The Department of Mathematical and Statistical Sciences offers Honors programs that lead to either a B.Sc. or B.A. degree. These Honors programs are designed both for students who are passionate about using mathematics and statistics to solve real-world problems and also for students who want to explore the full depth of these disciplines. These programs are built around Honors mathematics courses that are designed to empower students to develop their mathematical talents. Topics are presented in depth and reach the level of rigor used by practicing mathematicians. For this reason, honors-level courses are often required for admission to graduate research programs in mathematics and statistics.

The four major Honors Degree programs in the Department of Mathematical and Statistical Sciences are listed below.

1. **Honors in Mathematics** (Section 193.11.1 of the Calendar)
   
   (a) Standard Program

   The Honors in Mathematics program exposes students to the underlying beauty of mathematics. It appeals to students who are fascinated by abstraction, logic, and symmetry (“math for math’s sake”). Most pure mathematicians find employment in universities and research institutions, although an increasing number also branch out into commercial sectors such as finance and the computer industry.

   (b) Minor in Computing Science

   This program is essentially an Honors version of our popular Specialization in Computational Science, which allows students to combine and balance their interests in mathematics with studies in computer science. This combination will be of interest to students wishing to study the mathematical foundations of computing, algorithms, logic, or the application of modern algebraic theory to error-correcting codes and cryptography.

   (c) Minor in Statistics

   This program introduces students in Honors Mathematics to the fundamental principles, philosophy, and historical origins of statistics and probability theory. It allows Honors Mathematics students to broaden their portfolio of interests and transfer their theoretical skills to the discipline of statistics.
2. **Honors in Applied Mathematics** (Section 193.11.1 of the Calendar)

   (a) Standard Program
   
   The Honors in Applied Mathematics program trains students to apply mathematical ideas to solve practical problems that arise in the physical, life, and social sciences, as well as in engineering and finance. The program includes courses on numerical analysis, stability, and perturbation theory.

   (b) Minor in Computing Science
   
   This program is essentially an Applied Honors version of our Specialization in Computational Science, which allows students to combine and balance their interests in mathematics with studies in computer science. This program will be of interest to students wishing to combine analytical mathematical training with the power of modern computers for solving sophisticated practical problems.

   (c) Minor in Statistics
   
   The program is intended for students interested in including Statistics in their repertory of applicable mathematical and computational techniques. Applications to the biological sciences, business, computing science, economics, education, engineering, public health sciences, renewable resources and agriculture, and the physical and social sciences are possible.

3. **Honors in Mathematics and Economics** (Section 193.11.5 of the Calendar)

   This program is designed to provide a broad-based education in mathematics, finance, economics, and actuarial science. The student may also optionally choose some courses from management science. A graduate from this program would have the background to enter the finance industry and train as a financial analyst.

4. **Honors in Statistics** (Section 193.19.1 of the Calendar)

   The Honors program in Statistics gives a student the opportunity to prepare for advanced study of Statistics, whether as an independent discipline or with a view to its applications, while emphasizing underlying fundamentals in Computing Science and Mathematics. The student is given the opportunity to combine an interest in Statistics with an area of application that uses Statistics. Examples of areas of application include actuarial science, biological sciences, business, computing science, economics, education, engineering, public health sciences, pharmacology, renewable resources and agriculture, and the physical and social sciences. Upon graduation, students can find jobs with employers such as Statistics Canada, Environment Canada, and pharmaceutical companies.
These four programs are B.Sc. programs. There is also an Honors in Mathematics B.A. degree (Section 44.17.1 of the Calendar) for which the requirements are very much in line with those of the Honors B.Sc. degree.

Those third-year students with an interest in industrial applications are encouraged to take part in the department’s Industrial Internship program (Section 193.11.7 of the Calendar). This is an extended (8, 12, or 16 month) work-experience program.

Further information about these programs may be found in the University of Alberta Academic Calendar, on the web site www.math.ualberta.ca/~honors, or by consulting the Honors Advisor

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