

# Major Program Modification

## *Forensic Science Program*

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### **1. Introduction**

#### **a. Background on existing program**

The BSc (Honours) in Forensic Science program has been offered since 2005. It has since proven to be a competitive and immensely successful program. This program builds on a strong science foundation in biology and chemistry, where forensic science is the application of these core sciences. The UOIT Forensic Science program has its full accreditation by the American Academy of Forensic Sciences' Forensic Education Programs Accreditation Commission (FEPAC). One of only two programs in Canada to receive this prestigious award.

Being accredited under FEPAC means that the Forensic Science program must run under more stringent standards. Many of the courses and material within them are dictated by the accrediting body. A high level of practical ability is expected and rigorous assessment methods are compulsory. Faculty and staff within the program must have a minimum level of education as well as ongoing affiliations with forensic science labs and law enforcement organisations. This means that the students graduating from such a program are highly trained and can operate under the guidelines set by most accrediting bodies.

#### **b. Rationale for new program component**

In 2013, the program was changed to offer four specializations, Forensic Biology, Forensic Chemistry, Forensic Physics, and Forensic Psychology. This allowed the students to further their knowledge in their specialization of choice, beyond the already strong biology and chemistry. While these specializations have been well received and have contributed greatly to our students' depth of knowledge, there has been little interest in the Forensic Psychology specialization. Since 2013, only one part-time student has registered for the Forensic Psychology specialization. This specialization has also created confusion among applicants to the university as they struggle to make the distinction between the Forensic Psychology Specialization in the Forensic Science program within the Faculty of Science (FS) and the Forensic Psychology program offered in the Faculty of Social Science and Humanities (FSSH). The removal of the Forensic Psychology specialization will not prevent our students from taking other psychology courses (PSYC) as these can be taken as non-science electives.

### c. Overview of new program component

The Forensic Science program will continue to provide a major in Forensic Science and specializations in either Forensic Biology, Forensic Chemistry, or Forensic Physics. The removal of the Forensic Psychology specialization will not affect the remaining specializations, nor will it change the number of courses offered within the Faculty of Science. The course FSCI 3210U Forensic Psychology is cross-listed with PSYC 3210U, which is offered by FSSH. FSCI 3210U Forensic Psychology will remain available as an elective.

### d. How the new program components fit into broader array of program offerings

The Forensic Science program prides itself on its strong science component. This will allow us to focus on the natural sciences, such as biology, chemistry, and physics, which are make up a large component of the courses we offer. It is expected to eliminate any confusion between the Forensic Science program offered in FS and the Forensic Psychology program offered in FSSH. It is also expected that the professional links we now share with the Forensic Psychology program will remain as they will continue to offer our FSCI 3210U Forensic Psychology course (cross-listed with PSYC 3210U), three of the faculty/staff members of the Forensic Science program serve on various committees within the Forensic Psychology program, and Dr. Cecilia Hageman has a cross-appointment with FSSH.

### e. Career and academic opportunities

The Forensic Science program prepares students for careers in forensic science laboratories, crime scene investigation, as well as graduate school. As the Forensic Psychology specialization required a strong background in biology and chemistry, similar to the remaining three specializations, it is expected that very little will change.

## 2. Degree Requirements

### a. Program learning outcomes

Program Level Learning Outcomes	Program Requirements that contribute to the outcome
1. Depth and breadth of knowledge	<ul style="list-style-type: none"> <li>• Student will apply in depth knowledge and critical understanding of chemistry and biology to identify, evaluate, analyse and interpret information and hypotheses relative to forensic science.</li> <li>• Student will gain an interdisciplinary knowledge within the field of forensic science by having the opportunity to further specialise in the fields of biology, chemistry, or physics.</li> </ul>
2. Knowledge of methodologies	<ul style="list-style-type: none"> <li>• Student will critically evaluate and describe the principles, concepts, theories and assumptions that form the foundation of forensic science.</li> </ul>

3. Application of knowledge	<ul style="list-style-type: none"> <li>• Student will utilise independent learning and analytical skills to solve problems specific to forensic science and broader issues outside the discipline.</li> <li>• Formulate and conduct research or equivalent advanced scholarship in forensic science or a related discipline.</li> </ul>
4. Communication skills	<ul style="list-style-type: none"> <li>• Student will be able to communicate accurately and effectively in written and oral form with members of academia, government and industry, as well as the general public on matters related to the legal applications of science.</li> </ul>
5. Awareness of limits of knowledge	<ul style="list-style-type: none"> <li>• Student will recognize the limitations of the current state of knowledge in forensic science and appreciate the need to adapt to new and emerging technologies in the field.</li> </ul>
6. Autonomy and professional capacity	<ul style="list-style-type: none"> <li>• Student is expected to become an active member of multidisciplinary and multicultural teams and appreciate the importance of academic integrity, professional ethical conduct, and social responsibility.</li> <li>• Student will pursue further scholarly pursuits, employment, and community involvement to advance the knowledge base in forensic science and contribute towards the economic and societal growth of the community.</li> </ul>

### b. Admission requirements

All first year science programs, including Forensic Science, share the same entrance requirements. The admission requirements are described specifically for Ontario secondary institutions, however these requirements also apply to students from out of province.

Current Ontario secondary school students must complete the Ontario Secondary School Diploma (OSSD) with a minimum overall average of 70 per cent on six 4U or 4M credits including English (ENG4U), advanced functions (MHF4U), and two of physics (SPH4U), chemistry (SCH4U), biology (SBI4U), or calculus and vectors (MCV4U). In addition, a combined minimum 70 per cent average in math and science courses is required.

No changes to the admission requirements will be made.

### c. Program structure

There will be no change to the Forensic Biology, Forensic Chemistry, Forensic Physics specializations:

#### Electives and breadth requirements

Students must complete 24 elective credit hours. At least 12 elective credit hours must be in science courses offered by the Faculty of Science including 6 credit hours in biology/chemistry/physics. In order to satisfy breadth requirements 9 credit hours must be in courses outside the Faculty of Science. Students must take an additional 3 credit hours in a general elective (offered by the Faculty of Science or outside the Faculty of Science).

### Thesis Project and Senior Science elective courses

Students in clear academic standing who have completed 90 credit hours of their program and six third-year required FSCI courses may optionally apply to take a two-course sequence consisting of FSCI 4410U and FSCI 4420U (Thesis Project in Forensic Science I and II). Students not accepted to take the thesis courses must complete FSCI 4430U (Directed Studies in Forensic Science) or FSCI 4460U (Mock Crime Scene Practicum), plus one additional senior science elective. A senior science elective is defined as any third- or fourth-year series science course not explicitly specified in the program map. FSCI 4430U and FSCI 4460U may be offered in either semester, depending on demand. Opportunities for the Thesis project, Directed Studies, and Mock Crime Scene Practicum are limited; for any of these options, students must apply to the forensic science fourth-year thesis co-ordinator by March 30 in the third year of their program.

### d. Program content

There will be no change to the Forensic Biology, Forensic Chemistry, Forensic Physics specializations:

#### Degree Requirements

To be eligible for the BSc (Hons) degree in Forensic Science, students must successfully complete 120 credit hours, including all courses outlined in the program map. Depending on the chosen specialization, there are different requirements to satisfy the program. Each specialization is described in more detail in the following section, *Program Map of Each Specialization*.

Students are required to declare their specialization of study by the end of the Fall semester of their first year.

#### Forensic Science Program Map

##### YEAR 1

##### Semester 1 (15 credit hours)

BIOL 1010U Biology I  
CHEM 1010U Chemistry I  
CSCI 1040U Introduction to Computer Science  
with Python  
MATH 1000U Introductory Calculus or  
MATH 1010U Calculus I  
PHY 1030U Introductory Physics or  
PHY 1010U Physics I for Physics  
Specialization

##### Semester 2 (15 credit hours)

BIOL 1020U Biology II  
CHEM 1020U Chemistry II  
FSCI 1010U Introductory Forensic Science  
MATH 1020U Calculus II  
PHY 1040U Physics for Biosciences or  
PHY 1020U Physics II for Physics  
Specialization

##### YEAR 2

##### Semester 1 (15 credit hours)

BIOL 2010U Introductory Physiology  
BIOL 2030U Cell Biology  
CHEM 2020U Introduction to Organic Chemistry  
FSCI 2010U Crime Scene Science  
STAT 2020U Statistics and Probability for  
Biological Science

##### Semester 2 (15 credit hours)

BIOL 2020U Genetics and Molecular Biology  
BIOL 2080U Biochemistry I  
BIOL 2050U Human Anatomy  
CHEM 2120U Organic Chemistry  
BIOL, CHEM, PHY, or PSYC course relevant to  
specialization

### YEAR 3

#### Semester 1 (15 credit hours)

BIOL 3020U Principles of Pharmacology and Toxicology

CHEM 2030U Analytical Chemistry

FSCI 3010U Criminalistics I

BIOL, CHEM, PHY, or PSYC course relevant to specialization

Elective

#### Semester 2 (15 credit hours)

FSCI 3030U Criminalistics II

FSCI 3040U Forensic Chemistry

FSCI 3120U Forensic Biology

BIOL, CHEM, PHY, or PSYC course relevant to specialization

Elective

### YEAR 4

#### Semester 1 (15 credit hours)

FSCI 4020U Interdisciplinary Topics in Forensic Science

FSCI 4030U Forensic Drug Chemistry and Toxicology

FSCI 4410U Forensic Science Thesis Project in Forensic Science or one of the following:

FSCI 4430U Directed Studies, or FSCI 4460U Mock Crime Scene Practicum, or Senior elective relevant to specialization\*

BIOL, CHEM, PHY, or PSYC course relevant to specialization

Elective

#### Semester 2 (15 credit hours)

FSCI 4050U Law for Forensic Scientists

FSCI 4420U Forensic Science Thesis Project in Forensic Science or one of the following:

FSCI 4430U Directed Studies, or FSCI 4460U Mock Crime Scene Practicum, or Senior elective relevant to specialization\*

BIOL, CHEM, PHY, or PSYC courses relevant to specialization

Two Elective

Note: **One of** FSCI 4430U and FSCI 4460U is mandatory

### e. Program Map of Each Specialization

The **bolded** sections in each table indicate the differences between the program maps and thus represent what is unique for each specialization.

**Bachelor of Science (Honours) in Forensic Science Program Map - Biology**

Year-Sem.	Subject	Subject	Subject	Subject	Subject
1-1	Chemistry I CHEM1010U	Biology I BIOL1010U	Physics I PHY1010U OR Introductory Physics PHY1030U	Introductory Calculus MATH 1000U OR Calculus I MATH1010U	Introduction to Computer Science with Python CSCI1040U
1-2	Chemistry II CHEM1020U	Biology II BIOL1020U	Physics for Biosciences PHY1040U	Calculus II MATH1020U	Introductory Forensic Science FSCI1010U
2-1	Introductory Physiology BIOL2010U	Cell Biology BIOL2030U	Introduction to Organic Chemistry CHEM2020U	Statistics and Probability for Biological Science STAT2020U	Crime Scene Science FSCI2010U
2-2	Biochemistry BIOL2080U	Genetics and Molecular Biology BIOL2020U	Human Anatomy BIOL2050U	Organic Chemistry CHEM2120U	<b>Elective*</b>
3-1	Analytical Chemistry CHEM2030U	Principles of Pharmacology and Toxicology BIOL3020U	<b>Population Genetics FSCI3110U</b>	Criminalistics I FSCI3010U	<b>Elective*</b>
3-2	<b>Forensic Biology FSCI3020U</b>	Criminalistics II FSCI3030U	Forensic Chemistry FSCI3040U	<b>Elective*</b>	<b>Elective*</b>
4-1	Thesis Project in Forensic Science** FSCI4410U OR FSCI 4430U or FSCI 4460U, plus Senior Science Elective	Interdisciplinary Topics in Forensic Science FSCI4020U	Forensic Drug Chemistry and Toxicology FSCI4030U	<b>Advanced Forensic Biology FSCI4120U</b>	<b>Elective*</b>
4-2	Thesis Project in Forensic Science** FSCI4420U OR FSCI 4430U or FSCI 4460U, plus Senior Science Elective	Law for Forensic Scientists FSCI4050U	<b>Elective</b>	<b>Elective*</b>	<b>Elective*</b>

**Bachelor of Science (Honours) in Forensic Science Program Map - Chemistry**

<b>Year-Sem.</b>	<b>Subject</b>	<b>Subject</b>	<b>Subject</b>	<b>Subject</b>	<b>Subject</b>
<b>1-1</b>	Chemistry I CHEM1010U	Biology I BIOL1010U	Physics I PHY1010U OR Introductory Physics PHY1030U	Introductory Calculus MATH 1000U OR Calculus I MATH1010U	Introduction to Computer Science with Python CSCI1040U
<b>1-2</b>	Chemistry II CHEM1020U	Biology II BIOL1020U	Physics for Biosciences PHY1040U	Calculus II MATH1020U	Introductory Forensic Science FSCI1010U
<b>2-1</b>	Introductory Physiology BIOL2010U	Cell Biology BIOL2030U	Introduction to Organic Chemistry CHEM2020U	Statistics and Probability for Biological Science STAT2020U	Crime Scene Science FSCI2010U
<b>2-2</b>	Biochemistry BIOL2080U	Genetics and Molecular Biology BIOL2020U	Human Anatomy BIOL2050U	Organic Chemistry CHEM2120U	<b>Elective*</b>
<b>3-1</b>	Analytical Chemistry CHEM2030U	Principles of Pharmacology and Toxicology BIOL3020U	<b>Physical Chemistry for Biosciences CHEM3140U</b>	Criminalistics I FSCI3010U	<b>Elective*</b>
<b>3-2</b>	<b>Instrumental Analytical Chemistry CHEM3830U</b>	Criminalistics II FSCI3030U	Forensic Chemistry FSCI3040U	Forensic Biology FSCI 3020U	<b>Elective*</b>
<b>4-1</b>	Thesis Project in Forensic Science** FSCI4410U OR FSCI 4430U or FSCI 4460U, plus Senior Science Elective	Interdisciplinary Topics in Forensic Science FSCI4020U	Forensic Drug Chemistry and Toxicology FSCI4030U	<b>Elective*</b>	<b>Elective*</b>
<b>4-2</b>	Thesis Project in Forensic Science** FSCI4420U OR FSCI 4430U or FSCI 4460U, plus Senior Science Elective	Law for Forensic Scientists FSCI4050U	<b>Fire Investigation FSCI4040U</b>	<b>Elective*</b>	<b>Elective*</b>

**Bachelor of Science (Honours) in Forensic Science Program Map - Physics**

<b>Year-Sem.</b>	<b>Subject</b>	<b>Subject</b>	<b>Subject</b>	<b>Subject</b>	<b>Subject</b>
<b>1-1</b>	Chemistry I CHEM1010U	Biology I BIOL1010U	Physics I PHY1010U OR Introductory Physics PHY1030U	Introductory Calculus MATH 1000U OR Calculus I MATH1010U	Introduction to Computer Science with Python CSCI1040U
<b>1-2</b>	Chemistry II CHEM1020U	Biology II BIOL1020U	<b>Physics II PHY1020U</b>	Calculus II MATH1020U	Introductory Forensic Science FSCI1010U
<b>2-1</b>	Introductory Physiology BIOL2010U	Cell Biology BIOL2030U	Introduction to Organic Chemistry CHEM2020U	Statistics and Probability for Biological Science STAT2020U	Crime Scene Science FSCI2010U
<b>2-2</b>	Biochemistry BIOL2080U	Genetics and Molecular Biology BIOL2020U	Human Anatomy BIOL2050U	<b>Elective*</b>	Organic Chemistry CHEM2120U
<b>3-1</b>	Analytical Chemistry CHEM2030U	Principles of Pharmacology and Toxicology BIOL3020U	<b>Mechanics I PHY2030U</b>	Criminalistics I FSCI3010U	<b>Elective*</b>
<b>3-2</b>	<b>Electricity and Magnetism PHY2010U</b>	Criminalistics II FSCI3030U	Forensic Chemistry FSCI3040U	Forensic Biology FSCI3020U	<b>Elective*</b>
<b>4-1</b>	Thesis Project in Forensic Science** FSCI4410U OR FSCI 4430U or FSCI 4460U, plus Senior Science Elective	Interdisciplinary Topics in Forensic Science FSCI4020U	Forensic Drug Chemistry and Toxicology FSCI4030U	<b>Elective*</b>	<b>Elective*</b>
<b>4-2</b>	Thesis Project in Forensic Science** FSCI4420U OR FSCI 4430U or FSCI 4460U, plus Senior Science Elective	Law for Forensic Scientists FSCI4050U	<b>Forensic Physics Applications PHY4120U</b>	<b>Elective*</b>	<b>Elective*</b>



**Specialization to be removed**

**Bachelor of Science (Honours) in Forensic Science Program Map – Psychology**

Year-Sem.	Subject	Subject	Subject	Subject	Subject
1-1	Chemistry I CHEM1010U	Biology I BIOL1010U	Physics I PHY1010U OR Introductory Physics PHY1030U	Introductory Calculus MATH 1000U OR Calculus I MATH1010U	Introduction to Computer Science with Python CSCI1040U
1-2	Chemistry II CHEM1020U	Biology II BIOL1020U	Physics for Biosciences PHY1040U	Calculus II MATH1020U	Introductory Forensic Science FSCI1010U
2-1	<b>Introductory Physiology BIOL2010U</b>	Cell Biology BIOL2030U	Introduction to Organic Chemistry CHEM2020U	Statistics and Probability for Biological Science STAT2020U	Crime Scene Science FSCI2010U
2-2	Biochemistry BIOL2080U	Genetics and Molecular Biology BIOL2020U	Human Anatomy BIOL2050U	<b>Introductory Psychology PSYC1000U</b>	Organic Chemistry CHEM2120U
3-1	Analytical Chemistry CHEM2030U	Principles of Pharmacology and Toxicology BIOL3020U	<b>Elective*</b>	Criminalistics I FSCI3010U	<b>Elective*</b>
3-2	Forensic Biology FSCI3020U	Criminalistics II FSCI3030U	Forensic Chemistry FSCI3040U	<b>Forensic Psychology FSCI3210</b>	<b>Elective*</b>
4-1	Thesis Project in Forensic Science** FSCI4410U OR FSCI 4430U or FSCI 4460U, plus Senior Elective approved by Faculty	Interdisciplinary Topics in Forensic Science FSCI4020U	Forensic Drug Chemistry and Toxicology FSCI4030U	<b>Elective*</b>	<b>Elective*</b>
4-2	Thesis Project in Forensic Science** FSCI4420U OR FSCI 4430U or FSCI 4460U, plus Senior Elective approved by Faculty	Law for Forensic Scientists FSCI4050U	<b>Elective*</b>	<b>Elective*</b>	<b>Elective*</b>

**APPROVAL DATES**

Date of submission	<b>August 18<sup>th</sup>, 2015</b>
Curriculum Committee approval	<b>August 19<sup>th</sup>, 2015</b>
Faculty Council approval	<b>September 16<sup>th</sup>, 2015</b>
CPRC approval	<b>September 30<sup>th</sup>, 2015</b>