SCIN137

Course Summary

Course : SCIN137 **Title :** Introduction to Meteorology with Lab
Length of Course : 8
Prerequisites : **Credit Hours :** 4

Description

Course Description: Introduction to Meteorology covers the fundamental principles governing the behavior of our atmosphere and the duties and methods of the professional meteorologist. Students will gain insight into the exciting discipline of meteorology, discussing topics such as cloud formation, movement in the atmosphere, thunderstorms, tornadoes, meteorological satellites, and climate change. The Meteorology laboratory will take the student deeper into the aspects of our weather through the study and exploration of our atmosphere via online interactive modules prepared by professional meteorologists. Topics to be discussed range from hurricane formation and the impacts of extreme weather to forecasting local weather and toxic pollution. The online laboratory modules increase the student's awareness of our planet through hands-on activities.

Course Scope:

The course is divided into 8 weeks with 2 new topics addressed each week. Topics range from the structure of the atmosphere to weather patterns to air pollution. A survey course such as this might be described as similar to the Platte River – a mile wide and an inch deep. The course introduces many topics, but time and students' backgrounds prevent focusing very deeply into any one topic. Laboratory assignments will provide the students with an opportunity to apply their knowledge and explore topics in greater detail.

Objectives

The successful student will fulfill the following learning objectives:

CO-1 Describe how the Earth's atmosphere absorbs and reflects incoming solar radiation and maintains Earth's energy balance, and describe the vertical and horizontal structures of the Earth's atmosphere.
CO-2 Describe how temperature data are gathered and used; explain how moisture is observed and measured in the atmosphere.
CO-3 Examine how clouds develop, describe what causes precipitation, what is meant by air pressure, pressure gradient force, and Coriolis force, and discuss wind characteristics at the surface and aloft.
CO-4 Compare the technologies involved with meteorology and how they are applied to monitor conditions, create forecasts and disseminate warnings.

CO-5 Explain what factors produce the climate of a location on Earth, compare and classify the various climates of the world.
CO-6 Apply the laws of physics to hands-on weather observation and forecasting.
CO-7 Identify atmospheric forces creating weather systems, to include fronts, high and low pressure and severe weather systems.
CO-8 Demonstrate knowledge atmospheric optics characteristics.

Outline

Week 1: The Earth's Atmosphere and the Warming of the Earth's Atmosphere

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Learning Objectives(s)

CO-1, CO-2

Reading(s)

Ahrens, Essentials of Meteorology – Chapters 1 & 2

Assignment(s)

Weekly Assignment 1

Forum Topic 1 : Introductions

Forum Topic 2: Understanding Topics

NO LAB

Week 2: Air Temperature, Humidity, Condensation, and Clouds

Learning Objectives(s)

CO-1, CO-2

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 3 & 4

Assignment(s)

Weekly Assignment 2

Forum Topic 1: Understanding Topics

Week 2 Lab

Week 3: Cloud Development, Precipitation, Air Pressure, and Winds

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Learning Objectives(s)

CO-1, CO-2, CO-3

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 5 & 6

Assignment(s)

Weekly Assignment 3

Forum Topic 1: Understanding Topics

Week 3 Lab

Week 4: Atmospheric Circulation, Air Masses, Fronts, and Middle-Latitude Cyclones

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Learning Objectives(s)

CO-1, CO-3, CO-4

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 7 & 8

Assignment(s)

Weekly Assignment 4

Forum Topic 1: Understanding Topics

Week 4 Lab

Week 5: Weather Forecasting, Thunderstorms and Tornadoes

Learning Objectives(s)

CO-2, CO-4, CO-5

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 9 & 10

Assignment(s)

Weekly Assignment 5

Forum Topic 1: Understanding Topics

Week 5 Lab

Week 6: Hurricanes and Air Pollution

Learning Objectives(s)

CO-2, CO-3, CO-6

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 11 & 14

Assignment(s)

Weekly Assignment 6

Forum Topic 1: Understanding Topics

Week 6 Lab

Week 7: Climate and Global Climate Change

Learning Objectives(s)

CO-1, CO-2, CO-7

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 12 &13

Assignment(s)

Weekly Assignment 7

Research Project Due

NO LAB

Forum Topic 1: Understanding Topics

Week 8: Light, Color, and Atmospheric Optics

Learning Objectives(s)

CO-1, CO-8

Reading(s)

Ahrens, Essentials of Meteorology – Chapter 15

Assignment(s)

Final Exam

Week 8 Lab

Forum Topic 1: Understanding Topics

Evaluation

Grades for this course will be based upon graded forum assignments, quizzes, exams, and labs.

Forums
Weekly forum questions are provided in the **Forum** section of the E-classroom. Participation is mandatory and will count towards the course grade. All forum original comments are due at 11:55 pm, EST on the **Wednesday** of the assignment week. You are expected to provide an original, substantial comment of several well-written paragraphs in each session and participate in the ensuing discussion about your post. This is YOUR discussion. You must also post a similar comment or reflection in reply to at least two other students' contribution. Statements such as "I agree" or "good post" will not count as a reply. Forums will require research and proper citation of sources is required.

Weekly Assignments
Each week, there will be five short-answer questions that are to be answered. These questions are to be answered thoroughly and short answers that don't follow spelling and grammar rules will be penalized. One-sentence answers will not be sufficient to address the question. Turnitin.com will be automatically used on all submissions to check for plagiarism as well, so be sure to cite all sources following APA standards. If the Turnitin report indicated plagiarism, the assignment will receive a zero and will be reported to the registar's office.

Final Exam
The final exam is on-line, open-book, and may be timed. They may include multiple choice, fill in the blank, and short essay type questions. The Final Exam will be cumulative and available during the last week of the course.

Labs
Labs are found under "Test & Quizzes" section of the course. Labs are due every week except weeks 1 and 7. All labs are multiple choice and are to test you on applying what you learned within the text with real examples. More information on the Labs will be found when you take the lab for that week. A *critical* part of this course is active participation in lab work.

Please see the Student Handbook to reference the University's grading scale.

Grading:

Name	Grade %
Forum Assignments	15.00 %
Forum 1	1.88 %
Forum 2	1.88 %
Forum 3	1.88 %
Forum 4	1.88 %
Forum 5	1.88 %
Forum 6	1.88 %
Forum 7	1.88 %
Forum 8	1.88 %
Research Project	15.00 %
Research Project	15.00 %
Weekly Quizzes	25.00 %
Week 7 Quiz	3.57 %
Week 6 Quiz	3.57 %
Week 5 Quiz	3.57 %
Week 4 Quiz	3.57 %
Week 3 Quiz	3.57 %
Week 2 Quiz	3.57 %
Week 1 Quiz	3.57 %
Final Exam	20.00 %
Final Exam	20.00 %
Lab Assignments	25.00 %
Week 2 Lab	4.17 %
Week 3 Lab	4.17 %
Week 5 Lab	4.17 %
Week 4 Lab	4.17 %
Week 6 Lab	4.17 %
Week 8 Lab	4.17 %

Materials

Book Title: Essentials of Meteorology: An Invitation to the Atmosphere, 7th Edition - The VitalSource e-book is provided via the APUS Bookstore

Author: Ahrens, C. Donald

Publication Info: Cengage

ISBN: 9781285462363

Book Title: MetEd Modules-Links provided in syllabus. Free registration is required.

Author: University Corporation for Atmospheric Research

Publication Info: University Corporation for Atmospheric Research

ISBN: METEDMOD

Book Title: You must validate your cart to get access to your VitalSource e-book(s). If needed, instructions are available here - http://apus.libguides.com/bookstore/undergraduate

Author: N/A

Publication Info: N/A

ISBN: N/A

Required Technology

- See the Technology Requirements section of the undergraduate catalog for the minimum hardware and software requirements.
- Microsoft Office 365 is available to APUS students for free. To sign up, visit http://products.office.com/en-us/student. If you have questions about accessing the software, please contact Classroom support at classroomsupport@apus.edu.

Supplemental Materials

The COMET MetEd Modules are supplemental materials that are great ways to expand your understanding on topics, especially on the difficult topics. The modules that are pertainent to each week are listed within the Lessons page of each week.

COMET Modules are located:

https://www.meted.ucar.edu/training_detail.php

The first time you access a module, it will be necessary to register with an email address and establish a password.

Select “education”, and “university student” as your affiliation.

When you sign on the first time it will ask for your instructor’s email but this can be left blank.

The quizzes at the end of the module are not required. In order to find the module, after logging in, use the search bar at the top of the webpage and enter the title of the module listed in the

announcement.

Course Guidelines

Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

Tutoring

- Tutor.com offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- "Substantive" means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says "I agree" is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

University Policies

Student Handbook

- Drop/Withdrawal policy
- Extension Requests
- Academic Probation
- Appeals
- Disability Accommodations

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.