GRAND VIEW UNIVERSITY

Data Science

Degree Awarded: Bachelor of Arts
Requirements for the Major: 54-57 credits

The major in Data Science is designed to prepare students to utilize skills and practices of data science, preparing them for many careers, connecting to a wide variety of areas of study. The major emphasizes the statistical/probabilistic and algorithmic methods that underlie the acquisition, preparation, analysis, and communication of complex data. With its focus on technical foundations, within a liberal arts context, the data science program also promotes skills useful for creating and implementing new or special-purpose analysis and visualization tools. Students will be able to contribute to the application of and growth of data science in ethical ways.

Students will learn to think critically about the process of understanding data and will develop an in-depth understanding of the key technologies in data science and analytics: data mining, machine learning, visualization techniques, predictive modeling, and statistics. The major also promotes a fundamental understanding of how to best handle uncertainty when making data-driven decisions.

A capstone and internship experience will put the skills and knowledge learned into action.

Prerequisite courses for the major: Placement in MATH 231, Calculus with Analytic Geometry I, 5 credits.

Required courses for the major:

				Essential Competencies-Outcome Skills **Transfer courses do not receive outcome skills**					
				IL	**W**	**O**	**Q**	**IC**	**V**
	DATA 101	Introduction to Data Analytics	3	x					x
	DATA 321	Data Visualization	3		x				
	MATH 231	Calculus with Analytic Geometry I	5				x		
	MATH 232	Calculus with Analytic Geometry II	5						
	MATH 331	Linear Algebra	3						
	STAT 261	Applied Statistics	3				x	x	
	STAT 341	Applied Regression Analysis and Modeling	3			x			
	CPSC 241	Computer Science I	3						
	CPSC 242	Computer Science II	3	x					
	CPSC 260	Programming for Data Wrangling and Data Mining	3						
	CPSC 310	High Performance Computing for Big Data and AI	3						
	CPSC 421	Databases	3		x	x			
	CPSC 441	Machine Learning	3						
	CPSC 399	Internship	1-3						x
	CPSC 453 or MATH 450	Senior Capstone Seminar or Senior Seminar	3 or 3	x x	x x	x x	 x		 x

Take two courses from the following:

				IL	**W**	**O**	**Q**	**IC**	**V**
	STAT 361	Introduction to Probability Theory	4						
	STAT 430	Topics in Statistics	3						
	STAT 441	Design and Analysis of Experiments	3						
	STAT 461	Spatiotemporal Data Analysis	3						
	STAT 465	Bayesian Analysis	3						

All courses in the above categories will be counted in computing the 2.2 GPA required for this major.