

Program Change Request

Date Submitted: 09/19/18 10:35 pm

Viewing: **SC-PHD-CLIM : Climate Dynamics, PhD**

Last approved: 01/29/18 10:50 am

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Changes proposed by: bklinger

Catalog Pages

Using this Program

[Climate Dynamics, PhD](#)

In Workflow

1. **AOES Committee**
2. **AOES Chair**
3. **SC Curriculum Committee**
4. SC Associate Dean
5. SC CAT Editor
6. Assoc Provost-Graduate
7. Registrar-Programs

Approval Path

1. 09/19/18 10:36 pm
Barry Klinger (bklinger):
Approved for AOES Committee
2. 09/20/18 8:24 am
Jim Kinter (ikinter):
Approved for AOES Chair

History

1. Oct 22, 2017 by
clmig-jwehrheim
2. Jan 29, 2018 by
Rebekah Zacharias (rzachari)

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

No

Effective Catalog: 2019-2020

Program Level: Graduate
Program Type: Doctoral
Degree Type: Doctor of Philosophy
Title: Climate Dynamics, PhD

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar’s Office Use Only – Program Start Term

Registrar/OAPI Use Only – SCHEV Letter

Concentration(s):

INTO Major(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

1. Summary of modifications

a) Modify list of Fundamental Climate Science Courses to incorporate course number changes (CLIM 710 CLIM 610, CLIM 714 CLIM 614).

b) To make the qualifying exam more rigorous in testing the students’ ability to do research, replace current two-part qualifying exam with a course in which student works on a research project which demonstrates the student’s ability to conduct scientific research in Climate Dynamics. Modification also describes eligibility requirements to take qualifying exam.

3. Justification

a) CLIM 710 was renumbered to CLIM 610 and CLIM 714 was renumbered to CLIM 614. Program requirements list these courses, so the requirements must be updated accordingly.

b) Current system consists of written exam on 4 required core climate courses, followed by an oral specialty exam in which the student demonstrates knowledge and/or the ability to read papers from the primary literature on topics related to the student's intended dissertation topic. The exam committee has found that the written exam does not add much insight into the student's understanding beyond what is already shown by the student's performance in the courses. The specialty exam does not provide a comprehensive enough test of the student's ability to do research.

The new exam is based on a new 3-credit course, CLIM 997 Doctoral Qualification, which gives students the opportunity to develop a plan for a publishable paper and to incorporate feedback from faculty into the final product. This will give faculty a more comprehensive window into the students' ability to formulate a research problem and conduct research to address the problem. The new format also emphasizes the importance of publishable scientific research, a key part of what it means to be a PhD in physical science.

Total Credits Required: Total credits: 72

Registrar's Office Use Only - Program Code:
SC-PHD-CLIM

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the [Graduate Admissions Policies](#) section of this catalog.

To apply for this program, please complete the [George Mason University Admissions Application](#). Applicants should have demonstrated a high aptitude for quantitative reasoning, applied mathematics, and physical science. Applicants should have an undergraduate degree from a regionally accredited institution with a GPA of at least 3.00 in undergraduate work, and a GRE verbal plus quantitative score of 301 (1,100 on the old scale). To apply, prospective students should submit a completed [George Mason University Admissions Application](#), a current résumé, three letters of recommendation, an expanded goals

statement, and two copies of official transcripts from each college and graduate institution attended. An official report of scores obtained on the GRE-GEN should also be officially reported by [ETS](#). The GRE requirement for admission to the doctoral programs can be waived if the student holds a master's degree from a regionally accredited U.S. institution. TOEFL scores are required of all international applicants who have not completed a master's degree in the United States.

Program-Specific Policies:

Policies

For policies governing all graduate programs, see [AP.6 Graduate Policies](#).

Reduction of Credit

For students entering the doctoral program with a master's degree in a related field from a regionally accredited institution, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See [AP.6.5.2 Reduction of Credits](#) for more information.

Degree Requirements:

This is a Green Leaf program.

Students should refer to the [Admissions & Policies](#) tab for specific policies related to this program.

Fundamental Climate Science Courses

Course List

Code	Title	Credits
CLIM 710	Course CLIM 710 Not Found	3
CLIM 610	Introduction to the Physical Climate System	3
CLIM 614	Land-Climate Interactions	3
CLIM 711	Introduction to Atmospheric Dynamics	3
CLIM 712	Physical and Dynamical Oceanography	3
CLIM 714	Course CLIM 714 Not Found	3
CLIM 751	Predictability and Prediction of Weather and Climate	3
Total Credits		15

Core Computational Courses

Course List

Code	Title	Credits
CSI 690	Numerical Methods	3
CLIM 715	Numerical Methods for Climate Modeling	3
CLIM 762	Statistical Methods in Climate Research	3
Total Credits		9

Climate Seminar

Course List		
Code	Title	Credits
Climate Seminar		3
CLIM 991	Climate Dynamics Seminar (taken three times)	
Total Credits		3

Electives

Course List		
Code	Title	Credits
Select 21 credits of graduate-level electives, including CLIM courses and other relevant courses as approved by the graduate coordinator. 1		21
CLIM courses		
Total Credits		21
1 Including up to 3 credits of CLIM 796 or CLIM 996.		

Eligibility for Qualifying Exams

Satisfactory progress in ~~After completing~~ the program is demonstrated by adequate research progress (as attested by the advisor) and by the student attaining ~~fundamental climate science courses, students take~~ a B- or higher in all CLIM courses and on the final exams of the “Core Climate” courses (CLIM 610, 614, 711, 712). ~~two-part qualifying exam that includes core and specialty components.~~ If any ~~After approval~~ of these conditions are not met, the Director ~~dissertation proposal and completion of the Climate Dynamics all non-dissertation program~~ convenes a faculty committee ~~requirements, students are formally advanced to~~ recommend whether the student should continue in the program. ~~doctoral candidacy.~~ The Director makes the final decision based upon input from the committee. A student who is allowed to continue in the program may, in a later semester, retake any Core Climate final exam in which the student’s score was below B-.

~~The core component is administered by an examination committee.~~ To be eligible for [CLIM 997](#) Doctoral Qualification, ~~After successfully completing the core component exam,~~ students must have received a B- or higher on the final ~~take the exam for the specialty component, which is administered by the dissertation committee that students typically form by the spring semester~~ of each of the four

Core Climate courses. ~~their second year.~~ Students who have taken the equivalent of any of these courses must take the Core course's final exam even if they do not take the course.

Qualifying Exams

Students take a qualifying exam by enrolling in [CLIM 997 Doctoral Qualification](#). Students pass the exam by demonstrating an ability to analyze scientific problems, identify an open scientific question in climate dynamics, and outline a methodology to answer the question.

Students take [CLIM 997 Doctoral Qualification](#) in their second spring semester in the program.

Students who enter in the spring have the option of taking it in their 2nd or 3rd spring semester.

Advancement to Candidacy

A grade ~~Following successful completion~~ of A or B in [CLIM 997 Doctoral Qualification](#) allows ~~both parts of the qualifying exam, students present~~ a student ~~written dissertation proposal~~ to begin work on a Climate Dynamics doctoral dissertation by enrolling in [CLIM 998 Doctoral Dissertation Proposal](#). ~~the committee.~~ Once a dissertation committee approves the dissertation proposal and the student completes all non-dissertation program requirements, the student is formally advanced to doctoral candidacy.

~~Students may enroll in CLIM 998 Doctoral Dissertation Proposal to complete this effort. After approval of the dissertation proposal and completion of all non-dissertation program requirements, students are formally advanced to doctoral candidacy.~~ **Dissertation Research and Defense**

After approval of the dissertation proposal, students are formally advanced to doctoral candidacy and produce the dissertation while taking [CLIM 999 Doctoral Dissertation](#). The degree's requirements will be fulfilled upon completion of the required coursework and approval of a dissertation that makes an original and significant contribution to the field.

No more than 24 combined credits from [CLIM 998 Doctoral Dissertation Proposal](#) and [CLIM 999 Doctoral Dissertation](#) may be applied toward satisfying doctoral degree requirements, with no more than 21 credits of [CLIM 998 Doctoral Dissertation Proposal](#).

Course List

Code	Title	Credits
	Dissertation Research	24
CLIM 998	Doctoral Dissertation Proposal	
CLIM 999	Doctoral Dissertation (minimum 3 credits)	

Code

Title

Credits

Total Credits

24

Plan of Study:

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

Are you changing the total number of credits required for this program?

No

Are you changing the delivery format in any way (e.g adding an online option)?

No

Are you adding/removing a licensure option which was approved by SCHEV?

No

Will any portion of this program be offered at an off-campus location?

No

Are you adding significant new content areas to the program?

No

Will this program change affect any specialized accreditation?

No

Green Leaf Program Designation

Is this a Green Leaf program? Yes

Green Leaf Designation Sustainability-focused designation

Sustainability-focused academic programs require at least one green leaf course. Either that course is itself sustainability-focused or else the program requires a set of sustainability-related courses with aggregated substance equivalent to a sustainability-focused course.

Relationship to Existing Courses

Relationship to Existing Programs

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

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

**Executive
Summary**

**Reviewer
Comments**

**Additional
Comments**