

## Department of Statistics & Actuarial Science Graduate Degree Requirements

### **MMath Degree in Actuarial Science, Statistics, or Biostatistics:**

The requirements for the MMath degree are:

- i) Completion of the “Graduate Student Skills Workshop” (milestone) during the first year of the program.
- ii) (course work option) seven (7) term-courses and a Master’s Research Paper
- or
- ii) (thesis option) four (4) term-courses and a Master’s Thesis with an oral defence with the supervisor(s) and 2 committee members to take place after the 3 week display period.

For more information about the degree requirements, please visit:

<http://gradcalendar.uwaterloo.ca/?groupID=1455>

### **REQUIRED COURSES:**

#### **Actuarial Science**

In the course work option of the Actuarial Science MMath program, the required total of seven (7) term-courses, with an overall average of at least 70%, should include at least three (3) 900-level courses, of which two (2) must be labeled ACTSC. Six (6) of the seven (7) courses must be labeled ACTSC. In the thesis option, four (4) term-courses, with an overall average of at least 75%, should include at least two (2) 900-level ACTSC courses. Appropriate adjustments of these requirements can be approved at the discretion of the Associate Chair for Graduate Studies.

#### **Statistics**

In the course work option of the Statistics MMath program, the required total of seven (7) term-courses, with an overall average of at least 70%, should include STAT 830 or 835, STAT 850 and STAT 854. In the thesis option, four (4) term-courses, with an overall average of at least 70%, should include STAT 850 and at least two (2) 900-level STAT courses. Appropriate adjustments of these requirements can be approved at the discretion of the Associate Chair for Graduate Studies.

#### **Biostatistics**

In the course work option of the Biostatistics MMath program, the required total of seven (7) term-courses, with an overall average of at least 70%, should include STAT 831, STAT 850, STAT 931, STAT 932, STAT 935 and STAT 936 and one (1) of STAT 830, STAT 844, STAT 854, STAT 938 or STAT 947.

#### **Co-op Programs in Statistics and Biostatistics**

The Master’s programs in Statistics and Biostatistics are available on a co-operative basis. Courses are the same as for the regular MMath degree program course work option. In addition to the above Graduate Skills Workshop and research essay milestone requirement an additional milestone, a Co-op Work Report will be required. The Co-op Work Report describes what the student did during the co-op term(s) and submitted to the Graduate Officer for approval. An extension of the work report may be submitted to satisfy the Master’s Research Paper requirement. Normally students in co-op take two (2) academic terms, two (2) work terms and a final academic term.

## Master of Actuarial Science (M.Act.Sc.):

There will be fifteen (15) one-semester courses offered for M.Act.Sc. candidates. The courses for the program, divided by semester of offering, are:

### Fall Semester

<u>Course Number</u>	<u>Course Title</u>
ACTSC 611	<a href="#"><u>Financial Mathematics I</u></a>
ACTSC 612	<a href="#"><u>Life Insurance Math I</u></a>
ACTSC 613	<a href="#"><u>Statistics for Ac. Sci.</u></a>
ACTSC 614	<a href="#"><u>Corporate Finance I</u></a>
ACTSC 615	<a href="#"><u>Economics</u></a>

### Winter Semester

<u>Course Number</u>	<u>Course Title</u>
ACTSC 621	<a href="#"><u>Financial Mathematics II</u></a>
ACTSC 622	<a href="#"><u>Life Insurance Math II</u></a>
ACTSC 623	<a href="#"><u>Applied Statistics</u></a>
ACTSC 624	<a href="#"><u>Stochastic Processes for Act. Sci.</u></a>
ACTSC 625	<a href="#"><u>Casualty and Health Insurance Mathematics</u></a>

### Spring Semester

<u>Course Number</u>	<u>Course Title</u>
ACTSC 631	<a href="#"><u>Financial Mathematics III</u></a>
ACTSC 632	<a href="#"><u>Life Insurance Math III</u></a>
ACTSC 633	<a href="#"><u>Actuarial Risk Management</u></a>
ACTSC 634	<a href="#"><u>Quantitative Risk Management</u></a>
ACTSC 635	<a href="#"><u>Professional Communications</u></a>

It is expected that candidates will take all fifteen (15) courses.

The award of the M.Act.Sc. degree requires candidates to pass at least twelve (12) courses, with an overall average of at least 70%.

## PhD Degree:

### Statistics and Statistics–Biostatistics:

The requirements for the PhD Statistics and PhD Statistics–Biostatistics degrees are:

- 1) For students with a Master's degree: Satisfactory completion of five (5) term-courses, with an overall average of at least 70%; the five (5) term-courses must include STAT 901 and STAT 908.  
For student without a Master's degree: Satisfactory completion of eight (8) term-courses, with an overall average of at least 70%; the eight (8) term-courses must include STAT 901 and STAT 908.
- 2) Completion of the "Graduate Student Skills Workshop" (milestone) in the first year of the program. Students who successfully completed this requirement in their Master's program will be exempt.
- 3) Satisfactory performance in a Comprehensive Examination (written and an oral proposal) (milestone) arranged by the Department.
- 4) Completion of three (3) seminars for the "Research Presentation Requirement" (milestone).
- 5) The submission and defense of a thesis, embodying the results of original research – "PhD Thesis".

### Actuarial Science:

The requirements for the PhD Actuarial Science degree are:

- 1) For students with a Master's degree: Satisfactory completion of five (5) term-courses, with an overall average of at least 70%; the five (5) term-courses must include three (3) 900-level ACTSC courses and STAT 850 and STAT 901.  
For students without a Master's degree: Satisfactory completion of either (8) term-courses, with an overall average of at least 70%; the eight (8) term-courses must include three (3) 900-level ACTSC courses and STAT 850 and STAT 901.
- 2) Completion of the "Graduate Student Skills Workshop" (milestone) in the first year of the program. Students who successfully completed this requirement in their master's program will be exempt.
- 3) Satisfactory performance in a Comprehensive Examination (written and an oral proposal) (milestone) arranged by the Department.
- 4) Completion of three (3) seminars for the "Research Presentation Requirement" (milestone).
- 5) The submission and defense of a thesis, embodying the results of original research – "PhD Thesis".