

Program Change Request

Date Submitted: 02/03/26 9:58 am

Viewing: **SC-BS-AOES : Atmospheric Sciences, BS**

Last approved: 04/29/24 12:40 pm

Last edit: 02/09/26 5:45 pm

Changes proposed by: jbazaz

Catalog Pages
Using this Program
[Atmospheric Sciences, BS](#)

In Workflow

1. **AOES -Curriculum Committee**
2. **AOES Chair**
3. **SC Curriculum Committee**
4. SC Assistant Dean
5. Assoc Provost- Undergraduate
6. Registrar:Concentrat Code
7. Registrar-Programs

Are you completing this form on someone else's behalf?

Yes

Requestor:

Approval Path

1. 02/09/26 5:46 pm
Barry Klinger (bklinger):
Approved for AOES - Curriculum Committee
2. 02/10/26 11:09 am
Mark Uhen (muhen): Approved for AOES Chair

History

1. Oct 20, 2017 by clmig-jwehrheim
2. Jan 11, 2018 by rzachari
3. Jan 29, 2018 by rzachari
4. Mar 15, 2018 by rzachari
5. Aug 21, 2019 by soneill

- 6. Oct 23, 2019 by
Jennifer Bazaz
Gettys (jbazaz)
- 7. Mar 26, 2020 by
Tory Sarro (vsarro)
- 8. Oct 28, 2020 by
Tory Sarro (vsarro)
- 9. Nov 2, 2020 by
Jennifer Bazaz
Gettys (jbazaz)
- 10. May 17, 2021 by
Jennifer Bazaz
Gettys (jbazaz)
- 11. Jan 29, 2022 by
Jennifer Bazaz
Gettys (jbazaz)
- 12. May 10, 2022 by
Jennifer Bazaz
Gettys (jbazaz)
- 13. Apr 29, 2024 by
Jennifer Bazaz
Gettys (jbazaz)

Name	Extension	Email
Barry Klinger	5302	bklinger@gmu.edu

Effective Catalog: 2026-2027

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Atmospheric Sciences, BS

Banner Title: Atmospheric Sciences, BS

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar’s Office Use Only – Program Start Term

Registrar/OAPI Use Only – SCHEV

Letter

**Registrar/OAPI Use
Only – SACSCOC
Status**

Concentration(s):

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
<u>1</u>	<u>Computational Atmospheric Sciences</u>	
<u>2</u>	<u>Meteorology</u>	
<u>3</u>	<u>Weather, Climate, and Communication</u>	

**Registrar/IRR Use
Only –
Concentration CIP
Code**

College/School: College of Science

**Department /
Academic Unit:** Atmospheric, Oceanic, & Earth Sciences

**Jointly Owned
Program?** No

**Is there an
embedded degree
as part of a
program?**

Justification

What:

1. Change requirements for degree options Computational Atmospheric Science and Meteorology in order to make them concentrations rather than options.
2. Create a new concentration: Weather, Climate & Communication.

Why:

Many potential students are interested in becoming a broadcast meteorologist. This has been seen here at Mason and was also insight gleaned from a 2025 Eduventures research study on this program. A significant number of students start the program because they are interested in weather or climate, but change to another major because of the rigorous mathematical courses in the major. Thus the current degree requirements are lacking an element that could interest additional students, and have an element that drives away some students.

Though much research and operational work in atmospheric science demand a high level of mathematical expertise, there are also careers related to atmospheric science and climate which are focused on communicating with the public. In addition to broadcast meteorologists,

the importance of conveying information during extreme weather such as hurricanes is another avenue for a atmosphere/communications career. Similarly, the impacts of climate change on many aspects of society has made climate communications an important function; Mason itself has a Center for Climate Change Communications (C4).

The new concentration leverages Mason's Communication Department in order to graduate students who have expertise in both atmospheric science and key aspects of modern communication techniques.

The current degree requirements include two Options, which are a relatively unfamiliar structure to students compared to Concentrations, which occur in many undergraduate programs. Options include 9 credits unique to the Option and Concentrations are somewhat more distinct, with 12 credits unique to each Concentration. Options do not appear on the student's diploma or transcript, whereas Concentrations do, thus making the student's particular expertise clearer to potential employers or grad schools.

The revised Meteorology concentration now has three new courses, all of which are required for federal meteorologists and there important for employment. For the Computational Atmospheric Science concentration, two courses which we believe are important for the concentration have been added.

Total Credits Required: Total credits: minimum 120

Registrar's Office Use Only - Program Code:

SC-BS-AOES

Registrar/IRR Use Only – Program CIP Code 40.0401 - Atmospheric Sciences and Meteorology, General.

Admission Requirements:

Admissions

University-wide admissions policies can be found in the [Undergraduate Admissions Policies](#) section of this catalog. To apply for this program, please complete the [George Mason University Admissions Application](#).

Program-Specific Policies:

Policies

Students must fulfill all [Requirements for Bachelor's Degrees](#), including the [Mason Core](#).

The university's writing intensive requirement for the major will be met upon successful completion of [CLIM 408 Senior Research](#)([Mason Core](#)).

For policies governing all undergraduate degrees, see [AP.5 Undergraduate Policies](#).

Degree Requirements: This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates for this degree must complete all core courses with a minimum GPA of 2.30.

Students in the major will complete the *Atmospheric Sciences Core, Chemistry, Computer Science, Mathematics, Statistics, and Physics* sections below, then select one concentration.

The major's concentrations reflect faculty expertise and provide areas of research emphasis. They 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.

~~Students should refer to the Admissions & Policies tab for specific policies related to this program.~~

~~Candidates for this degree must complete all core courses with a minimum GPA of 2.30.~~

Atmospheric Sciences Core

CLIM 102	Introduction to Global Climate Change Science(Mason Core)	4
CLIM 111	Introduction to the Fundamentals of Atmospheric Science(Mason Core)	3
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab(Mason Core)	1
CLIM 301	Weather Analysis and Prediction	4
CLIM 408	Senior Research(Mason Core) ¹	3
CLIM 411	Atmospheric Dynamics	3
CLIM 429	Atmospheric Thermodynamics	3
PHYS 475	Atmospheric Physics	3
Total Credits		24

¹

Fulfills the writing intensive requirement.

Chemistry

CHEM 211 & CHEM 213	General Chemistry I(Mason Core) and General Chemistry Laboratory I(Mason Core)	4
Total Credits		4

Computer Science

Select one of the following:		3-4
CDS 130	Computing for Scientists(Mason Core)	
CS 112	Introduction to Computer Programming(Mason Core)	
Total Credits		3-4

Mathematics

<u>MATH 113</u>	Analytic Geometry and Calculus I(<u>Mason Core</u>)	4
<u>MATH 114</u>	Analytic Geometry and Calculus II	4
<u>MATH 213</u>	Analytic Geometry and Calculus III	3
Total Credits		11

Statistics

<u>STAT 250</u>	Introductory Statistics I(<u>Mason Core</u>)	3
Total Credits		3

Physics

<u>PHYS 160</u>	University Physics I(<u>Mason Core</u>)	3
<u>PHYS 161</u>	University Physics I Laboratory(<u>Mason Core</u>)	1
<u>PHYS 260</u>	University Physics II(<u>Mason Core</u>)	3
<u>PHYS 261</u>	University Physics II Laboratory(<u>Mason Core</u>)	1
Total Credits		8

Options

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:

<u>CLIM 312</u>	Physical Climatology	3
or <u>GGG 312</u>	Physical Climatology	
or <u>CLIM 440</u>	Climate Dynamics	
<u>CLIM 314</u>	Severe and Extreme Weather	3
or <u>GGG 314</u>	Severe and Extreme Weather	
<u>CLIM 319</u>	Air Pollution	3

Total Credits

0

Computational Atmospheric Sciences Concentration Option

The concentration computational atmospheric sciences option gives students preparation in computational science, mathematics, and elements of numerical modeling in order to support undertake quantitative research and industry applications or operational work in a professional or graduate contexts. setting-

<u>CLIM 319</u>	<u>Air Pollution</u>	<u>3</u>
<u>CLIM 470</u>	Numerical Weather Prediction	3
<u>CDS 251</u>	Introduction to Scientific Programming	3
or <u>CDS 301</u>	Scientific Information and Data Visualization	
or <u>CDS 302</u>	Scientific Data and Databases(<u>Mason Core</u>)	
or <u>CDS 303</u>	Scientific Data Mining	
EDS 301	Scientific Information and Data Visualization	
EDS 302	Scientific Data and Databases(Mason Core)	
EDS 303	Scientific Data Mining	
<u>GGG 311</u>	<u>Geographic Information Systems</u>	<u>3</u>
<u>Select 6 credits from the following:</u>		<u>6</u>
<u>CLIM 312</u>	<u>Physical Climatology</u>	
<u>CLIM 401</u>	<u>Midlatitude Synoptic Meteorology</u>	
<u>CLIM 409</u>	<u>Research Internship</u>	
<u>CLIM 412</u>	<u>Physical Oceanography</u>	
<u>CLIM 425</u>	<u>Unlocking Past Climate: Models Proxies</u>	
<u>CLIM 438</u>	<u>Atmospheric Chemistry</u>	
<u>CLIM 440</u>	<u>Climate Dynamics</u>	
<u>CLIM 456</u>	<u>Introduction to Atmospheric Radiation</u>	
<u>GEOL 420</u>	<u>Earth Science and Policy(Mason Core)</u>	
<u>MATH 214</u>	Elementary Differential Equations	

Select one from the following:

3

Total Credits

18

Meteorology Concentration

This option is designed for students who are primarily interested in weather and weather forecasting. The required classes in this option emphasize atmospheric phenomena and operational prediction.

<u>CLIM 314</u>	<u>Severe and Extreme Weather</u>	<u>3</u>
<u>CLIM 456</u>	<u>Introduction to Atmospheric Radiation</u>	<u>3</u>
<u>GGG 379</u>	<u>Remote Sensing</u>	<u>3</u>
<u>MATH 214</u>	<u>Elementary Differential Equations</u>	<u>3</u>
<u>Select 6 credits from the following:</u>		<u>6</u>
<u>CLIM 312</u>	<u>Physical Climatology</u>	
<u>CLIM 319</u>	<u>Air Pollution</u>	
<u>CLIM 401</u>	<u>Midlatitude Synoptic Meteorology</u>	
<u>CLIM 409</u>	<u>Research Internship</u>	
<u>CLIM 412</u>	<u>Physical Oceanography</u>	
<u>CLIM 425</u>	<u>Unlocking Past Climate: Models Proxies</u>	
<u>CLIM 438</u>	<u>Atmospheric Chemistry</u>	
<u>CLIM 440</u>	<u>Climate Dynamics</u>	
<u>CLIM 470</u>	<u>Numerical Weather Prediction</u>	
<u>GEOL 420</u>	<u>Earth Science and Policy(Mason Core)</u>	
Total Credits		18

Weather, Climate, and Communication Concentration

The concentration is recommended for students interested in pursuing a career in broadcast meteorology or climate communications. It combines learning about the science of the atmosphere, climate, and weather, with experience in modern communication techniques.

<u>CLIM 312</u>	<u>Physical Climatology</u>	<u>3</u>
<u>CLIM 314</u>	<u>Severe and Extreme Weather</u>	<u>3</u>
<u>COMM 208</u>	<u>Introduction to Media Production</u>	<u>3</u>
<u>or COMM 210</u>	<u>Voice and Articulation</u>	
<u>COMM 320</u>	<u>Digital Innovations in Professional Communication(Mason Core)</u>	<u>3</u>
<u>or COMM 356</u>	<u>Performance for Digital Production</u>	
<u>Select 6 credits from the following:</u>		<u>6</u>
<u>CLIM 319</u>	<u>Air Pollution</u>	

<u>CLIM 401</u>	<u>Midlatitude Synoptic Meteorology</u>
<u>CLIM 409</u>	<u>Research Internship</u>
<u>CLIM 412</u>	<u>Physical Oceanography</u>
<u>CLIM 425</u>	<u>Unlocking Past Climate: Models Proxies</u>
<u>CLIM 438</u>	<u>Atmospheric Chemistry</u>
<u>CLIM 440</u>	<u>Climate Dynamics</u>
<u>CLIM 456</u>	<u>Introduction to Atmospheric Radiation</u>
<u>CLIM 470</u>	<u>Numerical Weather Prediction</u>
<u>GEOL 420</u>	<u>Earth Science and Policy(Mason Core)</u>

Total Credits

18

Required Electives

The required electives must be chosen from this list and be independent of courses taken in the selected option (Meteorology or Computational Atmospheric Sciences):

Select 9 credits from the following:

9

EDS-251	Introduction to Scientific Programming
EDS-301	Scientific Information and Data Visualization
CLIM-312	Physical Climatology
or GGS-312	Physical Climatology
CLIM-314	Severe and Extreme Weather
or GGS-314	Severe and Extreme Weather
CLIM-319	Air Pollution
CLIM-401	Midlatitude Synoptic Meteorology
CLIM-409	Research Internship
CLIM-412	Physical Oceanography
CLIM-438	Atmospheric Chemistry
CLIM-440	Climate Dynamics
CLIM-456	Introduction to Atmospheric Radiation
CLIM-470	Numerical Weather Prediction
GEOL-420	Earth Science and Policy(Mason Core)

~~GGG-354~~ ~~Data Analysis and Global Change Detection Techniques~~

~~GGG-379~~ ~~Remote Sensing~~

~~MATH-214~~ ~~Elementary Differential Equations~~

~~Total Credits~~

~~0~~

**Retroactive
Requirements
Updates:**

Plan of Study:

**Honors
Information:**

Program Outcomes

Program Outcomes

- Students will apply mathematical tools to study atmospheric processes.
- Students will construct and interpret weather charts, maps, and diagrams.
- Students will demonstrate knowledge of the physical laws governing the structure and evolution of atmospheric phenomena spanning a broad range of spatial and temporal scales.
- Students will demonstrate the ability to plan, execute, and communicate research in the atmospheric sciences.
- Students will demonstrate ability to integrate atmospheric dynamics and thermodynamics into an understanding of how the climate has changed and may change in the future.
- Students will demonstrate the ability to apply advanced mathematical and computational methods to simulation and analysis of atmospheric phenomena.

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

**Courses offered via
distance (if
applicable):**

**What is the
primary delivery
format for the
program?** Face-to-Face Only

Does any portion of this program occur off-campus?
No

Are you working with a vendor / other collaborators to offer your program?
No

**Related
Departments**

Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?

No

Are you adding or removing a licensure component?

No

Additional SCHEV & SACSCOC Information

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructional level. Do not exclude gen ed credits in calculations for undergraduate programs.)

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program?

No

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Additional library/learning resources needed?

No

Have you reached out to the Libraries to determine whether there are adequate resources to support your program? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

No

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? Yes

Green Leaf Designation Sustainability-related designation

Sustainability-related academic programs either require at least one sustainability-related course or else offer any green leaf course as an option or elective.*

List sustainability-related courses currently required in the degree program:

- CLIM 102 - Introduction to Global Climate Change Science
- CLIM 111 - Introduction to the Fundamentals of Atmospheric Science
- CLIM 112 - Introduction to the Fundamentals of Atmospheric Science Lab

Does this program cover material which crosses into another department?

No

Additional Attachments [UGC-COS-Program-Mod-Atmospheric-Sciences-BS.pdf](#)

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

Is this course required of all students in this degree program?

%wi_required.eshtml%

Key: 5