

DATA SCIENCE

Department Website: Data Science (<https://www.gonzaga.edu/school-of-engineering-applied-science/degrees-and-programs/computer-science/bs-data-science/>)

The Bachelor of Science in Data Science (BSDS) is an interdisciplinary degree for students interested in knowledge and skills applicable to all aspects of the data science lifecycle: data collection and preprocessing, data visualization, data analysis, statistical inference, machine learning and AI, app/model deployment, and data storytelling/communication. The degree is primarily comprised of coursework in Computer Science and Mathematics; however, Data Science typically applies programming and statistics to a domain such as business or healthcare. Consequently, Data Science students take courses from other disciplines for their research method elective (from the Sociology, Psychology, or Communication Studies departments) and for their 2-course sequence application area (choosing from Marketing, Economics, Criminology, Environmental Studies, Finance, or Integrated Media/Public Relations). Furthermore, students in the Bachelor of Science in Data Science program participate in an intensive capstone experience their senior year, researching and building a large, semester-long data intensive project.

Data Science (BS) Major Program Requirements

Code	Title	Hours
Lower Division		
CPSC 121	Computer Science I	3
CPSC 122	Computer Science II	3
CPSC 222	Introduction to Data Science	3
CPSC 223	Algorithm and Abstract Data Structures	3
CPSC 224	Software Development	3
MATH 157	Calculus and Analytic Geometry I	4
MATH 231	Discrete Structures	3
MATH 258	Calculus and Analytic Geometry II	4
Select one of the following Research Methods courses:		3
COMM 285	Analyzing Practices and Habits	
PSYC 206	Scientific Principles of Psychology	
SOCI 204	Research Methods	
Upper Division		
CPSC 321	Database Management Systems	3
CPSC 322	Data Science Algorithms	3
CPSC 332	Web Development	3
or CPSC 334	Linux and DevOps	
CPSC 334	Linux and DevOps	3
CPSC 323	Machine Learning and Intelligent Systems	3
CPSC 450	Design and Analysis of Computer Algorithms	3
CPSC 475	Speech and Natural Language Processing	3
CPSC 481	Data Analytics and Communication	3
CPSC 482	Data Intensive Systems	3
CPSC 432	CIS:	3
CPSC 483	Data Science Capstone	3
MATH 321	Statistics for Experimentalist	3
Select one of the following:		3-4

MATH 335	Applied Linear Algebra	
MATH 339	Linear Algebra	
Select one of the following:		3-4
MATH 259	Calculus and Analytic Geometry III	
MATH 328	Operations Research	
MATH 425	Applied Statistical Models	
MATH 426	Experimental Design	
ECON 355	Regression Analysis	
Select one of the following six course pairs:		6
MKTG 310 & MKTG 410	Principles of Marketing and Digital Marketing	
ECON 201 & ECON 202	Microeconomics and Macroeconomics	
CRIM 101 & CRIM 312	Crime, Social Control, and Justice and Criminological Theories	
ENVS 101 & ENVS 320	Introduction to Environmental Studies and Econ of Environmental Protectn	
BFIN 320 & BFIN 322	Principles of Finance and Intermediate Finance	
INMD 101 & PRLS 260	Media Literacy and Public Relations Principles	
Total Hours		77-79

Data Science Minor Program Requirements

Code	Title	Hours
CPSC 121	Computer Science I	3
CPSC 222	Introduction to Data Science	3
CPSC 321	Database Management Systems	3
CPSC 322	Data Science Algorithms	3
Select one of the following:		3
MATH 121	Introductory Statistics	
MATH 221	Applied Statistics	
MATH 321	Statistics for Experimentalist	
Select one of the following:		3
CPSC 323	Machine Learning and Intelligent Systems	
CPSC 475	Speech and Natural Language Processing	
CPSC 481	Data Analytics and Communication	
CPSC 482	Data Intensive Systems	
CPSC 483	Data Science Capstone	
Total Hours		18