BIOCHEMISTRY DEGREE SPECIALIZATIONS

FIRST AND SECOND YEAR SPECIALIZATION REQUIREMENTS

REQUIRED COURSES

First Year:

BIOL 121	(3 credits)	*These courses, or equivalents, are **key pre-requisites** to required second year Chemistry and Biology courses. They **must** be completed during **Winter Session of 1st year** to be eligible to apply for 2nd year Biochemistry.*
CHEM 121, 123	(8)	
MATH 100, 101	(6)	

First *or* Second Years:

ENGL 100-level	(6)	- *Should normally be completed before the end of 3rd year Winter Session.*
PHYS 1st	(3)	- *Students lacking PHYS 12 must take PHYS 100 and an additional 3 credits of PHYS 1st to fulfill this requirement.*
BIOL 140	(2)	
BIOL 112	(3)	- *Biochemistry **Honours** specialization only. Also given during the summer session.*
Electives	(as needed)	- *See Third/ Fourth year pages for further information about elective requirements.*

(Students may replace 3 credits of ENGL with SCIE 113)

(Students should not normally defer more than 3 or 6 credits of first year coursework to second year.)
(Some first year ENGL and PHYS courses may also be taken during the summer session following first year.)
*(Students in the Biochem. and Chem. **Combined Honours** specialization need to complete 6 credits of PHYS 1st.*

Second Year:

BIOC 203	(3)	*BIOL 200, BIOC 203 & CHEM 203/213/245 are key pre-requisites to 3rd year Biochemistry.*
BIOL 200, 234	(6)	
CHEM 203, 213	(7)	*With the exception of MICB 202, these courses are given in a Standard Timetable (STT) that is only open to students registered in Biochemistry second year degree specializations. For additional information about the STTs, please see the following page.*
CHEM 245	(1)	
CHEM 211	(4)	
MATH 200	(3)	
MICB 202	(3)	- *Biochemistry **Honours** specialization only*
CHEM 208	(3)	- *Biochemistry and Chemistry **Combined Honours** specialization only.*

Students are encouraged to check out the UBC calendar for the most up to date information. Please see: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,417

NOTES

***Admission to Second Year Biochemistry*:**

- Students who have completed the required first year pre-requisite courses will be eligible to use the **Faculty of Science online Life Sciences application system**, which is normally available in June. Successful students are admitted directly by Science, prior to second year registration. More information about this will be available from the Faculty of Science; see also: http://www.science.ubc.ca/students/degree/apply.
- Students who wish to enquire about transferring from another degree specialization or another university into Biochemistry should **contact a Biochemistry adviser directly** to make their request.
- The first year Winter Session standing needed for successful admission to second year Biochemistry in previous years has been in the 72 to 76% range.

***Honours Specialization Requirements*:** Students planning a Biochemistry Honours specialization should register in a minimum of 30 credits during each Winter Session, and will need to maintain a minimum Winter Session average (with no failures). In previous academic sessions this average was 76%.

***Note that*:**

- **CHEM 203/213/245 and BIOC 203** are **required** of all Biochemistry specialization students–***Students transferring from another degree specialization with CHEM 233 and/or BIOL 201 should see a specialization adviser.*** Students who completed BIOL 201 or CHEM233 (and CHEM235) with a grade of ≥76% **MAY** be able to substitute BIOC 203 with BIOL 201 or CHEM 203 with CHEM 233.
- **BIOL 234 is required of all Biochemistry specializations**. Students with a grade of ≥70% **MAY** be able to substitute BIOL 234 with BIOL 233.
- Chemistry specialization students who complete second year successfully and also take BIOL 200/201, may be qualified for, and eligible to transfer into, a Biochemistry specialization in third year.

STANDARD TIMETABLES FOR SECOND YEAR REGISTRATION

Registration into most of the courses required by Biochemistry students is currently via Standard Timetables (STTs). A series of STTs has been created that allows students to register in a conflict-free set of the core courses: BIOC 203, BIOL 200, 234, CHEM 211, 203, 213, 245 and MATH 200, totaling 23 credits.

Students must have completed two semesters of first-year chemistry, BIOL 121 (or equivalent), as well as courses in both first-year differential and integral calculus, in order to utilize the STTs. Students in Science One will have met the equivalent prerequisites. The STTs will be available through the SSC by following the Standard Timetables/BSC links. The STTs may also be viewed on the Winter Session Course Schedule (https://courses.students.ubc.ca/cs/main).

The number of STTs is limited and is related directly to the amount of laboratory space available in the organic chemistry course CHEM 245. The amount of space in this key course has been at its limit for some time with the result that ***not all students wishing to follow either biochemistry or chemistry specializations can be accommodated***. Students who are unable to register in one of the STTs are encouraged to consider other specialization options as soon as possible; excessive delay often means that courses in alternate specializations become filled.

All of the STTs are "fixed" which means that you must add any missing courses that you require, as well as your electives, to the STT that you have chosen. Departments will not move any component of the STTs to accommodate a potential conflict; you must schedule your other courses in the free space in the timetables. Thus, you should first select an STT and then add your other courses to this framework. Note that the registration system will not allow conflicts in a timetable and thus careful selection of courses is necessary. Biochemistry students will need to add any desired electives to the STT selected, as well as BIOL 112 or MICB 202 if needed (honours specialization).

Students must take **all** components of the chosen STT - the only exception is as follows:

- Students who complete MATH 200, and/or BIOL 200 and/or BIOL 234 and/or CHEM 233/235 (with a grade of ≥76%) during the summer may request that it be dropped from their STT.

Requests to drop BIOL 200, BIOL 234, CHEM233 or MATH 200, from your STT should be directed to the Chemistry department at STTS@chem.ubc.ca after your registration opens. **If possible**, you should register into your chosen STT first. Please include the name(s) of the requested course drop(s) in the E-mail subject line; the body of the e-mail must contain your full name, student number, specialization, your STT number (or a prioritized list of available STTs if you were unable register into a STT), and the requested course(s) to be dropped.

Students who have already completed, or who have transfer credit for, CHEM 203/213/245, should be able to register directly into the remaining Chemistry and/or Math courses that they require; registration in an STT should not be necessary. Should you encounter any difficulties accessing needed Chemistry courses, please contact undergrad@chem.ubc.ca**.**

Biochemistry specialization students who:

- still need to take CHEM 203/213/245 but who have third year or higher standing in the Faculty of Science,
- have completed BIOL 201 with a grade of ≥76%,

should contact a biochemistry adviser.

Updated March 1st, 2015

BIOCHEMISTRY MAJOR
THIRD AND FOURTH YEAR SPECIALIZATION REQUIREMENTS

REQUIRED COURSES

Third Year:

BIOC 301, 303	(9 credits)	*[Lab & lecture; both full year. Pre-requisite to BIOC 4xx]*
BIOC 304	(3)	*[Research skills theory course. Required for promotion to 4th year.]*
BIOL 335	(3)	*[Genetics. Pre-requisites to BIOC410 - may also be taken in summer.]*
Electives	(as needed)	

Third *or* Fourth Years:

CHEM 304, 313	(6)	*[Biophysical Chemistry & Organic chemistry]*
CHEM 315, 335	(2)	*[Term 1 and 2 third year chemistry labs]*

(Many students defer 3/4 credits of CHEM 3xx to 4th year to reduce their 3rd year course load.)

Fourth Year:

BIOC 402, 410	(6)	*[Proteins and Nucleic acids]*
TWO of BIOC 403, 421, 440, 450, 460	(6)	*[New smaller seminar style exit courses.]*
Electives	(as needed)	

Second year Biochemistry standing DOES NOT guarantee admission into the third year of the specialization. Entry into Bioc 301 is required and this is based on academic record.

ELECTIVES

Arts (12): At least 12 credits of electives must be in **Arts** (courses offered for credit in the Faculty of Arts). Any courses taken to fulfill the Communication Requirement **CANNOT** be used to fulfill the Arts Elective.

Breadth (9): A further 9 credits of elective must either be in **Arts**, or in **Science** courses 'Outside the Field of the Major'. The field of the Major for Biochemistry is defined as all BIOC, BIOL, CHEM and MICB courses and all courses offered for Science credit by departments in the Faculty of Medicine (ANAT, MEDG, PCTH, PHYL, CAPS).

Courses taken in other faculties (e.g. Applied Science, Commerce, Education, Forestry, Pharmacy, etc.) will ***not*** normally count as breadth electives.

Upper Level (13): At least 13 credits of electives must be 300/400 level courses (needed to satisfy the Faculty of Science requirement **for 48 credits of Upper Level coursework** for the Major degree); they may be in **any** faculty. Note that any courses taken to meet the Arts or Breadth requirements, that are 300/400 level courses, will *also* count towards the Upper Level requirement.

Total Credits: A minimum of 120 eligible credits is normally required to graduate with the B.Sc. Biochemistry Major degree; sufficient electives must be completed to reach this total. Students who have transferred coursework to UBC should confirm with a Biochemistry adviser, and/or with Science Advising, which of their transfer credits will be applicable to their degree specialization & how many UBC credits will be needed.

CO-OP PROGRAM

The Biochemistry Co-op program is open to both Major and Honours students. It involves 4 consecutive work terms, starting in the summer following completion of third year. Students apply to the Science Co-op Office in September of third year, and are usually notified of acceptance sometime in November. For further information, application forms and guidelines, please visit the Co-op website: http://www.sciencecoop.ubc.ca/.

(See over for Honours specializations)

BIOCHEMISTRY HONOURS SPECIALIZATIONS
THIRD AND FOURTH YEAR REQUIREMENTS

Biochemistry Single Honours

REQUIRED COURSES

Third Year:

BIOC 301, 303, 304	(12 credits)
BIOL 335	(3)
CHEM 304, 313	(6)
CHEM 315, 335	(2)
Electives	(as needed)

Fourth Year:

BIOC 402, 410	(6)
BIOC 404, 420	(6)
BIOC 449	(6)
TWO of BIOC 403, 440, 450, or 460	(6)
BIOC Electives	(3)
Electives	(as needed)

Second year Biochemistry standing DOES NOT guarantee admission into the third year of the specialization. Entry into BIOC 301 is required and this is based on academic record.

NOTES

***Honours Specialization Requirements*:** Students in Biochemistry Honours specializations must register in a minimum of 30 credits in each Winter Session (except in their final year if less than 30 credits are needed to graduate), and maintain a minimum average with no failures. In the previous academic session, this average was 76%.

Major students wishing to transfer into third year Honours, who meet these requirements and have taken the needed second year coursework, should contact the Biochemistry adviser following completion of the 2011 Winter Session to request transfer to the honours specialization.

***Electives*:** Totals of, at minimum, 132 credits are normally required to graduate in the single honours or combined honours specializations. The totals must include at least 12 credits of **Arts** elective; any remaining electives are unrestricted and may be either inside or outside the field of the degree and at any year level. Any courses taken to fulfill the Communication Requirement **CANNOT** be used to fulfill the Arts Elective.

***Single Honours*:**

- Honours students wishing to replace BIOC 449 with BIOC 421 should see their biochemistry adviser. This is not normally permitted.
- BIOC Electives may be taken in either third or fourth years and can be selected from the following:

  3 credits of any CHEM 3xx or 4xx PCTH 325 (3) CAPS 301 (6)

  One of MICB 302, 306, 325, 403 or 405 (3) BIOC 403, 440, 450, 460

NOTE: BIOC403, 440, 450, 460 CANNOT be double counted. Students using one of these courses to fulfill their graduation requirements CANNOT use the same course as a BIOC elective.

***Combined Honours*:**

- Students interested in the Biochemistry and Chemistry combined honours should see the biochemistry or chemistry advisers.

(See over for Major specialization)