

## Cover Sheet: Request 14238

### MET4XXX Atmospheric Physics

#### Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Esther Mullens emullens@ufl.edu
Created	9/11/2019 10:52:17 AM
Updated	2/19/2020 12:02:11 PM
Description of request	Request for a new course in the department of Geography in support of the department's forthcoming meteorology major.

#### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CLAS - Geography 011609000	Jane Southworth		9/12/2019
No document changes					
College	Recycled	CLAS - College of Liberal Arts and Sciences	Joseph Spillane	The College Curriculum Committee recycles this request, with the following changes needed: 1) the transcript title can simply repeat the course title, there are enough characters; 2) explain why the course is repeatable in the rationale section; 3) clarify the prereqs, are these AND or OR; 4) fix an error in the "B" grading scale.	11/16/2019
No document changes					
Department	Approved	CLAS - Geography 011609000	Jane Southworth		1/28/2020
No document changes					
College	Conditionally Approved	CLAS - College of Liberal Arts and Sciences	Joseph Spillane	The College Curriculum Committee conditionally approves this request, with two minor changes: 1) please add an "E" to the grade scale; 2) please remove week 16 from the weekly schedule	2/18/2020
No document changes					
Department	Approved	CLAS - Geography 011609000	Jane Southworth		2/19/2020
No document changes					
College	Approved	CLAS - College of Liberal Arts and Sciences	Joseph Spillane		2/19/2020
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/19/2020
No document changes					

Step	Status	Group	User	Comment	Updated
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

# Course|New for request 14238

## Info

**Request:** MET4XXX Atmospheric Physics

**Description of request:** Request for a new course in the department of Geography in support of the department's forthcoming meteorology major.

**Submitter:** Esther Mullens emullens@ufl.edu

**Created:** 3/9/2020 9:37:17 AM

**Form version:** 16

## Responses

### Recommended Prefix

*Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.*

Response:  
MET

### Course Level

*Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).*

Response:  
4

### Course Number

*Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.*

Response:  
XXX

### Category of Instruction

*Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.*

Response:  
Advanced

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*\*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Council)*

**Lab Code**

Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).

Response:  
None

**Course Title**

Enter the title of the course as it should appear in the Academic Catalog.

Response:  
Atmospheric Physics

**Transcript Title**

Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 21 characters (including spaces and punctuation).

Response:  
Atmospheric Physics

**Degree Type**

Select the type of degree program for which this course is intended.

Response:  
Baccalaureate

**Delivery Method(s)**

Indicate all platforms through which the course is currently planned to be delivered.

Response:  
On-Campus

**Co-Listing**

Will this course be jointly taught to undergraduate, graduate, and/or professional students?

Response:  
No

**Effective Term**

Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.

Response:

Earliest Available

**Effective Year**

Select the requested year that the course will first be offered. See preceding item for further information.

Response:  
2020

**Rotating Topic?**

Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.

Response:  
No

**Repeatable Credit?**

Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.

Response:  
No

**Amount of Credit**

Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.

Response:  
3

**S/U Only?**

Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.

Response:  
No

**Contact Type**

Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.

Response:  
Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

### Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week on average throughout the duration of the course.

Response:

3

### Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 50 words or fewer. See course description guidelines.

Response:

Technical and theoretical evaluation of radiative and microphysical properties of the atmosphere, clouds, and precipitation. Course includes radiative transfer processes fundamental to Earth's climate system, and key hypotheses regarding the development of cloud and precipitation, using mathematical principles to understand how droplets condense and grow.

### Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Courses level 3000 and above must have a prerequisite.

Response:

MAC 2312 (C) &  
CHM 2045 (C) &  
PHY 2048 with Lab (C) &  
MET3503 (C)

Completing Prerequisites on UCC forms:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.

Example: A grade of C in HSC 3502, passing grades in HSC 3057 or HSC 4558, and major/minor in PHHP should be written as follows:

HSC 3502(C) & (HSC 3057 or HSC 4558) & (HP college or (HS or CMS or DSC or HP or RS minor)

### **Co-requisites**

Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.

Response:  
None

### **Rationale and Placement in Curriculum**

Explain the rationale for offering the course and its place in the curriculum.

Response:

This course is a required course for a Bachelors in meteorology, and one of several that will be developed in the coming years to grow UF's meteorology program. This course is more numerically intensive, and students may enroll once they have completed math/physics/met prerequisites, with these pre-reqs being generally similar to or identical to other met program requirements for classes at the 4000 level. It is therefore planned as a senior course and precedes topics such as atmospheric dynamics, though it can be taken alongside courses such as thermodynamics and synoptic meteorology.

### **Course Objectives**

Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.

Response:

Students who successfully complete this course will be able to:

- Critically examine physical processes in the atmosphere that are important to both weather and climate.
- Describe and apply the fundamental laws and mathematical equations of radiative transfer within Earth's atmosphere, inclusive of the impact of the natural and human-contributed greenhouse effect.
- Evaluate the key hypotheses at the microphysical level regarding the development of cloud and precipitation, using mathematical principles and other problem-solving activities to understand how droplets condense and grow into precipitation, and how snow obtains its various shapes.

### **Course Textbook(s) and/or Other Assigned Reading**

Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. &nbsp;Please provide specific examples&nbsp;to evaluate the course.

Response:

Two required texts:

Petty, G.W – A first course in atmospheric radiation (second edition), ISBN-13:978-0-9729033-1-8  
Rogers, R.R., and Yau, M.K – a short course in cloud physics (third edition), ISBN-9780750632157

### **Weekly Schedule of Topics**

Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.

Response:

Week 1-2: Overview, properties of radiation, properties of surfaces

Weeks 3-4: Interactions between radiation and the atmosphere - emission, transmission, absorption,

Weeks 5-6: Interactions between radiation and the atmosphere - extinction, reflection, scattering.

Week 7-8: summary of key processes in radiation & earth's climate, mid-term

Weeks 9-10: Observed properties of clouds, formation of cloud droplets

Weeks 11-12: Development of precipitation - warm and cold cloud processes

Weeks 13-14: Precipitation microphysics (drop size distributions, aggregation and breakup, efficiency), measuring and modeling

Week 15: Clouds and climate change

### Grading Scheme

*List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades.*

Response:

Assessments to measure learning will consist of:

- Homework - primarily short-answer format, including such as short essays, and mathematical analysis of concepts from the lectures & required text(s)

- A mid-term and final exam - mixed format to include short answer and multiple choice

- Class participation to include group activities applying theory to real-world meteorological events, online discussions based on textbook readings and/or critical evaluations of assigned reading from peer-reviewed literature. Anticipate one graded in-class participation exercise per week.

- Individual projects on an aspect of the course material, culminating in a scientific paper and brief presentation. In particular, they will be asked to explain the concepts for a non-scientific audience and why the concept is important to the meteorological event or condition that their project is based on.

Grade breakdown for the above assignments:

Two exams (25% total) - one midterm (10%), one final (15%).

Homework - 6-8 in total, 40%

In class and online group and/or individual exercises, discussions & quizzes. As described above.

These may take the form of meteorological briefings, map or weather data analysis, discussion of required reading from textbook, group and/or individual math-exercises in class. Online will revolve around weekly or bi-weekly short comprehension exercises, where students explain a particular concept in their own words. In class participation = 10%, online = 10% (total = 20%).

Semester project (individual) - 15% (culminates in scientific paper and short 5-8 minute oral presentation).

Grades

A => 90

B+ = 87-89.99%

B = 83-86.99%

B- = 80-82.99%

C+ = 77-79.99%

C = 73-76.99%

C- = 70-72.99%

D+ = 67-69.99%

D = 63-66.9%

D- = 60-62.99%



E < 60%

**Instructor(s)**

*Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.*

Response:  
Dr. Esther Mullens

**Attendance & Make-up**

*Please confirm that you have read and understand the University of Florida Attendance policy.*

*A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.*

- *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.*

Response:  
Yes

**Accommodations**

*Please confirm that you have read and understand the University of Florida Accommodations policy.*

*A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:*

- *Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.*

Response:  
Yes

**UF Grading Policies for assigning Grade Points**

*Please confirm that you have read and understand the University of Florida Grading policies.*

*Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:*

- *<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>*

Response:

Yes

### **Course Evaluation Policy**

#### *Course Evaluation Policy*

*Please confirm that you have read and understand the University of Florida Course Evaluation Policy.*

*A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:*

• *Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.*

*&nbsp;*

Response:

Yes