ATMO 2200: MOUNTAIN WEATHER AND CLIMATE

TEXTBOOK: Secrets of the Greatest Snow on Earth" by Jim Steenburgh (available in paperback or ebook, $10-20)
MetEd: https://www.meted.ucar.edu/ & Additional online readings as assigned.

COURSE TECHNOLOGY: Internet connection, Canvas, video playing (YouTube, Vimeo, Kaltura, etc.), SLCC ePortfolio, Zoom, Google Apps (slides, sheets, etc.).

COURSE DESCRIPTION

This course explores the influence of mountains on weather and climate, and how this shapes ecosystems and human environments. Students will analyze how mountains change wind and precipitation patterns and apply this to topics including snowpack and water supply, avalanches, fire weather, air pollution, and others.

COURSE LEARNING OUTCOMES

In order to fulfill the goals of the College-wide Learning Outcomes, the following course learning outcomes of been established for this course. Upon completion of this course a student should be able to:

- Construct a model, using evidence, of how Utah's geography and topography controls local and regional climate.
- Differentiate past and present mountain climates, and their weather, throughout the world using meteorological, climatological, geological, ecological, and hydrological data.
- Apply meteorological records to variations in snowpack structure and snow avalanche activity.
- Synthesize the impacts of climate change on mountain weather, climate, and ecosystems.
- Illustrate using multi-media communication the meteorological or climatological underpinnings of a mountain weather phenomenon.
- Predict mountain weather, and communicate this prediction, utilizing meteorological datasets and analytical skills.
- Develop scientific questions related to mountain weather and climate and discriminate which are feasible to answer with available resources, tools, and data.
- Design a research methodology utilizing background research, available datasets, and analytical skills.
- Collect, interpret, and analyze data that follows a research methodology designed to answer an accessible scientific question.
- Justify conclusion from result of data analysis, identifying assumptions and limitations, and develop additional related scientific questions.
- Generate an oral and poster presentation of a research project that is professional, thorough, and clearly understandable to a wide audience.

HOW TO DO WELL IN THIS CLASS

- Be an active participant by attending and participating in class, engaging in canvas, and asking and answering questions.
- Keep up with readings every week.
- Complete all assignments.
- Message me or come to office hours with questions or concerns.

COURSE PROCEDURES

Active participation in activities is expected. You will be expected to interact with others during class and participate in group discussions.

Most of the assignments you complete for the course will be submitted online using Canvas LMS. Please note that you can set up social media services in Canvas within your profile settings. There are also Canvas apps available. Some assignments may be difficult to complete on a tablet or phone. It is HIGHLY recommended you set up Canvas so it can send you messages to your email, cell phone, Facebook, or Twitter accounts. When your instructor sends out announcement, messages, and information on Canvas, you will be notified in the media you designate.

LATE WORK

Students are expected to complete all assignments on time. Late work will be accepted, but it is in your best interest to hand all assignments in on time.

INCOMPLETE GRADES

If circumstances lead you to not be able to complete the course in the regular time frame, you may work with the instructor to take an incomplete. Students must be passing and have completed 75% of the course work in order to be granted an incomplete. Students are responsible for planning for successful course completion.

GRADING SCALE

93-100 = A	90-92 = A-	87-89 = B+	84-86 = B	80-83 = B-	77-79 = C+
74-76 = C	70-73 = C-	67-69 = D+	64-66 = D	60-63 = D-	0-59 = E

RESOURCES FOR STUDENTS

General Learning Support & Tutoring Services provide support for SLCC students enrolled in any class at the College. All resources are provided free-of-charge. Ask your instructor about discipline-specific learning support and tutoring services.

- **Tutoring**: index of all tutoring resources.
- **STEM Learning Centers**: provide free assistance in Math, Science, Accounting, CSIS and Allied Health Classes at 6 campus locations.
- **Student Writing and Reading Center**: provides in-person and online feedback on all writing assignments.
- **Library Services**: provides research help, print and online resources, computers and study space.
- **ePortfolio Lab**: provides drop-in assistance for all ePortfolio questions.
- **eLearning Support**: provides support for navigating online and hybrid classes.

Advising and Counseling Support Services provide support for students enrolled in any class as the college.

- **Center for Health and Counseling**: provides health care, mental health counseling, massage therapy services and healthy lifestyle programs.
- **Veterans' Services**: assists hundreds of students in using their VA education benefits each semester.
- **Academic and Career Advising**: helps students plan, explore, make decisions, access resources and evaluate their academic and career goals.
- **#SLCCSAFE**: resources for students to stay safe at SLCC.

ASSIGNMENTS

Assignment Type	Points	Total	Percent
CQ: Chapter Quizzes (5)	5 @ 4 points	20	10%
HW: Homework (8)	8 @ 5 points	40	20%
IL: Interactive Labs (6)	6 @ 10 points	60	30%
B: Utah Weather Blog	1 @ 20 points	20	10%
R: Research Project (4)	4 @ 15 points	60	30%
	Grand Total	**200**	**100%**

CHAPTER QUIZZES

For each Module covered there will be a multiple choice, timed quiz on Canvas. The quizzes will be worth 4 points each and they will comprise 10% of your final grade.

HOMEWORK

About every other week you will have a 1-2-hour homework assignment. Generally, it will involve watching a video, completing a tutorial, or reading an article and responding to questions and submitting on Canvas. Homework assignments will be worth 5 points each and they will comprise 20% of your final grade.

INTERACTIVE LABS

About every other week we will have an interactive lab activity that will be graded. Interactive labs will be worth 10 points each and they will comprise 30% of your final grade.

PROJECTS (ePortfolio Signature Assignments)

During the semester you will complete two projects to enhance your learning, critical thinking, and research skills. The two projects together will be 40% of your grade.

Utah Weather Blog (20 points)

The goal of this project is to write a blog post/webpage that analyzes a significant Utah weather event of your choosing and presents it for the general public. The blog post should be multi-media and include necessary references. The weather event could be general or specific, such as the impact of Great Salt Lake effect snow to our water supply or the meteorological conditions that led to a large avalanche cycle in December 2009. You will also be required to present your blog to others in the class.

Mountain Weather Research Project (60 points)

In this project you will conduct a research project on a scientific question related to mountain weather or climate. This will be an iterative process following scientific methodologies including, exploring research questions, narrowing your focus, conducting background research, designing and conducting a research methodology, collecting and analyzing data, drawing conclusions, and communicating your results. Throughout the second half of the semester, we will work through this process, leading up to your final presentation at the end of class. Students are encouraged to submit their research project to present at the SME Symposium held each spring. You will submit four parts to this project:

- R-1: Project Topic & Background Research
- R-2: Data Collection & Analysis
- R-3: Draft Presentation
- R-4: Final Oral Presentation & ePortfolio

CLASS SCHEDULE: This is subject to change, so make sure check Canvas regularly.
Please see Canvas for online READINGS for each Module.

MOD	TOPIC/READING	ASSIGNMENTS
0	Class Introduction & Preview	Student Survey Degreeworks
1	Secrets of the Greatest Snow on Earth: -Ch. 1 The Secrets AND -Ch. 2 Wasatch Microclimates	HW-1
2	Secrets of the Greatest Snow on Earth: -Ch. 3 Beyond Utah or Ch. 3 & 4 2nd Edition	CQ-1 HW-2 IL-1
3	Secrets of the Greatest Snow on Earth: -Ch. 4 (or 5) Flaky Science AND -Ch. 5 (or 6) Lake Effect	HW-3
4	Secrets of the Greatest Snow on Earth: -Ch. 6 (or 7) Alta Goes to War AND -Ch. 7 (or 8) Beyond the Ropes	CQ-2 HW-4 IL-2
5	Secrets of the Greatest Snow on Earth: -Ch. 8 (or 9) Powder Prediction	HW-5 IL-3
6	Secrets of the Greatest Snow on Earth: -Ch. 9 Global Warming or Ch. 10 & 11 2nd Edition	CQ-3 HW-6 IL-4
B	Utah Weather Blog Presentations Intro to Research	**B-1**
R	Developing a Hypothesis	
R	Collecting and analyzing data	**R-1**
7	Water in the West	IL-5
8	Dancing with Climate Change	HW-7, CQ-4 **R-2**
R	Telling a Research Story	
R	Research Project Work	HW-8 **R-3**
R	Research Project Work	
9	The Dust Detectives & **Mountain Weather Research Presentations**	CQ-5 IL-6 **R-4**