

The following proposals, received on DAP between September 16-30, 2009, have now been approved. For more information on the DAP process see the Academic Handbook at <http://www.uwo.ca/univsec/handbook>

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*Effective **September 1, 2009**, the prerequisites and course description for the course Applied Mathematics 3613B, Mathematics of Financial Options, be revised.*

### **Applied Mathematics 3613B, Mathematics of Financial Options**

An introduction to modern financial mathematics using a differential equations approach. Stochastic differential equations and their related partial differential equations. The Fokker-Planck and Kolmogorov PDEs. No-arbitrage pricing, the Black-Scholes equation and its solutions. American options. Exotic options. Prerequisite(s): Applied Mathematics 2503A/B or Differential Equations 2402A. 3 lecture hours, 0.5 course.

*Effective **September 1, 2009**, the contents of the Honors Specialization in Applied Mathematics module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

### **HONORS SPECIALIZATION IN APPLIED MATHEMATICS**

#### Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.0 principal courses, including either Calculus 1000A/B or 1100A/B and either Calculus 1301A/B or 1501A/B plus 2.0 additional courses, with no mark in these principal courses below 60%. Students who take Calculus 1301A/B must have a mark of at least 85% in the course. Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, is normally taken in year 1. If not taken in year 1, it must be completed in the first term of year 2.

#### Module

9.0 courses:

4.5 courses: Applied Mathematics 2811B, 2813B, 3811A/B, 3813A/B, 3815A/B, 3817A/B\*, 4815A/B\*\*, 4817A/B\*, 4999Z.

1.0 course: Calculus 2502A/B, 2503A/B.

0.5 course: Differential Equations 2402A.

0.5 course from: Mathematics 2120A/B, 2122A/B, 3120A/B or the former Mathematics 203b.

1.0 course: Statistical Sciences 2857A/B or the former 2657A, 2858A/B.

0.5 course from: Applied Mathematics 4613A/B\*\* or 4617A/B\*.

1.0 additional course from: Applied Mathematics 3129A/B, 3151A/B, 3613B, 3615A/B, 3911F/G, 4129A/B, 4611F/G\*\*, 4613A/B\*\*, 4615F/G\*, 4617A/B\*.

\* May be offered only in odd-numbered academic years.

\*\*May be offered only in even-numbered academic years.

*Effective **September 1, 2009**, the contents of the Honors Specialization in Financial Modelling module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

### **HONORS SPECIALIZATION IN FINANCIAL MODELLING**

#### Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.0 principal courses, including: (Calculus 1000A/B or Calculus 1100A/B) and (Calculus 1501A/B or (Calculus 1301A/B with a mark of at least 85%)), plus 2.0 additional principal courses, with no mark less than 60% in any of the 3.0 principal courses.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, is normally taken in Year 1. If not taken in Year 1, it must be completed in the first term of Year 2.

Recommended (but not required) first year courses: Economics 1021A/B and Economics 1022A/B, Philosophy 1200, Computer Science 1026A/B and/or 1027A/B.

Please note: Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

#### Module

9.5 courses:

4.0 courses: Statistical Sciences 2857A/B or the former 2657A, 2858A/B, 2864A/B, 3520A/B or the former 4520A/B, 3657A/B, 3858A/B, 4521F/G, 4861A/B or the former 3861 A/B.

1.5 courses: Actuarial Science 2553A/B, 2555A/B, 2557A/B.

3.5 courses: Calculus 2402A/B, Applied Mathematics 2503A/B, 2811B, 2813B, 3815A/B, 3613B, 3817A/B\*.

0.5 courses from: Applied Mathematics 4613A/B\*\* or 4617A/B\*.

A student who has already taken Calculus 2502A/B may combine it with Mathematics 2123A/B as a substitute for Calculus 2402A/B.

\* May be offered only in odd-numbered academic years.

\*\* May be offered only in even-numbered academic years.

*Effective **September 1, 2009**, the contents of the Honors Specialization in Mathematical Sciences module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

### **HONORS SPECIALIZATION IN MATHEMATICAL SCIENCES**

The Honors Specialization in Mathematical Sciences may be used for concurrent degrees in Mathematics and Education.

#### Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.0 principal courses, including either Calculus 1000A/B or 1100A/B and either Calculus 1301A/B or 1501A/B plus 2.0 additional courses, with no mark in these principal courses below 60%. Students who take Calculus 1301A/B must have a mark of at least 85% in the course. Applied Mathematics 1413 may be substituted for 1.0 Calculus course requirement.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, is normally taken in year 1. If not taken in year 1, it must be taken in first term of year 2. Statistical Sciences 1023A/B is recommended.

#### Module

9.0 courses:

0.5 course from: Applied Mathematics 2811B, Mathematics 2120A/B or the former Mathematics 203b.

0.5 course: Applied Mathematics 2813B.

1.0 course: Calculus 2502A/B, 2503A/B.

0.5 course: Differential Equations 2402A.

0.5 course: Mathematics 2124A/B.

1.0 course: Statistical Sciences 2857A/B or the former 2657A, 2858A/B.

0.5 course: Statistical Sciences 3657A/B or the former 3652A/B.

0.5 course from: Applied Mathematics 3811A/B or Mathematics 3124A/B.

1.0 course from: Group A: Courses Emphasizing Proofs.

- Applied Mathematics 3815A/B or 4615F/G.

- Mathematics 2122A/B, 2155A/B, 2251F/G, 3120A/B, 3122A/B, 3150A/B, 3154A/B, 4123A/B or the former 308a/b.

- Statistical Sciences 3858A/B, 4654A/B.

1.0 course from: Group B: Applications.

- Actuarial Science 2553A/B, 2555A/B.

- Applied Mathematics 3129A/B, 3151A/B, 3613B, 3615A/B, 3813A/B, 3817A/B\*, Applied Mathematics 3911F/G, 4129A/B, 4251A, 4351A.

- Mathematics 2156A/B, 3152A/B.

- Statistical Sciences 3843A/B, 3850F/G, 3859A/B, 4521F/G, 4846A/B.

2.0 additional courses from either Group A or Group B.

\* May be offered only in odd-numbered academic years.

\*\*May be offered only in even-numbered academic years.

*Effective **September 1, 2009**, the contents of the Major in Applied Mathematics module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

### **MAJOR IN APPLIED MATHEMATICS**

#### Admission Requirements

Completion of first-year requirements, including either Calculus 1000A/B or 1100A/B, and either Calculus 1301A/B or 1501A/B with a mark of at least 60% for both. Students who take Calculus 1301A/B must have a

mark of at least 85% in the course. Applied Mathematics 1413 (with a mark of at least 60%) may be used to replace the 1.0 Calculus course requirement.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, if not taken in year 1, must be taken in the first term of year 2.

#### Module

6.0 courses:

2.5 courses: Applied Mathematics 2811B, 2813B, 3811A/B, 3813A/B, 3815A/B.

1.0 course: Calculus 2502A/B, 2503A/B.

0.5 course: Differential Equations 2402A.

0.5 course from: Mathematics 2120A/B, 2122A/B, 3120A/B, or the former Mathematics 203b.

0.5 course: Statistical Sciences 2857A/B or the former 2657A.

0.5 course from: Applied Mathematics 4613A/B\*\* or 4617A/B\*.

0.5 course from: Applied Mathematics 4815A/B\*\* or 4817A/B\*.

\* May be offered only in odd-numbered academic years.

\*\*May be offered only in even-numbered academic years.

*Effective **September 1, 2009**, the contents of the Major in Applied Mathematics Methods module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

### **MAJOR IN APPLIED MATHEMATICS METHODS**

#### Admission Requirements

Completion of first-year requirements, including either Calculus 1000A/B or 1100A/B, and either Calculus 1301A/B or 1501A/B with a mark of at least 60% for both. Students who take Calculus 1301A/B must have a mark of at least 85% in the course.. Applied Mathematics 1413 (with a mark of at least 60%) may be used to replace the 1.0 Calculus course requirement.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, if not taken in year 1, must be taken in the first term of year 2.

#### Module

6.0 courses:

2.5 courses: Applied Mathematics 2811B, 2813B, 3813A/B, 3817A/B\*, Applied Mathematics 3911F/G.

0.5 course from: Calculus 2302A/B or 2502A/B.

0.5 course from: Calculus 2303A/B or 2503A/B.

0.5 course: Differential Equations 2402A.

0.5 course from: Applied Mathematics 3413A/B or 3815A/B.

1.0 course from EITHER Statistical Sciences 2141A/B and 0.5 course at the 2100 level or above in Applied Mathematics, Mathematics, or Statistical and Actuarial Sciences OR Statistical Sciences 2857A/B or the former 2657A and 2858A/B.

0.5 approved course at the 2100 level or above in Applied Mathematics, Mathematics, or Statistics and Actuarial Science.

\* May be offered only in odd-numbered academic years.

*Effective **September 1, 2009**, the contents of the Major in Financial Modelling module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

### **MAJOR IN FINANCIAL MODELLING**

#### Admission Requirements

Completion of first-year requirements, including the following:

Calculus 1000A/B or Calculus 1100A/B, Calculus 1301A/B with a mark of at least 85% or Calculus 1501A/B, plus 2.0 other principal courses with no mark less than 60% in any of the 3.0 principal courses.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a minimum mark of 60% for either, is normally taken in year 1. If not taken in year 1, it must be completed in the first term of year 2.

Recommended (but not required) first year courses: Economics 1021A/B and Economics 1022A/B, Philosophy 1200, Computer Science 1026A/B.

Please note: Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

## Module

6.0 courses:

1.5 courses: Actuarial Science 2553A/B, 2555A/B, 2557A/B.

2.5 courses: Calculus 2402A/B, Applied Mathematics 2503A/B, 2813B, 3815A/B, 3817A/B.

1.5 courses: Statistical Sciences 2857A/B or the former 2657A, 2858A/B, 3657A/B.

0.5 course from: Applied Mathematics 3613B, Statistical Sciences 3520A/B or the former 4520A/B.

A student who has already taken Calculus 2502A/B may combine it with Mathematics 2123A/B as a substitute for Calculus 2402A/B.

*Effective **September 1, 2009**, the contents of the Major in Scientific Computing and Numerical Methods module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

**MAJOR IN SCIENTIFIC COMPUTING AND NUMERICAL METHODS**

## Admission Requirements

Completion of first-year requirements, including either Calculus 1000A/B or 1100A/B, and either Calculus 1301A/B or 1501A/B. Applied Mathematics

1413 may be used to replace this 1.0 Calculus course requirement. Each of these require a minimum mark of at least 60%. Students who take Calculus 1301A/B must have a mark of at least 85% in the course.

Computer Science 1025A/B or 1026A/B and Computer Science 1027A/B with at least 60% in each.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, if not taken in year 1, must be taken in the first term of year 2.

## Module

6.0 courses:

0.5 course: Applied Mathematics 2813B.

0.5 course from: Calculus 2302A/B or 2502A/B.

0.5 course from: Calculus 2303A/B or 2503A/B.

0.5 course: Differential Equations 2402A.

0.5 course: Applied Mathematics 3911F/G.

0.5 course from: Applied Mathematics 3413A/B or 3815A/B.

1.0 course from EITHER Statistical Sciences 2141A/B and 0.5 course at the 2100 level or above in Applied Mathematics, Mathematics, or Statistical and Actuarial Sciences, OR Statistical Sciences 2857A/B or the former 2657A and 2858A/B.

1.0 course: Computer Science 2210A/B, 2211A/B.

1.0 course from: Applied Mathematics 4613A/B\*\*, 4615F/G\*, 4617A/B\*.

\* May be offered only in odd-numbered academic years.

\*\*May be offered only in even-numbered academic years.

*Effective **September 1, 2009**, the contents of the Specialization in Applied Mathematics module be revised to reflect changes in Statistical and Actuarial Sciences courses being offered.*

**SPECIALIZATION IN APPLIED MATHEMATICS**

## Admission Requirements

Completion of first-year requirements, including 1.0 of the following with a mark of at least 60%: either Calculus 1000A/B or 1100A/B and either Calculus 1301A/B or 1501A/B. Students who take Calculus 1301A/B must have a mark of at least 85% in the course. Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, is normally taken in Year 1. If not taken in Year 1, it must be taken in the first term of Year 2.

## Module

9.0 courses:

0.5 course from: Calculus 2302A/B or 2502A/B.

0.5 course from: Calculus 2303A/B or 2503A/B.

0.5 course: Differential Equations 2402A.

1.0 course: Applied Mathematics 2811B, 2813B.

6.5 courses from: Applied Mathematics 3151A/B, 3613B, 3615A/B, 3811A/B, 3813A/B, 3815A/B, 3817A/B, 3911F/G, or any Applied Mathematics 4000-level course, Computer Science 2210A/B, 2211A/B, 2212A/B/Y, Mathematics 2124A/B, 2251F/G, Physics 3200A/B, 3300A/B, 3400A/B, Statistical Sciences 2857A/B (or the former 2657A), 2858A/B, 3657A/B.

(For these 6.5 courses, some have prerequisites that are not present in the module, and some may be offered only in alternate years.)

*Effective **September 1, 2009**, the wordings and description of the Major in Financial Modelling module offered in the Department of Statistical and Actuarial Sciences be revised to make them consistent with those of the Major in Financial Modelling module offered in the Department of Applied Mathematics.*

### **MAJOR IN FINANCIAL MODELLING**

#### Admission Requirements

Completion of first-year requirements, including the following:

Calculus 1000A/B or Calculus 1100A/B, Calculus 1301A/B with a mark of at least 85% or Calculus 1501A/B, plus 2.0 other principal courses with no mark less than 60% in any of the 3.0 principal courses.

Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a minimum mark of 60% for either, is normally taken in year 1. If not taken in year 1, it must be completed in the first term of year 2.

Recommended (but not required) first year courses: Economics 1021A/B and Economics 1022A/B, Philosophy 1200, Computer Science 1026A/B.

Please note: Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

#### Module

6.0 courses:

1.5 courses: Actuarial Science 2553A/B, 2555A/B, 2557A/B.

2.5 courses: Calculus 2402A/B, Applied Mathematics 2503A/B, 2813B, 3815A/B, 3817A/B.

1.5 courses: Statistical Sciences 2857A/B or the former 2657A, 2858A/B, 3657A/B.

0.5 course from: Applied Mathematics 3613B, Statistical Sciences 3520A/B or the former 4520A/B.

A student who has already taken Calculus 2502A/B may combine it with Mathematics 2123A/B as a substitute for Calculus 2402A/B.

*Effective **September 1, 2009**, the wordings and description of the Honors Specialization in Financial Modelling module offered in the Department of Statistical and Actuarial Sciences be revised to make them consistent with those of the Honors Specialization in Financial Modelling module offered in the Department of Applied Mathematics.*

### **HONORS SPECIALIZATION IN FINANCIAL MODELLING**

#### Admission Requirements

Completion of first-year requirements with no failures. Students must have an average of at least 70% in 3.0 principal courses, including:(Calculus 1000A/B or Calculus 1100A/B) and (Calculus 1501A/B or (Calculus 1301A/B with a mark of at least 85%)), plus 2.0 additional principal courses, with no mark less than 60% in any of the 3.0 principal courses. Linear Algebra 1600A/B or Applied Mathematics 1411A/B with a mark of at least 60% for either, is normally taken in Year 1. If not taken in Year 1, it must be completed in the first term of Year 2.

Recommended (but not required ) first year courses: Economics 1021A/B and Economics 1022A/B, Philosophy 1200, Computer Science 1026A/B and/or 1027A/B.

Please note: Applied Mathematics 1413 may be substituted for the 1.0 Calculus course requirement.

#### Module

9.5 courses:

4.0 courses: Statistical Sciences 2857A/B or the former 2657A, 2858A/B, 2864A/B, 3520A/B or the former 4520A/B, 3657A/B, 3858A/B, 4521F/G, 4861A/B or the former 3861A/B.

1.5 courses: Actuarial Science 2553A/B, 2555A/B, 2557A/B.

3.5 courses: Calculus 2402A/B, Applied Mathematics 2503A/B, 2811B, 2813B, 3815A/B, 3613B, 3817A/B\*.

0.5 courses from: Applied Mathematics 4613A/B\*\* or 4617A/B\*.

A student who has already taken Calculus 2502A/B may combine it with Mathematics 2123A/B as a substitute for Calculus 2402A/B.

\* May be offered only in odd-numbered academic years.

\*\* May be offered only in even-numbered academic years.