference	3
Total Credits		**15**

Aerospace Engineering Track

Required Courses		
AE 514	Introduction to the Finite Element Method	3
AE 516	Computational Aeronautical Fluid Dynamics	3
AE 523	Linear Systems	3
Select one of the following		3
AE 5XX	Aerospace Engineering Elective	
EP 501	Numerical Methods for Engineers and Scientists	
MA 532	Numerical Linear Algebra for Engineers	
Total Credits		**12**

Aviation Business Track

Electives - Select 12 hours from the following:		12
ACC 517	Accounting for Decision Making	
BA 511	Operations Research	
BA 523	Advanced Aviation Economics	
BA 610	Airline Optimization and Simulation Systems	
BA 612	Data Analytics for Aviation Business	
BA 645	Airport Operations and Management	
FIN 518	Managerial Finance	
FIN 621	International Aviation Finance	
FIN 623	Aircraft Funding Legal and Financial Analysis	
Total Credits		**12**

Aviation Safety Track

Electives - Select 12 hours from the following:		12
MSA 516	Applications in Crew Resource Management	
MSA 545	Human Factors in the Aviation/Aerospace Industry	
MSA 611	Aviation/Aerospace System Safety	
MSA 621	Aviation/Aerospace Safety Program Management	
MSA 628	Data Analytics for Aviation Safety	
Total Credits		**12**

Cybersecurity Track

Electives - Select 12 hours from the following:		12
CS 525	Current Topics in Cybersecurity	
CS 527	System Exploitation and Penetration Testing	
CS 528	Multi-Agent Systems	
CS 529	Computer Security	
CS 532	Software Security Assessment	
CS 538	Applied Cryptography	
CS 602	Big Data Analytics for Cybersecurity	
DS 625	Data Compression for Image and Signal Processing	
Total Credits		**12**

High Performance Computing & Big Data Track

Electives- Select 12 hours from the following:		12
DS 625	Data Compression for Image and Signal Processing	
MA 510	Fundamentals of Optimization	
MA 553	High Performance Scientific Computing	
MA 605	Statistical Quality Analysis	
MA 630	Complex Networks and Applications	
Total Credits		**12**

Homeland Security Track

Electives - Select 12 hours from the following:		12
HS 602	Data Analytics for Counterterrorism	
MHSR 500	Introduction to Human Security	
MHSR 511	The Internet, Security, and Governance	
MHSR 515	International Law and U.S. Security Policy	
MHSR 520	Principles of International Conflict Resolution	
MHSR 530	Environmental Security	
MHSR 540	Foundations of Resilience	
Total Credits		**12**

Human Factors Track

Electives - Select 12 hours from the following:		12
HFS 515	Ergonomics	
HFS 600	Human Factors in Systems	
HFS 615	Sensation and Perception	
HFS 620	Memory and Cognition	
HFS 624	User Experience	
HFS 635	Human-Computer Interaction	
Total Credits		**12**

Capstone Project or Thesis		3
MA 680	Data Science Capstone Project	
or CEDS 696 Co-Op Education Data Science		
Track specific elective (Thesis) [*]		
Total Credits		**3**

Total Degree Credits		**30**

[*] MA 700 Thesis (registration of 6 hours, with the other 3 hours replacing one elective from chosen track)

Suggested Plan of Study

Year One

		Credits
MA 506	Probability and Statistical Inference	3
CS 540	Database and Information Retrieval	3
DS 540	Data Mining	3
DS 544	Data Visualization	3
	Specified Electives	6
	Credits Subtotal	**18.0**
Year Two		
DS 615	Data Modeling	3
MA 680	Data Science Capstone Project	3
	Specified Electives	6
	Credits Subtotal	**12.0**
	Credits Total:	**30.0**