



<p>1.0 Degree Title Specify the two degrees for concurrent degree programs</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Bachelor of Science</div> <p>1.1 Major (Legacy= Subject) (30-char. max.)</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Atmospheric Science</div> <p>1.2 Concentration (Legacy = Concentration/Option) If applicable (30 char. max.)</p> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"></div> <p>1.3 Minor (with Concentration, if applicable) (30 char. max.)</p> <p>1.4 Category</p> <table style="width: 100%; border: none;"><tr><td style="width: 50%; vertical-align: top;">Faculty Program (FP) Major X Joint Major Major Concentration (CON) Minor Minor Concentration (CON)</td><td style="width: 50%; vertical-align: top;">Honours (HON) Joint Honours Component (HC) Internship/Co-op Thesis (T) Non-Thesis (N) Other Please specify</td></tr></table> <div style="border: 1px solid black; height: 20px; margin-top: 5px;"></div> <p>1.5 <div style="border: 1px solid black; padding: 2px; display: inline-block;">B.Sc. Major in Atmospheric Science</div></p>	Faculty Program (FP) Major X Joint Major Major Concentration (CON) Minor Minor Concentration (CON)	Honours (HON) Joint Honours Component (HC) Internship/Co-op Thesis (T) Non-Thesis (N) Other Please specify	<p>2.0 Administering Faculty/Unit</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Faculty of Science/Atmospheric & Oceanic Sciences</div> <p>Offering Faculty/Department</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Faculty of Science/Atmospheric & Oceanic Sciences</div> <p>3.0 Effective Term of revision or retirement Please give reasons in 5.0 "Rationale" in the case of retirement (Ex. Sept. 2004 = 200409) Retirement</p> <p>Term: <div style="border: 1px solid black; padding: 2px; display: inline-block;">201409</div></p> <p>4.0 Existing Credit Weight Proposed Credit Weight</p> <div style="display: flex; justify-content: space-between;"><div style="border: 1px solid black; padding: 2px; width: 45%;">60-61</div><div style="border: 1px solid black; padding: 2px; width: 45%;">60-61</div></div> <p>5.0 Rationale for revised program</p> <div style="border: 1px solid black; padding: 10px; min-height: 150px;"><p>These program revisions do not alter the content; they simply subdivide the complementary courses into "core" courses and "streams", the latter allowing for specialization in one of three recognizable subdomains of atmospheric science (along with a general stream for students not wishing to specialize). These streams will strengthen the link between the AOS curriculum and subjects of high interest/importance to science and society, which will aid the AOS undergraduate recruiting efforts.</p><div style="text-align: right; margin-top: 20px;"><input type="checkbox"/></div></div>
Faculty Program (FP) Major X Joint Major Major Concentration (CON) Minor Minor Concentration (CON)	Honours (HON) Joint Honours Component (HC) Internship/Co-op Thesis (T) Non-Thesis (N) Other Please specify		

6.0 Revised Program Description (Maximum 150 words)

The revised Major program offers the same courses as the previous program but introduces streams that allow students to specialize in one of three recognizable areas.

7.0 List of existing program and proposed program	
<p>Required Courses (24 credits) ATOC 214 Introduction: Physics of the Atmosphere (3 credits) ATOC 312 Rotating Fluid Dynamics (3 credits) ATOC 315 Thermodynamics and Convection (3 credits) COMP 208 Computers in Engineering (3 credits) MATH 222 Calculus 3 (3 credits) MATH 223 Linear Algebra (3 credits) MATH 314 Advanced Calculus (3 credits) MATH 315 Ordinary Differential Equations (3 credits)</p> <p>Complementary Courses (37 credits) 36-37 credits Note: All students are encouraged to consult with the Undergraduate Adviser for help selecting from among the complementary courses. As general recommendations (but not programmatic requirements), students wishing to comply with Environment Canada recommendations for careers in operational meteorology are advised to take ATOC 215, 309, 512, 513, 540, 541, and 546. Students interested in atmospheric chemistry, aerosols, and cloud physics are advised to take ATOC 219, 309, 419, 521, 525, 540 and CHEM 223, 253. Suggested minors include math, physics, chemistry, computer science, earth and planetary science, and geography.</p> <p>3-6 credits selected from: ATOC 215 Oceans, Weather and Climate (3 credits) ATOC 219 Introduction to Atmospheric Chemistry (3 credits)</p> <p>3 credits selected from: ATOC 357 Atmospheric and Oceanic Science Laboratory (3 credits) PHYS 257 Experimental Methods 1 (3 credits)</p> <p>3 credits selected from: PHYS 230 Dynamics of Simple Systems (3 credits) PHYS 251 Honours Classical Mechanics 1 (3 credits)</p> <p>3 credits selected from: PHYS 232 Heat and Waves (3 credits) PHYS 253 Thermal Physics (3 credits)</p> <p>21-25 credits selected from the following (at least 12 credits must come from ATOC): ATOC 309 Weather Radars and Satellites (3 credits) ATOC 419 Advances in Chemistry of Atmosphere (3 credits) ATOC 512 Atmospheric and Oceanic Dynamics (3 credits) ATOC 513 Waves and Stability (3 credits) ATOC 515 Turbulence in Atmosphere and Oceans (3 credits) ATOC 521 Cloud Physics (3 credits) ATOC 525 Atmospheric Radiation (3 credits) ATOC 531 Dynamics of Current Climates (3 credits) ATOC 540 Synoptic Meteorology 1 (3 credits) ATOC 541 Synoptic Meteorology 2 (3 credits) ATOC 546 Current Weather Discussion (1 credit) ATOC 558 Numerical Methods and Laboratory (3 credits) ATOC 568 Ocean Physics (3 credits) CHEM 223 Introductory Physical Chemistry 1 (2 credits) CHEM 243 Introductory Physical Chemistry 2 (2 credits) CHEM 253 Introductory Physical Chemistry 1 Laboratory (1 credit) CHEM 263 Introductory Physical Chemistry 2 Laboratory (1 credit) CHEM 367 Instrumental Analysis 1 (3 credits) CHEM 575 Chemical Kinetics (3 credits) EPSC 320 Elementary Earth Physics (3 credits) EPSC 340 Earth and Planetary Inference (3 credits) EPSC 542 Chemical Oceanography (3 credits) GEOG 322 Environmental Hydrology (3 credits) GEOG 372 Running Water Environments (3 credits) MATH 203 Principles of Statistics 1 (3 credits) MATH 317 Numerical Analysis (3 credits) MATH 319 Introduction to Partial Differential Equations (3 credits) MATH 323 Probability (3 credits) MATH 324 Statistics (3 credits) MATH 423 Regression and Analysis of Variance (3 credits) MATH 555 Fluid Dynamics (4 credits) * PHYS 241 Signal Processing (3 credits) PHYS 331 Topics in Classical Mechanics (3 credits) PHYS 333 Thermal and Statistical Physics (3 credits) PHYS 340 Majors Electricity and Magnetism (3 credits) PHYS 342 Majors Electromagnetic Waves (3 credits) PHYS 432 Physics of Fluids (3 credits) * * Students may take PHYS 432 OR MATH 555.</p>	<p>Required Courses (24 credits) ATOC 214 Introduction: Physics of the Atmosphere (3 credits) ATOC 312 Rotating Fluid Dynamics (3 credits) ATOC 315 Thermodynamics and Convection (3 credits) COMP 208 Computers in Engineering (3 credits) MATH 222 Calculus 3 (3 credits) MATH 223 Linear Algebra (3 credits) MATH 314 Advanced Calculus (3 credits) MATH 315 Ordinary Differential Equations (3 credits)</p> <p>Complementary Courses (37 credits) 36-37 credits Note: Students are required to fulfill the core complementary requirements along with one of the four streams listed below. In cases of overlap, each course can only be used once toward the satisfaction of the core complementary courses or the chosen stream.</p> <p>Core complementary courses (21 credits) 3-6 credits selected from: ATOC 215 Oceans, Weather and Climate (3 credits) ATOC 219 Introduction to Atmospheric Chemistry (3 credits) or CHEM 219</p> <p>3 credits selected from: ATOC 357 Atmospheric and Oceanic Science Laboratory (3 credits) PHYS 257 Experimental Methods 1 (3 credits)</p> <p>3 credits selected from: PHYS 230 Dynamics of Simple Systems (3 credits) PHYS 251 Honours Classical Mechanics 1 (3 credits)</p> <p>3 credits selected from: PHYS 232 Heat and Waves (3 credits) PHYS 253 Thermal Physics (3 credits)</p> <p>6-9 credits selected from: CHEM 223 Introductory Physical Chemistry 1 (2 credits) CHEM 243 Introductory Physical Chemistry 2 (2 credits) CHEM 253 Introductory Physical Chemistry 1 Laboratory (1 credit) CHEM 263 Introductory Physical Chemistry 2 Laboratory (1 credit) CHEM 367 Instrumental Analysis 1 (3 credits) CHEM 575 Chemical Kinetics (3 credits) MATH 203 Principles of Statistics 1 (3 credits) * MATH 317 Numerical Analysis (3 credits) MATH 319 Introduction to Partial Differential Equations (3 credits) MATH 323 Probability (3 credits) MATH 324 Statistics (3 credits) * PHYS 333 Thermal and Statistical Physics (3 credits) PHYS 340 Majors Electricity and Magnetism (3 credits) ** PHYS 342 Majors Electromagnetic Waves (3 credits) *** PHYS 350 Honours Electricity and Magnetism (3 credits) ** PHYS 352 Honours Electromagnetic Waves (3 credits) ***</p> <p>Streams (15-16 credits) WEATHER ANALYSIS AND FORECASTING STREAM (16 credits) ATOC 309 Weather Radars and Satellites (3 credits) ATOC 521 Cloud Physics (3 credits) ATOC 540 Synoptic Meteorology 1 (3 credits) ATOC 541 Synoptic Meteorology 2 (3 credits) ATOC 546 Current Weather Discussion (1 credit)</p> <p>3 credits selected from: ATOC 512 Atmospheric and Oceanic Dynamics (3 credits) ATOC 513 Waves and Stability (3 credits) ATOC 525 Atmospheric Radiation (3 credits) ATOC 531 Dynamics of Current Climates (3 credits) ATOC 530 Paleoclimate Dynamics (3 credits) ATOC 558 Numerical Methods and Laboratory (3 credits) ATOC 568 Ocean Physics (3 credits) GEOG 322 Environmental Hydrology (3 credits) GEOG 372 Running Water Environments (3 credits) MATH 555 Fluid Dynamics (4 credits) **** PHYS 432 Physics of Fluids (3 credits) ****</p> <p>CLIMATE SCIENCE STREAM (15 credits) MATH 203 Principles of Statistics 1 (3 credits) * ATOC 531 Dynamics of Current Climates (3 credits)</p> <p>9 credits (at least 6 of which must be ATOC) selected from: ATOC 512 Atmospheric and Oceanic Dynamics (3 credits)</p>

	<p> ATOC 513 Waves and Stability (3 credits) ATOC 519 Advances in Chemistry of Atmosphere (3 credits) ATOC 521 Cloud Physics (3 credits) ATOC 525 Atmospheric Radiation (3 credits) ATOC 530 Paleoclimate Dynamics (3 credits) ATOC 540 Synoptic Meteorology 1 (3 credits) ATOC 558 Numerical Methods and Laboratory (3 credits) ATOC 568 Ocean Physics (3 credits) GEOG 322 Environmental Hydrology (3 credits) GEOG 372 Running Water Environments (3 credits) EPSC 513 Climate and the Carbon Cycle (3 credits) EPSC 542 Chemical Oceanography (3 credits) MATH 323 Probability (3 credits) </p> <p> <u>ATMOSPHERIC CHEMISTRY AND PHYSICS STREAM (15 credits)</u> ATOC 309 Weather Radars and Satellites (3 credits) ATOC 519 Advances in Chemistry of Atmosphere (3 credits) ATOC 521 Cloud Physics (3 credits) CHEM 223 Introductory Physical Chemistry 1 (2 credits) CHEM 243 Introductory Physical Chemistry 2 (2 credits) CHEM 253 Introductory Physical Chemistry 1 Laboratory (1 credit) CHEM 263 Introductory Physical Chemistry 2 Laboratory (1 credit) </p> <p> <u>GENERAL STREAM (15-16 credits)</u> 15-16 credits (at least 12 of which must be ATOC) selected from: ATOC 309 Weather Radars and Satellites (3 credits) ATOC 512 Atmospheric and Oceanic Dynamics (3 credits) ATOC 513 Waves and Stability (3 credits) ATOC 519 Advances in Chemistry of Atmosphere (3 credits) ATOC 521 Cloud Physics (3 credits) ATOC 525 Atmospheric Radiation (3 credits) ATOC 530 Paleoclimate Dynamics (3 credits) ATOC 531 Dynamics of Current Climates (3 credits) ATOC 540 Synoptic Meteorology 1 (3 credits) ATOC 541 Synoptic Meteorology 2 (3 credits) ATOC 546 Current Weather Discussion (1 credit) ATOC 558 Numerical Methods and Laboratory (3 credits) ATOC 568 Ocean Physics (3 credits) CHEM 367 Instrumental Analysis 1 (3 credits) CHEM 575 Chemical Kinetics (3 credits) EPSC 513 Climate and the Carbon Cycle (3 credits) EPSC 542 Chemical Oceanography (3 credits) GEOG 322 Environmental Hydrology (3 credits) GEOG 372 Running Water Environments (3 credits) MATH 555 Fluid Dynamics (4 credits) **** PHYS 432 Physics of Fluids (3 credits) **** </p> <p> * Students cannot receive credit for both MATH 203 and MATH 324 ** Students cannot receive credit for both PHYS 340 and PHYS 350 *** Students cannot receive credit for both PHYS 342 and PHYS 352 **** Students cannot receive credit for both PHYS 432 or MATH 555 </p>
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8.0 Consultation with
Related Units

Yes ☒ No ☐

Financial Consult Yes ☐ No ☐

Attach list of consultations

9. Approvals

Routing Sequence

Name

Signature

Date

Department

Curric/Acad Committee

Faculty 1

Faculty 2

Faculty 3

SCTP

GS

APPC

Senate

Submitted by

Name

Daniel Kirshbaum

Phone

Email

Daniel.kirshbaum@mcquill.ca

Submission Date

To be completed by ARR:

CIP Code