Hunter College Department of Mathematics and Statistics

Mission Statement and Program Learning Outcomes

Mission Statement

The Department of Mathematics and Statistics seeks to provide students with a solid foundation in the fundamental areas of mathematics and statistics as well as the ability to competently apply mathematical and statistical reasoning in pure and applied settings and to communicate their ideas with clarity and precision. The Department trains majors in analytic thinking and rigorous methods of mathematical proof.

Mathematics Major (B.A.) Program Learning Outcomes

1. Students will demonstrate an understanding of the fundamental principles of major areas of mathematics—including Calculus and Linear Algebra, Abstract Algebra and Analysis, and Probability and Statistics—by explaining key concepts and theorems, performing computations, and solving problems.

2. Students will be able to reason mathematically and create and critique mathematical proofs that are clear, complete, and concise.

3. Students will demonstrate proficiency in symbolic computation.

4. Students will demonstrate the ability to think critically and apply mathematical principles to solve complex problems in pure and applied mathematics and other fields of study.

The Mathematics B.A. with a concentration in Quantitative Biology also has PLO:

5. Students will apply statistical and mathematical reasoning and methods—including numerical algorithms, stochastic and deterministic models, and probabilistic models—to process, store, analyze, visualize and model molecular biological data and make statistical inference from such data.

The Mathematics B.A. with concentrations in Early Childhood Education and Adolescent Education have additional requirements in the School of Education.
Master of Arts in Pure Mathematics (M.A. and B.A./M.A.) Program Learning Outcomes

1. Students will demonstrate a thorough understanding of major areas of modern mathematics—including Algebra, Analysis, Geometry and Topology, and two others selected in consultation with an adviser—by explaining and proving key theorems and concepts and applying them to perform computations and solve problems.

2. Students will be able to critically read and understand technical mathematical papers and explain advanced mathematics with clarity and precision.

3. Students will be able to transform their own intuitive and creative ideas into rigorous mathematics including clear, complete, and concise proofs.

4. Students will exhibit a working knowledge of a foreign language by translating a mathematical passage into English.
Statistics Major (B.A.) Program Learning Outcomes

1. Students will demonstrate proficiency in the fundamentals of probability and statistical theory and methods by explaining key concepts and solving problems.

2. Students will be able to organize and present data effectively and use it to compute standard statistical summaries and analysis clearly and accurately.

3. Students will demonstrate the ability to think critically and apply statistical principles to solve complex problems in pure and applied statistics and other fields of study.

The Statistics B.A. with a concentration in Quantitative Biology also has PLO:

4. Students will apply statistical and mathematical reasoning and methods—including numerical algorithms, stochastic and deterministic models, and probabilistic models—to process, store, analyze, visualize and model molecular biological data and make statistical inference from such data.


1. Students will demonstrate a thorough understanding of advanced probability theory and mathematical statistics by explaining and proving key theorems and concepts and applying them to perform computations and solve problems.

2. Students will be able to create and analyze general linear models.

3. Students will demonstrate thorough working knowledge of statistical principles and methods by designing, executing, and presenting a complete statistics project appropriate to their graduate program track (Statistics, Applied Mathematics, Bioinformatics, or Mathematical Finance).

4. Students will demonstrate proficiency with two approved data analysis packages.
Adolescent Education (M.A. and B.A./M.A.) Program Learning Outcomes

1. Students will demonstrate an advanced understanding of secondary school Algebra by using mathematical reasoning to formally prove and demonstrate algebraic principles and methods.

2. Students will demonstrate an advanced understanding of secondary school Euclidean Geometry and Trigonometry, as well as the fundamentals of Absolute and Non-Euclidean Geometry, by using definitions, axioms, and theorems to prove geometric and trigonometric principles and methods.

3. Students will demonstrate an advanced understanding of secondary school Probability and Statistics by creating models with statistical software and by using Common Core materials to illustrate concepts of Probability and Statistics.

4. Students will demonstrate the ability to think critically and apply mathematical principles to solve complex problems in all areas of secondary school mathematics.