Explore New Opportunities!

- Actuarial Science
- Data Science *NEW*
- Financial Modelling
- Statistics

Our degrees open doors to business, finance, research, industry, health care & so much more...

For more information visit: www.uwo.ca/stats
Potential Areas of Employment for Students Graduating from our
Programs

**Actuarial Science**
1. **Insurance Industry** - Life and Property and Casualty Insurance Companies
2. **Employee Benefits Consulting** – particularly Retirement (Pension) & Group Benefits Consulting
3. **Other Financial Institutions** such as Investment firms, Banks and Trust Companies
4. **Government** – this work may involve supporting the ongoing analysis of the various government social security programs and any related financial modeling, including looking at demographic trends and implications
5. **Education** – Research and/or teaching
6. **Several other areas** - include actuarial recruiting for the forensic sciences and employers in the Environmental Analysis sector, as well as other employers looking for expertise in financial modeling and/or risk management

Companies from the above sectors come to our campus annually to recruit students from our actuarial science programs. Opportunities exist both in Canada and abroad, particularly in the U.S. Recently there has been increased interest in recruiters from the U.S. who, in addition to Canadian employers, are now very actively recruiting our students. Websites of interest are [www.beanactuary.org/](http://www.beanactuary.org/), as well as the Canadian Institute of Actuaries website (www.cia-ica.ca/home) and the Society of Actuaries website (www.soa.org/).

**Data Science**
1. Banks, Insurance Companies, Investment Firms and other Financial Institutions
2. Health Care and Medical Research Firms
3. Marketing Firms
4. Sports Agencies
5. Tech Companies and numerous other Industries

**Statistics**
1. **Government** - both at the federal (Stats Canada and Health Welfare) and provincial levels
2. **Public and Private Statistical Consulting firms**
3. **Biostatistical and Pharmaceutical fields**
4. **Various sectors of the Financial Industry**, including banks, investment firms and insurance companies. Students with Statistics degrees may be hired for several different role types, including marketing research & analysis. Recently, several have been recruited for opportunities in the financial modeling area
5. **Public and Private Industry employment opportunities exist** for those wishing to specialize in areas such as qualify control and/or operations research areas. Potential employers here would include well known firms such as 3M, GM, Bell, and IBM amongst others.
6. **Education and other areas** – include Research and/or teaching, as well as employers looking for expertise in financial modeling and/or risk management

Several companies from the above sectors including **Stats Canada**, come to our campus annually to recruit students from our respective statistical science programs. Opportunities exist both in Canada and abroad, particularly in the U.S. The Statistical Society of Canada (SSC) posts job opportunities in the statistical field on their website at [www.ssc.ca](http://www.ssc.ca) Students possessing an Honors degree in Statistics will be well prepared to continue their education at the Master’s level.

**Financial Modeling**
1. **Banks** - Analyst in Currencies and Commodities, Investments, Risk Management, Securities
2. **Brokerage Firms**
3. **Education** – Research and/or teaching
4. **Pension Fund Management Companies**
5. **Insurance Firms**

This program is designed for people who wish to combine a solid quantitative grounding, chiefly in applied mathematics and in statistical sciences but with a bit of actuarial science as well, with a view to applying this quantitative grounding in a business career. As well as receiving a good quantitative and business-friendly education, graduates of this program will be very well prepared for Master's programs in business administration or in quantitative finance. We also strongly encourage those entering this program to explore the possibility of combining it with an HBA in a five year B.Sc-HBA concurrent degree.
Internship Program

As part of the Science Internship Program, 3rd year students participate in 8 - 16 month career-related placements, before returning to UWO to complete Year 4 of their program. As a Science intern, you will not only benefit from the paid hands-on work experience, but you will also be mentored by a professional in the field. This interaction will help identify long-term goals, as well as allow you to "try a career on for size." In a number of cases, Internship placements have led to full-time employment upon graduation.

Summer Jobs

Each fall approximately 10 - 12 companies hold recruitment sessions aimed specifically at students enrolled in Statistical and Actuarial Sciences. These employers are typically hiring for both summer and post graduate positions. Our students have the opportunity to attend resume writing and interview workshops in advance of these sessions and learn how to put their best foot forward.

International Exchange Programs

Western is committed to internationalization and encourages all students to become global citizens. By studying on exchange, students learn the dynamics between the developing and the developed world and build familiarity and connections with different world regions. A cosmopolitan worldview is rated as one of the top three skills needed in future leaders & by going on exchange, students gain valuable skills for succeeding in a global economy.

An exchange involves students applying to the program to study at one of the universities with whom Western has an exchange agreement. Students pay regular Western tuition fees to participate, thus not being subjected to international student fees. Full details about the Exchange Program can be viewed at:
http://www.sdc.uwo.ca/int/exchange

Statistical & Actuarial Sciences Internship Partners:

- Great West Life/London Life
- Manulife Financial
- Towers Perrin
- Morneau Sobeco
- Mercer Consulting
- Hewitt Associates
- AON
- Buck Consultants
- Robertson, Eadie & Associates Ltd
The Department of Statistical and Actuarial Sciences Scholarships
(for students entering year 2 or higher)*

For complete details of the following scholarships go to: https://studentservices.uwo.ca/secure/Awards/awardsearch.cfm*

<table>
<thead>
<tr>
<th>Scholarship</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class of '49 Scholarship</td>
<td>One award annually to a first year student who has obtained the highest mark in SS1023a/b and who, in the opinion of the Dept. of Stats &amp; Act Sci has achieved a high overall academic standing. No application required.</td>
<td>$125</td>
</tr>
<tr>
<td>London Life Actuarial Career Scholarship, Three Year Continuing</td>
<td>Awarded annually to a student in second year, pursuing an Honors Specialization or Double Major, including Actuarial Science.</td>
<td>$5,000 annually continuing for 3 years plus 2 x 4 month summer internships</td>
</tr>
<tr>
<td>London Life Actuarial Career Scholarship, Two Year Continuing</td>
<td>Awarded annually to two students in third year, pursuing an Honors Specialization or Double Major, including Actuarial Science.</td>
<td>$5,000 annually continuing for 2 years plus 4 month summer internship</td>
</tr>
<tr>
<td>Manulife Financial Scholarships in Actuarial Sciences</td>
<td>Awarded annually to a student in third year of an Honors Specialization module in Actuarial Science or an Honors Degree with contains an Actuarial Science module.</td>
<td>$5,200</td>
</tr>
<tr>
<td>Morneau Shepell Scholarship in Actuarial Science</td>
<td>Awarded annually to a student in second year of an Honors Specialization module in Actuarial Science.</td>
<td>$2,500</td>
</tr>
<tr>
<td>V. M. Joshi Memorial Scholarship</td>
<td>Awarded to any undergraduate in any Honours Statistics program who has maintained minimum 80% average and demonstrates financial need.</td>
<td>$750</td>
</tr>
<tr>
<td>Mercer Human Resource Consulting 125th Anniversary Alumni Scholarship</td>
<td>Awarded to a full-time student in year 3 of an Honors degree with an Honors Specialization or Double Major in Actuarial Science based on a minimum 80% average, financial need, and university and community involvement.</td>
<td>$1,000 continuing for 2 years</td>
</tr>
<tr>
<td>The Honourable Company of Freeman of the City of London, England Scholarship</td>
<td>Awarded to a graduate or undergraduate student in any program of any year who has been accepted to pursue course work or significant scholarly activity for a minimum of three months at a university or college in Greater London Authority or the City of London, England. Preference will be given to graduate students whose scholarly pursuits would benefit from the opportunity to travel and live in London, England. However, undergraduate students applying for an approved exchange program, study abroad or other international experience to take place at a university or college in London, England also may apply. The Honourable Company will endeavour to introduce the student to a Guild event in the City of London, England. Please contact the International Exchange Program at: <a href="mailto:exchange@uwo.ca">exchange@uwo.ca</a> or 519-661-2111 ext. 85196 for application details.</td>
<td>Value: 1 at $5,000 annually ($1,000 of the award to support travel cost, including the cost of attendance at the Annual Dinner of the Honourable Company in Toronto.)</td>
</tr>
</tbody>
</table>

*The Department of Statistical and Actuarial Sciences - Awards*

<table>
<thead>
<tr>
<th>Scholarship</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Northern Life Assurance Gold Medal</td>
<td>Awarded to a full time student in a Statistics program with the highest average in their graduating year.</td>
</tr>
<tr>
<td>The U.W.O. Gold Medals in Honors Actuarial Science and Statistical Programs</td>
<td>Awarded to a full time student in the respective Honors program with the highest graduating average, minimum 80%.</td>
</tr>
<tr>
<td>The John Mereu Book Prize</td>
<td>Awarded to the student with the highest average in the life contingency courses (which now includes AS327,AS329 &amp; AS422).</td>
</tr>
</tbody>
</table>

*in addition to UWO entrance scholarships*
Resume writing seminars & Interview workshops

Mentorship Program

Summer Job Seminars

Society of Actuaries Exam Seminars and Help Sessions

SOA Study Manuals

Travel Subsidies for the Annual Actuarial Student National Association Convention

Volunteer Opportunities at Seminars, Conferences, and Outreach Events

Bowling Parties, Professor Meet & Greet, Movie Nights, Study Groups, Holiday Parties, and lots more

ASUA provides opportunities to network, make lasting friendships, take on leadership roles, and enrich your undergraduate experience.
What is an Actuary?

The future is full of uncertainty. Some of the events that can happen are undesirable. "Risk" is the possibility that an undesirable event will occur. Actuaries are experts in:

- evaluating the likelihood of future events,
- designing creative ways to reduce the likelihood of undesirable events,
- decreasing the impact of undesirable events that do occur.

The impact of undesirable events can be both emotional and financial. Reducing the likelihood of these events helps relieve emotional pain. But some events, such as car accidents or house fires, cannot be totally avoided. So, reducing the financial impact of these adverse events is very important. Actuaries are the leading professionals in finding ways to manage risk. It takes a combination of strong analytical skills, business knowledge and understanding of human behaviour to design and manage programs that control risk.

Where do actuaries work?

- Insurance Companies
- Employee Benefits Consulting Companies
- Reinsurance Companies
- Investment Firms
- Trust Companies/Banks
- Governments
- Universities: Research/Teaching

What should I have taken in first year?

- Calculus 1000A/B or 1500A/B
- Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
- Math 1600A/B
- Economics 1021A/B and Economics 1022A/B (can complete in upper year)

Why choose Actuarial Science?

- “Actuary” regularly appears on the list of top five professions
- Internship program: you will not only benefit from the paid hands-on work experience, but you will also be mentored by a professional in the field
- Dynamic undergraduate student association
- High faculty/student ratio, undergraduate opportunities for summer funded research
- Combined Ivey HBA degree option
- Some courses may count towards professional accreditation requirements
Honors Specialization in Actuarial Science Module (20.0 courses)

This is a guide only. For complete information, see the current online Academic Calendar

Last updated July 12, 2017

**The following course name/# changes made(W2014) are granted automatic equivalency for modular requirement purposes:**

AM2503→SS2503; AS2553→FM2553; AS2557→FM2557; SS3520→FM3520; SS4521→FM4521; SS4998→FM4998

<table>
<thead>
<tr>
<th>Year 1 (5.0 Courses)</th>
<th>Graduation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus 1000A/B or 1500A/B</td>
<td><strong>Breadth Requirement:</strong></td>
</tr>
<tr>
<td>Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%</td>
<td>• At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar.</td>
</tr>
<tr>
<td>Math 1600A/B</td>
<td><strong>Essay Requirement:</strong></td>
</tr>
<tr>
<td>Economics 1021A/B and Economics 1022A/B</td>
<td>• 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement</td>
</tr>
<tr>
<td>0.5 other principal course</td>
<td><strong>Senior Courses:</strong></td>
</tr>
<tr>
<td>2.0 options</td>
<td>• 13.0 senior courses (numbered 2000-4999)</td>
</tr>
</tbody>
</table>

**NOTE:** At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g., 1.0 from A and 1.0 from C)

**Admission to Honors Specialization Module:**
Complete first year (5.0 courses) with no failures including:

- Minimum average of 70% on 3.0 principal courses with no mark less than 60% in any of the 3 principal courses:
  - Calculus 1000A/B or 1500A/B
  - Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
  - Mathematics 1600A/B Economics 1021A/B and Economics 1022A/B
  - 0.5 other principal course

**Recommended (but not required) first year courses:** AS1021A/B, Business 1220, Philosophy 1200

**NOTE 1:** If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.

**NOTE 2:** AM1413 may be substituted for the 1.0 Calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.

**NOTE 3:** Economics 1021A/B and Economics 1022A/B, if not taken in first year, must be completed in one of your upper years.

**MODULE (10.5 Courses)**

**2.5 courses:** Actuarial Science 2553A/B, 2427A/B, 3429A/B, 3431A/B, 4426F/G.

**4.5 courses:** Statistical Sciences 2503A/B, 2857A/B, 2858A/B, 2864A/B, 3657A/B, 3843A/B, 3858A/B, 3859A/B, 4861A/B.

**1.5 courses:** Financial Modeling 2555A/B, 2557A/B, 3520A/B.

**0.5 courses:** Calculus 2402A/B.

**0.5 course from:** Actuarial Science 3424A/B or 4824A/B.

**1.0 courses from:** Actuarial Science at the 4000 level, or Mathematics 2123A/B, or Calculus 2402A/B. When such a replacement occurs, the module will include 11.0 courses.

**OPTIONS (4.5 Courses)**
Any additional Major or Minor module offered by a department other than Department of Statistical and Actuarial Science.

You must complete this additional module with a minimum mark of 60%.

**Notes:**
- Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.

**Progression Requirements**
- Minimum cumulative modular average of 70%
- Minimum mark of 60% in each course of module
- Passing grade in each course

**Graduation Requirements**

**Breadth Requirement:**

- At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar.

**Essay Requirement:**

- 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement

**Senior Courses:**

- 13.0 senior courses (numbered 2000-4999)

**Average Requirements:**

- Minimum overall average of 65% on the 20.0 courses
- Minimum cumulative modular average of 70% and a minimum mark of 60% in each course of the module
- Passing grade in each course
- Minimum cumulative modular average of 60% in any additional Major or Minor module completed

**Residency Requirement:**

- Minimum of 15.0 courses must be completed at Western University, as well as the majority of your modular courses

**To graduate with an Honors BSc, at least 11.0 of your 20.0 courses must be taken from the Faculty of Science**

**Department Recommendation for order in which modular courses should be taken**

**Second Year**

- AS2553A Mathematics of Finance
- FM2555A Corporate Finance
- Calculus 2402A Calculus with Analysis for Statistics
- SS2857A Probability and Statistics I
- AS2427B Life Contingencies I
- FM2557B Financial Markets & Investments
- SS2503B Advanced Mathematics for Statistical Applications
- SS2858B Probability & Statistics II
- SS2864B Statistical Programming*

* May be taken in 3rd year

**Third Year**

- AS3429A Life Contingencies II
- SS3657A Intermediate Probability
- SS3843A Introduction to Study Design
- SS3859A Regression
- AS3424B Loss Models II**
- AS3431B Life Contingencies II
- FM3520B Financial Modelling I
- SS3858B Mathematical Statistics

**One of AS3424A/B or 4824A/B is required for the module**

**Fourth Year**

- AS4426F Actuarial Practice I
- SS4861B Time Series

- 0.5 of AS4324A/B or 4824A/B (if not previously completed)
- 1.0 Actuarial Science courses at the 4000 level, or other 4000 level dept. approved course (FM4521 is approved for this purpose).
Major in Actuarial Science Module (20.0 courses)

*This is a guide only. For complete information, see the current online Academic Calendar*

Last updated July 12, 2017

### Year 1 (5.0 Courses)

- **Graduation Requirements**
  - Calculus 1000A/B or 1500A/B
  - Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
  - Mathematics 1600A/B
  - Economics 1021A/B and Economics 1022A/B
  - 0.5 other principal course
  - 2.0 options

**NOTE:** At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g. 1.0 from A and 1.0 from C)

### Admission to the Major Module:

Complete first year (5.0 courses) with no failures including:
- Minimum grade of 60% in each of:
  - Calculus 1000A/B or 1100A/B or 1500A/B
  - Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
  - Mathematics 1600A/B or the former Linear Algebra 1600A/B
  - Economics 1021A/B and Economics 1022A/B
  - 0.5 other principal course

### Recommended (but not required) first year courses:

- AS1021A/B, Business 1220E, Philosophy 1200

**NOTE 1:** If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.

**NOTE 2:** AM1413 may be substituted for the 1.0 Calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.

**NOTE 3:** Economics 1021A/B and Economics 1022A/B, if not taken in first year, must be completed in one of your upper years.

### Module (6.0 courses) **

- **1.5 courses:** Actuarial Science 2553A/B, 2427A/B, 3429A/B.
- **0.5 courses:** FM2555A.
- **2.5 courses:** Statistical Sciences 2503A/B, 2857A/B, 2858A/B, 2864A/B, 3657A/B.
- **0.5 course:** Calculus 2402A/B.
- **1.0 additional Actuarial Science course** at the 3000 level or higher.

**NOTE:** Calculus 2402A/B may be replaced by either (Calculus 2502A/B and Calculus 2503A/B) or (Calculus 2502A/B and Mathematics 2123A/B). When such a replacement occurs, the module will include 6.5 courses.

### Options (9.0) Courses

Any additional Major or Minor module may be taken other than Financial Modelling.

**Notes:**
- This module can only be completed in a four-year (honors or non-honors) degree.
- Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.

### Progression Requirements

- Satisfy the progression requirements for the University (Level 1 and Level II as described in the Academic Calendar)
- See graduation requirements on honors degree (with double major)
- **Note:** most modular course pre-requisites stipulate min. grade of 60%

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**The (W2014) course name/# change made is granted automatic equivalency for modular requirement purposes:** AM2503→SS2503
What is Data Science?

Data Science is inherently interdisciplinary, with the two dominant disciplines being Computer Science and Statistical Science.

Data science refers to the development and application of methodologies for inspecting, cleaning, managing, transform, visualizing and modeling data with a view to discovering useful information, reaching conclusions and supporting decision making.

There is a big demand for Data Scientists and that demand is still growing as the rate of data collection is increasing in every discipline. Being able to efficiently generate, manage and analyze digital information, data scientists are widely sought after in numerous fields of scientific investigation.

Where do Data Scientists work?

- Airline and Auto Industry
- Banks, Investment Firms and other Financial Institutions
- Insurance Companies
- Health Care and Medical Research Firms
- Marketing Firms
- Sports Agencies
- Tech Companies and numerous other industries

What should I have taken in first year?

- Computer Science 1026A/B
- Computer Science 1027 A/B
- Calculus 1000A/B or 1500 A/B
- Calculus 1501A/B or 1301 A/B (min 85%)
- Math 1600 A/B

Why choose Data Science?

Students graduating with a Data Science module will have solid data and analytical literacy and these skills are in very high demand in the work place. The following are just some of the opportunities available to you while completing a program at Western in Data Science:

- Internship program; you will not only benefit from the paid hands-on work experience, but you will also be mentored by a professional in the field
- Undergraduate opportunities for summer funded research in either the Computer Science or Statistical and Actuarial Sciences Department
- Dynamic undergraduate students association and clubs in both departments
- Combined Ivey HBA degree option as well as concurrent degree option with engineering
- Data Science modules can be combined with other modules including Biology, Economics, Actuarial Science and Financial Modeling to name a few
**Honors Specialization in Data Sciences Module (20.0 courses)**

*This is a guide only. For complete information, see the current online Academic Calendar*

**Graduation Requirements**

**Breadth Requirement:**
- At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar.

**Essay Requirement:**
- 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement.

**Senior Courses:**
- 13.0 senior courses (numbered 2000-4999)

**Average Requirements:**
- Minimum overall average of 65% on the 20.0 courses
- Minimum cumulative modular average of 70% and a minimum mark of 60% in each course of the module
- Passing grade in each course
- Minimum cumulative modular average of 60% in any additional Major or Minor module completed

**Residency Requirement:**
- Minimum of 15.0 courses must be completed at Western University, as well as the majority of your modular courses

**Notes for students interested in graduate programs:**
If interested in Stats grad programs should take SS3657A & SS3858B
If interested in Comp Sci grad programs should take CS2212A/B

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**Year 1 (5.0 Courses)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus 1000A/B or 1500A/B</td>
<td></td>
</tr>
<tr>
<td>Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>Mathematics 1600A/B</td>
<td></td>
</tr>
<tr>
<td>Computer Science 1026 A/B and Computer Science 1027A/B</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>0.5 other principal courses</td>
<td></td>
</tr>
</tbody>
</table>

**Admission to Honors Specialization Module:**

Complete first year (5.0 courses) with no failures including:
- Minimum average of 70% on 3.0 principal courses with no mark less than 60% in any of the 3.0 principal courses:
  - Calculus 1000A/B or Calculus 1500A/B
  - Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
  - Mathematics 1600A/B
  - Computer Science 1026 A/B and Computer Science 1027 A/B
- 0.5 other principal course

**Recommended (but not required) first year courses:**
Statistics 1023A/B

**NOTE:** If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.

**NOTE 1:** AM1413 may be substituted for the 1.0 calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.

**MODULE (10.0 Courses)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5 courses: Computer Science 2035A/B, 2210A/B, 2211A/b, 2214A/b, 3319A/b, 3340A/B, 4414A/B.</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>1.5 courses: Computer Sciences 3377A/B (or Science 3377A/B), Computer Science 4411A/B, 4412A/B, 4416A/B, 4417A/B, 4418A/B, Statistical Sciences 4860A/B, Statistical Sciences 4864 A/B, Statistical Sciences 4960A/B</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>0.5 courses: Any 4000-level course offered by the Department of Computer Science or the Department of Statistical and Actuarial Sciences</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
</tbody>
</table>

**OPTIONS (5.0 Courses)**

An additional Major or Minor module may be taken, *excluding* Applied Statistics. Note that if you are considering a Computer Science (CS) module, you should consult with the CS department.

You must complete this additional module with a minimum mark of 60%.

**Notes:**
- Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses *that are explicitly required for each module* can be counted towards both modules.

**Progression Requirements**

- Minimum cumulative modular average of 70%
- Minimum mark of 60% in each course of module
- Passing grade in each option

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**Department Recommendation for order in which modular courses should be taken:**

**Second Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS2210A/B Data Structure and Algorithms</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>CS2211A/B Software Tools and Systems Programming</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS2857A Probability and Statistics I</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>CS2035B Dealing with Data: Analysis and Visualization</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>CS2214B Discrete Structures for Computing</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS2858B Probability &amp; Statistics II</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS2864B Statistical Programming</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
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</tbody>
</table>

**Third Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS3319A Databases I</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>CS4414A Data Science I</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS3843A Introduction to Study Design</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS3859A Regression</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>CS3340B Analysis of Algorithms I</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS3850G Data Analysis</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS3860A/B Generalized Linear Models</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
</tbody>
</table>

**Fourth Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS4844A/B Statistical Consulting</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
<tr>
<td>SS4850G Advanced Data Analysis</td>
<td>** require min grade of 65% in CS1027 for some 2000 level modular CS courses**</td>
</tr>
</tbody>
</table>

1.0 courses from the “1.0 modular course selection list” (less, if some were taken in 3rd year)
0.5 courses from the “0.5 modular course selection list”

---

**Last updated September 19, 2017**
**Major in Data Sciences Module (15.0 or 20.0 courses)**

*This is a guide only. For complete information, see the current online Academic Calendar*

_Last updated September 19, 2017_

### Year 1 (5.0 Courses)

- Calculus 1000A/B or 1500A/B
- Calculus 1501A/B or Calculus 1301B with a mark of at least 85%
- Mathematics 1600A/B
- Computer Science 1026 A/B and Computer Science 1027A/B
- 0.5 other principal course
- 2.0 options

**NOTE:** At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g. 1.0 from A and 1.0 from C)

### Graduation Requirements

- **Breadth Requirement:**
  - At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar
- **Essay Requirement:**
  - 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement
- **Senior Courses:**
  - 13.0 senior courses (numbered 2000-4999)
- **Average Requirements-for a general degree:**
  - Minimum cumulative overall average of 60%
  - Minimum cumulative modular average of 60% in the major module
  - Passing grade in each course
  - Minimum cumulative modular average of 60% in any additional Major or Minor module completed
- **Residency Requirement:**
  - Minimum of 15.0 courses (if 4 year degree) must be completed at Western University, as well as the majority of your modular courses

**Notes:**

- ** honors degree (with double major) requires a 70% average within each module, with no Ds in any modular course
- To graduate with either a 4 year general or honors BSc degree, at least 11.0 of your 20.0 courses must be taken from the Faculty of Science
- To graduate with a 3 year BSc degree, at least 8.0 of your 15.0 courses must be taken from the Faculty of Science

### Admission to the Major Module:

Complete first year (5.0 courses) with no failures including:
- Minimum grade of 60% in each of:
  - Calculus 1000A/B or Calculus 1500A/B
  - Calculus 1501A/B or Calculus 1301B with a mark of at least 85%
  - Mathematics 1600A/B
  - Computer Science 1026 A/B and Computer Science 1027 A/B
  - 0.5 other principal course

**NOTE:**
- If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.
- AM1413 may be substituted for the 1.0 Calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.

### MODULE (7.0 courses)

**3.5 courses:** Statistical Science 2857A/B, 2858A/B, 2864A/B, 3843A/B, 3850F/G, 3859A/B, 3860 A/B.

**3.5 courses:** Computer Science 2210A/B, 2211A/B, 2214A/B, 3319A/B, 3340A/B, 4414A/B, and one of Computer Science 2035A/B or 3377A/B (or Science 3377A/B)

### OPTIONS (8.0) Courses - for a 4 year Degree**

An additional Major or Minor module may be taken, excluding Applied Statistics. Note that if you are considering a Computer Science (CS) module, you should consult with the CS department.

**Notes:**

- ** For a 3 year degree you require only 3.0 optional courses.
- Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.

### Progression Requirements

- Satisfy the progression requirements for the University (Level 1 and Level II as described in the Academic Calendar)
- See graduation requirements on honors degree (with double major)
- **Note:** some modular course pre-requisites stipulate min. grade of 60%

### Department Recommendation for order in which modular courses should be taken:

#### Second Year

- CS2210A/B Data Structure and Algorithms
- CS2211A/B Software Tools and Systems Programming
- SS2857A Probability and Statistics I
- CS2035B Dealing with Data: Analysis and Visualization *
- CS2214B Discrete Structures for Computing
- SS2858B Probability & Statistics II
- SS2864B Statistical Programming

* student may choose to take CS3377 instead in year 3 (and should check CS3377 pre-reqs if they plan to do so)

#### Third Year

- CS3319A Databases I
- CS4414A Data Science I
- SS3843A Introduction to Study Design
- SS3859A Regression
- CS3340B Analysis of Algorithms I
- SS3850G Data Analysis
- SS3860A/B Generalized Linear Models

#### Fourth Year

Any modular courses not yet completed
What is Financial Modeling?

Over the past two decades, new quantitative techniques have transformed the investor decision-making process and the financial industry. Today banks, insurance companies, securities and investment firms turn to technical innovation to gain the competitive advantage. Sophisticated mathematical models are used to support investment decisions, to develop and price new securities or to manage risk.

Financial institutions but also energy companies, utilities and corporations with exposure to exchange rate or commodities risk are hiring quantitatively sophisticated employees.

Where do financial mathematicians work?

- Banks
- Analyst in Currencies and Commodities
- Investments
- Risk Management
- Securities
- Brokerage Firms
- Universities - Research/Teaching
- Pension Fund Management Companies
- Insurance Firms

What should I have taken in first year?

- Calculus 1000A/B or 1500A/B
- Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
- Math 1600A/B

Why choose a Financial Modelling Module?

- Gateway to dynamic, fascinating, and lucrative positions in the financial industry
- Internship program: you will not only benefit from the paid hands-on work experience, but you will also be mentored by a professional in the field
- Dynamic undergraduate student association
- High faculty/student ratio, undergraduate opportunities for summer funded research
- Great combination with modules in Economics
- combined Ivey HBA degree option
Honors Specialization in Financial Modeling Module (20.0 courses)

This is a guide only. For complete information, see the current Online Academic Calendar

Last updated July 12, 2017

<table>
<thead>
<tr>
<th>Year 1 (5.0 Courses)</th>
<th>Graduation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus 1000A/B or 1500A/B</td>
<td><strong>Graduation Requirements</strong></td>
</tr>
<tr>
<td>Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%</td>
<td><strong>Breadth Requirement:</strong></td>
</tr>
<tr>
<td>Math 1600 A/B</td>
<td>• At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar.</td>
</tr>
<tr>
<td>1.5 other principal course</td>
<td><strong>Essay Requirement:</strong></td>
</tr>
<tr>
<td>2.0 options</td>
<td>• 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement</td>
</tr>
<tr>
<td>NOTE: At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g. 1.0 from A and 1.0 from C)</td>
<td><strong>Senior Courses:</strong></td>
</tr>
<tr>
<td><strong>Admission to Honors Specialization Module:</strong></td>
<td>• 13.0 senior courses (numbered 2000-4999)</td>
</tr>
<tr>
<td>Complete first year (5.0 courses) with no failures including:</td>
<td><strong>Average Requirements:</strong></td>
</tr>
<tr>
<td>• Minimum average of 70% on 3.0 principal courses with no mark less than 60% in any of the 3 principal courses:</td>
<td>• Minimum overall average of 65% on the 20.0 courses</td>
</tr>
<tr>
<td>o Calculus 1000A/B or 1500A/B</td>
<td>• Minimum cumulative modular average of 70% and a minimum mark of 60% in each course of the module</td>
</tr>
<tr>
<td>o Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%</td>
<td>• Passing grade in each course</td>
</tr>
<tr>
<td>o Mathematics 1600 A/B</td>
<td>• Minimum cumulative modular average of 60% in any additional Major or Minor module completed</td>
</tr>
<tr>
<td>o 1.5 other principal course</td>
<td><strong>Residency Requirement:</strong></td>
</tr>
<tr>
<td><strong>Recommended (but not required) first year courses:</strong></td>
<td>• Minimum of 15.0 courses must be completed at Western University, as well as the majority of your modular courses</td>
</tr>
<tr>
<td>Economics 1021A/B and 1022A/B, Computer Science 1026 A/B and/or Computer Science 1027A/B, Philosophy 1200</td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td><strong>NOTE 1:</strong> If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.</td>
<td>To graduate with an Honors BSc, at least 11.0 of your 20.0 courses must be taken from the Faculty of Science</td>
</tr>
<tr>
<td><strong>NOTE 2:</strong> AM1413 may be substituted for the 1.0 Calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.</td>
<td><strong>Department Recommendation for order in which modular courses should be taken:</strong></td>
</tr>
<tr>
<td><strong>MODULE (9.5 Courses)</strong> **</td>
<td><strong>Second Year</strong></td>
</tr>
<tr>
<td>0.5 courses: Actuarial Science 2553A/B.</td>
<td>FM2555A Corporate Finance</td>
</tr>
<tr>
<td>2.0 courses: Calculus 2402A/B, Applied Math 2811B, 2814F/G, 3815A/B</td>
<td>SS2857A Probability and Statistics I</td>
</tr>
<tr>
<td>Calculus 2402A/B may be replaced by either (Calculus 2502A/B and Calculus 2503A/B) or (Calculus 2502A/B and Mathematics 2123A/B).</td>
<td>SS2503B Advanced Mathematics with Statistical Applications</td>
</tr>
<tr>
<td>When such a replacement occurs, the module will include 10.0 courses.</td>
<td>AM2811B Linear Algebra II</td>
</tr>
<tr>
<td># May be offered only in odd-numbered academic years.</td>
<td>AM2814G Numerical Analysis*</td>
</tr>
<tr>
<td><strong>OPTIONS (5.5 Courses)</strong></td>
<td>SS2858B Probability and Statistics II</td>
</tr>
<tr>
<td>Any additional Major or Minor module may be taken other than Actuarial Science.</td>
<td>SS2864 Statistical Programming*</td>
</tr>
<tr>
<td>You must complete this additional module with a minimum mark of 60%.</td>
<td>*can be taken in 3rd year</td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
<td><strong>Third Year</strong></td>
</tr>
<tr>
<td>Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.</td>
<td>AM3815A Partial Differential Equations I</td>
</tr>
<tr>
<td><strong>Progression Requirements</strong></td>
<td>SS3657A Intermediate Probability</td>
</tr>
<tr>
<td>• Minimum cumulative modular average of 70%</td>
<td>FM3613B Mathematics of Financial Options**</td>
</tr>
<tr>
<td>• Minimum mark of 60% in each course of module</td>
<td>FM3817B Optimization Methods for Financial Modelling**</td>
</tr>
<tr>
<td>• Passing grade in each optional course</td>
<td>FM3520B Financial Modelling I</td>
</tr>
<tr>
<td><strong>Fourth Year</strong></td>
<td>SS3858B Mathematical Statistics</td>
</tr>
<tr>
<td><strong>FM4521B Advanced Financial Modelling</strong></td>
<td>Any 2000 level modular courses not yet completed</td>
</tr>
<tr>
<td><strong>SS4861B Time Series</strong></td>
<td><strong>Fourth Year</strong></td>
</tr>
<tr>
<td>0.5 courses from the “0.5 modular course selection list”</td>
<td><strong>Fourth Year</strong></td>
</tr>
</tbody>
</table>

** The following course name/# changes made (W2014) are granted automatic equivalency for modular requirement purposes:

AM2503→SS2503; AM3613→FM3613; AM3817→FM3817; AS2555→FM2555; AS2557→FM2557; SS3520→FM3520; SS4521→FM4521; SS4998→FM4998; AM2813→AM2814F/G
Major in Financial Modelling Module (15.0 or 20.0 courses)

This is a guide only. For complete information, see the current Online Academic Calendar

Last updated July 11, 2017

### Year 1 (5.0 Courses)

- **Calculus 1000A/B or 1500A/B**
- **Calculus 1501A/B or (Calculus 1301B with a mark of at least 85%)**
- **Mathematics 1600 A/B**
- 1.5 other principal courses
- 2.0 options

**NOTE:** At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g. 1.0 from A and 1.0 from C)

### Graduation Requirements

**Breadth Requirement:**
- At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar

**Essay Requirement:**
- 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement

**Senior Courses:**
- 13.0 senior courses (numbered 2000-4999)

### Department Recommendation for order in which modular courses should be taken:

**Second Year**
- AS2553A: Mathematics of Finance
- FM2555A: Corporate Finance
- Calc2402A: Calculus with Analysis for Statistics
- SS2857A: Probability and Statistics I
- FM2557B: Financial Markets and Investments
- SS2503B: Advanced Mathematics for Statistical Applications
- AM2814G: Numerical Analysis
- SS2858B: Probability and Statistics II

**Third Year**
- AM3815A: Partial Differential Equations
- SS3657A: Intermediate Probability
- FM3817B: Optimization Methods for Financial Modeling
- 0.5 of FM3613b: Mathematics of Financial Options, FM3520b

**Fourth Year**
- Any modular courses not yet completed

### Notes:
- **For a 3 year degree you require only 4.0 optional courses.**
- Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.

**Progression Requirements**
- Satisfy the progression requirements for the University (Level 1 and Level II as described in the Academic Calendar)
- See graduation requirements on honors degree (with double major)

**Fourth Year**
- Any modular courses not yet completed

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**The following course name/# changes made(W2014) are granted automatic equivalency for modular requirement purposes:**
- AM2503 → SS2503;
- AM3613 → FM3613;
- AM3817 → FM3817;
- AS2555 → FM2555;
- AS2557 → FM2557;
- SS3520 → FM3520;
- AM2813 → AM2814F/G
What is a Statistician?

Statisticians collect data and analyze it, looking for patterns that explain behaviour or describe the world as it is. They design and build models using data. The models can be used to help understand the world and to make predictions.

Where do statisticians work?

- Banks & Investment Firms
- Chemical & Pharmaceutical Manufacturers
- Colleges/Universities
- Computer Service & Software Firms
- Engineering Firms
- Environmental Agencies
- Government Offices and Labs
- Marketing Firms
- Medical Research Firms
- Psychological Research Firms
- Sports Agencies

What should I have taken in first year?

- Calculus 1000A/B or 1500A/B
- Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
- Math 1600A/B

Why choose a Statistics Module?

The world is becoming increasingly data driven, and many jobs in industry, finance, government, and even sports management require a statistics background.

- Internship program: you will not only benefit from the paid hands-on work experience, but you will also be mentored by a professional in the field
- Dynamic undergraduate student association
- High faculty/student ratio, undergraduate opportunities for summer funded research
- Our modules make great combinations with modules in Biology, Psychology, Economics, and many other subjects
- Combined Ivey HBA degree option
- Courses may count towards Statistical Sciences Society education accreditation
Honors Specialization in Statistics (20.0 courses)
This is a guide only. For complete information, see the current online Academic Calendar

Year 1 (5.0 Courses)
- Calculus 1000A/B or 1500A/B
- Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
- Mathematics 1600A/B
- 1.5 other principal courses
- 2.0 options

NOTE: At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g. 1.0 from A and 1.0 from C)

Admission to Honors Specialization Module:
Complete first year (5.0 courses) with no failures including:
- Minimum average of 70% on 3.0 principal courses with no mark less than 60% in any of the 3 principal courses:
  - Calculus 1000A/B or 1500A/B
  - Calculus 1501A/B or Calculus 1301A/B with a mark of at least 85%
  - Mathematics 1600A/B
- 1.5 other principal course

Recommended (but not required) first year courses:
- Statistics 1023A/B

NOTE 1: If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.

NOTE 2: AM1413 may be substituted for the 1.0 Calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.

MODULE (9.0 Courses) **
- 0.5 courses: Calculus 2402A/B.
- 1.0 courses from: Actuarial Science 3424A/B, 4824A/B, 4823A/B, one of Statistical Sciences 4846A/B or 4853A/B.
- 1.0 courses from: Actuarial Science 3424A/B, 4824A/B, 4823A/B, Financial Modelling 3520A/B, 3613A/B, 3817B, AM3815A/B, any Statistical science course at the 4000 level, or any course at the 4000 level approved by the Department of Statistical and Actuarial Sciences.

Calculus 2402A/B may be replaced by either (Calculus 2502A/B and Calculus 2503B) or (Calculus 2502A/B and Mathematics 2123A/B). When such a replacement occurs, the module will include 9.5 courses.

OPTIONS (6.0 Courses)
Any additional Major or Minor module offered by a department other than Department of Statistical and Actuarial Science.

You must complete this additional module with a minimum mark of 60%.

Notes:
Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.

Progression Requirements
- Minimum cumulative modular average of 70%
- Minimum mark of 60% in each course of module
- Passing grade in each option

Graduation Requirements

Breadth Requirement:
- At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar.

Essay Requirement:
- 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement

Senior Courses:
- 13.0 senior courses (numbered 2000-4999)

Average Requirements:
- Minimum overall average of 65% on the 20.0 courses
- Minimum cumulative modular average of 70% and a minimum mark of 60% in each course of the module
- Passing grade in each course
- Minimum cumulative modular average of 60% in any additional Major or Minor module completed

Residency Requirement:
- Minimum of 15.0 courses must be completed at Western University, as well as the majority of your modular courses

Note:
To graduate with an Honors BSc, at least 11.0 of your 20.0 courses must be taken from the Faculty of Science

Department Recommendation for order in which modular courses should be taken:

Second Year
- Calculus 2402A Calculus with Analysis for Statistics
- SS2857A Probability and Statistics I
- SS2503B Advanced Mathematics for Statistical Applications
- SS2858B Probability & Statistics II
- SS2864B Statistical Programming

Third Year
- SS3843A Introduction to Study Design
- SS3859A Regression
- SS3657A Intermediate Probability
- SS3850G Data Analysis
- SS3858B Mathematical Statistics

0.5 courses from the 1.0 or 1.5 modular course selection list

Fourth Year
- SS4850F/G Advanced Data Analysis
- SS4861B Time Series
- 0.5 of SS4846A/B Experimental Design or SS4853A/B Sampling Theory and Methods

1.5 courses from the “1.5 modular course selection list” (1.0 if one of these is taken during 3rd year)

0.5 courses from the “1.0 modular course selection list” (1.0 if none are taken prior to 4th year)

** The following course name/# changes made (W2014) are granted automatic equivalency for modular requirement purposes:
AM2503→SS2503; AM3613→FM3613; AM3817→FM3817; SS3520→FM3520; SS4521→FM4521; SS4998→FM4998
## Major in Applied Statistics Module (20.0 courses)

*This is a guide only. For complete information, see the current online Academic Calendar*

Last updated July 12, 2017

<table>
<thead>
<tr>
<th>Year 1 (5.0 Courses)</th>
<th>Graduation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus 1000A/B or 1500A/B</td>
<td><strong>Breadth Requirement:</strong></td>
</tr>
<tr>
<td>Calculus 1501A/B or Calculus 1301B with a mark of at least 85%</td>
<td>- At least 1.0 course from each of Category A, B, and C as listed in the Academic Calendar</td>
</tr>
<tr>
<td>Mathematics 1600A/B</td>
<td><strong>Essay Requirement:</strong></td>
</tr>
<tr>
<td>1.0 courses from Psychology 1000, Biology 1001A or 1201A, Biology 1002B or 1202B, or Sociology 1020</td>
<td>- 2.0 essay courses (1.0 must be senior course). Note that any modular essay course taken can be used towards this requirement</td>
</tr>
<tr>
<td>0.5 other principal course</td>
<td><strong>Senior Courses:</strong></td>
</tr>
<tr>
<td>2.0 options</td>
<td>- 13.0 senior courses (numbered 2000-4999)</td>
</tr>
<tr>
<td><strong>NOTE:</strong> At least 1.0 course must be chosen from two of Category A, B, and C as listed in the Academic Calendar (e.g. 1.0 from A and 1.0 from C)</td>
<td><strong>Average Requirements - for general degree:</strong></td>
</tr>
</tbody>
</table>

### Admission to the Major Module:

Complete first year (5.0 courses) with no failures including:

- Minimum grade of 60% in each of:
  - Calculus 1000A/B or Calculus 1500A/B
  - Calculus 1501A/B or Calculus 1301B with a mark of at least 85%
  - Mathematics 1600A/B
  - 1.0 courses from Psychology 1000, Biology 1001A or 1201A, Biology 1002B or 1202B, or Sociology 1020
  - 0.5 other principal course

**Recommended (but not required) first year courses:** Statistical Science 1024A/B and/or Statistical Science 1023A/B.

**NOTE 1:** If not taken in first year, Math 1600A/B must be completed prior to the second term of second year.

**NOTE 2:** AM1413 may be substituted for the 1.0 Calculus course requirements and AM1411 A/B may be substituted for Mathematics 1600 A/B.

### Module (6.0 courses) **

3.0 courses:

0.5 course:
- Calculus 2402A/B.

0.5 course from:
- Biology 2290F/G, Sociology 2206A/B.

0.5 course:
- Epidemiology 2200B.

1.0 course from:
- Applied Mathematics 2402A, 3615A/B, Financial Modelling 3817A/B; Psychology 3800F/G, 3840F/G; Sociology 2236A/B, 4441A/B; Statistical Science 4846A/B, 4850F/G, 4853A/B, or any approved Statistics course at the 3000-level or higher.

0.5 course from:
- Statistical Science 4846A/B, 4853A/B.

Calculus 2402A/B may be replaced by either Calculus 2502A/B and 2503A/B, or Calculus 2502A/B and Mathematics 2123A/B. When such a replacement occurs, the module will include 6.5 courses.

### OPTIONS (9.0) Courses

Any additional Major or Minor module may be taken, other than Data Science.

**Notes:**

- **This module can only be completed in a four-year (honors or non-honors) degree.**
- Courses common to more than one module taken require substitution. However, if both modules are from the faculty of science, a maximum of 1.0 courses that are explicitly required for each module can be counted towards both modules.

### Progression Requirements

- Satisfy the progression requirements for the University (Level 1 and Level II as described in the Academic Calendar)
- See graduation requirements on honors degree (with double major)
- **Note:** many modular course pre-requisites stipulate min. grade of 60%

### Department Recommendation for order in which modular courses should be taken:

#### Second Year

- Calculus 2402A Calculus with Analysis for Statistics
- S2857A Probability and Statistics I
- S2858B Probability & Statistics II
- S2864B Statistical Programming

Courses from modular selection list(s)

#### Third Year

- S3843A Introduction to Study Design
- S3859A Regression
- S3850G Data Analysis
- Epidemiology 2200B* Introduction to Epidemiology

Courses from modular selection list(s)

* this course can be taken concurrently with Stats 2858b

#### Fourth Year

Any modular courses not yet completed