1.0 Degree Title
Specify the two degrees for concurrent degree programs

B.Sc

1.1 Major (Legacy = Subject) (30-char. max.)
Honours Probability and Statistics

1.2 Concentration (Legacy = Concentration/Option)
If applicable (30 char. max.)

1.3 Minor (with Concentration, if applicable)
(30 char. max.)

1.4 Category

<table>
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<tr>
<th>Faculty Program (FP)</th>
<th>Honours (HON)</th>
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<tbody>
<tr>
<td>Major</td>
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<td>Internship/Co-op</td>
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<td>Major Concentration (CON)</td>
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<td>Minor</td>
<td>Non-Thesis (N)</td>
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<td>Minor Concentration (CON)</td>
<td>Other</td>
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</table>

1.5 Complete Program Title
B.Sc Honours Probability and Statistics

2.0 Administering Faculty/Unit
Science/Mathematics and Statistics

3.0 Effective Term of revision or retirement
Please give reasons in 5.0 “Rationale” in the case of retirement
(Ex. Sept. 2004 = 200409) Retirement

Term: Fall 2014

4.0 Existing Credit Weight
64

Proposed Credit Weight
65

5.0 Rationale for revised program
Since basic measure theory is taught in MATH 567 and since it introduces students to crucial notions in probability (for example, distributions, expectation, independence, laws of large numbers, conditional expectation), topics not part of the MATH 355 Honours Analysis 4 syllabus, it is felt that students in the Honours program in Probability and Statistics should be required to take this course and MATH 355 Honours Analysis 4 should remain part of the list of complementary courses.

6.0 Revised Program Description (Maximum 150 words)
7.0 List of existing program and proposed program

Existing program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)

Required Courses (46 credits)
* COMP 250 may be preceded by COMP 202.
** Students select either MATH 251 or MATH 247, but not both.
COMP 250 Introduction to Computer Science (3 credits)
MATH 235 Algebra 1 (3 credits)
MATH 242 Analysis 1 (3 credits)
MATH 247 Honours Applied Linear Algebra (3 credits)**
MATH 248 Honours Advanced Calculus (3 credits)
MATH 251 Honours Algebra 2 (3 credits)**
MATH 255 Honours Analysis 2 (3 credits)
MATH 354 Honours Analysis 3 (3 credits)
MATH 356 Honours Probability (3 credits)
MATH 357 Honours Statistics (3 credits)
MATH 470 Honours Research Project (3 credits)
MATH 523 Generalized Linear Models (4 credits)
MATH 533 Honours Regression and Analysis of Variance (4 credits)
MATH 556 Mathematical Statistics 1 (4 credits)
MATH 557 Mathematical Statistics 2 (4 credits)

Complementary Courses (18 credits)

At least 3 credits from:
MATH 355 Honours Analysis 4 (3 credits)
MATH 587 Advanced Probability Theory 1 (4 credits)

The remaining credits selected from:
MATH 325 Honours Ordinary Differential Equations (3 credits)
MATH 350 Graph Theory and Combinatorics (3 credits)
MATH 352 Problem Seminar 1 (credit)
MATH 366 Honours Complex Analysis (3 credits)
MATH 375 Honours Partial Differential Equations (3 credits)
MATH 380 Honours Differential Geometry (3 credits)
MATH 387 Honours Numerical Analysis (3 credits)
MATH 397 Honours Matrix Numerical Analysis (3 credits)
MATH 480 Honours Independent Study (3 credits)
MATH 490 Honours Mathematics of Finance (3 credits)
MATH 524 Nonparametric Statistics (4 credits)
MATH 525 Sampling Theory and Applications (4 credits)
MATH 545 Introduction to Time Series Analysis (4 credits)
MATH 547 Stochastic Processes (4 credits)
MATH 550 Combinatorics (4 credits)
MATH 589 Advanced Probability Theory 2 (4 credits)
MATH 598 Topics in Probability & Statistics (4 credits)

With at most 3 credits from the following courses for which no Honours equivalent exists:
MATH 204 Principles of Statistics 2 (3 credits)
MATH 407 Dynamic Programming (3 credits)
MATH 427 Statistical Quality Control (3 credits)

Proposed program (list courses as follows: Subj Code/Crse Num, Title, Credit weight, under the headings of: Required Courses, Complementary Courses, Elective Courses)

Required Courses (47 credits)
* COMP 250 may be preceded by COMP 202.
** Students select either MATH 251 or MATH 247, but not both.
COMP 250 Introduction to Computer Science (3 credits)
MATH 235 Algebra 1 (3 credits)
MATH 247 Honours Applied Linear Algebra (3 credits)**
MATH 248 Honours Advanced Calculus (3 credits)
MATH 251 Honours Algebra 2 (3 credits)**
MATH 255 Honours Analysis 2 (3 credits)
MATH 354 Honours Analysis 3 (3 credits)
MATH 356 Honours Probability (3 credits)
MATH 357 Honours Statistics (3 credits)
MATH 470 Honours Research Project (3 credits)
MATH 523 Generalized Linear Models (4 credits)
MATH 533 Honours Regression and Analysis of Variance (4 credits)
MATH 556 Mathematical Statistics 1 (4 credits)
MATH 557 Mathematical Statistics 2 (4 credits)
MATH 587 Advanced Probability Theory 1 (4 credits)

Complementary Courses (18 credits)

3 credits selected from:
MATH 242 Analysis 1 (3 credits)
*MATH 254 Honours Analysis 1 (3 credits)

*It is strongly recommended that students take MATH 254

The remaining credits selected from:
MATH 325 Honours Ordinary Differential Equations (3 credits)
MATH 350 Graph Theory and Combinatorics (3 credits)
MATH 352 Problem Seminar 1 (credit)
MATH 355 Honours Analysis 4 (3 credits)*
MATH 366 Honours Complex Analysis (3 credits)
MATH 375 Honours Partial Differential Equations (3 credits)
MATH 380 Honours Differential Geometry (3 credits)
MATH 387 Honours Numerical Analysis (3 credits)
MATH 397 Honours Matrix Numerical Analysis (3 credits)
MATH 480 Honours Independent Study (3 credits)
MATH 490 Honours Mathematics of Finance (3 credits)
MATH 524 Nonparametric Statistics (4 credits)
MATH 525 Sampling Theory and Applications (4 credits)
MATH 545 Introduction to Time Series Analysis (4 credits)
MATH 547 Stochastic Processes (4 credits)
MATH 550 Combinatorics (4 credits)
MATH 589 Advanced Probability Theory 2 (4 credits)
MATH 598 Topics in Probability & Statistics (4 credits)

*MATH 355 cannot be taken as a substitute for MATH 587. Students may obtain credit for both MATH 587 and MATH 355.

With at most 3 credits from the following courses for which no Honours equivalent exists:
MATH 204 Principles of Statistics 2 (3 credits)
MATH 407 Dynamic Programming (3 credits)
MATH 427 Statistical Quality Control (3 credits)
### 8.0 Consultation with Related Units

- Yes
- No

- Financial Consult
  - Yes
  - No

Attach list of consultations

### 9. Approvals

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<th>Routing Sequence</th>
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<td>Department</td>
<td>Voikan Jaksic - Director-CUA</td>
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<td>02-07-2014</td>
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Submitted by

- Name
- Phone
- Email
- Submission Date

To be completed by ARR:

- CIP Code