

Program Approval Form

For approval of new programs and deletions or modifications to an existing program.

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Action Requested: Create New (SCHEV approval Inactivate Existing X Modify Existing (check all that Title (SCHEV approval req Concentration (Choose or X Degree Requirements Admission Standards/ Appl Other Changes:	required except for minors) apply) uired except for minors) ne): Add Delete [ication Requirements	Modify	Type (Cheo B.A. M.A. Ph.D. Undergr Graduat Other:	ek one): X B.S. Minor M.S. M.Ed. Aduate Certificate* e Certificate*	
		Donortmont	4058		
Submitted by:	ence	Ext: 3 5302	Fmail:	ibazaz@gmu.edu	
Effective Term: Fall 201 Justification: (attach separate doct Adding "Mason Core and Elective C	5 Please note: For students t program must be fully appro ument if necessary) redits" and "Mason Core" sections i	o be admitted to a wed, entered into I n order to have the	new degree, minor, ce Banner, and published e catalog listing clearly	rtificate or concentration, the in the University Catalog. show how the degree	
equals 120 credits and how the Mas	on Core requirements can be fulfille	əd.			
	Existing		New/Modified		
Program Title: (Required) Title must identify subject matter. Do not include name of college/school/dept. Concentration(s):	Atmospheric Sciences, BS				
Admissions Standards / Application Requirements: (Required only if different from those listed in the University Catalog)					
Degree Requirements: Consult University Catalog for models, attach separate document if necessary using track changes for modifications	[Mason Core and Electives section	on not included]	See the bottom portio attached.	n of the degree listing	
Courses offered via distance: (if applicable)					
TOTAL CREDITS REQUIRED:					
*For Certificates Only: Indicate	L whether students are able to pu	rsue on a	Full-time basis	Part-time basis	
Approval Signatures					
Department D	ate College/School	Date	Provost's Off Required for Mi	ice Date nors and Interdisciplinary Programs	

If this program may impact another unit or is in collaboration with another unit at Mason, the originating department must circulate this
proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.Unit NameUnit Approval NameUnit Approver's SignatureDate

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

For Graduate Programs Only

Graduate Council Member	Provost Office		Graduate Council Approval Date
For Registrar Office's Use Only: Received	Banner	Catalog	revised 6/7/12

Program Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference. Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

FOR ALL PROGRAMS (required)

Program Title: Atmospheric Sciences, BS

Date of Departmental Approval: 3/11/2015

FOR INACTIVATED PROGRAMS (required if inactivating a program)

• Reason for Inactivation:

FOR MODIFIED PROGRAMS (required if modifying a program)

- Summary of the Modification: Adding "Mason Core and Elective Credits" and "Mason Core" sections.
- Text before Modification (title, degree requirements, etc.): Sections weren't included.
- Text after Modification (title, degree requirements, etc.): See attached.
- Reason for the Modification: In order to have the catalog listing clearly show how the degree equals 120 credits and how the Mason Core requirements can be fulfilled.

FOR NEW PROGRAMS (required if creating a new program)

- Reason for the New Program:
- Relationship to Existing Programs:
- Relationship to Existing Courses:
- Semester of Initial Offering:
- Insert Tentative SCHEV Proposal Below

Acalog ACMS™

2015-2016 University Catalog {working}

Atmospheric Sciences, BS

Banner Code: SC-BS-AOES

This program of study is offered by the <u>Department of Atmospheric, Oceanic and Earth Sciences</u> in the <u>College of Science</u>.

The undergraduate program in atmospheric sciences gives students a strong quantitative undergraduate education in atmospheric, climate, and related sciences to understand the basic principles behind current and emerging issues in weather, climate variability, and climate change. Students completing the atmospheric sciences degree will be prepared for a full range of career paths including forecast and analysis, operations and research support in meteorology, atmospheric sciences, and climate. The curriculum meets the American Meteorological Society's recommendations for a bachelor's degree in atmospheric sciences.

Students must fulfill all <u>requirements for bachelor's degrees</u>, including the <u>Mason Core</u>. In addition, a GPA of at least 2.00 is required for all core courses with an overall GPA of at least 2.50. Through the coursework below, atmospheric sciences majors will satisfy the <u>Mason Core</u> requirements for 'Information Technology', 'Natural Science', and 'Quantitative Reasoning'. The university's writing intensive requirement for the major will be met upon successful completion of <u>CLIM</u> <u>408</u>.

Degree Requirements

Atmospheric Sciences Core (24 credits)

- <u>CLIM 102 Introduction to Global Climate Change Science</u> Credits: 4 (<u>Mason Core: Natural Science</u> course)
- <u>CLIM 111 Introduction to the Fundamentals of Atmospheric Science</u> Credits: 3 (<u>Mason Core: Natural</u> <u>Science</u> course)
- CLIM 112 Introduction to the Fundamentals of Atmospheric Science Lab Credits: 1
- CLIM 301 Weather Analysis and Prediction Credits: 4
- CLIM 408 Senior Research Credits: 3 (fulfills the writing intensive requirement)
- CLIM 411 Atmospheric Dynamics Credits: 3
- <u>CLIM 429 Atmospheric Thermodynamics</u> Credits: 3
- PHYS 475 Atmospheric Physics Credits: 3

Chemistry (4 credits)

• CHEM 211 - General Chemistry Credits: 4 (Mason Core: Natural Science course)

Computer Science (4 credits)

[•] CS 112 - Introduction to Computer Programming Credits: 4 (An additional 1 credit information technology

ethics course must be taken in order to completely fulfill the <u>Mason Core: Information</u> <u>Technology</u> requirement. Recommended courses include either <u>CDS 151</u> or <u>CS 105</u>).

Mathematics (11 credits)

- MATH 113 Analytic Geometry and Calculus I Credits: 4 (Mason Core: Quantitative Reasoning course)
- MATH 114 Analytic Geometry and Calculus II Credits: 4
- MATH 213 Analytic Geometry and Calculus III Credits: 3

Statistics (3 credits)

• STAT 250 - Introductory Statistics I Credits: 3 (Mason Core: Quantitative Reasoning course)

Physics (8 credits)

Each is a Mason Core: Natural Science course:

- PHYS 160 University Physics I Credits: 3
- PHYS 161 University Physics I Laboratory Credits: 1
- PHYS 260 University Physics II Credits: 3
- PHYS 261 University Physics II Laboratory Credits: 1

Options (9 credits)

Students in the atmospheric sciences major will select one of the following options in addition to the required courses above. These options reflect faculty expertise and provide two areas of research emphasis. The options will help in creating educated professionals who have the requisite training to support future weather and climate research, enabling the graduate's potential for providing substantial societal benefits.

Meteorology Option

This option is designed for students who are primarily interested in weather and weather forecasting. The required classes in this option emphasize atmospheric phenomena, especially those that have the greatest impact on society. In addition to the required courses above, students choosing this option will take the following 9 credits of meteorology courses:

- CLIM 312 Physical Climatology Credits: 3 or GGS 312 Physical Climatology Credits: 3
- CLIM 314 Severe and Extreme Weather Credits: 3 or GGS 314 Severe and Extreme Weather Credits: 3
- <u>CLIM 319 Air Pollution Credits: 3</u> or <u>GGS 319 Air Pollution</u> Credits: 3

Option Total: 9 credits

Computational Atmospheric Sciences Option

The Computational Atmospheric Sciences option gives students preparation in computational science, mathematics, and elements of numerical modeling in order to undertake quantitative research or operational work in a professional or graduate setting. In addition to the required courses above, students choosing this option will take the following 9 credits:

- CLIM 440 Climate Dynamics Credits: 3 or CLIM 470 Numerical Weather Prediction Credits: 3
- <u>CDS 251 Introduction to Scientific Programming Credits: 3</u>
- MATH 214 Elementary Differential Equations Credits: 3

Option Total: 9 credits

Required Electives (9 credits)

The 9 credits of required electives must be chosen from this list and be independent of courses taken in the selected option (meteorology or computational atmospheric sciences):

- CLIM 312 Physical Climatology Credits: 3 or GGS 312 Physical Climatology Credits: 3
- CLIM 314 Severe and Extreme Weather Credits: 3 or GGS 314 Severe and Extreme Weather Credits: 3
- CLIM 319 Air Pollution Credits: 3 or GGS 319 Air Pollution Credits: 3
- CLIM 409 Research Internship Credits: 3
- CLIM 412 Physical Oceanography Credits: 3
- CLIM 429 Atmospheric Thermodynamics Credits: 3
- CLIM 438 Atmospheric Chemistry Credits: 3
- CLIM 440 Climate Dynamics Credits: 3
- CLIM 470 Numerical Weather Prediction Credits: 3
- GEOL 420 Earth Science and Policy Credits: 3 (Mason Core: Synthesis course)
- CDS 251 Introduction to Scientific Programming Credits: 3
- CDS 301 Scientific Information and Data Visualization Credits: 3
- GGS 353 Observations of the Earth and its Climate Credits: 3
- GGS 354 Data Analysis and Global Change Detection Techniques Credits: 3
- GGS 455 Environmental Impact Assessment Credits: 3
- GGS 456 Introduction to Atmospheric Radiation Credits: 3
- MATH 214 Elementary Differential Equations Credits: 3

Mason Core and Elective Credits (48 credits)

These 48 credits are available to fulfill any remaining <u>Mason Core</u> requirements (outlined below). Once those and all <u>requirements for bachelor's degrees</u> are met, any remaining credits may be completed by elective courses. Students are strongly encouraged to consult with their advisor to ensure that they fulfill all requirements.

Mason Core

Please note that some Mason Core requirements may already be fulfilled by the major requirements listed above.

Expand each item below for a link to specific course lists for each category:

Foundation Requirements (15-19 credits)

- Mason Core UWCU Written Communication Credits: 6
- <u>Mason Core UOC Oral Communication Credits: 3</u>
- Mason Core UQR Quantitative Reasoning Credits: 3
- Mason Core UITC Information Technology Credits: 3-7

Core Requirements (22 credits)

- Mason Core UFA Arts Credits: 3
- Mason Core UGU Global Understanding Credits: 3
- Mason Core ULIT Literature Credits: 3
- <u>Mason Core UNSL Natural Science Credits: 7</u>
- Mason Core USBS Social and Behavioral Sciences Credits: 3
- Mason Core UWC Western Civilization/Western History Credits: 3

Synthesis/Capstone Requirement (minimum 3 credits)

<u>Mason Core USYN - Synthesis/Capstone Credits: minimum 3</u>

Degree Total: Minimum 120 credits