

MATHEMATICS (MTH)

MTH 500 Advanced Geometry (3 Credits)

Contact the department for specific course information.

MTH 500L Geometry and the Middle School Teacher (3 Credits)

See department for more information

MTH 500S Probability and Statistics (3 Credits)

See department for more information

MTH 501J Numerical Systems (3 Credits)

Special contract course requested by Norfolk Schools Portsmouth, for in service teachers to acquire Math Specialist Certification

MTH 501K Algebra and Functions in Mathematics (3 Credits)

See department for more information

MTH 501L Rational Numbers & Proportional Reasoning (3 Credits)

Special Grant Course Requested by Norfolk Public Schools & Va Beach Public School

MTH 504 Graph Theory in Data Science (3 Credits)

A graduate-level introduction to advanced introduction to various graphs, trees, flows in networks, maps, walks, networks, and cycles. This course will primarily introduce all the standard graphs theory results, emphasizing its applications in Data Science. Large datasets with multiple interconnections between dataset variables can be distilled and illuminated using various graphs, trees, and networks, recognizing situations where graphs delineate a given dataset. An introduction to the tree search algorithm and solutions to four color problems is covered.

MTH 510 Discrete Mathematics (3 Credits)

Contact the department for specific course information

MTH 511 Adv Topics in Geom (3 Credits)

Contact the department for specific course information

MTH 514 Probability and Stats for Data Analytics (3 Credits)

A graduate level introduction to probability and statistical with emphasis towards applications in data sciences. Probabilistic and statistical methods regularly provide the foundations for data science, the methodologies included in this course will provide the students the knowledge needed in several fields as marketing, finance, and other disciplines. This course will prepare the students for modeling and understanding big data problems.

MTH 520 Mathematical Logic and Set Theory (3 Credits)

Contact the department for specific course information.

MTH 524 Mathematical Foundations for Machine Learning (3 Credits)

A graduate level introduction to mathematical foundations for machine learning provides a collection of tools for doing machine learning. While the theory of the tools may be technical, the emphasis is on a balance between theory and practice, with hands-on activities assigned to help the understanding of the theory.

MTH 530 Mathematical Models and Applications (3 Credits)

See department for more information

MTH 531 Topics in Algebra (3 Credits)

Contact the department for specific course information.

MTH 534 Applications in Advanced Numerical Linear Algebra (3 Credits)

This course is a continuation of linear algebra, towards topics relevant to applications as well as theoretical concepts. The course starts with a review of matrices, linear systems, subspaces, determinants, eigenvalues and eigenvectors, and orthogonal vectors. Then it introduces the basic techniques, analysis methods, and implementation details of numerical linear algebra. Emphasis will be given on the matrix computations that arise in solving linear systems, least squares problems, and eigenvalue problems. Students will demonstrate knowledge by completing a final project that demonstrates understanding of linear systems applications.

MTH 540 Mathematical Model and Application (3 Credits)

Contact the department for specific course information

MTH 544 Numerical Analysis for Computer Methods (3 Credits)

A graduate level introduction to numerical algorithms for linear algebra problems with applications to data analytics. Algorithms will be studied and analyzed for efficiency and accuracy. Topics include Singular Value Decomposition, QR factorization, Least Squares, Conditioning and Stability, Systems of Equations, Eigenvalues and Eigenvalue algorithms and Iterative methods.

MTH 554 Data Visualization and Technical Report (3 Credits)

This course presents a graduate level comprehensive introduction to data visualization and technical reporting. The course will provide the students with the necessary background for visual representation and analytics of complex data and data communication to a target audience. The course will cover design strategies, techniques to display multidimensional information structures, and exploratory visualization tools. As part of the course, students will be required to present written reports and oral presentations.

MTH 600 Modern Applied Statistics: Data Mining (3 Credits)

A graduate level introduction to new techniques for predictive descriptive learning using concepts from statistics, programming and artificial intelligence with emphasis on statistical aspects and integration with standard methodologies. Course covers regression and classification models with descriptive methods to discover patterns and data relationships without inference. This course will prepare students to view data from a statistical perspective with automated analysis of large complex data sets.

MTH 620 Mathematical Modeling Project in Data Science (3 Credits)

The course structure follows a graduate case-study model. Throughout the semester, students will be presented with various case studies of mathematical models as applied to the fields of engineering, technology, natural/physical science, social science, business, and/or management. Completion of a formal project with proposal describing the modeling problem with outline of a possible solution path concluding in guided solution as primary focus. Regular progress reports and presentation of the completed project by the end of the semester will be required. The project will provide solution(s) to the modeling problem and demonstrate skill on problem-solving, data-fitting, writing, and presenting.

MTH 630 Statistical Methods in Big Data Analytics (3 Credits)

A graduate level of statistical methods with emphasis towards applications in data sciences. Statistical learning methods regularly provide the foundations for data science, the methodologies included in this course will provide the students the knowledge needed in several fields as marketing, finance, and other disciplines. This course will prepare the students for modeling and understanding the fundamentals of statistical methods useful for modeling, analyzing and forecasting problems, which include big data.

MTH 640 Ethics and Communication in Data Science (3 Credits)

A graduate level introduction to issues of ethical deliberation involved in data analytics including topics like machine learning and working with incomplete data. Issues on how to collect data to reflect population of interest, model validation with appropriate error rate, model performance to standards when deployed are explored. Choice of learning algorithm and approach to maximize models' performance with interpretability with consideration of ethics into trade-off considerations are studied. Decision making for real-world effects. Reporting and communication topics emphasized through projects.