

# Life Sciences and Biochemistry

**Michael D. Kawaja, PhD**  
**Associate Dean**  
**Life Sciences and Biochemistry**

**Professor, Department of Biomedical and Molecular Sciences**  
**Researcher, Centre for Neuroscience Studies**

**Faculty of Health Sciences**



**Faculty of Arts  
and Science**

**Faculty of Health  
Sciences**

**Biology  
Chemistry  
Geology  
SKHS  
Math  
Physics  
Psychology**

**LISC  
&  
BCHM**

**Medicine  
Nursing  
Rehabilitation  
Therapy**

# Faculty of Arts And Science

**1st year declared ...  
Direct Entry**

- Music
- Kinesiology
- Fine art
- Physical and Health Education

**1<sup>st</sup> year undeclared ....  
Not Direct Entry**

- Social Sciences
- Life & Physical Sciences (**e.g., LISC and BCHM**)
- Humanities
- Languages
- Creative Arts
- Interdisciplinary Programs

### ***What is “Life Sciences” at Queen’s?***

This is a highly sought after undergraduate program that offers students both lecture instruction and laboratory opportunities to learn about human life. With courses ranging from the anatomy and physiology of the organs in our bodies to the bacteria and viruses that compromise organ functions to the cells that give rise to carcinomas to the drugs used to cure us of infection and disease.

### ***What is “Biochemistry” at Queen’s?***

This undergraduate program offers students a unique opportunity to learn about the machinery in cells that governs their shape, movement, and functional importance, as well as how this machinery is altered in response to injury and disease.

## LIFE SCIENCES (LISC)

Anatomy and Cell Biology  
Cancer Biology  
Biochemistry  
Epidemiology and Community Health  
Microbiology and Immunology  
Neurosciences  
Pathology and Molecular Medicine  
Pharmacology and Toxicology  
Physiology  
**Etc!**

## BIOCHEMISTRY (BCHM)

Biochemistry  
Chemistry  
+  
Cell Biology  
Microbiology and Immunology  
Pathology and Molecular Medicine  
Pharmacology and Toxicology  
Physiology  
**Etc!**

### **Faculty who teach in LISC and BCHM are in ...**

Department of Biomedical and Molecular Sciences  
Department of Pathology and Molecular Medicine  
Department of Public Health Sciences

+

Departments of Biology, Chemistry, Mathematics, Physics, etc

**Entry into 2<sup>nd</sup> year LISC requires:**

**GPA greater than 2.0**

**(automatic acceptance GPA  $\geq$  3.2)**

**Pass in 1<sup>st</sup> year Chemistry**

**No less than 27-unit load**

**Entry into 2<sup>nd</sup> year BCHM requires:**

**GPA greater than 2.5**

**(automatic acceptance GPA  $\geq$  2.9)**

**Pass in 1<sup>st</sup> year Chemistry**

**No less than 27-unit load**

**Maximum combined enrolment in Sept 2018 ...**

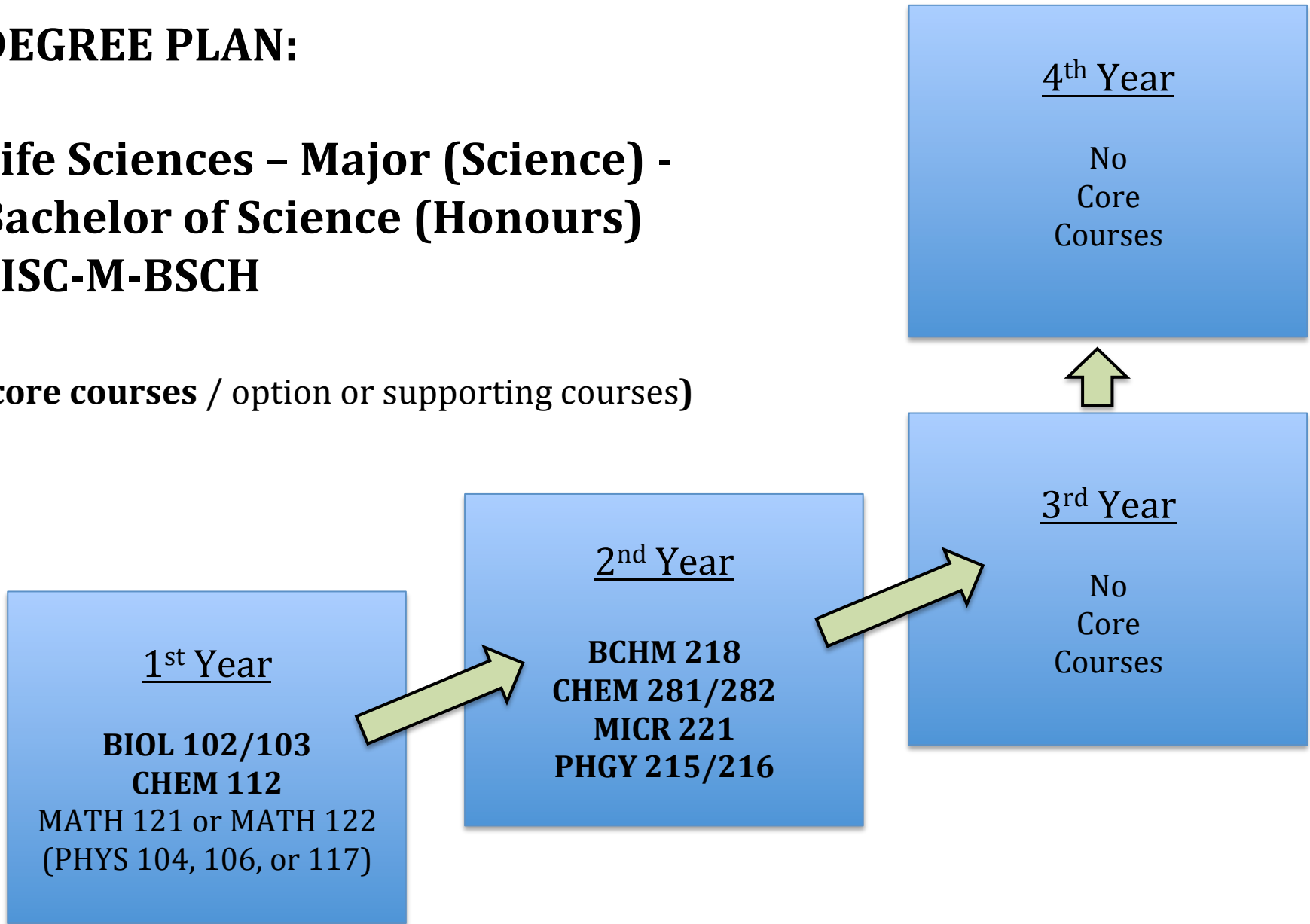
**440**

***Pending list* between automatic acceptance and final class list – last week of May**

# DEGREE PLAN:

## Life Sciences – Major (Science) - Bachelor of Science (Honours) LISC-M-BSCH

(core courses / option or supporting courses)



**\*\* taking a declared minor??**

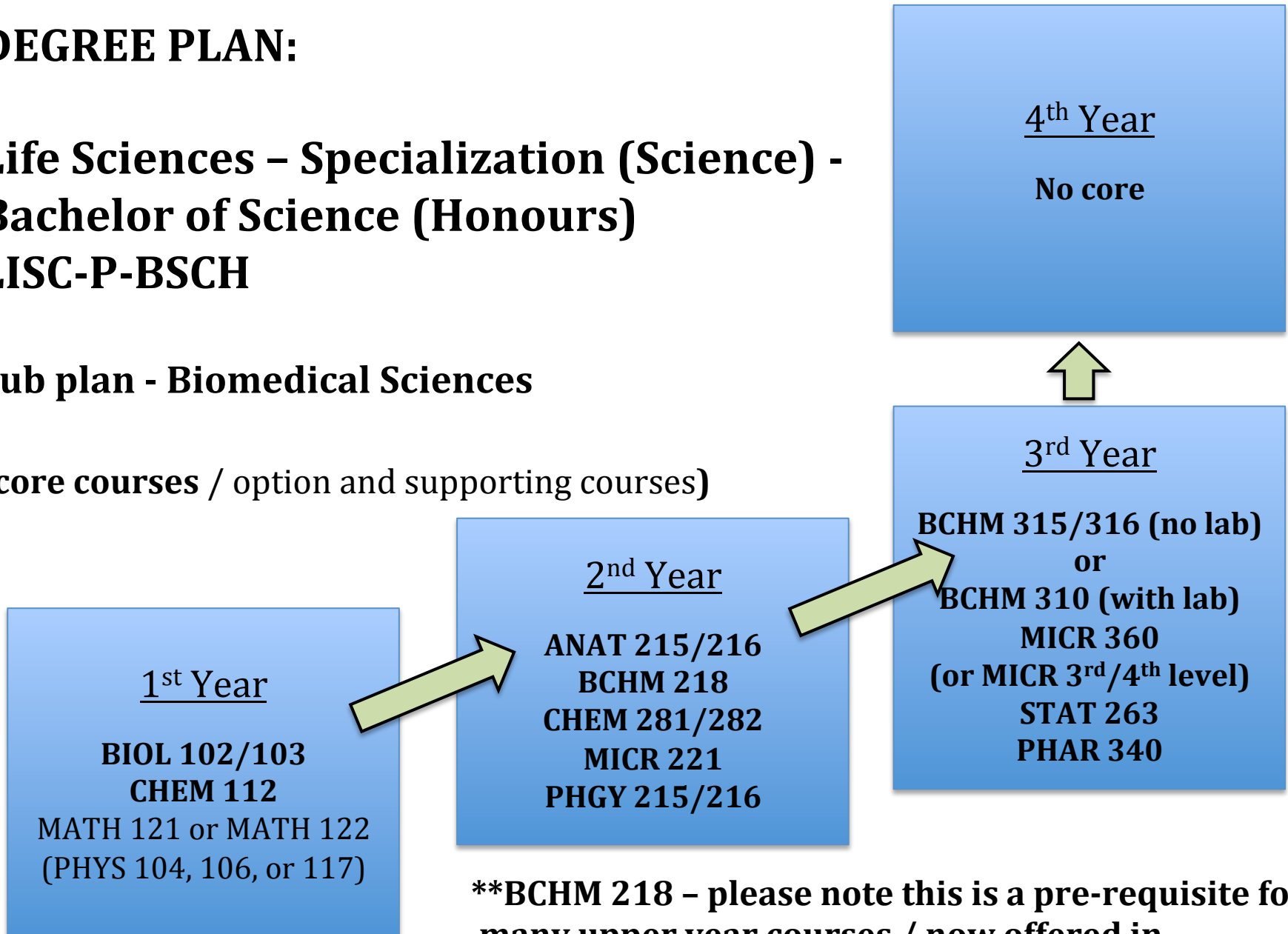
# DEGREE PLAN:

## Life Sciences – Specialization (Science) - Bachelor of Science (Honours)

### LISC-P-BSCH

#### Sub plan - Biomedical Sciences

(core courses / option and supporting courses)



**\*\*BCHM 218 – please note this is a pre-requisite for many upper year courses / now offered in summer term**



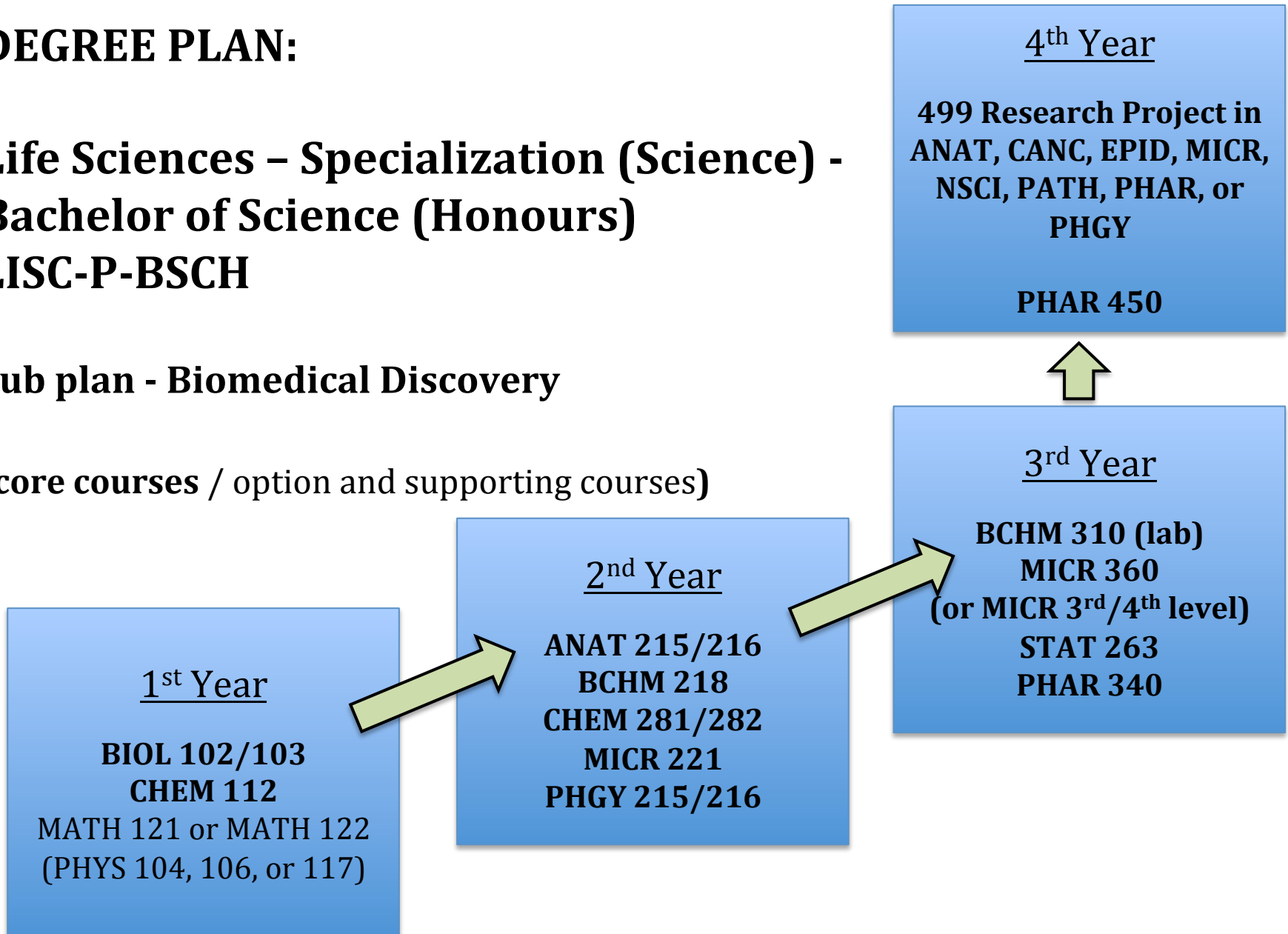
# DEGREE PLAN:

## Life Sciences – Specialization (Science) - Bachelor of Science (Honours)

LISC-P-BSCH

Sub plan - Biomedical Discovery

(core courses / option and supporting courses)



# DEGREE PLAN:

## Life Sciences – Specialization - Bachelor of Science (Honours) LISC-P-BSCH

4 Sub plans

(core courses shown)

### 3<sup>rd</sup> Year

BCHM 310 (lab)  
MICR 360  
(or MICR 3<sup>rd</sup>/4<sup>th</sup> level)  
STAT 263  
PHAR 340

CANCER BIOLOGY

CARDIORESPIRATORY

DRUG DEVEL. / HUMAN TOXI.

NEUROSCIENCE

### 3<sup>rd</sup> / 4<sup>th</sup> Year

CANC 440  
CANC 499  
PHAR 450

### 3<sup>rd</sup> / 4<sup>th</sup> Year

PHGY 355 & CRSS 453  
LISC 454 or CRSS 456  
499 in ANAT, MICR, NSCI,  
PATH, PHAR, or PHGY  
PHAR 450

### 3<sup>rd</sup> / 4<sup>th</sup> Year

DDHT 459, DDHT 460, &  
PHAR 416  
499 in ANAT, EPID, MICR,  
NSCI, PATH, PHAR, or PHGY  
PHAR 450

### 3<sup>rd</sup> / 4<sup>th</sup> Year

NSCI 323 or NSCI 324  
NSCI 499  
PHAR 450

# Combined BScH/MSc Accelerated Program

## ***Combined BScH/MSc (Biomedical & Molecular Sciences)***

The Department of *Biomedical & Molecular Sciences* is very excited to launch a new initiative which offers a combined program of a BScH/MSc (*Biomedical & Molecular Sciences*). This program offers an opportunity for students in the 4<sup>th</sup> year of their Honours program (Biomedical Discovery stream of the Life Sciences or Biochemistry programs) to take up to 2 courses in *Biomedical & Molecular Sciences* at the graduate level which would then allow these students to enter the graduate program with advanced standing. Research begun in the 4<sup>th</sup> year thesis project could be carried forward as a foundation for the graduate thesis, which would create an opportunity for exceptional students to complete the graduate degree within 4 terms.

Admission to the combined program is a two-step process.

### Step 1:

Students will have the option to apply for admission to the combined program (permission to take graduate level courses) in the winter term of the 3<sup>rd</sup> year, in parallel with the process for admittance to the Honours year and the thesis research project. All applications will then be reviewed by the DBMS Graduate Admissions Committee.

If accepted into the combined program, in Year 4 of the BSc (Honours) program students will be permitted to take up to two 3.0 graduate level courses for a total of 3 or 6 credits towards the 12 credits required for the MSc degree. It is the student's responsibility to gain admission to these graduate courses following acceptance into the program. These courses will be counted as electives or science options towards completion of the degree requirements in the BSc (Hons) program. Only 1 of these courses may be a combined undergraduate/graduate (400/800) level course. The second (and all subsequent) graduate courses must be graduate only (800 and/or 900 level).

### Step 2:

For admission to the MSc program in *Biomedical & Molecular Sciences with advanced standing*, students will be expected to complete the standard SGS application process, have an overall A- average in the previous 2 years of their undergraduate program, and have demonstrated significant research productivity in the 4<sup>th</sup> year thesis project. In order for the student to be granted advanced standing in the M.Sc. degree program, they must have received a final grade of at least B+ (B plus) in the graduate course(s) taken during the 4<sup>th</sup> year and meet all other requirements for admission to the MSc program in *Biomedical & Molecular Sciences*.

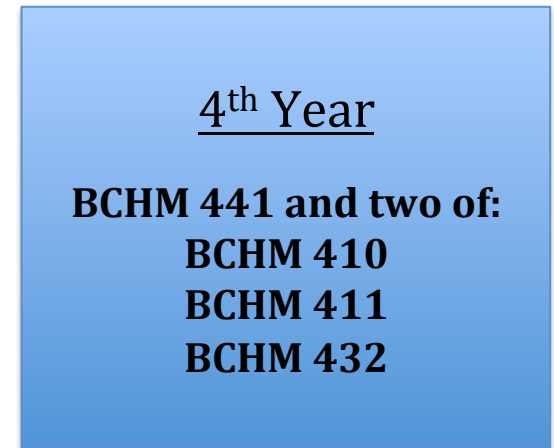
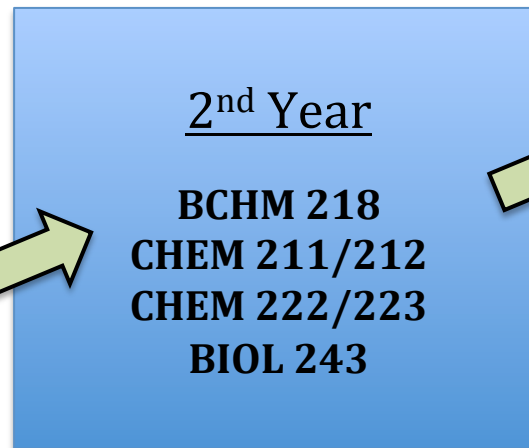
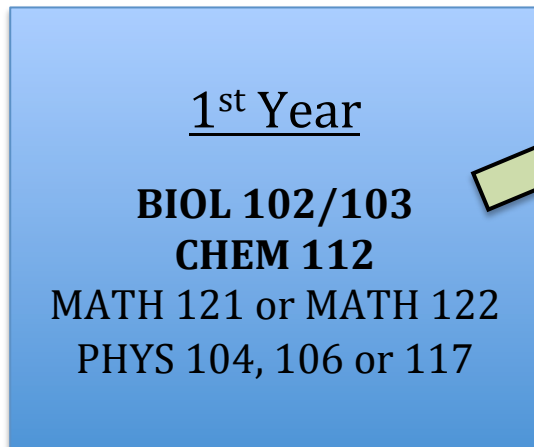
### Applications:

Students should apply in writing via email to (Dr Louise Winn: [winnl@queensu.ca](mailto:winnl@queensu.ca)) with a copy to the Graduate Assistant Diane Sommerfeld ([diane.sommerfeld@queensu.ca](mailto:diane.sommerfeld@queensu.ca)) and at that time should provide a copy of their transcript, a brief description (1 Paragraph) of their research project, the name of their Project Supervisor, and identify the graduate level courses they hope to enroll in during their 4<sup>th</sup> year.

# DEGREE PLAN:

## Biochemistry – Major (Science) - Bachelor of Science (Honours) BCHM-M-BSCH

(core courses / option and supporting courses)

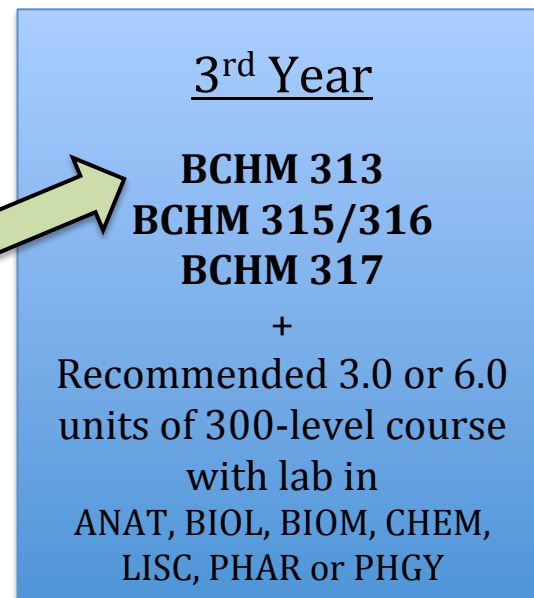
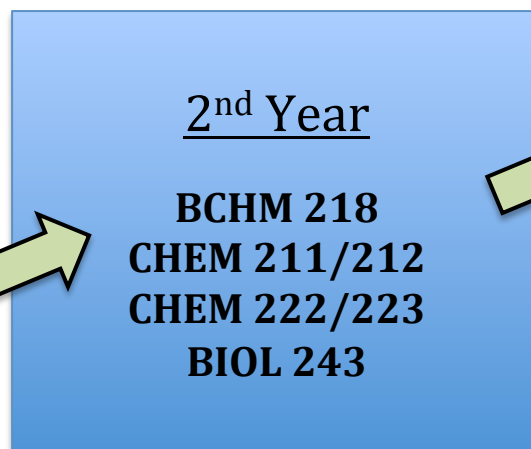
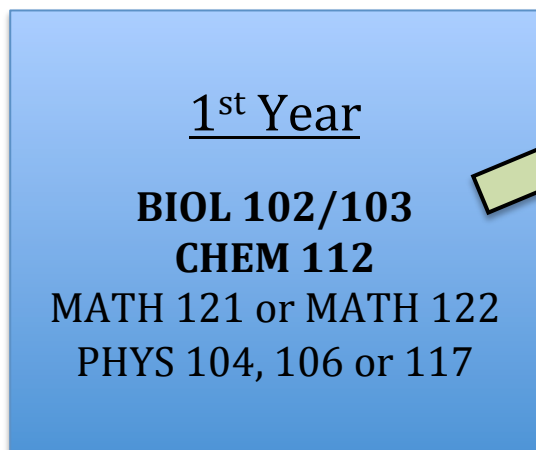


# DEGREE PLAN:

## Biochemistry – Specialization (Science) - Bachelor of Science (Honours)

### BCHM-P-BSCH

(core courses / option and supporting courses)



# DEGREE PLAN:

## Biochemistry – Specialization (Science) - Bachelor of Science (Honours)

### BCHM-P-BSCH

Cooperative program  
(core courses shown)

#### 3<sup>rd</sup> Year

BCHM 313  
BCHM 315/316  
BCHM 317

+

3.0 or 6.0 units of 300-  
level course with lab in  
ANAT, BIOL, BIOM, CHEM,  
LISC, PHAR or PHGY

#### 4<sup>th</sup> Year

BCHM 411  
BCHM 442

+

BCHM 421

(8-month placement away)

+

BCHM 422

(4-month period at Queen's)

Final 4-month placement  
away

(Research Project +  
Cooperative)

#### 5<sup>th</sup> Year

BCHM 410  
BCHM 432

# How about an “exit” strategy?

Did you get an acceptance to medical school in your 3<sup>rd</sup> year?

Life Sciences – General (Science)  
Bachelor of Science

Honours routes of Major or  
Specialization

Biochemistry – General (Science)  
Bachelor of Science

Honours routes of Major or  
Specialization

## STUDENTS

- ▶ Looking for a Job?
- ▶ Wondering about Career Options?
- ▶ Thinking about Grad School?
- ▶ Want to Build Experience?
- ▶ Tipsheets & Career Resources
- ▼ Services for Students
  - Graduate and Professional Students
  - ▼ Employment Programs
    - M.Eng. Industrial Internship Program
    - **QUIP**
    - SWEP
    - Work Study Program
  - Drop-in Career Advising
  - Events, Fairs, & Information Sessions
  - Career Advising & Resource Area
    - ▶ Workshops
    - ▶ Appointments
  - It All Adds Up
  - LinkedIn at Queen's

## Queen's Undergraduate Internship Program (QUIP)

The Queen's Undergraduate Internship Program (QUIP) provides students with a 12-16 month work experience. QUIP internships are paid, professionally supervised, career-related positions designed to offer second or third year students the opportunity to learn about current advances, practices and technologies in business and industry. The program is open to students in the Faculty of Engineering and Applied Science (domestic and international), Faculty of Arts and Science (domestic and international), School of Computing (domestic and international) and the School of Business (domestic only; not for credit). Due to the longer work term (compared to a 4-month co-op), employers are highly motivated to maximize their time and investment. This means that Internship students are offered the opportunity to manage more extensive and significant projects.

[Search QUIP job postings](#)

[Contact QUIP coordinator](#)



**Got Questions?** Come and see the QUIP Coordinator during QUIP Drop-in Advising Hour – no appointment necessary!

**QUIP Drop-in Advising:** Every Tuesday and Thursday from 11-12 in the [Career Advising and Resources Area](#) (Sept-April)

### – Eligibility

The program is open to students in the Faculty of Engineering and Applied Science (domestic and international), Faculty of Arts and Science (domestic and international), School of Computing (domestic and international) and the School of Business (domestic only - please see an academic advisor in the School of Business before registering).

- Queen's students can participate in QUIP after their 2nd or 3rd year of studies and must be returning to complete their final academic term after the internship.
- Students must have a minimum GPA of 1.9 and the permission of your undergraduate chair to register in QUIP.



## **Some recent examples of possible internships ...**

**The Centre for Drug Research and Development** in Vancouver is hiring for multiple 12-month internships to start in May 2017, such as Pharmacology Toxicology Intern, Data Integrity Intern, Biologics Screening Intern, Formulations Intern, Biologics Molecular Intern, and Screening Intern. These opportunities **close on January 23**.

**PnuVax Biopharmaceuticals**, a vaccine company in Montreal, is hiring multiple students for the 12-month role of Biotechnology Intern to start in May 2017. They are looking for students with an interest in hands-on laboratory work, attention to detail, and strong writing skills. This opportunity **closes February 15**.

**Hydro One** in Toronto is hiring 2 students for a 12-16 month internship starting in May as an Environmental Planner. They are targeting students in science disciplines related to Biology and Environmental Science. This opportunity **closes on January 30**.



# Arts and Science Online

Continuing and Distance Studies, Queen's University

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## Online Bachelor of Science

A *General Bachelor of Science plan* is a concentration of 48 units in one subject area and 42 units of electives taken from other subject areas. Queen's Arts and Science Online currently offers the following online Bachelor of Science degree plan:

- Bachelor of Science (General) in Life Sciences

Visit the [Courses page](#) to see the range of options for your electives. Please note that the option courses listed below may not be offered every year, and that you are not required to take all of them to complete your degree. You simply need to take just enough to meet the elective requirement in your chosen plan.

**+ Admission Requirements (Online Bachelor of Science)**

**+ Life Sciences Program Plan**

### Upcoming Key Dates

**November 6, 2015**

Fall and Fall/Winter Exam Centre Change Deadline

**November 6, 2015**

Fall Term Academic Drop Deadline

**December 4, 2015**

Fall Term Term End

[See More Dates](#)

### Apply

The application process for our courses is entirely online. Click on this button to get started.

[Apply Now](#)

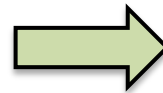
# International Programs Office

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## Exchange

CANADA



- Australia
- United Kingdom
- China, Taiwan, Hong Kong
- Singapore
- France
- Sweden
- Etc ...
- New Zealand
- Germany
- Netherlands