Bachelor of Science in Data Science

Selected Educational Outcomes

1. Collect, clean, and preprocess data from various sources for accurate analysis.

2. Apply key mathematical concepts such as linear algebra, calculus, and probability theory to solve data science problems.

3. Develop proficiency in using programming languages appropriate to the ever-changing field of data science to manipulate and analyze data.

4. Design, build, train, and evaluate predictive models using fundamental machine learning algorithms and techniques.

5. Demonstrate skills in designing, querying, and managing databases to support data-driven decision-making.

6. Analyze ethical considerations and legal issues related to data collection, analysis, and sharing, ensuring adherence to data privacy regulations.

7. Communicate complex technical information and data insights to non-technical stakeholders effectively through written and oral presentations.

8. Complete a capstone project that involves real-world data analysis, demonstrating practical skills and knowledge in data science.

Requirements for the Bachelor of Science Degree with a Major in Data Science

Code	Title	Hours
Core Curriculum		**60**
Core IMPACTS (see VSU Core Curriculum)		42
Core Field of Study		18
ACED 1100	Introduction to Business	3
or BUSA 1105	Introduction to Business	
DATA 2600	Foundations of Data Science	3
MATH 2261	Analytic Geometry and Calculus I	1
or MATH 1261	Survey of Calculus I	
MATH 2262	Analytic Geometry and Calculus II	4
or MATH 1262		
CS 1301	Principles of Programming I	4
MATH 2900	Mathematics Sophomore Seminar – Discrete Mathematics	2
Senior College Curriculum		**60**
MATH 3600	Probability and Statistics	3
DATA 3700	Statistical Computing	3
DATA 3801	Programming for Data Science I	3
DATA 3502	Data Architecture	3
DATA 3505	Data Architecture	3
DATA 3508	Data-Driven Decision Making	3
DATA 3355	Data Mining	3
DATA 4610	Statistical Machine Learning I	3
DATA 4905	Topics in Data Science	3
Supporting Courses		**9**
MATH 2150	Introduction to Linear Algebra	3
Choose from among the following concentrations:		
Computational Science Engineering		**19**
CS 1302	Principles of Programming II	
CS 3300	UNIX Programming	
ENGT 3530	Introduction to Manufacturing Systems	
ENGT 4110	Industrial Automation	
Select two:		
CS 3101	Computer Organization	
CS 3410	Data Structures	
CS 4731	Introduction to Big Data and Machine Learning	

CS 4820	Artificial Intelligence	
ENGT 3130	Industrial Cost Control	
ENGT 4120	Project Management	
DATA 4990	Special Topics in Data Science	
Supply Chain and Logistics		**18**
ENGT 3100		
ENGT 3140	Simulation Modeling of Industrial Systems	
ENGT 3150	Supply Chain and Logistics Concepts	
DATA 4901	Operations Research	
or MATH 4901	Operations Research I	
Select two:		6
ENGT 3130	Industrial Cost Control	
ENGT 4110	Industrial Automation	
ENGT 4120	Project Management	
DATA 3701	Time Series Forecasting Techniques	
DATA 4990	Special Topics in Data Science	
Business Analytics		**18**
DATA 4901	Operations Research	
or MATH 4901	Operations Research I	
DATA 3701	Time Series Forecasting Techniques	
ENGT 4120	Project Management	
ACCT 2101	Principles of Accounting I	
Select two:		6
ACCT 3000	Data Analytics in Accounting	
BUSA 3450	Management Information Systems	
DATA 4750		
DATA 4990	Special Topics in Data Science	
General Electives		**8-9**
Total hours required for the Degree		120

[1] One (1) hour of MATH 2261 spilled from STEM Area