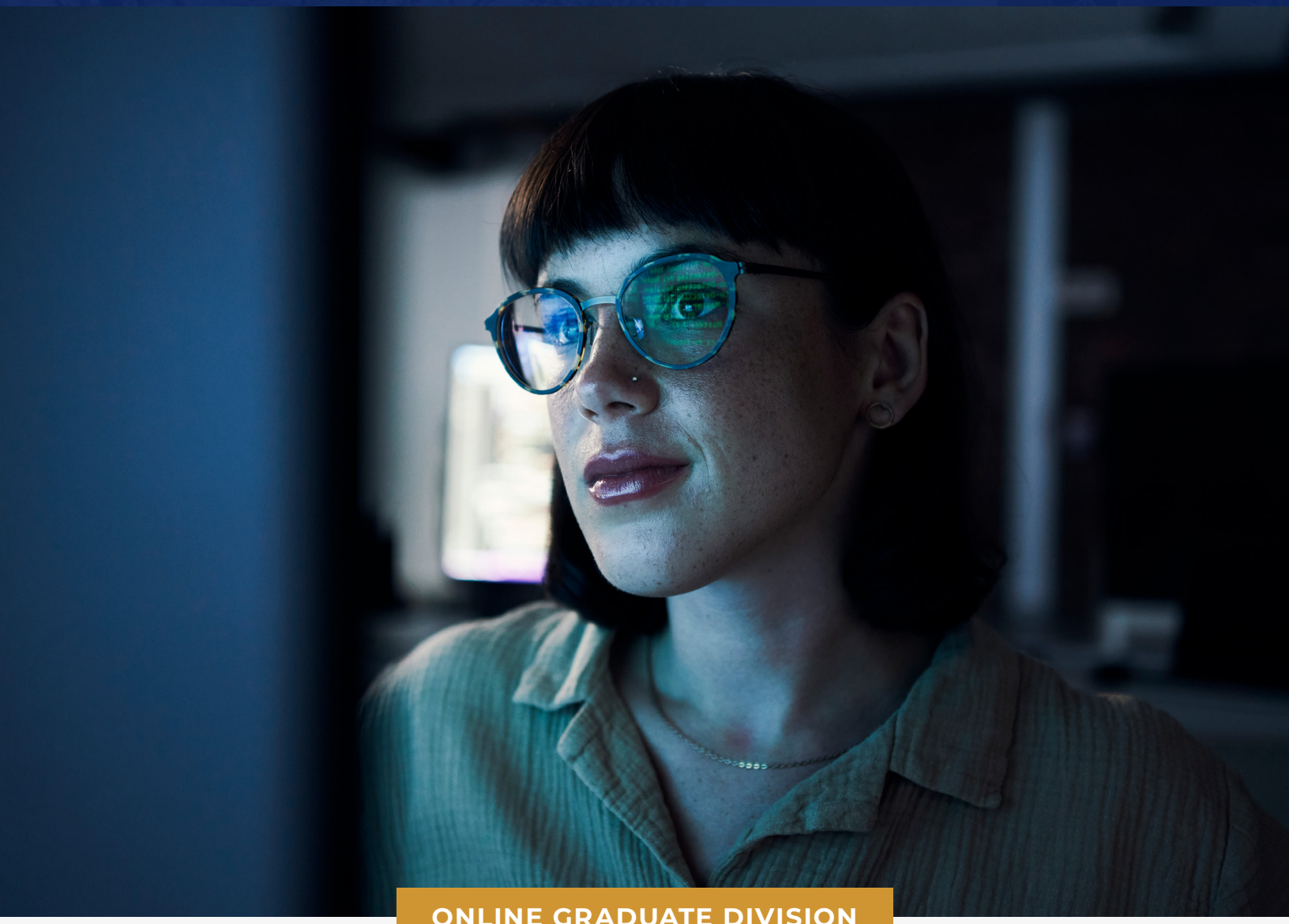
EASTERN
CONNECTICUT STATE UNIVERSITY



ONLINE GRADUATE DIVISION

MASTER OF SCIENCE IN
APPLIED DATA SCIENCE

Data collection and interpretation plays an essential role in how our world is evolving. The emergence of massive datasets from diverse areas such as telecommunications, large-scale retailing, sports, healthcare, climate science, and social media are helping to improve the way companies do business and their potential to make an impact in lives around the world.

Program Overview

The online Master of Science in Applied Data Science program from Eastern Connecticut State University (Eastern) is designed to prepare students for careers that are using data to create better services, products, and processes for the future.

This is done through a curriculum focused on practical and transferable skills that can be used in a range of roles and professions. You can not only enhance your knowledge of these tools, but learn to leverage them to acquire, process, analyze, visualize, and communicate meaningful data for leading new strategic initiatives.

Who Should Apply?

Developing your skills in the online Master of Science in Applied Data Science program can help you prepare to excel in your current role or seek new professional opportunities in this rapidly growing field. Potential areas where you can apply your graduate studies include business, finance, healthcare, sports, entertainment, education, and a range of sciences – from climate science to political science, and more.

$750 per credit hour

Finish in as few as 18 months

Flexible application deadlines

30 credits to complete

35% Projected Job Growth

The demand for data scientists is projected to grow 35% between 2022 and 2032, according to the U.S. Bureau of Labor Statistics (BLS) - which is much faster than the average for all occupations. The BLS also reports a median salary of $108,020 per year for those in this role.*

**Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Data Scientists, on the internet at https://www.easternct.edu/graduate-division/online/programs/ms-applied-data-science/ (visited July 2, 2024).*

National long-term projections may not reflect local and/or short-term economic or job conditions, and do not guarantee actual job growth. Degree program options do not guarantee career or salary outcomes. Students should conduct independent research for specific employment information.

Faculty Overview

DR. GARRETT M. DANCIK

Program Coordinator; Professor and Department Chair, Computer Science

Dr. Dancik is interested in various aspects of data science, with a focus on applications in bioinformatics and computational biology. His research involves applying statistical, mathematical, and computational models to answer biological questions and to gain insight into biological systems. His current work focuses on the identification of genomic biomarkers in cancer and methods for mining biomedical literature. Dr. Dancik earned an M.S. in Statistics, and a Ph.D. in Bioinformatics and Computational Biology from Iowa State University.

DR. MARSHA DAVIS

Professor and Department Chair, Mathematical Sciences

Dr. Davis received her Ph.D. in Statistics from the University of Connecticut. Dr. Davis is interested in development of curriculum and was instrumental in the creation of the Data Science Program at Eastern. She was the chief content consultant and author for Against All Odds: Inside Statistics, part of the Annenberg Learner Series. Dr. Davis is the recipient of the Distinguished Professor award at Eastern Connecticut State University.

DR. XING LIU

Professor and Associate Chair, Education

Dr. Liu received his Ph.D. in measurement, evaluation and assessment in educational psychology from the University of Connecticut. His research interests include categorical data analysis, multilevel modeling, propensity score methods, data science, and Bayesian methods. His major publications focus on advanced statistical models. His articles have been recognized among the most popular papers published in the *Journal of Modern Applied Statistical Methods* (JMASM). Dr. Liu is the recipient of the Excellence Award in Creativity/Scholarship at Eastern.

Curriculum Overview

All courses are worth three (3) credit hours and are seven (7) weeks in length.
**Courses taken in the summer term are six (6) weeks long.*

CORE COURSES | 21 CREDITS

Introduction to Data Science DSC 501

Emphasizes practical techniques that include cleaning and transforming data, exploring and analyzing data, summarizing and visualizing data, statistical inference, creation of statistical models, and communication of results. In addition, ethical implications of the choices made at different stages in a data science project are explored. This course also introduces the scripting languages R and Python.

Python for Data Science DSC 502

Explores the fundamental Python programming concepts used in data science. Topics include variables, data types, control structures, functions, object-oriented programming, and programming libraries used for data manipulation and visualization. Students learn how to read, write, and debug code following best software development practices.

Applied Statistical Methods for Data Science DSC 503

Covers basic statistical skills for advanced work in data science and analytics. It begins with a review of descriptive statistics and contingency tables, before moving on to one-and two-sample methods of point estimation, interval estimation and hypothesis testing. The remainder of the course focuses on predictive modeling methods, including simple and multiple linear regression, logistic regression, and time series.

Communicating with Data DSC 504

Data scientists need to be able to rationally justify their approach to a project, and then convince stakeholders that their results should be utilized, and recommendations implemented. This course develops an understanding of theory and skills in constructing a relevant, ethical, and engaging message using data that tells a coherent, persuasive story to audiences of technical experts and non-experts.

Databases and Big Data Systems DSC 505

This course covers concepts related to the design and implementation of traditional databases and distributed systems for the management of big data. Topics include theory and applications related to efficient database models and queries, relational and non-relational databases, parallel and distributed processing, stream processing, and cloud-based computing.

Applied Machine Learning DSC 506

Teaches standard supervised machine learning techniques including linear and logistic regression, support vector machines, and artificial neural networks; and unsupervised techniques for clustering and dimension reduction. Develop practical experience with using programming frameworks, software, and cloud platforms for developing and evaluating machine learning models for a variety of applications.

Data Visualization DSC 507

Data visualization is one of the most powerful tools to explore, understand, and communicate patterns in data. This course will introduce students to data visualization design principles so that they can think critically about each design decision. Students will then apply these principles in the context of data analysis and visual storytelling using appropriate programming frameworks and software tools.

CULMINATING EXPERIENCE | 9 CREDITS

Special Topics in Data Science DSC 508

This course may be taken with different topics up to five (5) times for credit. Each special topic course will focus on an advanced topic in data science. Special topics may include Business Analytics, Network Science, Web Programming, and Geographic Information Systems.

Data Science Practicum DSC 509

This is a project-based course where students work closely with outside sponsors and faculty for one or more semesters on an extensive data science project. Students will identify an application or problem in the area of data science or will be assigned a project by a sponsor or faculty member. The Practicum provides a capstone experience that requires the correct application of data science principles for the processing, analysis, visualization, and interpretation of data; and/or the development of novel methods for a unique data science task. The experience culminates in a written report and final presentation. This course may be repeated up to two times for a maximum of six (6) credits.

What to Expect

Requirements for Completion

Students must earn 30 credits by successfully completing 10 courses. This includes the seven (7) core courses, two (2) special topics courses (DSC 508) and one (1) Practicum (DSC 509) or one (1) special topics course and two (2) Practicums. DSC 508 may be taken more than once on different topics and DSC 509 may be taken twice. Students must maintain a GPA of 3.0 to remain in and graduate from the program.

Learning Online

Eastern online graduate degree programs are designed for professionals wanting to expand their career potential while earning a comprehensive education on a schedule that fits around their lives. You can expect:

- Online courses
- Active learning
- Personalized instruction
- Expert faculty
- Flexible scheduling
- Library resources

Admission Requirements

You must provide evidence of having earned a bachelor's degree with a minimum 2.7 GPA requirement. Work experience will be part of the assessment for students if their GPA is below 2.7.

- A completed application.
  - Includes a $50 non-refundable application fee.
- Recommendations from two references.
  - Two recommendation surveys completed by individuals knowledgeable about the applicant's abilities to complete graduate work.
- Official college transcript(s) for all non-Eastern colleges/ universities attended.
- A current CV/resume
- Personal/Philosophy statement, explaining your professional goals.
  - Personal statements can be uploaded as supplemental items in the online application system.

TOP 25

Best Public Institutions in the North

About Eastern

Eastern Connecticut State University is accredited by the New England Commission of Higher Education (NECHE). Eastern engages students from diverse backgrounds in a transformative liberal arts learning experience that provides knowledge and skills to lead enriching, purposeful lives. Eastern is ranked among the top 25 public institutions in the North Region for universities, according to *U.S. News & World Report's* latest rankings.

About Bisk

An added benefit of becoming a student in our online degree programs is that you will receive support from a Bisk representative. Bisk partners with leading institutions to provide the resources, expertise and technology to help institutions grow and students thrive. Bisk is passionate about supporting students and will help ensure that you have the best experience possible.

Our primary objective is to remain focused on what is best for each student. Part of the role of a Student Success representative is to:

- Help you learn about Eastern's online graduate programs and guide you through the process of completing your degree.
- Assist with the application process, including helping obtain transcripts, and provide proactive outreach to help you register for future classes.
- Supplement faculty academic advising with one-to-one guidance throughout the program.

A Bisk representative will be contacting you soon to discuss program details, the application and admission process, and more.

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Discover More About the Online Master of Science in Applied Data Science

https://www.easternct.edu/graduate-division/online/programs/ms-applied-data-science/

Start Your Application

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