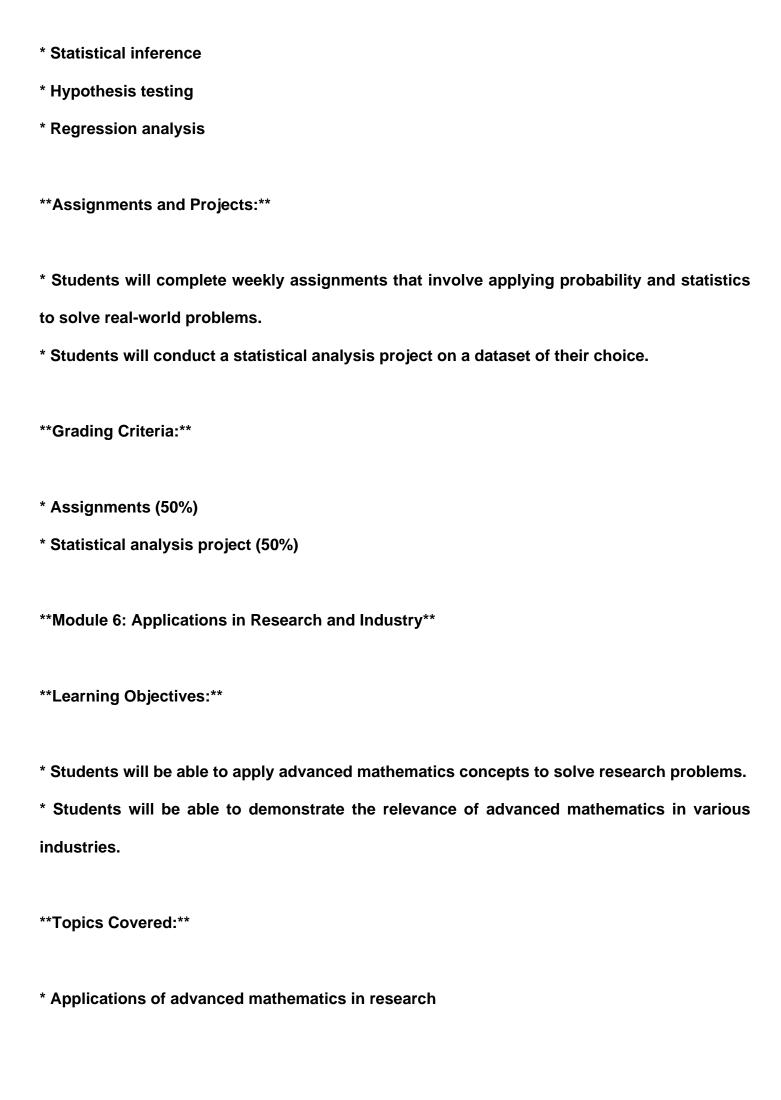


* Vector spaces
* Eigenvalues and eigenvectors
* Applications of linear algebra
Assignments and Projects:
* Students will complete weekly assignments that involve solving systems of linear
equations and applying linear algebra to real-world problems.
* Students will present a research paper on the applications of linear algebra in their chosen
field of study.
Grading Criteria:
* Assignments (50%)
* Research paper presentation (50%)
Module 3: Differential Equations
Learning Objectives:
* Students will be able to solve differential equations using various techniques.
* Students will be able to apply differential equations to model real-world phenomena.
Topics Covered:
* First-order differential equations

* Higher-order differential equations
* Partial differential equations
* Applications of differential equations
Assignments and Projects:
* Students will solve weekly differential equation problems using analytical and numerical
methods.
* Students will develop a mathematical model using differential equations to solve a problem
in their field of study.
Grading Criteria:
* Problem sets (50%)
* Mathematical modeling project (50%)
Module 4: Numerical Analysis
Learning Objectives:
* Students will be able to apply numerical methods to solve complex mathematical problems.
* Students will be able to analyze and interpret the results of numerical calculations.
Topics Covered:
* Numerical linear algebra

* Numerical integration
* Numerical differentiation
* Applications of numerical analysis
Assignments and Projects:
* Students will complete weekly assignments that involve using numerical methods to solve
real-world problems.
* Students will work on a group project to develop a numerical model for a specific
application.
Grading Criteria:
* Assignments (50%)
* Group project (50%)
Module 5: Probability and Statistics
Learning Objectives:
* Students will be able to apply probability and statistics to solve real-world problems.
* Students will be able to analyze and interpret statistical data.
Topics Covered:
* Probability theory



* Applications of advanced mathematics in industry
* Case studies
Assignments and Projects:
* Oto-donto will complete a final present that demonstrates their understanding of advanced
* Students will complete a final project that demonstrates their understanding of advanced
mathematics concepts and their applications in a real-world setting.
Grading Criteria:
* Final project (100%)
Final project (100%)