

Degree Progress Guide for Double Majors

Summer Fast Pass for Double Majors serves as a guide for how undergraduate students with a double major can utilize summer to effectively manage their course schedule and make significant degree progress. It is intended to show what is possible with the inclusion of the summer term in a student's academic journey.

The course options listed under each double major pairing were selected based on previous summer course offerings and major requirements outlined on each individual department's website. Several course options are listed under each pairing to provide maximum flexibility for student scheduling and to encourage students to create their own personalized fast pass.

This specific guide is designed for undergraduate students admitted as a freshman who are double majoring in both **Applied Mathematics** and **Statistics and Data Science**.

Disclaimer: Please note, the Summer Fast Pass for Double Majors serves as a **general guide ONLY**. Final enrollment decisions will ultimately depend on a student's current progress in their major. It is a student's responsibility to ensure they meet the prerequisites for any courses prior to enrolling. Please defer to the major department for degree specific questions.

For each year, select 1-2 courses from Category A + 1 course from Category B:

YEAR 1

CATEGORY A (Applied Mathematics Summer Courses Offered)

***MATH 31A: Differential and Integral Calculus (4 units)**

Satisfies a lower division course requirement for the Applied Mathematics major.

MATH 31B: Integration and Infinite Series (4 units)

Satisfies a lower division course requirement for the Applied Mathematics major.

MATH 32A: Calculus of Several Variables (4 units)

Satisfies a lower division course requirement for the Applied Mathematics OR Statistics and Data Science major.

CATEGORY B (Statistics and Data Science Summer Courses Offered)

***MATH 31A: Differential and Integral Calculus (4 units)**

Satisfies a lower division course requirement for the Statistics and Data Science major.

***MATH 31B: Integration and Infinite Series (4 units)**

Satisfies a lower division course requirement for the Statistics and Data Science major.

STATS 10: Introduction to Statistical Reasoning (5 units)

Satisfies a lower division course requirement for the Statistics and Data Science major.

STATS 20: Introduction to Statistical Programming with R (4 units)

Satisfies a lower division course requirement for the Statistics and Data Science major.

**MATH 31A and 31B overlap within the Applied Mathematics and Statistics and Data Science majors.*

YEAR 2

CATEGORY A (Applied Mathematics Summer Courses Offered)

PHYSICS 1A: Physics for Scientists and Engineers: Mechanics (5 units)

Satisfies a lower division course requirement for the Applied Mathematics major.

PHYSICS 1B: Physics for Scientists and Engineers: Oscillations, Waves, Electric and Magnetic Fields (5 units)

Satisfies a lower division course requirement for the Applied Mathematics major.

PHYSICS 1C: Physics for Scientists and Engineers: Electrodynamics, Optics, and Special Relativity (5 units)

Satisfies a lower division elective for the Applied Mathematics major.

CHEM 20A: Chemical Structure (4 units)

Satisfies a lower division elective for the Applied Mathematics major.

***MATH 33A: Linear Algebra and Applications (4 units)**

Satisfies a lower division course requirement for the Applied Mathematics major.

CATEGORY B (Statistics and Data Science Summer Courses Offered)

***MATH 33A: Linear Algebra and Applications (4 units)**

Satisfies a lower division course requirement for the Statistics and Data Science major.

STATS 100A: Introduction to Probability (4 units)

Satisfies a core upper division course requirement for the Statistics and Data Science major.

STATS 100B: Introduction to Mathematical Statistics (4 units)

Satisfies a core upper division course requirement for the Statistics and Data Science major.

STATS 100C: Linear Models (4 units)

Satisfies a core upper division course requirement for the Statistics and Data Science major.

**MATH 31A and 31B overlap within the Applied Mathematics and Statistics and Data Science majors.*

YEAR 3

CATEGORY A (Applied Mathematics Summer Courses Offered)

MATH 115A: Linear Algebra (5 units)

Satisfies a core upper division course requirement in Mathematics for the Applied Mathematics major.

***MATH 131A: Analysis** (4 units)

Satisfies a core upper division course requirement in Mathematics for the Applied Mathematics major.

MATH 132: Complex Analysis for Applications (4 units)

Satisfies a core upper division course requirement in Mathematics for the Applied Mathematics major.

MATH 134: Linear and Nonlinear Systems of Differential Equations (4 units)

Satisfies a core upper division course requirement in Two Term Sequence, Differential Equations for the Applied Mathematics major.

CATEGORY B (Statistics and Data Science Summer Courses Offered)

***MATH 131A: Analysis** (4 units)

Satisfies a core upper division course requirement in Mathematics for the Statistics and Data Science major.

STATS 101A: Introduction to Data Analysis and Regression (4 units)

Satisfies a core upper division major requirement for the Statistics and Data Science major.

STATS 101B: Introduction to Design and Analysis of Experiment (4 units)

Satisfies a core upper division major requirement for the Statistics and Data Science major.

STATS 101C: Introduction to Statistical Models and Data Mining (4 units)

Satisfies a core upper division major requirement for the Statistics and Data Science major.

**MATH 131A overlaps within the Applied Mathematics and Statistics and Data Science majors.*

CATEGORY A (Applied Mathematics Summer Courses Offered)

MATH 135: Ordinary Differential Equations (4 units)

Satisfies a core upper division course requirement in Two Term Sequence, Differential Equations for the Applied Mathematics major.

MATH 142: Mathematical Modeling (4 units)

Satisfies a core upper division course requirement in Mathematics for the Applied Mathematics major.

***MATH 151A: Applied Numerical Methods (4 units)**

Satisfies a core upper division course requirement in Two Term Sequence, Numerical Analysis for the Applied Mathematics major.

***MATH 151B: Applied Numerical Methods (4 units)**

Satisfies a core upper division course requirement in Two Term Sequence, Numerical Analysis for the Applied Mathematics major.

CATEGORY B (Statistics and Data Science Summer Courses Offered)

STATS 102A: Introduction to Computational Statistics with R (4 units)

Satisfies a core upper division requirement for the Statistics and Data Science major.

STATS 102B: Introduction to Computation and Optimization for Statistics (4 units)

Satisfies a core upper division requirement for the Statistics and Data Science major.

STATS 102C: Introduction to Monte Carlo Methods (4 units)

Satisfies a core upper division requirement for the Statistics and Data Science major.

STATS 195: Community and Corporate Internships in Statistics (4 units)

Satisfies an upper division elective for the Statistics and Data Science major.

STATS 199: Directed Research in Statistics (1 - 4 units)

Satisfies an upper division elective for the Statistics and Data Science major.

***MATH 151A: Applied Numerical Methods (4 units)**

Satisfies an upper division elective for the Statistics and Data Analysis major.

***MATH 151B: Applied Numerical Methods (4 units)**

Satisfies an upper division elective for the Statistics and Data Analysis major.

**MATH 151A and 151B overlap within the Applied Mathematics and Statistics and Data Science majors.*