

Bachelor of Science in Data Science
Program Goals and Student Learning Outcomes

Goal 1: Provide students with knowledge and skills in both computer science and statistical modeling for data-intensive problem solving and scientific discovery

Student Outcomes:

Students will be able to:

- 1.1. Use concepts and methods of mathematical disciplines relevant to data analytics and statistical modeling
- 1.2. Utilize statistical concepts of data analysis, data collection, modeling, and inference
- 1.3. Employ algorithmic problem-solving skills to the problem at hand, including defining clear requirements to a problem, decomposing the problem, using efficient strategies to arrive at an algorithmic solution, and implementing solutions through programming in a suitable high-level language

Goal 2: Equip students with software engineering and machine learning skills to design and implement efficient, data-driven solutions to real world problems

Student Outcomes:

Students will be able to:

- 2.1. Visualize, curate, and prepare data for use with a variety of statistical methods and models and recognize how the quality of the data and the means of data collection may affect conclusions
- 2.2. Use and adapt statistical software packages and scalable computing infrastructure to formulate problems, identify and gather relevant existing data, and analyze the data to provide insights
- 2.3. Utilize contemporary computing technologies, such as machine learning, AI, parallel and distributed computing, to solve practical problems characterized by large-scale data

Goal 3: Train students for careers and advanced studies in a wide range of applied computer science, engineering, business, and biotechnology disciplines

Student Learning Outcomes:

Students will be able to:

- 3.1 Apply modern data science methods to one or more domains of application (e.g. business analytics, finance, biotechnology, and public health)
- 3.2 Pursue graduate studies or gain employment that requires expertise in data science and analytical reasoning
- 3.3 Demonstrate professional and ethical responsibility in areas such as citation and data ownership, security and sensitivity of data, consequences and privacy concerns of data analysis, and the professionalism of transparency and reproducibility

Goal 4: Develop articulate, conscientious leaders and problem solvers who are committed to contributing to their fields and society.

Student Learning Outcomes:

Students will be able to

- 4.1 Produce and deliver written and oral presentations, and communicate with specialists and non-specialists using appropriate media and technology.
- 4.2 Think critically and creatively, conceptualizing real-world problems from different perspectives.
- 4.3 Work productively in diverse teams and solve problems collaboratively.

Goal 5: Provide students with a broad foundation of knowledge and skills and cultivate a commitment to life-long learning.

Student Learning Outcomes:

Students will be able to

- 5.1 Use common software and information technology to pursue inquiry relevant to their academic and professional fields, and personal interests.
- 5.2 Weigh evidence and arguments, and appreciate and engage in diverse modes of inquiry characteristic of historical, cultural, political, economic, and quantitative disciplines.
- 5.3 Properly document and synthesize existing scholarship and data, keep current with developments, conduct independent research, and discover and learn new material on their own.