Program Change Request

Date Submitted: 02/08/24 11:30 am

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

Last approved: 05/10/22 11:52 am

Last edit: 03/27/24 2:56 pm

Changes proposed by: jbazaz

Catalog Pages
Using this Program
Atmospheric Sciences, BS

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

Yes

Requestor:

In Workflow

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

Approval Path

1. 03/08/24 2:28 pm Barry Klinger (bklinger): Approved for AOES Curriculum Committee
2. 03/09/24 11:00 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)

Name	Extension	Email
Barry Klinger	5302	bklinger@gmu.edu

Effective Catalog: 2024-2025

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):

Registrar/IRR Use Only – Concentration CIP Code	
College/School:	College of Science
Department / Academic Unit:	Atmospheric, Oceanic, & Earth Sciences
Jointly Owned Program?	No

Justification

What: Add GGS 379 Remote Sensing to list of Electives.
Why: Remote sensing is an important tool in atmospheric science and students in the program often take this course. The revision makes getting elective credit for the course automatic.

What: Updating GPA requirements.
Why: To keep all AOES undergraduate programs consistent.

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.

A GPA of at least 2.00 is required for all core courses, with an overall GPA of at least 2.30. ~~2.50.~~

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

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Fulfills the writing intensive requirement.

Chemistry

CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
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

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

Statistics

STAT 250	Introductory Statistics I (Mason Core)	3
Total Credits		3

Physics

PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	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.

CLIM 312	Physical Climatology	3
or GGS 312	Physical Climatology	
or CLIM 440	Climate Dynamics	
CLIM 314	Severe and Extreme Weather	3
or GGS 314	Severe and Extreme Weather	
CLIM 319	Air Pollution	3
Total Credits		9

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.

CLIM 470	Numerical Weather Prediction	3
MATH 214	Elementary Differential Equations	3
Select one from the following:		3
CDS 251	Introduction to Scientific Programming	
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases (Mason Core)	
CDS 303	Scientific Data Mining	
Total Credits		9

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
CDS 251	Introduction to Scientific Programming	
CDS 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)	
GGS 354	Data Analysis and Global Change Detection Techniques	
GGS 379	Remote Sensing	
MATH 214	Elementary Differential Equations	
Total Credits		9

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 instructiona 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

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.eschtml%

Key: 5