Program Change Request

Date Submitted: 10/14/20 11:21 am

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

Last approved: 01/15/19 9:56 am

Last edit: 10/14/20 11:21 am

Changes proposed by: jbazaz

Catalog Pages Using this Program

Climate Dynamics, PhD

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

Yes

Requestor:

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: Duration
8. Registrar-Programs

Approval Path

1. 10/16/20 4:38 pm Barry Klinger (bklinger): Approved for AOES Committee
2. 10/16/20 5:09 pm Jim Kinter (ikinter): Approved for AOES Chair

History

1. Oct 22, 2017 by clmig-jwehrheim
2. Jan 29, 2018 by Rebekah Zacharias (rzachari)
3. Dec 9, 2018 by Barry Klinger (bklinger)
4. Jan 15, 2019 by Tory Sarro (vsarro)

Name	Extension	Email
Barry Klinger	9227	bklinger

Effective Catalog: 2021-2022

Program Level: Graduate

Program Type: Doctoral

Degree Type: Doctor of Philosophy

Title: Climate Dynamics, PhD

Banner 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

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

1. Change Core Computational Requirements to include CLIM 680: CLIM 680 Climate Data trains students in key computational/statistical techniques useful to Climate Dynamics students.

2. Change limit of reading course credit to 6 credits: Both faculty and students find the extra flexibility in choosing electives to be useful. It also supports recent efforts to get students

proficient in research earlier.

3. Reduce dissertation requirement from 24 cr to 21 cr: Creation of the new required course CLIM 997 added 3 credits to the program requirements. However, the extra research that students will do in CLIM 997 will contribute to their dissertation. Therefore we want to reduce dissertation credits by the same amount so that the total required dissertation and pre-dissertation research stays the same.

4. Update requirements for “Advancement to Candidacy”: Purpose of these changes is to: 1. Clarify the role of the Program Director in deciding whether student has passed the qualification exam. 2. Formalize unofficial requirement to submit a paper. 3. Give students guideline on expected time the Dissertation Proposal should take to complete.

5. Cleaning up the formatting by removing duplicate headers.

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

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 751	Predictability and Prediction of Weather and Climate	3
Total Credits		15

Core Computational Courses

~~CSI 690~~	~~Numerical Methods~~	~~3~~
CLIM 680	**Climate Data**	**3**
or CLIM 690	**Scientific Basis of Climate Change**	
CLIM 715	Numerical Methods for Climate Modeling	3
CLIM 762	Statistical Methods in Climate Research	3
Total Credits		9

Climate Seminar

~~Climate Seminar~~		~~3~~
CLIM 991	Climate Dynamics Seminar (taken three times)	3
Total Credits		3

Electives

Select 21 credits ~~Eligibility for Qualifying ExamsSatisfactory progress in the program is demonstrated by adequate research progress (as attested by the advisor) and by the student attaining a B- or higher in all CLIM courses and on the final exams~~ of **graduate-level electives, including CLIM courses and other relevant** ~~the "Core Climate"~~ courses **as approved by the graduate coordinator1.**

~~(CLIM 610 Introduction to the Physical Climate System, CLIM 614 Land-Climate Interactions, CLIM 711 Introduction to Atmospheric Dynamics, CLIM 712 Physical and Dynamical Oceanography).~~

~~Select 21 credits of graduate-level electives, including CLIM courses and other relevant courses as approved by the graduate coordinator. 1~~ ~~21~~

~~CLIM courses~~

CLIM courses	**21**
Total Credits	21

1 Including up to 6 credits of CLIM 796 or CLIM 996.

Eligibility for Qualifying Exams

Satisfactory progress in the program is demonstrated by adequate research progress (as attested by the advisor) and by the student attaining a B- or higher in all CLIM courses and on the final exams of the "Core Climate" courses (CLIM 610 Introduction to the Physical Climate System, CLIM 614 Land-Climate Interactions, CLIM 711 Introduction to Atmospheric Dynamics, CLIM 712 Physical and Dynamical Oceanography). If any of these conditions are not met, the director of the Climate Dynamics program convenes a faculty committee to recommend whether the student should continue in the program. 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-.

To be eligible for CLIM 997 Doctoral Qualification, students must have received a B- or higher on the final exam of each of the four Core Climate courses. 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.

CLIM 997	**Doctoral Qualification**	**3**
Total Credits		3

Advancement to Candidacy

After the ~~A grade of A or B in CLIM 997 Doctoral Qualification allows a~~ student **has completed all coursework in CLIM 997 Doctoral Qualification, the** ~~to begin work on a~~ Climate Dynamics **Director decides whether the student continues in the** doctoral **program, based on performance in CLIM 997 Doctoral Qualification and consultation with student's advisor and the instructors of CLIM 997 Doctoral Qualification and Core Climate courses.** ~~dissertation by enrolling in CLIM 998 Doctoral Dissertation Proposal.~~ **To continue, the student forms a dissertation committee by the end of the following summer and thereafter enrolls in CLIM 998 Doctoral Dissertation Proposal.**

Students who continue in the doctoral program are expected to submit a paper to a peer-reviewed journal, and to the dissertation committee, before the start of the Spring semester following the qualifier. If this deadline is not met, then the student submits a progress report to the thesis committee at the end of each semester until the paper is submitted. In all cases, student must satisfy the submission requirement before submitting and defending a dissertation proposal.

By the end of the student's third year, the student is expected to present a Dissertation Proposal to their thesis committee. The dissertation proposal will generally be an extension of the CLIM 997 Doctoral Qualification proposal.

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.

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 **21** ~~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** ~~21~~ credits of CLIM 998 Doctoral Dissertation Proposal.

~~Dissertation Research~~		~~24~~
Choose credits for the following courses in consultation with an advisor:		**21**
CLIM 998	Doctoral Dissertation Proposal	
CLIM 999	Doctoral Dissertation (minimum 3 credits)	
Total Credits		21

Retroactive Requirements Updates:

Plan of Study:

Program Outcomes

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

Will this program change affect any specialized accreditation?

No

Is the content of the new program closely related to that of an existing approved program?

No

Is this new program considered to be "advancing the degree level of a currently approved program" (i.e. existing content is at lower degree level, new content is at the higher degree level)?

No

Is this new program considered to be "lowering the degree level of a currently approved program" (i.e. existing content is at higher degree level, new content is at the lower degree level)?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program?

No

Percentage of total credits containing new course content, excluding gen ed courses for undergraduate programs ("New content" means content that is not currently included in an existing approved degree/certificate program.) Please choose a percentage (i.e. 0%-100%)

less than 25%

Are the total credits for the program increasing or decreasing by more than 3 credits?

No

Will any additional equipment/facilites be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Will any 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-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

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

%wi_required.eschtml%

Key: 6