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THE UNIVERSITY OF BRITISH COLUMBIA

UBC Okanagan

ACADEMIC

CALENDAR

2022/23

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THE UNIVERSITY OF BRITISH COLUMBIA

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Program Overview



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Introduction

Faculty of Science

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The Faculty of Science offers students a well-rounded education in the natural, physical and computational sciences. Students may complete honours, majors, minors, and a general studies program leading to a Bachelor of Science (B.Sc.). The Faculty also offers graduate programs leading to Master of Science (M.Sc.), Master of Data Science (M.D.S.), and Ph.D. degrees (see Graduate Studies).

Program offerings in the Faculty of Science are organized into clusters within administrative departments.

Program Offerings

Bachelor of Science	B.Sc.	Biology; Chemistry; Computer Science; Data Science; Earth and Environmental Sciences; Ecology and Evolutionary Biology; Economics; Environmental Chemistry; Freshwater Science; Mathematical Sciences; Mathematics; Microbiology; Physics and Astronomy; Psychology, Statistics, Zoology.
Interdisciplinary Bachelor of Science	B.Sc.	General Science, Biochemistry and Molecular Biology, Data Science.
Bachelor of Sustainability ¹	B.Sust.	Sustainability
Graduate programs	M.Sc., M.D.S., Ph.D.	Biochemistry and Molecular Biology, Biology, Chemistry, Computer Science, Data Science, Earth and Environmental Sciences, Interdisciplinary Studies, Mathematics, Medical Physics.

Repeating Courses

Except in special cases, no student may repeat a course more than once.

Students wanting to repeat a course more than once must submit a written request to the Faculty of Science.



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The highest grade achieved will be used in the determination of the student's graduation standing, though all grades remain on the student's academic record.

Requirements of an Annotation of a Second or Subsequent Major or Honours Designation on a Baccalaureate Degree Previously Conferred

Students who have previously been granted a UBC Okanagan campus B.A. or B.Sc. may subsequently return and complete the requirements for a first or an additional major or honours designation relevant to and within the same baccalaureate degree. The student will then be issued an updated parchment of the baccalaureate degree if the major or honours program requirements have been fully met. The updated degree parchment will include an annotation specific to the majors or honours designation. The student will be required to surrender the degree parchment previously conferred upon the issuance of the updated parchment for the baccalaureate degree. The official transcript of the student will be updated to indicate that the requirements of a subsequent major or honours have been met.

Returning students must receive the approval of the relevant department head before the student may enter either the second major or the honours program. The department head will ensure that the student's prior work is sufficiently current to progress within the proposed program of study.

Bachelor of Science Programs

Bachelor of Science Programs > Program Overview

The Faculty of Science offers the Bachelor of Science (B.Sc.) degree in several Major programs and the General Science program. Although some students take longer, the B.Sc. degree can be earned in four years (eight four-month academic terms) of full-time study. To earn a B.Sc. degree, students must complete one of the following two programs listed below.

B.Sc. Major Program

The Faculty of Science currently offers Major programs in Biochemistry and Molecular Biology; Biology; Chemistry; Computer Science¹; Earth and Environmental Sciences; Ecology and Evolutionary Biology; Economics²; Environmental Chemistry; Freshwater Science; Mathematical Sciences; Mathematics³; Microbiology; Physics and Astronomy; Psychology⁴; Statistics; and, Zoology. Completion of a Major program prepares students for career-entry positions, graduate study, or admission to post-baccalaureate professional programs. Students entering a Major program should note the courses listed in years one, two, three, and four as indicated under each discipline.

¹Computer Science is also offered as a B.A. program (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1260#14718>). ²Economics is also offered as a B.A. program (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,980#11310>). ³Mathematics is also offered as a B.A. program (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1125#14636>). ⁴Psychology is also offered as a B.A. program (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,989#11377>).

B.Sc. General Science Program

This program provides a comprehensive education in science with the opportunity for some specialization in two or three of the following eight areas: Biochemistry and Molecular Biology, Biology, Chemistry, Earth and Environmental Sciences (including certain courses in Geography), Economics, Mathematical Sciences (including courses in Computer Science, Mathematics, Statistics, and Data Science), Physics (including courses in Astronomy) and Psychology.

Bachelor of Science Programs > Admission Requirements

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Application for admission to the Faculty of Science must be made through Enrolment Services. Procedures, policies, and admission requirements to the University of British Columbia and the Faculty of Science are specified in Admissions (<http://www.calendar.ubc.ca/><http://www.calendar.ubc.ca/okanagan/index.cfm?tree=2,0,0,0>).

International Baccalaureate and Advanced Placement

See Applicants with International Baccalaureate and Advanced Placement Courses for detailed information (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=2,316,0,0#13536>).

Students Entering the Bachelor of Science Program with Credit for Secondary School Calculus

The UBC Okanagan campus offers a three-hour calculus examination to all B.Sc. students who have completed or are currently registered in a calculus course in secondary school. Students who pass the examination can obtain credit for MATH 100. Bachelor of Science students claiming credit at the UBC Okanagan campus will have their examination score shown on their transcript as their grade in MATH 100. Only one attempt is permitted. Students who have already started college or university may not participate. Students already eligible for transfer credit because of high AP or IB scores retain their eligibility regardless of their examination score.

Applications to write the MATH 100 examination must be made to the Head of the Department of Computer Science, Math, Physics and Statistics by March 15 for the April examination date, and by November 15 for the December examination date. A non-refundable fee, equal to the cost of a 1-credit-hour course, must be included with the application.

The examination is scheduled to be taken concurrently with students registered in MATH 100 at the UBC Okanagan campus. Further inquiries about writing the MATH 100 examination should be directed to the academic department head.

Bachelor of Science Programs > Academic Regulations

In addition to the general policies and regulations set out in Policies and Regulations (<http://www.calendar.ubc.ca/okanagan/index.cfm><http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,0,0,0>), the following academic regulations listed apply to undergraduate students in this Faculty.

Academic Standing

Supplementary to the University's policy on Academic Standing (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,91,0>), the regulations below are applicable to B.Sc. students in this Faculty.

On Academic Probation

On Academic Probation will be assigned to a student who, while not falling under the provisions for Failed standing, has:

- earned a term cumulative average of less than 55%; or
- enrolled in 9 or more credits in a term and passed fewer than 60% of those credits; or
- enrolled in fewer than 9 credits in a term and passed fewer than 50% of those credits.

A student placed On Academic Probation at the end of the Winter Session will normally be allowed to register in a maximum of 9 credits in the following term. This restriction may be waived at the discretion of the Faculty. The credit restriction will only be enforced if the student is notified before the subsequent term begins.



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On Academic Probation is changed to In Good Standing if a student's cumulative average in the term in which he or she was on Academic Probation is 55% or higher.

Failed Standing

A student placed on Failed standing for the first time will normally be required to discontinue his or her studies for a period of one academic year (12 months) prior to resuming his or her program of study. A student who already has a Failed standing on his or her academic record (from any UBC program) will be required to withdraw from the University and may only be readmitted under the Advancement Regulations (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,93,0>). Failed standing will be assigned at the end of the Winter Session (April) based on performance in that session. The evaluation will consider all courses taken in the session. Failed standing will be assigned to a student who has:

- a sessional cumulative average less than 50%, passing fewer than 50% of the credits attempted in that session; or
- a sessional cumulative average of less than 45%.

Courses taken in the Summer Session are not taken into consideration for assigning Failed standing, although they are applicable for On Academic Probation.

Dean's List

Students in any Winter Session with a sessional average of at least 85% while taking 24 or more credits will receive the notation "Dean's List" on their official transcript of academic record.

Bachelor of Science Programs > Degree Requirements for students who entered the program in 2019/2020 or earlier

These are the degree requirements for students who entered the program prior to 2020/2021.

To receive a B.Sc. degree, a student must earn at least 120 baccalaureate program course credits subject to the following:

- at least 78 of the 120 credits must be science course credits;
- at least 18 of the 120 credits must be Arts course credits, including 6 credits of first-year English and at least 12 other credits in Arts courses that are recognized for credit toward the B.A. degree;
- at least 42 of the 120 credits must be upper-level courses (numbered 300 or higher), of which at least 36 credits must be in Science;
- at most, 12 of the 120 credits may be from courses that carry credit toward a baccalaureate degree in faculties other than Arts or Science (except those Science courses which are specifically exempted from credit toward the B.Sc. degree);
- at least 36 of the 120 credits must be Science credits from upper-level courses (numbered 300 or higher) and at least an additional 6 upper-level course credits which may be from Arts or Science; and
- at least 30 of the 42 upper-level credits must be completed at UBC.

A minimum graduating grade average (GGA) of 60% is required to be eligible for graduation with the B.Sc. degree.

Designation of Science Courses

Courses with the prefixes ASTR, BIOC, BIOL, CHEM, COSC, DATA, EESC, GISC, MATH, PHYS, and STAT are considered Science courses, unless otherwise noted in the course description. In addition, for students registered in the B.Sc. program in

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Economics or Psychology, courses taken to complete the requirements for the major are considered Science courses. Otherwise, courses in Economics (ECON) and Psychology (PSYO) count as Arts credit only. The following Geography courses are also designated as Science courses: GEOG 108, 109, 200, 205, 207, 213, 222, 271, 272, 301, 304, 307, 310, 314, 317, 341, 356, 367, 377, 380, 381, 413, 414, 416, 422, 436, 437 and 466. GEOG 491 and 498 may be taken as Science courses depending on the designated topic.

First and Second Years Credit Requirements

To complete years one and two of the B.Sc. program, a student must complete 60 credits in Arts or Science courses. These credits must be selected from the following:

English

Students must complete 6 credits of English selected from: ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156. Students who have not earned the 6 credits of first-year English referred to above by the time they have completed 60 credits of coursework toward a B.Sc. degree will not be permitted to enrol in any courses other than first-year English until the English requirement is met.

Science

Students must complete 18 first-year Science credits, including:

- 6 credits of MATH 100, 101;
- 6 credits of either CHEM 121/123 or CHEM 111/113
- 3 credits of either PHYS 102, 121 or 122;
- 3 credits of either PHYS 111 or 112.

Students must also complete 18-24 second-year Science credits. These credits must be chosen to meet the specific Year Two course requirements of the chosen B.Sc. major. See the requirements of the relevant major program.

Electives in Arts or Science

Students must complete 12-24 credits of Arts or Science electives. See major degree details or General Science degree program requirements.

6 elective Science credits must be selected from the list below:

- ASTR 110, 120;
- ASTR 111, 121;
- BIOL 116, 125;
- COSC 111, 121;
- COSC 122, 123;
- EESC 111, 121;
- GEOG 108, 109.

Progression Requirements



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First Year	0–23 credits
Second Year	24–47 credits
Third Year	48–77 credits
Fourth Year	78 or more credits

Bachelor of Science Programs > Degree Requirements for students entering the program in 2020/2021 or later

These are the degree requirements for students entering the program in 2020/2021 or later.

Degree Requirements

To receive a B.Sc. degree, a student must earn at least 120 baccalaureate program course credits subject to the following:

- at least 78 of the 120 credits must be Science course credits;
- at least 42 of the 120 credits must be upper-level courses (numbered 300 or higher), of which at least 36 credits must be in Science; and,
- At least 30 of the 42 upper-level credits must be completed at UBC.

A minimum graduating grade average (GGA) of 60% is required to be eligible for graduation with the B.Sc. degree.

Designation of Science Courses

Courses with the prefixes ASTR, BIOC, BIOL, CHEM, COSC, DATA, EESC, GISC, MATH, PHYS, and STAT are considered Science courses, unless otherwise noted in the course description. In addition, for students registered in the B.Sc. program in Economics or Psychology, courses taken to complete the requirements for the major are considered Science courses. Otherwise, courses in Economics (ECON) and Psychology (PSYO) count as non-science electives. The following Geography courses are also designated as Science courses:

GEOG 108, 109, 200, 205, 207, 213, 222, 271, 272, 301, 304, 307, 310, 314, 317, 341, 356, 367, 377, 380, 381, 413, 414, 416, 422, 436, 437, and 466.

GEOG 491 and 498 may be taken as Science courses depending on the designated topic.

Credit Requirements

English

Six credits of English or Communications courses must be completed before promotion to fourth-year standing. Students who have not earned the 6 credits of required English or Communications coursework by the time they enter fourth year will not be permitted to enrol in any courses other than courses that satisfy the English or Communications requirement.

Science

Students must complete 9 first-year Science credits, including:



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- MATH 100
- 3 credits of program-approved COSC, DATA, STAT, or additional MATH courses; and,
- At least 3 credits of experimental science in any BIOL, CHEM, EESC, or PHYS courses with labs.

Electives¹

Students must complete:

- At least 12 credits of non-science designated courses.

See individual major program details or General Science degree program requirements.

¹Students are strongly encouraged to take 3 credits of an Indigenous content course to partially fulfill this requirement. Students entering the B.Sc. in 2024 and later will have to successfully complete an Indigenous content course.

Progression Requirements

First Year	0–23 credits
Second Year	24–47 credits
Third Year	48–77 credits
Fourth Year	78 or more credits

Bachelor of Science Programs > Program Requirements

Registration

Students are responsible for meeting all program requirements. Program advisors are available to assist with the appropriate course selection to meet graduation requirements. Before completing their final 30 credits, students are encouraged to have their progress reviewed by a program advisor to ensure that they meet all graduation requirements.

Students enrolled in the following programs: double major, major/minor, double honours or honours/minor are permitted to double count a limited number of credits between the two fields of study (see [Double Counting of Credits in Honours, Majors, and Minors](#)).

Honours

The B.Sc. with Honours provides an intensive program of study in an established discipline or program. Students who complete this program will learn to work independently with a high standard of competency in their chosen field. Honours programs require students to acquire sophisticated analytic and communication skills. May require completion of an honours thesis. Requires a minimum grade average as specified by the program.

Major

Please refer to the individual major program description for course and credit requirements.

Major with a Science Minor

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In addition to a major, a student may receive a minor in either another Science discipline or in an interdisciplinary Science area (such as the Data Science Minor or the GIS Minor) by earning at least 30 credits, of which at least 18 must be at the 300 or 400 level. These 30 credits must be in a discipline different from the student's major. Please refer to the individual major program description for the requirements for a minor. The student must also complete all requirements for the major.

See [Minor in Data Science for B.Sc. majors](#) for program details.

See [Minor in Geospatial Information Science for B.Sc. majors](#) for program details (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1455>).

Major with an Arts Minor

B.Sc. students may earn a minor in the following Arts disciplines: Anthropology, Art History and Visual Culture, Creative Writing, Cultural Studies, Economics, English, French, Gender and Women's Studies, Geography, History, Indigenous Studies, Latin American Studies, Philosophy, Political Science, Psychology, Spanish, Sociology, and Theatre. To complete an Arts minor, students must complete at least 30 credits in an Arts discipline. At least 12 of these 30 credits must be in courses numbered 300 or above.

Major with a Fine Arts Minor

B.Sc. students may earn a Minor in Visual Arts (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,283,833,1289#15882>). Note: due to the number of credits required, adding this program to a degree of study may result in it requiring more than four years to complete.

Major with a Management Minor

B.Sc. students may earn a Minor in Management. To complete a Management minor, students must complete at least 30 credits in Management courses. At least 18 of these 30 credits must be in courses numbered 300 or above. There are specific courses at both first and second year that are also required.

Double Major in Sciences

A student may earn a double major by completing all program requirements for each major. Completing a double major in the Sciences will likely require more than 120 credits. Note: the two majors must be from different disciplines. It is not possible to double major in two sub-areas of one discipline.

Double Major in Arts and Sciences

A student may earn a double major by completing all program requirements for the B.Sc. degree with a major plus completing the requirements for a major offered in Arts. Completing a double major in Arts and Sciences will likely require more than 120 credits. B.Sc. students completing a double major in a program offered in both, Sciences and Arts, must follow the requirements for the B.Sc. version of both programs. Arts elective credits may be obtained through the Faculty of Arts and Social Sciences and the Faculty of Creative and Critical Studies in courses not designated as science outside their program.

Double Counting of Credits in Honours, Majors, and Minors

Students enrolled in the following programs: double major, major/minor, double honours or honours/minor are permitted to double count a limited number of credits between the two fields of study. No more than 6 upper-level credits that count toward the program-specified requirements for the first major or honours may be double counted to fulfill requirements for the second honours, major, or minor. Thus, in order to graduate, double major students must have at least 54 program-specified upper-level credit requirements, and major/honours and minor students must have at least 48 upper-level credits; this number of credits cannot be arrived at by double counting. Students should be aware that by double counting they could substantially weaken the intellectual content of one of their fields of study.



Bachelor of Science, General Studies

See General Studies B.Sc. (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1454>) for program details.

Bachelor of Science Programs > Co-operative Education Program

Co-operative Education Option

The Co-operative Education (Co-op) program provides interested and qualified students in the B.Sc. program with paid employment experience relevant to their future careers. The Co-operative Education program is an optional, year-round program, supplementary to academic programs in the Faculty. For general program information, see Cooperative Education (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=19,352,0>)

To graduate with a Co-operative Education Program designation on the transcript, a student must complete three work placement terms, including placements in Term 1 (September to December) and/or Term 2 (January to April) of a Winter Session.

Students wishing to enrol in the Co-op program typically apply in the Winter Session, Term 1 of their third year, however other entry points may be possible if requested and will be evaluated on a case-by-case basis. For admittance into the Co-operative Education program, students must have selected a major and attained third-year standing (i.e., completed at least 48 credits) prior to their first work term while maintaining an overall GPA of 70%. Academic performance and suitability for the work environment, as assessed by the Co-operative Education office during the student intake process, will also be part of the selection criteria used for program admission. Total enrolment is subject to the availability of appropriate work placements. Acceptance into the Co-op program does not guarantee a work term placement.

Students admitted into the Co-op program will be registered in the appropriate Co-operative Education course for each work term, once a suitable work placement is confirmed and upon completion of mandatory pre-employment training. Pre-employment training includes workshops, assignments and activities.

Additionally, payment of the Co-operative Education program fees is mandatory. The fees include a Co-operative Education program fee for each work term and a one-time Co-operative Education program workshop fee (see Program and Course Fees (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=14,341,0,0#1536>)).

Each successfully completed Co-operative Education course is assigned 3 Co-op credits on a student's academic transcript. In order to graduate in a Co-operative Education program designation, a student must complete a minimum of 9 Co-op credits (three work terms), in addition to the normal academic requirements of the Faculty.

The Co-operative Education program typically necessitates an additional four months to one year to complete a bachelor's degree. Faculty advisors or Co-operative Education coordinators visit students at their places of work and provide advice on the work term reports that are a requirement of the program. Students transferring to UBC from accredited co-op programs at other institutions may request admission to the Co-op program and may receive credit for previously completed work placement, to a maximum of 6 Co-op course credits (two work terms).

Bachelor of Science Programs > Dual Degree Program Option: Bachelor of Science and Master of Management

This dual degree program option offers qualified students the opportunity to earn, in one program of study, an undergraduate Bachelor of Science degree from the Faculty of Science and a Master of Management degree from the Faculty of Management.



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This dual degree program option can be completed in four years and eight months through intensive study and scheduling that includes one summer of study following the completion of their undergraduate program requirements. During the period of undergraduate study, admitted students are required to complete MGMT 100 Introduction to Business and MGMT 110 Introduction to Management Thought and Social Responsibility and at least two intensive, week-long workshops. The workshops are offered over summer terms, are self-contained, and can be completed in any order. Workshops will focus on personal development, and enable critical thinking on equity, inclusion, diversity, enculturation, emotional intelligence, social interaction, metacognition, research, inquiry, sensibility, sustainability, well-being, communication, and presentation. These workshops will emphasize social and economic issues in ways that link theory and practice.

Additional fees are required for the dual degree program option. Further information is available in Faculty of Management (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,287,1108,0>) section of the Academic Calendar.

Bachelor of Science Programs > Biochemistry and Molecular Biology

Major in Biochemistry and Molecular Biology

The Major in Biochemistry and Molecular Biology will provide students with a strong background in biochemistry, biology, and chemistry so that they will be well-placed to develop their interests and move on to graduate school, or work in allied fields such as microbiology, environmental sciences, plant science, food science, pharmacology, pharmaceutical sciences, industrial applications of molecular techniques, and biotechnology. This program is also suitable for students who would like a career in health or medical sciences, molecular diagnostics, and government agencies dealing with medicinal biochemistry. The program is composed of two options leading to a Major in Biochemistry and Molecular Biology. There is a strong lab component to the program, which is essential for students working in this area. The program also allows for the students to do a directed studies research project with various professors in both Chemistry and Biology.

There are two options in the Biochemistry Major and Molecular Biology:

- Biochemistry option:** encompasses a broad selection of courses from all areas of chemistry as well as biology. The program is especially suited for professional careers in medicine, biochemistry, and biophysics and is well suited to research careers in basic and translational medicine, as well as university and marketplace laboratories. Students earning a biochemistry degree may pursue graduate studies in a variety of fields;
- Medical and Molecular Biology option:** takes students into the medical aspects of biochemistry and molecular biology, including pharmacology, medical microbiology and virology, and the biochemical basis of disease. This concentration will be of interest to students who would like to do medical research in the future, or those who would like to work in medical or allied health sciences.

The Major is structured to meet the requirements of a major in Science and will normally take four years.

BIOL 116, 125	6
CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
MATH 100, 101	6
PHYS 111 or 112	3
PHYS 121 or 122	3
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, 156, CORH 203 ¹	6
BIOL 200	3



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BIOL 228	3
BIOL 265	3
CHEM 203, 204	6
CHEM 201	3
Arts electives	6
Biochemistry Option	
MATH 200	3
One of CHEM 211, BIOL 202, STAT 230	3
Medical and Molecular Biology Option	
One of BIOL 201, 204, 205, 209, 210	3
One of BIOL 202, STAT 230	3
Total Credits	60

BIOC 304, 305	6
BIOL 366	3
BIOC 393	3
Arts electives	6
Biochemistry Option	
Three of BIOC 402, 403, 405, 410, 420, 425	9
CHEM 305	3
Two of CHEM 304, 330, 333, 335, BIOC 494, BIOC 495 ²	6
Upper-level science elective	6
Upper-level arts or science electives	6
Electives	12
Medical and Molecular Biology Option	
BIOC 308, 309	6
Two of BIOC 402, 403, 405, 410	6
BIOC 407	3
One of BIOC 494, BIOC 495 ²	3
BIOL 318	3
Two of BIOL 312, 314, 341, 363	6
Upper-level elective	3
Electives	12
Total Credits	60
Minimum credits for degree	120

¹It is recommended students take CORH 203 to fulfill the English or Communications requirement.

²BIOC 494 and/or 495 (Biotechnology Laboratory I and II) can be replaced by BIOC 448 or BIOC 449, a 6-credit lab-based directed studies or honours course, though students may take both. Note: credit will be granted for only one of BIOC 393 or BIOL 393. Credit will be granted for only one of BIOC 493 and BIOC 494 or BIOC 493 and BIOC 495.



Biochemistry and Molecular Biology Honours Program

The Honours in Biochemistry and Molecular Biology provides an intensive program of study through coursework and research experience. Students who complete this program will have the ability to work independently and with a high level of competency.

The course requirements are the same as in the Major in Biochemistry and Molecular Biology program, except that 6 credits must be in BIOC 449.

Admission Requirements

- Fourth-year standing (minimum of 78 credits in the Biochemistry and Molecular Biology Major).
- Minimum grade average of 76% in all courses taken applicable to the Biochemistry and Molecular Biology Major.
- Enrolment in BIOC 449 with a research project and a research supervisor approved by either the Chemistry or Biology Department Head.

Graduation Requirements

- Completion of the course requirements for the Major in Biochemistry and Molecular Biology.
- A minimum 76% graduating grade average (GGA).
- BIOC 449, with a minimum grade of 76%. A written thesis, with a public presentation of the thesis in the form of a poster or a seminar.

Bachelor of Science Programs > Biology

Major in Biology

Note: The UBC Okanagan campus also offers Majors in Ecology and Evolutionary Biology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1450>), Microbiology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1458>), and Zoology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1462>).

The Biology Major is designed to provide students with an excellent grounding in all fields of biology and the basic practical skills of the working biologist. This program prepares students for graduate school and professional programs. Students graduating from the UBC Okanagan campus with a B.Sc. in Biology will have a wide variety of practical experience and skills in laboratory and fieldwork, and communications (both oral and written).

Electives to satisfy B.Sc. Degree Requirements should include a minimum of 12 credits of Arts electives (in addition to 6 credits in English) and 12 credits of other courses (chosen, if needed, to ensure prerequisites are met for third- and fourth-year elective courses).

A minimum of 42 upper-level credits are required, which include at least 36 credits of Science courses (including at least 30 credits of Biology courses).

BIOL 116, 125 ¹	6
CHEM 111 or CHEM 121	3



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CHEM 113 or CHEM 123	3
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
MATH 100 ¹	3
MATH 101 or 103 ¹	3
PHYS 111 or 112	3
PHYS 121 or 122	3
Total credits	30

BIOL 200, 201	6
BIOL 202, 265	6
Two of BIOL 204, 205, 209, 210, 228	6
CHEM 203, 204; or CHEM 213, 214 ²	6
Electives	6
Total Credits	30

BIOL 311	3
BIOL 354	3
Biology electives numbered 300 or higher	24
Science electives numbered 300 or higher	6
Other electives numbered 300 or higher	6
Electives to satisfy B.Sc. credit requirements	18
Total Credits	60
Minimum credits for degree	120

¹BIOL 116, 125; CHEM 111, 113 or 121, 123; and MATH 100, 101 or 103 should be taken in the first year to ensure students have the prerequisites for second year.

²Strongly recommended.

Biology Honours Program

The Honours in Biology is an intensive program of study based on coursework and research experience. Students who complete this program will have the ability to work independently and with a high level of competency. The course requirements are the same as in the Major in Biology program, except students must complete 6 credits of BIOL 440.

Admission Requirements

- Fourth-year standing.
- A minimum overall grade average of 75% over all courses completed.
- Enrolment in BIOL 440 with a research project and research supervisor approved by the department head.



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Graduation Requirements

- Completion of the course requirements for the Major in Biology.
- A 75% overall grade average.
- BIOL 440, with a minimum grade of 75%. A written thesis is required, with a public presentation of the thesis in the form of a poster session or a seminar.

Minor in Biology

A student must successfully complete 18 credits of third- or fourth-year Biology courses.

Bachelor of Science Programs > Chemistry*Major in Chemistry*

Note: The UBC Okanagan campus also offers a Major in Environmental Chemistry

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1452>).

Students entering the Major in Chemistry program must complete Chemistry 11 (or equivalent) and Principles of Mathematics 12 or Pre-Calculus 12. Students are strongly advised to complete Chemistry 12.

CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
MATH 100, 101	6
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, 156, CORH 203 ¹	6
PHYS 111 or 112	3
PHYS 121 or 122	3
Electives	6
Total Credits	30

CHEM 201, 220	6
CHEM 203, 204	6
CHEM 211	3
MATH 200	3
Science electives	6
Arts electives	6
Total Credits	30

Analytical: CHEM 311	3
Biochemistry: BIOC 304	3
Inorganic: two of CHEM 335, 336, 337, 338	6



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Organic: two of CHEM 317, 330, 333, 403	6
Physical: CHEM 304, 312 ²	6
Two of CHEM 461, 462, 463, 464, 465	6
Upper-level Chemistry electives	6
Upper-level electives	6
Arts electives	6
Electives ³	12
Total Credits	60
Minimum credits for degree	120

¹It is recommended students take CORH 203 to fulfill the English or Communications requirement.

²MATH 200 is a strongly recommended corequisite for CHEM 312 and should be taken in second year if CHEM 312 is to be taken in third year.

³Of the electives, 6 credits must be taken from the following: ASTR 110, 120; ASTR 111, 121; BIOL 116, 125; COSC 111, 121; COSC 122, 123; EESC 111, 121; GEOG 108, 109.

Chemistry Honours Program

The Honours in Chemistry program is designed to provide an intensive program of study through coursework and research experience. Students who complete this program will have the ability to work independently and with a high level of competency. The course requirements are the same as in the Major in Chemistry program, except 6 credits of the elective component of the program must be in CHEM 449.

Admission Requirements

- Fourth-year standing (minimum of 78 credits in the Chemistry Major).
- Minimum grade average of 76% in all courses taken applicable to the Chemistry Major.
- Enrolment in CHEM 449 with a research project and a research supervisor approved by the Chemistry Curriculum Committee.

Graduation Requirements

- Completion of the course requirements for the Major in Chemistry.
- A minimum 76% graduating grade average (GGA).
- CHEM 449 with a minimum grade of 76%. A written thesis, public poster presentation, and public thesis defence.

Minor in Chemistry

A student must successfully complete the core second-year Chemistry courses: CHEM 201 or 210 and all of CHEM 203, 204, 211, 220. The student must also complete at least 18 credits in 300- or 400-level Chemistry courses.

Bachelor of Science Programs > Communications and Rhetoric (Undergraduate Certificate)

Available to all students in the Bachelor of Science program offered by the Faculty of Science. Consult the Faculty of Creative and Critical Studies for information on the Undergraduate Certificate in Communications and Rhetoric (<http://www.calendar.ubc.ca/okanagan> <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,283,1107,0>).



Bachelor of Science Programs > Computer Science (B.Sc.)

B.Sc. Major in Computer Science

Note: The UBC Okanagan campus also offers a B.A. Major in Computer Science (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1260#14718>).

This program provides students with a comprehensive overview of computer science including data structures, databases, mobile and web development, software engineering, numerical methods, and security. Computer Science graduates have an impact on society by developing systems used by millions of users and are in very high demand. Students must take COSC 304, 310 and COSC 341 in their 3rd year since they are a prerequisite to COSC 499. COSC 499 must be taken in 4th year.

Students must also meet the BSc degree requirements.

COSC 111 or 123	3
COSC 121	3
ENGL 109, or two of 112, 113, 114, 150, 151, 153, 154, 155, 156, 203, CORH 203, CORH 205, APSC 176, APSC 201	6
MATH 100, 101	6
PHYS 111 or 112	3
Electives ^{1, 4}	9
Total Credits	30
COSC 211, 221, 222	9
MATH 221	3
STAT 230	3
Electives ^{2, 4}	15
Total Credits	30
COSC 320	3
COSC 304, 310, 341 ³	9
COSC 499 ³	6
PHIL 331	3
Upper-level Computer Science electives	18
Upper-level electives ⁴	3
Electives ⁴	18
Total Credits	60
Minimum credits for degree ⁴	120



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¹COSC 101, 122, 123, 150 are recommended.

²COSC and DATA courses are recommended. MATH 200 is recommended as several upper-level COSC courses require it as a prerequisite.

³COSC 304, 310, 341 must be taken in 3rd-year because they are all prerequisites to COSC 499. COSC 499 must be taken in 4th-year.

⁴At least 12 of the 45 Elective credits must be Science courses.

B.Sc. Computer Science Honours Program

Through coursework and research, the Honours in Computer Science is an intensive program of study. Students who complete this program will have the ability to work independently and with a high level of competency. The course requirements are the same as in the Major in Computer Science program, except the student must maintain a high grade level (a minimum of 76%) and the student must complete COSC 449 Honours Thesis (6 credits).

Admission Requirements

- Fourth-year standing in the Computer Science Major;
- This program requires a research project with an undergraduate honours thesis. The thesis proposal and a research supervisor must be approved by the department head; and
- Minimum grade average of 76% in all courses taken to date applicable to the Computer Science Major.

In exceptional cases, such as transferees from another institution, a student may be admitted to the Honours program notwithstanding the criteria listed above.

Graduation Requirements

- Completion of the course requirements for the Computer Science Major;
- Completion of COSC 449 Honours Thesis with a minimum grade of 76%. A written thesis is required, with a public presentation of the thesis in the form of a poster session and/or a seminar; and
- A minimum 76% graduating grade average (GGA).

B.Sc. Minor in Computer Science

A Minor in Computer Science allows a student to combine extensive knowledge of one field (the major) with the necessary supporting computer science knowledge. A Minor in Computer Science taken with a Science major requires 18 credits of upper-level Computer Science courses (along with their prerequisites). A Minor in Computer Science taken with an Arts major requires 12 credits of upper-level Computer Science courses (along with their prerequisites).

Bachelor of Science Programs > Data Science

Major in Data Science

Note: The UBC Okanagan campus also offers a B.Sc. Minor in Data Science.

This program provides students with a thorough training in Data Science, which focuses on taking decisions supported by data. It is grounded in Statistics (to formulate relevant questions and determine the answer based on data) and Computer Science (to manipulate and visualize data efficiently).



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Data Science graduates have an impact on society by supporting evidence-based decisions grounded in our ever-growing collection of data. They are in very high demand and are called Statisticians, Quantitative Analysts, Decision Support Engineering Analysts, or Data Scientists.

CHEM 111 or 121; and CHEM 113 or 123	6
MATH 100, 101	6
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
PHYS 111 or 112	3
PHYS 121 or 122	3
COSC 111, 121	6
Total Credits	30

MATH 200, 221 ¹	6
STAT 230	3
COSC 221, 222	6
Arts electives	6
Electives	9
Total Credits	30

COSC 304, 322, 360, 407	12
DATA 301, 311, 410	9
PHIL 331	3
STAT 303	3
Three of COSC 303, DATA 405, MATH 307, STAT 401, 403	9
One of DATA 421, 407, PHYS 420	3
Two of BIOL 308, 414, 444, 460, 468, ECON 327, 328, 427, EESC 342, 413, GISC 380, 381, PHYS 331, 441, PSYO 372, 443	6
Science electives	9
Arts electives	3
Electives	3
Total Credits	60
Minimum credits for degree	120



¹Math 221 may be taken in the second term of the first year.

Data Science Honours Program

Through coursework and research, the Honours in Data Science is an intensive program of study. Students who complete this program will have the ability to work independently and with a high level of competency. The course requirements are the same as in the Major in Data Science program, except the student must maintain a high grade level (a minimum of 75%) and the student must complete DATA 449 Honours Thesis (6 credits).

Admission Requirements

- Fourth-year standing in the Data Science Major;
- This program requires a research project with an undergraduate honours thesis. The thesis proposal and a research supervisor must be approved by the department head; and
- Minimum grade average of 76% in all courses taken to date applicable to the Data Science Major.

In exceptional cases, such as transferees from another institution, a student may be admitted to the Honours program notwithstanding the criteria listed above.

Graduation Requirements

- Completion of the course requirements for the Data Science Major;
- Completion of DATA 449 Honours Thesis with a minimum grade of 76%. A written thesis is required, with a public presentation of the thesis in the form of a poster session or a seminar; and
- A minimum 76% graduating grade average (GGA).

Any query related to the data science Major/Honours should be addressed to the data science Major/Honours program advisor at datascience.advisor@ubc.ca

Minor in Data Science

The Minor in Data Science provides advanced numeracy skills to majors in disciplines where new discoveries rely increasingly on the creation, management, and understanding of large data sets such as biology, chemistry, economics, and psychology. The minor is open to all majors in the B.Sc. program.

Students may earn a minor in data science by completing 30 credits as follows:

- Up to 12 credits from APSC 177, 254; BIOL 201, 202; COSC 111, 121, 123, 221, 222; ECON 101, 102, 204, 205; EESC 205, 212, 222; GEOG 108, 109, 271; MATH 100, 101, 200, 220, 221, 225; PHYS 111, 112, 231; PSYO 271; STAT 230.
- 3 credits of DATA 301
- 15 credits of elective courses, which must not include more than 9 credits from a single discipline and must be in the following two lists of courses:
 - At least 9 credits from COSC 303, 304, 320, 322, 360, 407, 419¹; DATA 311, 405, 407, 410, 419, 421; STAT 303, 401, 403.
 - Up to 6 credits from BIOL 308, 414, 444, 460, 468; ECON 321, 327, 328, 427; EESC 342, 413; GEOG 371, 377; GISC 380, 381; MATH 302, 303, 307, 319, 327, 340, 430, 441, 461; MGMT 350, 423, 460; PHYS 331, 441, 420; PSYO 372, 443.

¹Only when COSC 419 is a special topic related to data science as approved by the data science minor program coordinator



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Double Counting of Credits restrictions apply, see Program Requirements
(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1442>).

Any query related to the data science minor should be addressed to the data science minor program coordinator at datascience.advisor@ubc.ca

Bachelor of Science Programs > Earth and Environmental Sciences

Major in Earth and Environmental Sciences

The Earth and Environmental Sciences B.Sc. program provides an education reflecting the multi-disciplinary nature of the field. Students will acquire a fundamental understanding of past and present relationships among air, water, rocks and minerals, and biota. Flexible program requirements allow students to acquire a degree that meets their personal objectives. Students can highlight the environment or the solid earth and enhance their program with related elective courses from Biochemistry, Biology, Chemistry, Geography, Mathematics, and Statistics. Programs can also be designed to meet curriculum guidelines required by professional organizations. For example, students are referred to the Geoscientists Canada and the Engineers and Geoscientists British Columbia websites for syllabus requirements for registration as a Professional Geoscientist. Registration with other national and provincial bodies may be possible with careful course selection.

¹Professional registration in geoscience and other related fields is managed by organizations external to UBC. Efforts are made to ensure that the relevant UBC courses meet provincial and national registration requirements, but students are reminded that the final decision on course acceptance and registration rests with these external organizations.

Two of EESC 101, 111, 121	6
Two of BIOL 116, 125, COSC 101, 111, 114, 121, DATA 101	6
CHEM 111 or CHEM 121	3
CHEM 113 or CHEM 123	3
MATH 100, 101	6
PHYS 111 or 112	3
PHYS 121 or 122	3
Communication Requirement ²	6
One of BIOL 202; GEOG 271, STAT 121, 230	3
EESC 200-level courses	9
EESC or other Science 200-level courses ³	6
Non-Science electives	6
Total Credits	60
EESC 300- and 400-level courses ⁴	18
EESC or GISC 300- or 400-level courses	6
EESC, GISC or other Science 300- and 400-level courses ⁵	12
Non-Science electives ^{6, 7}	6



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Electives ⁷	18
Minimum total credits for degree	120

¹Students are advised to consult a departmental program advisor or the program website for guidance on which courses to take in first and second year. The choice of courses, and the order to take them in, may vary depending on student interests. Careful selection of courses at all levels may be required to meet the requirements of registration in some professional organizations. Consultation with a departmental program advisor is recommended at the end of 1st-year or in the first weeks of 2nd year if a student is aiming to meet requirements of professional registration.

²Communication Requirement: This may be fulfilled by 6 credits from: APSC 176, 201, CORH 203, ENGL 109,112, 113, 114, 150, 151, 153, 154, 155, 156, BIOL 313, EESC 398. In exceptional circumstances, such as transfer students, other courses may be permitted by the program advisor. Students who have not completed the Communication Requirement by the time they enter fourth year will not be permitted to enrol in any courses other than courses that satisfy the requirement.

³Students may choose 200-level courses from Earth and Environmental Sciences courses, Geography courses accepted as science courses, or from across the sciences. Students should consult with a program advisor to select courses to match their intended program of study and professional registration intentions.

⁴A few upper-level Earth and Environmental Sciences courses are offered in alternate years. Planning with a department advisor is recommended.

⁵Students may choose from Earth and Environmental Sciences courses, Geospatial Information Science courses, Geography courses accepted as science courses, or from across the sciences. Students should consult with a program advisor to select courses to match their intended program of study and professional registration intentions.

⁶Those Geography courses regarded as Science courses cannot be used for Non-Science credit. See the Bachelor of Science Degree Requirements for a list.

⁷At least 6 credits of these electives must be at upper-level.

Minor in Earth and Environmental Sciences for Science Majors

A student must successfully complete 30 credits in Earth and Environmental Sciences with at least 18 of these credits at the 300 and 400 level. All 300 or 400-level Earth and Environmental Sciences courses are acceptable, with the exception of EESC 449. Up to 6 credits of GISC courses may be substituted.

Minor in Earth and Environmental Sciences for Arts Majors

To complete a Science minor, a Bachelor of Arts student must successfully complete 30 credits of Earth and Environmental Sciences courses¹ with at least 12 of these credits at the 300 or 400 level.

¹Students with a strong interest in Geospatial Information Science may wish to speak to an Earth, Environmental and Geographic Sciences department advisor about the Minor in Geospatial Information Science.

Earth and Environmental Sciences Honours Program

The Earth and Environmental Sciences Honours program is designed for dedicated students in Earth and Environmental Sciences desiring a recognized research component in their B.Sc. degree. Students must maintain a high academic standing, and demonstrate their ability to undertake independent research through completion of an individual research project.

Admission Requirements

- Fourth-year standing;
- A minimum grade average of 76% in 200- and 300 and 400-level courses applicable to the Major in Earth and Environmental Sciences; and
- Enrolment in EESC 449 with a research project and supervisor approved by the department head.
- An individual research project as agreed upon by the student and the supervising faculty member.



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- Permission of the Department Head.
- In exceptional cases, such as transferees from another institution, a student may be admitted to the Honours program notwithstanding the criteria listed above.

In exceptional cases, such as transferees from another institution, a student may be admitted to the Honours program notwithstanding the criteria listed above.

Graduation Requirements

- Completion of the course requirements for the Major in Earth and Environmental Sciences with EESC 449 Honours Thesis representing 6 of the 120 credits;
- A minimum 76% graduating grade average;
- A minimum average of 76% in all 300- and 400-level Earth and Environmental Sciences courses including up to 6 credits of Geospatial Information Science courses used to fulfill the program requirements; and
- A minimum grade of 76% in EESC 449. A written thesis is required and the research must be publicly presented either as a seminar or poster.

Bachelor of Science Programs > Ecology and Evolutionary Biology

Major in Ecology and Evolutionary Biology

Note: The UBC Okanagan campus also offers Majors in Biology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1445>), Microbiology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1458>), and Zoology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1462>).

Graduates will obtain a grounding in theory, practical experience, and skills in laboratory and field work, and communications (both verbal and written). This program prepares students for graduate school and professional programs.

Electives to satisfy B.Sc. Degree Requirements should include a minimum of 12 credits of Arts electives (in addition to 6 credits in English) and 12 credits of other courses (chosen, if needed, to ensure prerequisites are met for third- and fourth-year elective courses).

A minimum of 42 upper-level credits are required, which include at least 36 credits of Science courses (including at least 30 credits of Biology courses).

BIOL 116, 125 ¹	6
CHEM 111 or CHEM 121	3
CHEM 113 or CHEM 123	3
ENGL 109, or two of ENGL 112 ² , 113, 114, 150, 151, 153, 154, 155, or 156	6
MATH 100 ¹	3
MATH 101 OR 103 ¹	3
PHYS 111 or 112	3
PHYS 102, 121 or 122	3



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Total credits	30
BIOL 200, 201	6
BIOL 202, 265	6
Two of BIOL 204, 205, 209, 210, 228	6
CHEM 203, 204; or CHEM 213, 214 ²	6
Electives	6
Total credits	30
BIOL 308	3
BIOL 311	3
BIOL 354	3
Ecology and Evolution electives from the following courses: BIOL 301, 306, 307, 309, 313, 357, 358, 370, 371, 372, 375, 381, 401, 410, 414, 417, 420, 422, 444, 452 ³ , 459, 460, 468, GEOG 307, GISC 380, 381	21
Science electives numbered 300 or higher	6
Other electives numbered 300 or higher	6
Electives to satisfy B.Sc. credit requirements	18
Total credits	60
Minimum credits for degree	120

¹BIOL 116, 125; CHEM 111, 113 or 121, 123; and MATH 100, 101 OR 103 should be taken in first year to ensure students have the prerequisites for second year.

²Strongly recommended.

³If approved by the program advisor as appropriate to Ecology and Evolutionary Biology.

Ecology and Evolutionary Biology Honours Program

The Honours in Ecology and Evolutionary Biology is an intensive program of study based on coursework and research experience. Students who complete this program will have the ability to work independently and with a high level of competency.

The course requirements are the same as in the Major in Ecology and Evolutionary Biology, except that students must complete 6 credits of BIOL 440.

Admission Requirements

- Fourth-year standing;
- A minimum grade average of 75% over all courses completed; and
- Enrolment in BIOL 440 with a research project and research supervisor approved by the department head as appropriate to Ecology and Evolutionary Biology.



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Graduation Requirements

- Completion of the course requirements for the Major in Ecology and Evolutionary Biology;
- A 75% overall grade average; and
- BIOL 440 (6 credits), with a minimum grade of 75%. A written thesis is required, with a public presentation in the form of a poster session or a seminar.

Bachelor of Science Programs > Economics (B.Sc.)

B.Sc. Major in Economics

Note: UBC Okanagan also offers a B.A. Major in Economics

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,980#14673>) and a B.A. Major in Philosophy, Politics, and Economics (PPE) (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1255#14638>).

The B.Sc. Major in Economics emphasizes the mathematical and quantitative nature of modern economic inquiry that is increasingly required for progress on to graduate studies in economics or to careers in quantitative economic and financial analysis in the public and private sectors. The Major combines courses in Economics, Mathematics, and Statistics along with other Arts and Social Sciences requirements and electives. For students registered in the B.Sc. program in Economics, courses in Economics (ECON) taken to complete the requirements for the major are considered Science courses. Otherwise, Economics courses count as Arts credit

Students are recommended to enter the B.Sc. Economics Major in their second year in order to ensure proper program advising and course selection.

To be admitted to the major program students must:

- have successfully completed both ECON 204 and ECON 205 (or equivalent); and,
- consult with the department.

ECON 101, 102	6
MATH 100, 101	6
CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
PHYS 111 or 112	3
PHYS 121 or 122	3
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
Two of ASTR 110, 120, 111, 121; BIOL 116, 125; COSC 111, 121, 122, 123; EESC 111, 121; GEOG 108, 109	6
ECON 204, 205	6
MATH 200, 221	6
One of MATH 220, 225	3
STAT 230	3
Electives ¹	6
Total Credits	60



ECON 327, 328	6
Four of ECON 320, 427; MATH 303, 307, 317, 319, 327, 339, 340, 409, 441; STAT 303, 401; DATA 301,311, 410	12
ECON courses numbered 300 or higher ²	18
ECON courses at any level ¹	6
Electives ¹	18
Total Credits	60
Minimum credits for degree	120

¹In order to meet the degree requirements for the B.Sc., at least 42 of the 120 credits must be upper-level courses (numbered 300 or higher) and at least 18 of the 120 credits must be Arts course credits (including the 6 required credits of first-year English and at least 12 other credits in Arts courses).

²At least one course must be upper-level microeconomics (ECON 308, 386, or 401) and at least one course must be in upper-level monetary/macroeconomics (ECON 309, 345, 356, 402, or 409).

B.Sc. Honours in Economics

The Honours program in Economics enables high-achieving B.Sc. Major students in Economics to increase their concentration in economics and to gain research experience through the completion of a directed-studies project (ECON 499 Honours Essay). Students are expected to satisfy high levels of competency in their academic program and to successfully complete a directed-studies project (ECON 499 Honours Essay) under the supervision of a faculty member. Students intending to pursue graduate studies in economics are advised to consider taking the Honours program since it better equips them to be successful; in addition, most of the high-quality programs in Economics expect potential graduate students to have completed an Honours degree.

Students who wish to enroll in the Honours program must submit a formal application to the coordinator of the Honours Program. After being admitted to the Honours Program, students must complete ECON 495 (Honours Seminar) and ECON 499 (Honours Essay) in sequence during their final year of study.

Admission Requirements:

- Fourth-year standing in the Economics major;
- A minimum grade average of 76% in all courses taken to date that are applicable to the Economics Major;
- A minimum grade of 76% in both ECON 204 and ECON 205;
- A minimum grade average of 76% in MATH 100 and MATH 101;
- Successful Completion of ECON 327 and ECON 328.

Graduation Requirements:

- All general program requirements for the B.Sc. degree ;
- All requirements for the B.Sc. Economics Major;
- Successful completion of ECON 401, 402, 427, 495 and 499;
- A minimum overall grade average of 76% in all Economics (ECON) courses;
- A minimum overall grade average of 76% in all courses; and
- A minimum of 51 credits of Economics with at least 36 credits at the upper level.



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Bachelor of Science Programs > Environmental Chemistry*Major in Environmental Chemistry*

Note: The UBC Okanagan campus also offers a Major in Chemistry
(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1446>).

This program provides students with a core education in the four important areas of chemistry: analytical, inorganic, organic, and physical chemistry, with specialization in environmental chemistry. Employment opportunities include positions with environmental consulting firms, environmental departments in industrial operations, analytical laboratories, and environmental regulatory agencies.

Students entering the Major in Environmental Chemistry program must complete Chemistry 11 (or equivalent) and Principles of Mathematics 12 or Pre-Calculus 12. Students are strongly advised to complete Chemistry 12.

CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
MATH 100, 101	6
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, 156, CORH 203 ¹	6
PHYS 111 or 112	3
PHYS 121 or 122	3
BIOL 116, 125; or two of EESC 101, 111, 121 ²	6
Total Credits	30

One of CHEM 201, 210	3
CHEM 203, 204	6
CHEM 211	3
CHEM 220	3
BIOL 116, 125; or two of EESC 101, 111, 121 ²	6
Arts elective ³	3
Electives ³	6
Total Credits	30

CHEM 301, 302	6
CHEM 311	3
CHEM 317	3
One of CHEM 330, 333, 403	3
Two of CHEM 335, 336, 337, 338	6
One of CHEM 412, 434	3



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CHEM 461	3
EESC 309	3
EESC 323 ⁴	3
EESC 423 ⁴	3
Two approved environmental electives ^{3,5}	6
Arts electives ³	9
Electives ³	9
Total Credits	60
Minimum credits for degree	120

¹It is recommended students take CORH 203 to fulfill the English or Communications requirement.

²Students must complete BIOL 116, 125, and two of EESC 101, 111, 121. The order in which these pairs of courses are completed in first and second year is optional.

³At least 18 total credits (including 6 credits in first-year English) must be in Arts courses. At least 6 elective credits must be 300 level or higher.

⁴Students should be aware that these courses are generally offered only in alternate years, and plan their course selections accordingly.

⁵The environmental electives must be chosen from outside Chemistry, in consultation with a program advisor.

Students are encouraged to take courses offered in other disciplines that are relevant to the B.Sc. in Environmental Chemistry. Such courses often have prerequisites, so students should start planning their electives early in their degree program.

Environmental Chemistry Honours Program

The Honours in Environmental Chemistry program is designed to provide an intensive program of study through coursework and research experience. Students who complete this program will have the ability to work independently and with a high level of competency. The course requirements are the same as in the Major in Environmental Chemistry program, except 6 credits of the elective component of the program must be in CHEM 449.

Admission Requirements

- Fourth-year standing (minimum of 78 credits in the Environmental Chemistry Major).
- Minimum grade average of 76% in all courses taken applicable to the Environmental Chemistry Major.
- Enrolment in CHEM 449 with a research project and a research supervisor approved by the Chemistry Curriculum Committee.

Graduation Requirements

- Completion of the course requirements for the Major in Environmental Chemistry.
- A minimum 76% graduating grade average (GGA).
- CHEM 449 with a minimum grade of 76%. A written thesis, public poster presentation, and public thesis defence.

Bachelor of Science Programs > Freshwater Science

Major in Freshwater Science



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The Freshwater Science program integrates and synthesizes aquatic aspects of biology, chemistry, geography, and earth and environmental sciences. Students will study water quality and quantity, aquatic organisms, and the health of aquatic ecosystems

This program prepares students for careers related to inland aquatic ecosystems. Graduates of this program will acquire the skills and knowledge necessary to deal with future national and international freshwater environmental problems - both in water quality and quantity. In addition to employment in freshwater and environmental sectors, graduates will be prepared for graduate study and research in freshwater science.

BIOL 116, 125	6
CHEM 111 or CHEM 121	3
CHEM 113 or CHEM 123	3
EESC 101, 111	6
MATH 100, 101	6
PHYS 111 or 112	3
PHYS 121 or 122	3
Total Credits	30

BIOL 201	3
One of BIOL 202, GEOG 271, STAT 121, 230	3
CHEM 201	3
CHEM 211	3
EESC 205, 222	6
Communication Requirement ¹	6
Non-science electives	6
Total Credits	30

BIOL 308, 375 ²	6
CHEM 301	3
EESC 212	3
EESC 301	3
EESC 402	3
One of EESC 305, 342, 413, 435	3
Two of EESC 309, EESC 323, EESC 423	6
One of EESC 313, EESC 314, EESC 315, GEOG 310, GEOG 314	3
Upper-level Science electives	9
Non-Science electives ³	6
Electives ³	15



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Total Credits	60
Minimum Credits for Degree	120

¹Communication Requirement: This may be fulfilled by 6 credits from: APSC 176, 201, CORH 203, ENGL 109, 112, 113, 114, 150, 151, 153, 154, 155, 156, BIOL 313, EESC 398. In exceptional circumstances, such as transfer students, other courses may be permitted by the program advisor. Students who have not completed the Communication Requirement by the time they enter fourth year will not be permitted to enrol in any courses other than courses that satisfy the requirement.

²In lieu of BIOL 375, two of BIOL 204, 205, 209, 210 will be accepted.

³At least 6 credits of these electives must be at upper-level.

Freshwater Science Honours Program

The Freshwater Science Honours program is designed for dedicated students in Freshwater Science desiring a recognized research component in their B.Sc. degree. Students must maintain a high academic standing, and demonstrate their ability to undertake independent research through completion of an individual research project.

Admission Requirements

- Fourth-year standing;
- A minimum overall grade average of 76% in 200-, 300- and 400-level courses applicable to the Major in Freshwater Sciences
- Enrolment in EESC 449 with a research project and supervisor approved by the department head.
- An individual research project as agreed upon by the student and the supervising
- Permission of the Department Head.
- In exceptional cases, such as transferees from another institution, a student may be admitted to the Honours program notwithstanding the criteria listed above.

Graduation Requirements

- Completion of the course requirements for the Major in Freshwater Science with EESC 449 Honours Thesis representing 6 of the 120 credits;
- A 76% graduating grade average;
- A minimum average of 76% in all 300- and 400-level courses applicable to the Major in Freshwater Sciences; and
- A minimum grade of 76% in EESC 449. A written thesis is required and the research must be publicly presented as a seminar or poster.

Bachelor of Science Programs > General Studies

Bachelor of Science, General Studies

The Bachelor of Science, General Studies is appropriate for students planning to continue their studies in professional areas such as post-secondary education, business administration, dentistry, law, medicine, or veterinary medicine. In particular, this program provides excellent preparation for prospective secondary school teachers. It is not generally intended for students planning to continue to graduate studies in science; however, with careful planning and high academic achievement, it is possible to enter a science graduate program, although additional qualifying studies may be required at some universities.

This degree option provides a comprehensive undergraduate science education with the opportunity to complete concentrations in two or three of the following disciplines:



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- Biochemistry
- Biology
- Chemistry
- Computer Science
- Data Science
- Earth and Environmental Sciences (including certain courses in Geography¹)
- Economics²
- Geospatial Information Science
- Mathematics
- Physics
- Psychology³
- Statistics

Students in all B.Sc. programs must complete at least 42 credits at the 300/400 level in any discipline, of which at least 30 credits must be completed at UBC.

Students must see an undergraduate advisor before entering third-year.

In addition to fulfilling the B.Sc. requirements (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,0>), students completing a B.Sc. General Studies must successfully complete 36 credits of courses numbered 300 or higher by selecting one of the following two options⁴:

Option A

At least 18 credits in each of any two of the above listed disciplines^{5,6}.

Option B

At least 18 credits in one of the above listed disciplines, at least 9 credits in a second discipline, and at least 9 credits in a third discipline.

Courses selected for either option must be acceptable for a B.Sc. major program in the specific disciplines^{5,6}. Students who successfully complete the B.Sc. General Studies program will have the disciplines recorded on their transcript.

¹For a list of Geography courses designated as Science courses, see BSc requirements (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,0>).

²For students completing the B.Sc. Major in Economics program or the B.Sc. General Studies program with one of their concentrations in Economics, courses in Economics (ECON) are considered Science courses for Science credit. For all other B.Sc. students, Economics courses count as Arts credit.

³Only Psychology courses used in a concentration area can be counted as Science credit and used for the purpose of the General Degree. For all other B.Sc. students, Psychology courses count as Arts credit.

⁴Students may not complete a major or minor within the General program.

⁵Students may not complete more than one concentration area of similar nature within the same Science GENP (e.g. CHEM and BIOC, BIOL and BIOC, or STAT and DATA).

⁶Cross-listed courses can only be used to satisfy the requirements of one concentration (e.g. GEOG 304 and EESC 304).



Bachelor of Science Programs > Geospatial Information Science Minor

Minor in Geospatial Information Science

The Minor in Geospatial Information Science provides a formal introduction to foundational concepts, principles, and tools for gathering, storing, processing, analyzing, viewing, and portraying geospatial data. Practical applications and problem solving are stressed.

The minor is open to all majors in a Bachelor of Arts or Bachelor of Science program. The choice of electives enables students to specialize in an area of academic interest that complements their disciplinary major.

Students may earn a Minor in Geospatial Information Science by completing 30 credits, with at least 18 at the 300 or 400 level, as follows:

- 9 credits of core courses: GISC 380, GISC 381, and GISC 480;
- 21 credits of elective courses, with no more than 6 credits at the 100-level¹ and with no more than 12 elective credits from a single discipline² that is the same as the major, from the following list:
 - APSC 169³;
 - COSC 101, 111, 121, 222, 304, 341, 360, 404, 435, 448⁴;
 - DATA 101, 301;
 - EESC 111, 413, 437, 444, 448⁴;
 - ENGR 332³;
 - GEOG 109, 129³, 271⁵, 272, 427³, 437, 498⁴

¹First-year electives can only be counted toward the GIS Minor by students not majoring in the discipline of the subject code (e.g., an EESC major may not count EESC 111 for the GIS Minor, but a COSC or GEOG major may do so).

²For the purposes of the GIS Minor, a discipline is identified by the subject code (e.g., GEOG, EESC) with COSC and DATA combined as one discipline and ASPC and ENGR combined as another discipline.

³For the purposes of the GIS Minor only, these courses will be counted as science credits.

⁴Directed studies courses (3 credits only) can be counted toward the GIS Minor only if pre-approved by the program coordinator based on sufficient GIS content and learning potential.

⁵Any equivalent course dealing with introductory statistical methods can be substituted (e.g. APSC 254, BIOL 202, PSYO 270, SOCI 271, STAT 230).

Double Counting of Credits restrictions apply. See Program Requirements (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1442>).

Queries related to the GIS Minor should be addressed to the program coordinator.

Bachelor of Science Programs > Management (Minor)

Minor in Management

The Minor in Management is open to all students completing a Bachelor of Science.



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Students may earn a Minor in Management by completing 30 credits as follows:

- 6 credits of core courses: MGMT 100, MGMT 110
- 6 credits from: MGMT 201, MGMT 202, MGMT 220, MGMT 230, MGMT 250, MGMT 290
- 18 credits of MGMT courses at the 300- and 400-level¹

Students might encounter difficulty fitting the courses for the Minor into their timetable; careful planning is essential, and completion of the Minor program may necessitate an additional term beyond that required to complete the B.Sc. degree alone.

¹Some upper-level MGMT courses may have prerequisites beyond the required lower-level courses for the minor. Non-MGMT prerequisites courses do not count towards the required upper-level credits

Bachelor of Science Programs > Mathematical Sciences

This program is currently under review. Admissions into the program has been suspended for 2021. Students wishing to enrol in this program must contact the Mathematical Sciences undergraduate program advisor.

Major in Mathematical Sciences

Note: The UBC Okanagan campus also offers a B.A. Major in Computer Science

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1260#14718>), a B.Sc. Major in Computer Science

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1447>), a B.Sc. Major in Data Science

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1448>)¹, a B.A. Major in Mathematics

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1125>), a B.Sc. Major in Mathematics

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1457>), and a B.Sc. Combined Major in Physics and Mathematics (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1459>).

This program provides students with a solid grounding in the mathematical sciences including mathematics, statistics, and computer science. While maintaining a strong core in mathematics, the program allows students to emphasize mathematics, statistics, computer science, or any combination of the three. Computer science and statistics are extensively integrated throughout the program

A graduate of this program is prepared for further study in the mathematical sciences, or to enter into a career in business, education, government, industry, and financial institutions. Each student must consult with the department head in his or her first or second year for advice in planning his or her third- and fourth-year courses. Students planning to enter this program must include the course sequence COSC 111/121 in their 30 credits of required first-year courses.

CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
COSC 111, 121	6
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
MATH 100, 101	6
PHYS 111 or 112	3
PHYS 102, 121 or 122	3
Total Credits	30



COSC 221, 222	6
DATA 311	3
MATH 200, 220, 221, 225	12
STAT 230	3
Arts electives ¹	6
Total Credits	30

COSC 310, 320	6
MATH 307	3
One of MATH 311, 327	3
One of MATH 319, 340	3
STAT 303	3
One of STAT 401, 410	3
Arts electives ¹	6
Upper-level Computer Science elective	3
Upper-level Mathematics elective	3
Upper-level Science elective	3
Upper-level Statistics elective	3
Upper-level electives selected from Mathematics, Statistics, Data Science, or Computer Science	9
Upper-level electives	9
Elective	3
Total Credits	60
Minimum credits for degree	120

¹At least 18 credits (including the 6 credits in first-year English) must be in Arts courses.

Bachelor of Science Programs > Mathematics (B.Sc.)

B.Sc. Major in Mathematics

Note: The UBC Okanagan campus also offers a B.A. Major in Mathematics (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,1125#12828>), and a B.Sc. Combined Major in Physics and Mathematics (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1459>).

Graduates of this program are prepared for direct entry into careers in actuarial science, government, or finance. Many graduates go on to graduate studies, professional secondary teaching programs, or other professional programs.



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MATH 100, 101	6
6 credits from the following courses: BIOL 116 or 117, 122 or 125, 131, 133; CHEM 111 or 121, 113 or 123; EESC 111, 121; PHYS 111 or 112, 121 or 122	6
COSC 111 ¹ , 121 ²	6
DATA 101 or STAT 121 ³	3
ENGL 109, or two of 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
Electives	3
Total Credits	30

MATH 200, 220, 221 ⁴ , 225	12
STAT 230 ³	3
COSC 221	3
Non-Science electives	6
Electives	6
Total Credits	30

MATH 307, 311, 319, 327, 350	15
STAT 303	3
A student in this program may choose to specialize further by completing a concentration in Applied Mathematics, Data Science, or Pure Mathematics, or may choose not to pursue a concentration. The student must choose upper-level electives as specified in one of the four options below.	
General Program Upper-level Mathematics and Statistics electives. No more than 6 credits may be DATA/STAT courses.	12
Applied Mathematics Concentration Electives chosen from MATH 303, 317, 323, 339, 340, 409, 441, 442, 459, 461, 462 or other approved electives in applied mathematics	12
Data Science Concentration Electives chosen from: DATA 301, 311, 407, 410, 421; STAT 401, 403, 406, 449, or other approved electives in statistics, data science, or computer science	12
Pure Mathematics Concentration Electives chosen from MATH 308, 312, 313, 328, 330, 408, 410, 429, 443, 461, or other approved electives in pure mathematics	12
Upper-level Science electives	6
Upper-level electives	6
Science elective	3
Non-Science electives	6
Electives	9
Total Credits	60
Minimum credits for degree	120



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¹COSC 111 may be replaced by COSC 122 and 123.

²COSC 111 and 121 may be taken in 2nd year

³Pre-reqs for STAT 230 are DATA 101 or COSC 221. Therefore, students who take STAT 121 instead of DATA 101 in first year will need to take COSC 221 before enrolling in STAT 230.

⁴MATH 221 may be taken in the second term of the 1st year

Mathematics Honours Program

Graduation Requirements

- Completion of the course requirements for the B.Sc. Major in Mathematics (this may include any of the three concentrations);
- A minimum 75% grade average in all courses in the program;
- A minimum 85% grade average in all upper-level Mathematics and Statistics courses; and
- Completion of 6 credits of MATH 448 (Directed Studies in Mathematics) and/or STAT 448 (Directed Studies in Statistics).

Minor in Mathematics

A student must successfully complete MATH 220 and 18 credits of MATH courses numbered 300 or above (excluding MATH 448).

Minor in Mathematics and Statistics

A student must successfully complete MATH 220 and 18 credits of MATH and STAT courses numbered 300 or above (excluding MATH 448 and STAT 448) of which at least 6 credits must be MATH courses and at least 6 credits must be STAT courses.

Bachelor of Science Programs > Microbiology

Major in Microbiology

Note: The UBC Okanagan campus also offers Majors in Biology

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1445>), Ecology and Evolutionary Biology

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1450>), and Zoology

(<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1462>).

Designed to provide graduates with a breadth of knowledge in microbiology as it applies to the environment, health, and industry. Students graduating from the UBC Okanagan campus with a B.Sc. in Microbiology will have developed a wide range of lab, communication, and critical thinking skills. Prepares students for careers in microbiology (e.g., food and beverage industries, health sciences, and environmental sciences), graduate school, and professional programs.

Electives to satisfy B.Sc. Degree Requirements should include a minimum of 12 credits of Arts electives (in addition to 6 credits in English) and 12 credits of other courses (chosen, if needed, to ensure prerequisites are met for third- and fourth-year elective courses).

A minimum of 42 upper-level credits are required, which include at least 36 credits of Science courses (including at least 30 credits of Biology courses).



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BIOL 116, 125 ¹	6
CHEM 111 or CHEM 121	3
CHEM 113 or CHEM 123	3
ENGL 109, or two of ENGL 112 ² , 113, 114, 150, 151, 153, 154, 155, or 156	6
MATH 100 ¹	3
MATH 101 or 103 ¹	3
PHYS 111 or 112	3
PHYS 102, 121 or 122	3
Total credits	30
BIOL 200, 201	6
BIOL 202, 265	6
One of BIOL 204, 205, 209, 210	3
BIOL 228	3
CHEM 203, 204; or CHEM 213, 214 ²	6
Electives	6
Total Credits	30
BIOL 311	3
One of BIOL 354, BIOL 382	3
BIOL 393	3
Microbiology electives from the following: a) strongly recommended electives: BIOL 318, 319, 354 or 382, 366, or BIOC 494 or 495; b) other electives: BIOL 312, 314, 380, 381, 410, 420 ³ , 452 ³ , 480	21
Science electives numbered 300 or higher	6
Other electives numbered 300 or higher	6
Electives to satisfy B.Sc. credit requirements	18
Total credits	60
Mimimum credits for degree	120

¹BIOL 116, 125; CHEM 111, 113 or 121, 123; and MATH 100, 101 or 103 should be taken in the first year to ensure students have the prerequisites for second year.

²Strongly recommended.

³If approved by the program advisor as appropriate to Microbiology.

⁴BIOC 494 and BIOC 495 may both be used toward the requirement to take 30 credits of upper level BIOL courses in the Major in Microbiology.



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Note: credit will be granted for only one of BIOC 393 or BIOL 393, and one of BIOC 493 and either BIOC 494 or BIOC 495.

Microbiology Honours Program

The Honours in Microbiology is an intensive program of study based on coursework and research experience. Students who complete this program will have the ability to work independently with a high level of competency.

The course requirements are the same as in the Major in Microbiology, except that students must complete 6 credits of BIOL 440.

Admission Requirements

- Fourth-year standing;
- A minimum grade average of 75% from all courses completed; and
- Enrolment in BIOL 440 with a research project and research supervisor approved by the department head as appropriate to Microbiology.

Graduation Requirements

- Completion of the course requirements for the Major in Microbiology;
- A 75% overall grade average; and
- BIOL 440 (6 credits), with a minimum grade of 75%. A written thesis is required, with a public presentation in the form of a poster session or a seminar.

Bachelor of Science Programs > Physics and Astronomy**Major in Physics**

This program aims to provide a comprehensive physics education with considerable emphasis on both theoretical foundations and laboratory practice. The theoretical and mathematical components develop the intellectual skills and versatility needed either to pursue physics professionally at the post-graduate level, or to cross over into other professions such as medicine, actuarial science, meteorology, and secondary education, in which a physics background is strongly preferred. The senior laboratory components consist of long-range projects rather than prescribed exercises, to encourage initiative on the part of the student and to prepare him or her for the inventive atmosphere of modern high-tech industry. Graduates of this program have attained success in high-tech industry, computer software development, secondary education, and post-graduate studies.

CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
MATH 100, 101	6
PHYS 111 or 112 ¹	3
PHYS 121 or 122 ¹	3
Electives ²	6
Total Credits	30



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ASTR 210, or one of PHYS 225, 305, 320	3
MATH 200, 221 ³ , 225, 317 ⁴	12
PHYS 200, 215, 216, 231, 232	15
Total Credits	30

MATH 319	3
PHYS 301, 304, 331, 328, 403, 441	18
9 credits chosen from: PHYS 314, 324, 400, 401, 402, 407, 408, 413, 418, 420, 431, 474	9
6 credits chosen from: PHYS 305, 310, 314, 320, 321, 324, 360, 400, 401 ⁵ , 402 ⁵ , 407, 408, 413, 418, 420, 425, 431, 448 ⁶ , 474	6
Electives ^{2, 7, 8}	24
Total Credits	60
Minimum credits for degree	120

¹Minimum grade of 68% is required in each of PHYS 112 and PHYS 122.

²COSC 111 and 121 are strongly recommended. Students considering a career in geosciences should take EESC 111, 121, and 350. Students considering a career in astronomy should take ASTR 111 and 121. At least 18 credits (including the 6 credits in first-year English) must be Arts courses.

³MATH 221 may be taken in the second term of the first year.

⁴MATH 317 may be taken in the third year.

⁵Students in the Physics Honours Program (PHYS 449) must use PHYS 401 and PHYS 402 to fulfill the Major requirements. Further information can be obtained from the Physics and Astronomy program advisor.

⁶Capable students are advised to consider selecting the directed studies course PHYS 448, which grants either 2, 3, 4, or 6 upper-level credits in Physics.

⁷PHYS 448 may not be applied toward the Major requirements for Honours students, except as elective credit.

⁸At least 36 of 120 credits must be Science course credits from courses numbered 300 or higher (upper-level courses), and at least an additional 6 upper-level courses which may be from Arts or Social Sciences.

Combined Major in Physics and Mathematics

Provides students with a rich background in both theoretical physics and mathematics. The program consists of core training in both disciplines and electives that highlight common ground between the two fields. Graduates of the program will be well prepared for post-graduate studies in theoretical physics or applied mathematics. The combined major will also prepare students for further training and careers in education, finance, computer software development, or industrial research.

CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
MATH 100, 101	6
Two of ENGL 112 or 114, 113, 150, 151, 153	6



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PHYS 111 or 112	3
PHYS 121 or 122 ¹	3
COSC 111, 121	6
Total Credits	30

PHYS 200, 215, 216, 231, 232	15
MATH 200, 220, 221, 225, 317 ²	15
Total Credits	30

MATH 307, 311, 319, 327; STAT 303	15
PHYS 301, 304, 328	9
One of PHYS 401 ³ , 402 ³ , 418 ³	3
6 credits chosen from: MATH 350, 408, 459, 461	6
9 credits chosen from: PHYS 314, 331, 401 ³ , 402, 403, 407, 408, 418 ³ , 420, 431, 441, 474	9
Electives ⁴	18
Total Credits	60
Minimum credits for degree	120

¹Minimum grade of 68% is required in each of PHYS 112 and PHYS 122.

²MATH 317 may be taken in the third year but is a requirement for PHYS 301.

³Each of PHYS 401, 402, 418 may only fulfill one requirement.

⁴At least 12 credits of electives must be from Arts.

Minor in Physics

A student must successfully complete 18 credits in Physics courses selected from PHYS 301, 304, 305, 310, 314, 320, 321, 324, 328, 331, 360, 400, 401, 402, 403, 407, 408, 418, 420, 425, 431, 441, 474.

Physics Honours Program

This program enables high-achieving Physics Major students to gain research experience through the completion of an Honours Thesis. It is particularly recommended to those students intending to pursue post-graduate studies.

Admission Requirements

- Fourth-year standing in the Physics Major program;
- Students with a minimum grade average of 76% for all second-, third- and fourth-year science courses taken to date that are applicable to the Physics Major may apply to be considered for the Honours program. Admission is at the discretion of the Department Head, and may be subject to a ranking of those students applying.



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- Enrolment in PHYS 449 (Honours Thesis). The thesis proposal and research supervisor must be approved by the Academic Department.

In exceptional cases, such as transferees from another institution, a student may be admitted by permission of the Academic Department notwithstanding the above criteria.

Graduation Requirements

- Completion of the course requirements for the Physics major¹, including PHYS 401² and 402²;
- Minimum grade average of 76% for all second-, third-, and fourth-year science courses taken to fulfill the requirements of the Physics Major; and
- Completion of PHYS 449 with a minimum grade of 76%. A written thesis is required, with a public seminar presentation of the thesis research.

¹PHYS 448 and 449 may not be applied toward the Major requirements for Honours students, except as elective credit.

²Students in the Physics Honours Program (PHYS 449) must use PHYS 401 and PHYS 402 to fulfill the Major requirements.

Bachelor of Science Programs > Psychology (B.Sc.)

B.Sc. Major in Psychology

Note: The UBC Okanagan campus also offers a B.A. Major in Psychology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,282,857,989#11377>).

The Bachelor of Science Major in Psychology provides a strong foundation in psychology.

Students gain a broad perspective in psychology with courses in such diverse areas as biopsychology, cognitive, developmental, social, and abnormal psychology. In addition, students gain an understanding and appreciation of the empirical method as it is applied across the disciplines. Students may complete a B.Sc. Major in Psychology with a minor in any other Social Science area.

Students intending to pursue graduate studies in Psychology are advised to consider taking the Honours degree since many Canadian universities expect potential graduate students to have completed an Honours degree.

Enrolling as a Psychology Major

Students are encouraged to declare their Major in Psychology at the end of their first year. To be admitted to the Major program, students must successfully complete both PSYO 111 and 121 (or equivalent) and a minimum of 24 credits. To continue as a Psychology Major, a student must complete both PSYO 270 and 271 (or equivalent); these courses should be completed in second year.

First and Second Years

ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153 ¹ , 154, 155, or 156	6
MATH 100	3



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One of COSC, DATA, STAT, additional MATH courses	3
At least 3 credits of experimental science in any BIOL, CHEM, EESC, or PHYS courses with labs	3
Science electives ³	9
PSYO 111, 121	6
Total Credits	30

Science [non-Psychology] electives ³	12
PSYO 270, 271 ²	6
At least 12 credits of non-science designated courses ^{4,5}	12
Total Credits	30

¹Students who have not earned the 6 credits of required English or Communications coursework by the time they enter fourth year will not be permitted to enroll in any courses other than courses that satisfy the English or Communications requirement.

²A student must complete PSYO 270 (Introduction to Research Methods and Design) and PSYO 271 (Introduction to Data Analysis) to graduate as a Psychology Major.

³The first-year courses are often prerequisite for second-year courses and second-year courses are often prerequisites for upper-level (third- and fourth-year) courses in the discipline. Students are strongly advised to consider what upper-level courses are of interest to ensure that they have the proper prerequisites.

⁴PSYO courses are NOT Arts courses for B.Sc. Psychology students.

⁵Students are strongly encouraged to take 3 credits of an Indigenous content course to partially fulfill this requirement. Students entering the B.Sc. in 2022 and later will have to successfully complete an Indigenous content course.

Third and Fourth Years

- At least 30 credits of 300-level or higher Psychology courses;
- Psychology breadth requirement of at least 3 credits from each of the following five areas:
 1. Cognitive/Learning/ Perception;
 2. Developmental;
 3. Biopsychology;
 4. Personality/Abnormal;
 5. Social/Sex/Forensic.

Note: each area is defined by the middle number in the course number (e.g., PSYO 219 satisfies area 1; PSYO 321 satisfies area 2, etc.); students may complete this requirement with second-year as well as upper-level courses.

Also:

- In total, a minimum of 48 credits in Psychology courses (at least 30 credits at the 300 level or higher). Students may earn the additional 6 credits in Psychology beyond the required 12 lower-level [PSYO 111, 121, 270 & 271] and the 30 upper-level [i.e., 300 or higher] credits with second- and/or upper-level credits;
- At least 12 credits in 300-level or higher non-Psychology courses (upper division). At least 6 must be designated as Science which will give a total of 78 Science credits [this includes all Psychology credits];
- At least 12 credits of non-science designated courses;
- At least 120 credits are required for the degree;



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- The credits not specifically defined are electives. Given the requirements of a minimum 42 upper-division credits, it is possible to take a limited number of lower-division courses (including Psychology) during third and fourth year.

Note: not all of the identified courses are offered each year. A number of courses are offered in alternate years, and some may not be offered for several years. Students are advised to check the current schedule of course offerings. Moreover, timetabling conflicts may mean that courses have to be taken in a different order.

B.Sc. Psychology Honours Program

The Honours degree program in Psychology enables high-achieving Psychology Major students to increase their concentration in Psychology and gain research experience by the completion of an Honours thesis. Students are expected to satisfy high levels of competency in their academic achievement and to successfully complete a research project under the supervision of a faculty member. Students admitted to B.Sc. Psychology Major program, or in any of the concentration areas, may apply to the Honours program provided all admission requirements outlined below are satisfied.

Admission Requirements

- Fourth-year standing;
- Minimum weighted average of 76% from all courses taken in Psychology;
- Minimum weighted average of 76% over the last 60 credits;
- Preliminary thesis topic approved by a thesis supervisor. Note: the department head must approve the thesis supervisor; and
- Completion of PSYO 372.

Graduation Requirements

- All general program requirements for the Bachelor of Science;
- All requirements for the Psychology Major, including the breadth requirement;
- Completion of PSYO 372 (Research Methods and Statistics), PSYO 373 (Advanced Research Methods and Statistics), and 6 credits of PSYO 490 (Undergraduate Honours Thesis), with a minimum of 76% in each of these courses;
- A minimum of 54 credits of Psychology, of which 42 must be upper-level Psychology;
- Minimum weighted average of 76% from all courses in Psychology;
- Minimum weighted average of 76% over the last 60 credits; and
- Public presentation of the thesis.

Residency Requirements

Same as for B.Sc. Major in Psychology.

Bachelor of Science Programs > Statistics

Major in Statistics

This program provides students with a solid grounding in the theoretical, computational, and applied aspects of statistical science. Students also specialize in an area of application through upper-level electives and fulfilling stream requirements in another discipline. A graduate of this program is prepared for further study in statistical science, or to enter into a career in Statistics Canada, health sciences, business, government, industry, or an actuarial/financial institution. Each student must consult with the program advisor in his or her first or second year for advice in planning third- and fourth-year courses.



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CHEM 111 or CHEM 121; and CHEM 113 or CHEM 123	6
MATH 100, 101	6
ENGL 109, or two of ENGL 112, 113, 114, 150, 151, 153, 154, 155, or 156	6
PHYS 111 or 112; and PHYS 121, or 122	6
COSC 111	3
DATA 101	3
MATH 200, 221 ¹	6
STAT 230	3
Arts electives	6
2nd-Year Science Electives	6
Stream requirements ²	9
Total Credits	60

STAT 303	12
Three of STAT 400, 401, 403, 406	
Four of DATA 311, 315, 405, 407, 410, 421	12
Two of MATH 303, 307, COSC 303, 304, DATA 301, PHYS 420	6
Arts electives	6
Electives, of which at least 3 credits must be upper-level	15
Stream requirements ²	9
Total Credits	60

¹Math 221 may be taken in the second term of the first year.

²Stream requirements: Students must complete one of the following options. The program advisor maintains a list of suggested courses for which within-stream students will gain the pre-requisites for upper-level requirements.

Biology Stream:

All of: BIOL 116, 125, 201

All of: 9 credits upper-level BIOL

Biochemistry Stream:

All of: BIOL 116, 125, 200:

All of: 9 credits upper-level BIOL or BIOC

Physical Geography Stream:



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One of: GEOG 108, 109

Two of: GEOG 108, 109, 200, 207, 213, 222, 272

All of: 9 credits upper-level Science GEOG courses*

Earth and Environmental Sciences Stream:

All of: EESC 111 and 6 credits 2nd-year EESC

All of: 9 credits upper-level EESC

*See BSc requirement page (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,0>) and program advisor.

Statistics Honours Program

The course requirements are the same as in the Major in Statistics program, except that 6 credits must be in STAT 448.

Admission Requirements

- Fourth-year standing (minimum of 78 credits in the Major in Statistics).
- Minimum grade average of 76% in all courses taken to date applicable to the Major in Statistics.
- Enrolment in STAT 448 with a project and a supervisor.

Graduation Requirements

- Completion of the course requirements for the Major in Statistics.
- A minimum 76% graduating grade average (GGA).
- Minimum grade average of 85% in all upper-level STAT courses.
- Completion of 6 credits of STAT 448. A written project is required with a public presentation of the project in the form of a seminar.

Minor in Statistics

A student must successfully complete MATH 100, 101, 200, 221, STAT 230 and DATA 101, and 18 credits in courses selected from STAT 303, 400, 401, 403, 406, 448, 449, DATA 311, 405, 407, 410.

Bachelor of Science Programs > Zoology

Major in Zoology

Note: The UBC Okanagan campus also offers Majors in Biology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1445>), Ecology and Evolutionary Biology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1450>), and Microbiology (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,360,1102,1458>).

Graduates will obtain a solid grounding in a broad range of topics dealing with animal biology (physiology, ecology, developmental biology). This program emphasizes a comparative approach and provides students with a variety of practical experience and skills in laboratory and field work, and communication. This program prepares students for graduate school and professional programs.



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Electives to satisfy B.Sc. Degree Requirements should include a minimum of 12 credits of Arts electives (in addition to 6 credits in English) and 12 credits of other courses (chosen, if needed, to ensure prerequisites are met for third- and fourth-year elective courses).

A minimum of 42 upper-level credits are required, which include at least 36 credits of Science courses (including at least 30 credits of Biology courses).

BIOL 116, 125 ¹	6
CHEM 111 or CHEM 121	3
CHEM 113 or CHEM 123	3
ENGL 109, or two of ENGL 112 ² , 113, 114, 150, 151, 153, 154, 155, or 156	6
MATH 100 ¹	6
MATH 101 OR 103 ¹	
PHYS 111 or 112	3
PHYS 102, 121 or 122	3
Total Credits	30

BIOL 200, 201	6
BIOL 202, 265	6
BIOL 204, 205	6
CHEM 203, 204; or CHEM 213, 214 ²	6
Electives	6
Total credits	30

BIOL 311	3
BIOL 354	3
BIOL 363	3
Zoology electives from the following courses: BIOL 301, 306, 308, 341, 356 ² , 357, 359 ² , 370, 372, 375, 401, 414, 417, 420 ³ , 422, 452 ³ , 459, 460, 461, 467, 468	21
Science electives numbered 300 or higher	6
Other electives numbered 300 or higher	6
Electives to satisfy B.Sc. requirements	18
Total credits	60
Minimum credits for degree	120



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¹BIOL 116, 125; CHEM 111, 113 or 121, 123; and MATH 100, 101 OR 103 should be taken in first year to ensure students have the prerequisites for second year.

²Strongly recommended.

³If approved by the program advisor as appropriate to Zoology.

Zoology Honours Program

The Honours in Zoology is an intensive program of study based on coursework and research experience. Students who complete this program will have the ability to work independently and with a high level of competency.

The course requirements are the same as in the Major in Zoology, except that students must complete 6 credits of BIOL 440.

Admission Requirements

- Fourth-year standing;
- A minimum grade average of 75% over all courses completed; and
- Enrolment in BIOL 440 with a research project and research supervisor approved by the department head as appropriate to Zoology.

Graduation Requirements

- Completion of the course requirements for the Major in Zoology;
- A 75% overall grade average; and
- BIOL 440 (6 credits) with a minimum grade of 75%. A written thesis is required with a public presentation in the form of a poster session or a seminar.

Bachelor of Sustainability (B.Sust.)

Bachelor of Sustainability (B.Sust.) > Program Overview

The Bachelor of Sustainability (B.Sust.) degree is a four-year direct-entry interdisciplinary program blending practice, theory, and research methodology in participating concentrations. Students take a set of core integrative courses specific to sustainability along with a set of advanced courses in one of the concentrations:

- Environmental Analytics
- Environmental Conservation and Management
- Environmental Humanities
- Green Chemistry

The curriculum consists of 39 credits from core integrative courses, along with a minimum of 42 credits from concentration courses. Remaining credits will be chosen from relevant elective courses in consultation with a program advisor to enable students to achieve the necessary breadth to become well-versed in sustainability matters on a local-to-global scale.

Bachelor of Sustainability (B.Sust.) > Admission Requirements

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Application for admission to the Bachelor of Sustainability program must be made through Enrolment Services.

The program will only admit students to the Winter Session. Students admitted to the Winter Session can elect to register only for courses beginning in January; however, this is not recommended. Starting classes in January may limit course options and may lengthen the time it takes to complete degree requirements. Students applying to the program should be available to start in September of the year admitted.

Admission from Secondary School

The admission criteria specific to secondary school applicants to the Bachelor of Sustainability program are detailed in Admissions (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=2,0,0,0>).

Admission from Post-Secondary Study

Individuals who have completed courses through an alternate post-secondary institution can apply for entry to year one of the Bachelor of Sustainability program and must meet competitive admission requirements for entry. Once admitted, applicants may be considered for promotion to year two of the program only if they are recognized as having already substantially completed year one core and concentration course requirements.

Transfer from Another UBC Program

Individuals who have completed courses through another UBC program can apply for entry to year one of the Bachelor of Sustainability program and must meet competitive admission requirements. Once admitted, applicants may be considered for promotion to year two of the program only if they are recognized as having already substantially completed year one core and concentration course requirements.

Admission is not available into years three and four of the program.

Bachelor of Sustainability (B.Sust.) > Academic Regulations

In addition to the general policies and regulations set out in Policies and Regulations, the following academic regulations listed apply to undergraduate students in this program.

Repeating/Failed Courses

Except in special cases, no student may repeat a course more than once.

Students wanting to repeat a course more than once must submit a written request to the Dean's Office in the faculty delivering their concentration.

The highest grade achieved will be used in the determination of the student's graduation standing, though all grades remain on the student's academic record.

Supplemental Examinations

The Bachelor of Sustainability degree program does not offer supplemental examinations in any courses.



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Major or Honours Programs

Students in the Bachelor of Sustainability are not permitted to complete a major or honours program in addition to their B.Sust.

Dean's List

Students who complete 24 credits or more in a Winter Session with an overall average of 85% or higher on all credits attempted will receive the notation "Dean's List" on their permanent records for that specific Winter Session.

Promotion Requirements

Promotion is dependent on successful completion of a minimum number of credits as listed below.

First Year	0–23 credits
Second Year	24–47 credits
Third Year	48–77 credits
Fourth Year	78 or more credits

Academic Standing and Continuation Requirements

Supplementary to the University's policy on Academic Standing, the regulations below are applicable to B.Sust. students.

On Academic Probation

On Academic Probation will be assigned to a student who, while not falling under the provisions for Failed standing, has:

- earned a sessional cumulative average of less than 55%; or
- enrolled in 18 or more credits in a session and passed fewer than 60% of those credits; or
- enrolled in fewer than 18 credits in a session and passed fewer than 50% of those credits.

A student placed On Academic Probation at the end of the Winter Session will normally be allowed to register in a maximum of 9 credits in the following term. This restriction may be waived at the discretion of the Faculty. The credit restriction will only be enforced if the student is notified before the subsequent term begins.

On Academic Probation is changed to In Good Standing if a student's cumulative average in the term in which he or she was on Academic Probation is 55% or higher.

Failed Standing

A student placed on Failed standing for the first time will normally be required to discontinue his or her studies for a period of one academic year (12 months) prior to resuming his or her program of study. A student who already has a Failed standing on his or her academic record (from any UBC program) will be required to withdraw from the University and may only be readmitted under the Advancement Regulations (<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,93,0>). Failed standing will be assigned at the end of the Winter Session (April) based on performance in that session. The evaluation will consider all courses taken in the session. Failed standing will be assigned to a student who has:



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- a sessional cumulative average less than 50%, passing fewer than 50% of the credits attempted in that session; or
- a sessional cumulative average of less than 45%.

Courses taken in the Summer Session are not taken into consideration for assigning Failed standing, although they are applicable for On Academic Probation.

Bachelor of Sustainability (B.Sust.) > Degree Requirements

Students in the Bachelor of Sustainability program must complete the following degree requirements:

- A minimum of 123 credits of which:
 - 39 credits are in core integrative courses in sustainability.
 - At least 42¹ additional credits are from courses in one concentration, of which at least 21 credits must be at the 300/400 level.
 - Remaining credits are from a selection of electives recommended for the program. Overall, students must complete 48 credits in upper-level courses to fulfill degree requirements.
 - Recommended electives may also occur in a concentration. Course credit can only be used once toward concentration or elective requirements. Double-counting of course credit will not be granted.
- Once accepted into the Bachelor of Sustainability program, students are expected to complete all of their coursework at the UBC Okanagan Campus, with the exception of credit completed through a UBC Go Global (<http://students.ok.ubc.ca/involvement-http://students.ok.ubc.ca/involvement-activities/go-global>) student exchange experience or through the cross-campus exchange program.

Bachelor of Sustainability (B.Sust.) > Environmental Analytics Concentration

Upon successful completion of this Concentration, the notation "Concentration in Environmental Analytics" will be placed on the student's transcript and degree parchment.

ENGL 112	3
INDG 102	3
SUST 100	3
SUST 104	3
COSC 111	3
DATA 101	3
ECON 101	3
ECON 102	3
MATH 100	3
MATH 101	3
Total Credits (minimum)	30



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STAT 230	3
SUST 200	3
SUST 202	1
SUST 204	3
SUST 205	3
DATA 301	3
GEOG 128	3
PHIL 125	3
Electives	9
Total Credits (minimum)	31

SUST 300	3
SUST 301	3
SUST 302	1
COSC 304	3
DATA 311	3
DATA 315	3
ECON 371	3
GISC 380	3
Electives	9
Total Credits (minimum)	31

SUST 400	6
SUST 402	1
BIOL 401 or another approved upper-level BIOL course	3
DATA 407	3
DATA 410	3
GEOG 431	3
PHIL 435	3
STAT 406	3
Electives	6
Total Credits (minimum)	31



Bachelor of Sustainability (B.Sust.) > Environmental Conservation & Management Concentration

Upon successful completion of this Concentration, the notation "Concentration in Environmental Conservation & Mgmt" will be placed on the student's transcript and degree parchment.

ENGL 112	3
INDG 102	3
SUST 100	3
SUST 104	3
ECON 101	3
EESC 111	3
GEOG 109	3
GEOG 129	3
MATH 100	3
Electives	3
Total Credits (minimum)	30
BIOL 202	3
SUST 200	3
SUST 201	3
SUST 202	1
SUST 204	3
SUST 205	3
EESC 213	3
GEOG 272	3
Electives	9
Total Credits (minimum)	31
SUST 300	3
SUST 301	3
SUST 302	1
EESC/GEOG 314	3
EESC 315	3
GISC 380	3
GISC 381	3
Electives	12
Total Credits (minimum)	31



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SUST 400	6
SUST 402	1
EESC 402	3
EESC 444	3
EESC 456	3
Electives	15
Total Credits (minimum)	31
Overall Total Credits (minimum)	123

Bachelor of Sustainability (B.Sust.) > Environmental Humanities Concentration

Upon successful completion of this Concentration, the notation "Concentration in Environmental Humanities" will be placed on the student's transcript and degree parchment.

ENGL 112	3
INDG 102	3
SUST 100	3
SUST 104	3
ENGL 156	3
GEOG 108	3
HIST 106	3
INDG 100	3
Electives	6
Total Credits (minimum)	30

SUST 201	3
SUST 200	3
SUST 202	1
SUST 204	3
SUST 205	3
One of ANTH 245, ENG 234, ENGL 297, INDG 201, INDG 203	3
HIST 215	3
INDG 202	3
Electives	9
Total Credits (minimum)	31



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SUST 300	3
SUST 301	3
SUST 302	1
One of CULT 317, ENGL 387, ENGL 388, ENGL 397	3
One of GEOG 304, GEOG 318, GEOG 365	3
One of HIST 300, HIST 301, HIST 309, HIST 395	3
INDG 307	3
Electives	12
Total Credits (minimum)	31

SUST 400	6
SUST 402	1
One of ANTH 445, GEOG 423, INDG 420	3
One of ENGL 457, ENGL 458, GWST 400	3
PHIL 435	3
Electives	15
Total Credits (minimum)	31

Bachelor of Sustainability (B.Sust.) > Green Chemistry Concentration

Upon successful completion of this Concentration, the notation "Concentration in Green Chemistry" will be placed on the student's transcript and degree parchment.

ENGL 112	3
INDG 102	3
SUST 100	3
SUST 104	3
CHEM 121	3
CHEM 123	3
MATH 100	3
MATH 101	3
PHYS 111	3
PHYS 121	3



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Total Credits (minimum)	30
BIOL 202	3
SUST 200	3
SUST 202	1
SUST 204	3
SUST 205	3
CHEM 201	3
CHEM 203	3
CHEM 204	3
CHEM 220	3
Electives	6
Total Credits (minimum)	31
SUST 300	3
SUST 301	3
SUST 302	1
CHEM 330	3
CHEM 336	3
CHEM 338	3
Electives ²	15
Total Credits (minimum)	31
SUST 400	6
SUST 402	1
CHEM 333	3
CHEM 334	3
CHEM 462 or CHEM 448	3
CHEM 463 or CHEM 448	3
Electives	12
Total Credits (minimum)	31



Academic Staff

Academic Staff > Biology

Professor

P. A. Barker, B.Sc. (S.Fraser), Ph.D. (Alta.)
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B. Mathieson, B.A., M.Sc., Ph.D. (Ott.)
B. Nilson, B.Sc., M.Sc. (Vic.(BC))



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S. Du, Ph.D. (UBC)
F. H. Fard, Ph.D. (Calg.)



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Affiliate Associate Professor

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Professor

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I. Vrbik, B.Sc. (McM.), M.Sc., Ph.D. (Guelph)



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Lecturer

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Affiliate Professor

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Academic Staff > Earth and Environmental Sciences

Professor

B. Bauer, M.Sc., Ph.D. (Johns H.), joint appointed with Physical Geography

J. Greenough, B.Sc., M.Sc., Ph.D. (Nfld.)

E. Hornibrook, B.Sc.Eng. (New Brunswick), Ph.D. (W.Ont.)

K. Larson, B.Sc. (Vic(BC)), M.Sc., Ph.D. (Qu.)

L. Parrott, B.A., M.Sc., Ph.D. (McG.), joint appointed with Biology and Physical Geography

I. Walker, B.Sc., M.Sc., Ph.D. (S.Fraser), joint appointed with Biology

A. Wei, B.Sc., M.Sc., Ph.D. (N.For.)

Associate Professor

Y. Chen, B.Sc., M.Sc., Ph.D. (W.Ont.)

J. Curtis, B.Sc., M.Sc., Ph.D. (Manit.)

K. Hanna, B.A., M.A., Ph.D. (Tor.)

D. F. Scott, B.Sc., M.Sc., Ph.D. (Natal, ZA)

R. Young, B.Sc., M.Sc. (Alta.), Ph.D. (Calg.), joint appointed with Physical Geography

Assistant Professor

M. Bourbonnais, B.Sc. (Vic(BC)), M.Sc. (Vic(BC)), Ph.D. (Vic(BC))

B. Dyck, B.Sc. (Lund), M.Sc. (Lund), DPhil (Oxford), PostDoc/Research Fellowship (Cambridge)

Associate Professor of Teaching

C. F. Nichol, B.A. (Camb.), M.Sc. (Birm.), Ph.D. (Br.Col.)

Adjunct Professor

D. Austin, B.Sc. (Vic(BC)), MGIS (Calg)

K. Brown, Ph.D. (Vic(BC))

L. Burge, B.Sc. (Vic(BC)), M.Sc. (Calg.), Ph.D. (Mc.G.)

D. Kellett, B.Sc. (UBC), M.Sc. (Queens), Ph.D. (Dalhousie)

G. Mowat, B.Sc. (Br.Col.), M.Sc. (Alta.), Ph.D. (NULS)

N. Neumann, B.Sc. (Vic(BC)), M.Sc. (Sask), Ph.D. (UBC)

Academic Staff > Physics and Astronomy

Professor

C. Haston, B.Sc (W.Ont), MSc (Tor.), PhD (Texas)

A. Jirasek, M.Sc.(Guelph), Ph.D.(Br.Col.)

P. Simpson, B.Sc, M.Sc. (Waterloo), Ph.D. (W.Ont.)



OKANAGAN

Associate Professor

D. Vollick, B.Sc., M.Sc., Ph.D. (Br.Col.)

Assistant Professor

R. Feldman, B.A.Sc (Tor), MSc. Ph.D (W. Ont)

A. Hill, B.A (Oberlin), Ph.D (Wisc.)

Adjunct Professor

C. Araujo, B.Sc., Ph.D. (Br.Col.)

D. Batchelar, B.Sc. (W.Ont.), M.Sc. (McM.), Ph.D. (W.Ont.)

N. Becker, BC Cancer

T. Bjarnason, B.Eng (Sask.), M.A.Sc., Ph.D. (Br.Col.)

M. Carlone, Ph.D. (Carleton)

M. Dehnel, B.A.Sc., M.A.Sc., Ph.D. (Br.Col.)

M. Hilts, B.A., B.Sc. (McM.), M.Sc., Ph.D. (Br.Col.)

C. Hoehr, M.A. (Freiburg), Ph.D. (Heidelberg)

D. Hyde, H.B.Sc., M.Sc. (McM.), Ph.D. (W.Ont.)

M. Lamey, BC Cancer

T. Landecker, Ph.D. (Sydney)

M.-P. Millette, B.Sc., M.Sc. (Qué.), Ph.D. (Br.Col.)

T. Robishaw, Ph.D. (UC Berk)

T. Teke, B.Sc. (Queb.), M.Sc. (Queb.), Ph.D. (Br.Col.)

Professor of Teaching

J. Bobowski, B.Sc. (Manit.), M.Sc., Ph.D. (Br. Col.)

Associate Professor of Teaching

J. Hopkinson, B.Sc. (McM.), Ph.D. (Rutg.)

Lecturer

R. Khanbabaie, Ph.D. (Washington University)

F. Moosvi, Ph.D. (Br.Col.)

Associate Professor Emeritus

D. Kay, B.Sc., M.Sc., Ph.D. (S.Fraser)

M. Neuman, B.Sc., M.Sc., Ph.D. (Manit.)

Academic Staff > Mathematics

Professor

H. Bauschke, Dipl.-Math. (Fran.), Ph.D. (S.Fraser)

W. Hare, B.Sc., M.Sc. (Alta.), Ph.D. (S.Fraser)

J. Tavakoli, B.Sc., M.Sc., Ph.D. (Dal.)

R. Tyson, B.Sc., M.S., Ph.D. (Wash.)

X. Wang, B.Sc., M.Sc., Ph.D. (S.Fraser)

Associate Professor

W. Broughton, B.Sc. (Br.Col.), Ph.D. (Cal.Tech.)



OKANAGAN

E. G. Butz, B.Sc., M.A., Ph.D. (Chic.)
S. Desjardins, B.Sc., M.Sc. (Calg.), Ph.D. (Oregon)
D. Hare, B.Sc. (Vic.(BC)), M.Sc. (Alta.), Ph.D. (S.Fraser)

Assistant Professor

E. Foxall, B.ASc. (UBC), MSc. (Vic.), Ph.D. (Vic.)

Assistant Professor of Teaching

P. Tsopméné, B.Sc., M.Sc. (Camer.), Ph.D. (UCL)

Lecturer

C. Davis, B.A. (UBC), M.Sc. (Wat.), Ph.D. (UBC)

Associate Professor Emeritus

Q. Yang, B.Sc., M.Sc., Ph.D. (Calg.)

Honorary Affiliate

Y. Zhao, Ph.D. (Sask.)

Academic Staff > Statistics

Professor

W. J. Braun, B.Sc., M.Sc. (Calg.), Ph.D. (W.Ont.)

Associate Professor

J. Andrews, B.Sc., (Acad.), M.Sc., Ph.D. (Guelph)
P. Gill, B.Sc., M.Sc., Ph.D. (IIT Kanpur)

Assistant Professor

X. Shi, B.Sc. (Chongqing), M.Sc. (CUST), Ph.D. (York)
J. Thompson, (Waterloo), M.Sc. (McM.), Ph.D. (W.Ont.)

Assistant Professor of Teaching

L. Han, M.Ed. (Shenyang), M.Sc., Ph.D. (W.Ont.)
I. Vrbik, B.Sc. (McM.), M.Sc., Ph.D. (Guelph)

Affiliate Professor

M. Davison, Ph.D. (W.Ont)
J. Hu, Ph.D. (Wat.)

Associate Professor Emeritus

S. Esterby, Ph.D. (Wat.)