

Atmospheric Science

Significant changes have been made to the Atmospheric Science specialization that do not yet appear in the 2017/2018 Calendar. This material is taken from a draft edition of the UBC Vancouver Calendar to help students applying for their UBC Science Second Year Program Specialization.

[4994] Undergraduate major and honours specializations in Atmospheric Science and the Diploma in Meteorology are offered cooperatively by the Department of Earth, Ocean and Atmospheric Sciences and the Department of Geography. Students should direct enquiries to the [Atmospheric Sciences Specialization](#). For information concerning the diploma program see Diploma in Meteorology.

[20496] The Major in Atmospheric Science is available for students with a broad interest in the Earth's atmosphere. Students who wish to pursue a professional career as an atmospheric scientist or environmental consultant should consider graduate study leading to advanced degrees; see graduate [Atmospheric Science](#). For more information, visit [Atmospheric Science](#).

[20497] For details of other undergraduate Science specializations available in the Department of Earth, Ocean and Atmospheric Sciences, see [Earth and Ocean Sciences](#), [Environmental Sciences](#), [Geological Sciences](#), [Geophysics](#), and [Oceanography](#). The Department of Earth, Ocean and Atmospheric Sciences also offers [Geological Engineering](#) as part of the B.A.Sc. degree program.

[4995] Co-operative Education Option

[4996] This option integrates academic study with relevant supervised work experience. The work placements are arranged by mutual agreement between the students and the employing organizations. Enrolment is limited. Admission is by application to the Science Co-op Office in February prior to third year. Selection will be based on previous academic performance and general suitability to the work environment as assessed by resumé and interview. Graduation from the Co-op program requires completion of four work terms, in addition to the normal courses required for the specialization. Detailed information is available from [Atmospheric Sciences](#) or the [Co-operative Education Office](#).

[10544] Specializations

[4998] Major (0167): Atmospheric Science (ATSC)

First Year	
Communication Requirement ¹	6
CHEM 121 (or 111), 123	8
MATH 100 or 102 or 104 ⁶	3
MATH 101 or 103 or 105 ⁷	3
PHYS 117 (or 101 or 107) ²	3

PHYS 118 (or 102 or 108)	3
PHYS 119 (or 109)	1
Elective ^{2,3,5}	3
Total Credits	30

Second Year

One of ATSC 201, GEOB 200	3
CPSC 103 (or CPSC 110) ¹¹	3
EOSC 211	3
MATH 200	3
STAT 200	3
Electives ^{3,4,9,10}	15
Total Credits	30

Third and Fourth Years

ATSC 301 ⁸ , GEOB 300	6
ENVR 300	3
Three of ATSC 303 ⁸ , ATSC 406 ⁸ , ATSC 409 ⁸ , GEOB 309, 370, 373, EOSC 354	9
One of EOSC 340, ENVR 410, GEOG 312	3
Four of CHEM 302, GEOB 400, 401, 402, EOSC 471	12
One of ATSC 448, GEOB 448	3
Electives ^{3,4,9,10,11}	24
Total Credits	60
Total Credits for Degree	120

¹ For a full list of acceptable courses see [Communication Requirement](#). ENGL 112 is recommended.

² Students without Physics 12 must take PHYS 100 prior to other physics courses. Qualified students are encouraged to take PHYS 107/108/109. Students are advised to take PHYS 117 in second year if they did not take it or PHYS 107 in first year.

³ Surplus elective credit taken in first or second year can be applied to third or fourth year as elective credit. Electives must be selected to ensure that the following Faculty of Science requirements are met: a) [sufficient upper-level credits](#); b) [sufficient credits of coursework from the Faculty of Arts](#), excluding Arts credits used to satisfy the Faculty of Science [Communication Requirement](#). Students selecting CHEM 304 must adjust the number of electives accordingly.

⁴ Electives must be chosen to satisfy the Faculty of Science [Breadth Requirement](#).

⁵ Students without Biology 11 or 12 must take 3 credits of 100-level BIOL.

⁶ MATH 180 or 184 or 120 may substitute for any of the specified differential calculus courses listed by decreasing the electives by 1 credit. MATH 110 may substitute for any of the specified differential calculus courses listed by decreasing the electives by 3 credits.

⁷ MATH 121 may substitute for any of the specified integral calculus courses listed by decreasing the electives by 1 credit.

⁸ Usually only offered every other year. Check timing with the advisor and plan accordingly.

⁹ Students wishing to pursue a career in weather forecasting or meteorology to prepare for graduate study in Atmospheric Science should consult with an ATSC advisor regarding choices of electives, including additional courses in Physics, Chemistry, Mathematics, Statistics or Computer Science.

¹⁰ See the [Atmospheric Sciences Website](#) for suggestions on appropriate electives.

¹¹ If choosing CPSC 110, reduce electives by 1 credit.

[20663] Specialization Objectives

[20664] Mastery of the curriculum will provide a thorough background in atmospheric sciences, which will:

[20665]

1. qualify the student for work as an atmospheric technician or environmental consultant;
2. qualify the student for graduate study in meteorology and atmospheric sciences (with appropriate course background).

[20666] Learning Goals

[20667] Students completing this specialization will be able to:

[20668]

1. demonstrate basic knowledge of atmospheric physics, dynamics, and chemistry on a wide range of scales;
2. utilize information from weather radar, satellites, numerical weather prediction, weather maps, and soundings to form a 3-D understanding of atmospheric state and evolution;

3. use numerical problem solving, computer programming, mathematical knowledge and statistical approaches for data analysis and atmospheric modeling;
4. communicate (written, oral, electronic) weather information to a broad audience;
5. deploy and utilize meteorological field and lab instruments and data loggers;
6. integrate meteorological knowledge with broader issues including air quality, environment, sustainability, renewable energy, and climate variability.