

Submit originals and one copy and electronic copy to **Governance/Faculty Senate Office**
See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL

SUBMITTED BY:

Department	Atmospheric Sciences	College/School	CNSM
Prepared by	Barbara Day	Phone	X7368
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1. COURSE IDENTIFICATION:

Dept Course # No. of Credits

COURSE TITLE

Received

JUN 18 2010

2. ACTION DESIRED:

Change Course ☒ If Change, indicate below what change. Drop Course ☐ Dean's Office
College of Natural Science & Mathematics

NUMBER	TITLE	DESCRIPTION
PREQUISITES		FREQUENCY OF OFFERING
CREDITS (including credit distribution)		COURSE CLASSIFICATION
CROSS-LISTED	X Dept. PHY S	(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)
STACKED (400/600) Include syllabi.	X Dept. PHY S	Course # <input type="text" value="F413/F613"/>
OTHER (please specify)		

3. COURSE FORMAT

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☒ 6 weeks to full semester

OTHER FORMAT (specify all that apply)

Mode of delivery (specify lecture, field trips, labs, etc)

Lecture

4. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

H = Humanities ☐ S = Social Sciences ☐

Will this course be used to fulfill a requirement for the baccalaureate core? YES ☐ NO ☐

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, ☐ W = Writing Intensive, ☐ Natural Science, ☐
Format 6 also submitted ☐ Format 7 submitted ☐ Format 8 submitted ☐

5. COURSE REPEATABILITY:

Is this course repeatable for credit? YES ☐ NO ☒

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit? TIMES

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? CREDITS

6. **CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits**

ATM F413 Atmospheric Radiation

3 Credits

Offered Fall Odd-numbered Years

Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology. Prerequisites/Co-requisites: ATM F401. (Stacked with ATM F613.) (3+0)

ATM F613 Atmospheric Radiation

3 Credits

Offered Fall Odd-numbered Years

Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. Prerequisites/co-requisites: ATM F601; graduate standing. (Stacked with ATM F413.) (3+0)

7. **COMPLETE CATALOG DESCRIPTION AS IT WILL APPEAR WITH THESE CHANGES: (Underline new wording ~~strike through old wording~~ and use complete catalog format including dept., number, title, credits and cross-listed and stacked.) PLEASE SUBMIT NEW COURSE SYLLABUS. For stacked courses the syllabus must clearly indicate differences in required work and evaluation for students at different levels.**

ATM F413 Atmospheric Radiation

3 Credits

Offered Fall Odd-numbered Years

Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. Prerequisites/co-requisites: ATM F401; graduate standing. (Stacked with ATM F613.) (Cross-listed with PHYS F413). (3+0).

ATM F613 Atmospheric Radiation

3 Credits

Offered Fall Odd-numbered Years

Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. Prerequisites/co-requisites: ATM F601; graduate standing. (Stacked with ATM F413 and PHYS F413). (Cross-listed with PHYS F613). (3+0).

PHYS F413 Atmospheric Radiation

3 Credits

Offered Fall Odd-numbered Years

Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. Prerequisites/co-requisites: ATM F401. (Stacked with PHYS F613). (Cross-listed with ATM F613). (3+0).

PHYS F613 Atmospheric Radiation

3 Credits

Offered Fall Odd-numbered Years

Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. Prerequisites/co-requisites: ATM F601; graduate standing. (Stacked with PHYS F413.) (Cross-listed with ATM F613). (3+0).

8. IS THIS COURSE CURRENTLY CROSS-LISTED?

YES/NO

☒ No

If Yes, DEPT

NUMBER

(Requires written notification of each department and dean involved. Attach a copy of written notification.)

9. GRADING SYSTEM: Specify only one

LETTER:

☒ X

PASS/FAIL:

☐

10. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

No impact. Physics students already take the class.

11. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No

☐

Yes

☐

Professor has talked to the librarian and all the requested materials will be available at the Keith Mather Library.

12. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

None

13. POSITIVE AND NEGATIVE IMPACTS

Please specify **positive** and **negative** impacts on other courses, programs and departments resulting from the proposed action.

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

Physics used to offer a similar class (Radiative Transfer), 10 years ago. In the last 10 years, physics students who were interested in radiative transfer were advised to take this class through ATM as the ATM atmospheric radiation class to bundle resources. Physics students who are interested in space physics and applied physics frequently took this class as ATM413 or ATM613 in the last years. For physics graduates, however, it is advantageous if they take this class under a physics rather than atmospheric sciences label. UAF will save money if the two departments cross-list the class rather than both departments teaching a class that basically delivers the same material.

APPROVALS:

Nicole Mölders	<i>Nicole Mölders</i>	Date	6-15-2010
Signature, Chair, Program/Department of:		Atmospheric Sciences	

<i>[Signature]</i>	Date	6/28/2010
Signature, Chair, College/School Curriculum Council for:		CNSM

<i>[Signature]</i>	Date	6/28/10
Signature, Dean, College/School of:		CNSM

	Date	
Signature of Provost (if applicable)		
Offerings above the level of approved programs must be approved in advance by the Provost.		

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

	Date	
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

<i>JOHN OLSON</i>	Date	6/17/2010
Signature, Chair, Program/Department of:		Physics

	Date	
Signature, Chair, College/School Curriculum Council for:		CNSM

	Date	
Signature, Dean, College/School of:		CNSM

Atmospheric Radiation - Fall 2011

ATM F613/F413; PHYS F613/F413 F01 Atmospheric Radiation (3)

Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology.

Instructor: Richard L. Collins rlc@gi.alaska.edu

317 Akasofu (907) 474-7607

Class: Tuesday and Thursday, 2 pm – 3:30pm, REIC 207

Office Hours: Monday 3pm – 5pm 319 Akasofu, or by appointment.

Recommended Texts on Reserve at Mather Library and Chapters in eRes:

Radiative Processes in Meteorology and Climatology

Paltridge, G. W., and C. M. R. Platt, Elsevier Scientific Pub. Co., 1976. ISBN: 0444414444

Fundamentals of Atmospheric Radiation: An Introduction with 400 Problems

Bohren, C. F., and E. E. Clothiaux, Wiley-VCH, 2006. ISBN: 3527405038

An Introduction to Atmospheric Radiation

Liou, K.-N., Academic Press, 2002. ISBN: 0124514510

A First Course in Atmospheric Radiation

Petty, G. W., Sundog Pub., 2004. ISBN: 0972903305

Description

This course meets core requirements for Atmospheric Science M.S. and Ph.D. degrees. However, interested students from other areas of science and engineering are welcome. Course will follow elements from recommended text and review articles. Grades will be based on homework, exams and a term paper-project. This class focuses on the fundamental study and quantitative measurement of the interactions of solar and terrestrial radiation with molecules, aerosols and cloud particles in planetary atmospheres. The goal of the course is to give students a foundation in the principles of atmospheric radiation. Lectures will include material not found in the texts. Where possible we will try to explore concepts from a data driven perspective. The topics to be covered include;

1. Introduction and overview of Earth's radiation budget and balance
2. Principles and practices of describing radiation
3. The Sun and solar radiation.
4. Long-wave radiation
5. Radiative Transfer
6. Aerosols and clouds
7. Radiation and observed atmospheric thermal structure

Student Learning Outcomes:

Students completing the course should have an understanding of the key concepts in the interaction of radiation with the atmosphere. They should have developed a foundation for research in atmospheric sciences, geography, environmental sciences and remote sensing. Students will improve the quality of their presentations.

The instructor will work with the UAF Center for Health and Counseling's Disability Services Program (<http://www.uaf.edu/chc/disability.html>) to accommodate students with disabilities.

Grading

The class grade will be based on (near) weekly quizzes and homework, two term exams, a term paper-project, and participation as follows;

Homework 35%
Exams I and II 30%
Term Paper-Project 30%
Participation 5%
ATM613/413 and PHYS613/413

Grades will be assigned in accordance with university policy http://www.uaf.edu/catalog/catalog_09-10/academics/regsl.html. A student who scores greater than 90% on their submitted body of work is guaranteed an A. A student who scores greater than 75% on their submitted body of work is guaranteed a B. A student who scores greater than 60% on their submitted body of work is guaranteed a C. A student who scores greater than 50% on their submitted body of work is guaranteed a D.

Homework

Homework problems will be assigned bi-weekly and must be turned in on or before the stated deadline. No late homework will be accepted without a suitable excuse. You are encouraged to work independently in study groups. The work you hand in should be your own effort (not merely a copy of another student's work). You are welcome to use the scheduled office hours for tutorial assistance with the homework. If you have questions about a homework problem outside of office hours, contact the instructor by e-mail. Homework assignments are expected to be neat and legible. Students are expected to complete the reading assignments.

Exams

There will be two term exams. The term exams will last 90 minutes. Students may refer to a single, double-sided cheat-sheet in each of the term exams.

Term Paper-Project

There will be a term paper-project required of each student based on a topic selected by the student. The paper should be present a review of several (minimum of four) while the project can present a smaller number of research articles and conduct an analysis. The preparation of the term paper will be staged over the semester. An outline (~1 page) outlining the topic to be addressed, with list of possible papers, is due in October. A detailed outline citing the references to be used and giving a brief description of each paper and/or method is due in November. The instructor requires each student to meet with the instructor to discuss the paper project. The final paper-project report is due on the last class. Each student is required to make a PowerPoint presentation with handout (15 min presentation, with 5 min for discussion) to the class. The grade for the paper-project will be based on both the paper and the presentation. Class members and the instructor will complete evaluation sheets for each presentation, and the grade for the presentation will be based on both the peer and instructor evaluations. Attendance and participation is mandatory in order to pass the class.

Participation

Participation is based on regular attendance, submitting a full body of work (i.e., attempting all homework assignments, reading assignments, exams, and term paper), participating in class discussion, and participating in the paper-project presentations and evaluations. Students are expected to come to class prepared, with assigned reading done.

Attendance

Class attendance is mandatory (see catalog). Material not in the text may be introduced at random intervals. If you miss a class, extras of handouts are available outside the instructor's office.

e-Access

Class will use Blackboard <http://classes.uaf.edu/> and materials will be placed on e-reserve <http://eres.uaf.edu/>.

ATM413/PHYS413 and ATM613/PHYS613

Students taking ATM413 or PHYS413 will be required to review one research article (rather than a term paper based on multiple papers) for the term paper.

ATM613/413 PHYS 613/413**KEY DATES FOR ATM 613/413 FALL 2011**

Week 1		Sep 1 First Class
Week 2 HW#1	Sep 6	Sep 8
Week 3 HW#2	Sep 13	Sep 15
Week 4 Term Paper Proposal Due	Sep 20	Sep 22
Week 5 HW #3	Sep 27	Sep 29
Week 6 Exam #1	Oct 4	Oct 6
Week 7 HW #4	Oct 11	Oct 13
Week 8 Paper-Project Outline Due	Oct 18	Oct 20
Week 9 HW#5	Oct 25	Oct 27
Week 10	Nov 1	Nov 3
Week 11 HW #6	Nov 8	Nov 10
Week 12 Exam #2	Nov 15	Nov 17
Week 13 Paper-Project Meetings	Nov 22	Nov 24 Thanksgiving - No Class
Week 14	Nov 29	Dec 1
Week 15 Presentations	Dec 6	Dec 8 Last Class
Week 16 Presentations AGU Fall Meeting Final Exam Period TBA		

Notes: **Schedule is provisional and dates may change.**
Changes will be announced in class.