

CAPILANO UNIVERSITY COURSE OUTLINES			
TERM:	FALL 2014	COURSE NO:	GEOGRAPHY 114
INSTRUCTOR:		COURSE NAME: WEATHER & CLIMATE	
OFFICE:	LOCAL:	SECTION NO(S):	CREDITS: 4
E-MAIL:			

COURSE FORMAT:

Three instructional hours plus two lab hours, and an additional hour delivered through other activities, per week for a 15-week semester, which includes two weeks for final exams.

COURSE PREREQUISITES:

None.

COURSE OBJECTIVES:

Geography 114 is a course about weather and climate. **Weather** is the day-to-day variation in the state of the atmosphere. The elements of weather are temperature, pressure, clouds and fog, precipitation, and wind. Weather, averaged over many years, becomes **climate**, a significant characteristic of a place. The overall objective of this course is to show how air, water, energy, and Earth's surface interact to produce weather and, ultimately, climate.

In this course we are interested in the **processes** responsible for weather and its variability. We will explore each weather element individually, but the interactions between these elements will also be discussed. With an aim to understanding the elements of weather, we will study the composition and structure of the atmosphere, the way in which Earth's orbit creates our seasons, the nature of energy transfer in Earth's atmosphere and at its surface, the variability of water vapour in our atmosphere, and the processes controlling the vertical motions of air parcels. We will consider how the above, combined with the general circulation of the atmosphere and oceans, produces global climate patterns. In turn, we will see how global climate patterns play an important role in controlling the global distribution of vegetation.

Where applicable, we will examine the complex role people play in influencing both atmospheric composition and atmospheric processes. An important theme in this course is **climate change** resulting from human activities.

This is a Geography course for several reasons. It is about a part of the Earth **system**: the atmosphere. We will consider **interrelationships** between the different parts of the Earth system, between the various elements of weather, and between the activities of humans and the atmosphere. We will also study the **spatial variability** of climate. For much of this, we will rely on **maps** as tools.

The objective of both the labs, and the term project, is to provide opportunities to *apply* the course content. Labs are an essential part of the course. These exercises involve mathematical problem solving, graphing, and the analysis of weather maps. To be successful with the lab work, students are expected to be able to do basic arithmetic; this includes having a working knowledge of such concepts as percentages, ratios, and exponents. The term project requires that students observe and analyze the weather for one week.

REQUIRED TEXT:

Strahler, Alan, and O.W. Archibold. Physical Geography - Science and Systems of the Human Environment, 5th Canadian Ed. Mississauga, Ontario: John Wiley and Sons, Ltd., 2011.

COURSE CONTENT:

All readings are from the textbook.

Students are expected to read the assigned readings *before* class.

It is strongly recommended that students make use of the **Chapter Summaries** and do the suggested **Review Questions** at the end of each chapter.

Week 1

Introduction to Weather

Skim Chapters 1 and 2 to find answers to the following Review Questions.

Review Questions (p. 17): 2, 6, 10, 11

Review Questions (p. 34): 2, 3, 4

Read: Chapter 5, p. 101

Chapter 6, pp. 138 - 140 and pp. 147 - 148

Review Questions (p. 154): 8, 11, 13

Read: Chapter 7, pp. 163 - 169

Week 2

Introduction to Weather, cont.**Seasons**

Read: Chapter 2, pp. 29 - 33

Review Questions (p. 34): 7

Read: Chapter 3, p. 50 and pp. 54 - 56

Review Questions (p. 61): 10, 11

Week 3

Structure of the Atmosphere

Read: Chapter 4, pp. 76 - 78

Review Questions (p. 95): 6

Read: Chapter 5, pp. 101 - 102

Review Questions (p. 127): 1

Read: Working It Out, pp. 128 - 129 (You can ignore the equations.)

Composition of the Atmosphere

Read: Chapter 3, pp. 43 - 47, including *The Ozone Layer - Shield to Life*

Review Questions (p. 61): 1, 2, 22, 23, 24

Read: Chapter 4, pp. 86 - 92

Review Questions (p. 96): 18

Week 4

Energy

Read: Chapter 3, pp. 47 - 59,

including *Ceres - Clouds and the Earth's Radiant Energy System*

Review Questions (pp. 61 - 62): 3, 4, 6, 7, 8, 9, 13, 14, 15, 17, 18

Optional Reading: Working It Out, pp. 62 - 63

Read: Chapter 4, pp. 86 - 94 and pp. 97 - 99

Review Questions (p. 95): 13, 14

Week 5

Energy, cont.**QUIZ (TWO PARTS)**

Course content - continued

- Week 6 **Temperature**
Read: Chapter 4, pp. 69 - 95
Review Questions (p. 95): 1, 3, 7, 8, 9, 10, 11, 12, 15, and 18
- Week 7 **Atmospheric Water Vapour**
Read: Chapter 6, pp. 131 - 150
Review Questions (p. 154): 1, 3 - 13
This includes the readings and review questions for Stability and Precipitation.
- Week 8 **Atmospheric Water Vapour, cont.**
- MIDTERM EXAM**
- Week 9 **Atmospheric Stability**
See Feb. 24 - 28 for readings and review questions.
- Week 10 **Precipitation**
Read: Chapter 8, pp. 183 - 187
Review Questions (p. 195): 3, 5, and 6
See also Feb. 24 - 28 for readings and review questions.
- Winds and the General Circulation of the Atmosphere**
Read: Chapter 5, pp. 103 - 119
Review Questions (p. 127): 2, 4, 5, 7, 10, 11
- Week 11 **Winds and the General Circulation of the Atmosphere, cont.**
Air Masses, Fronts, and Mid-latitude (Wave) Cyclones
Read: Chapter 7, pp. 159 - 169
Review Questions (p. 179): 1, 2
- Week 12 **Global Climate and Vegetation**
Read: Chapter 8, pp. 181 - 195
Review Questions (p. 195): 1 - 9
Read: Appendix 8.1, p. 198 - 201
Questions (p. 201): 1, 2
Read: Chapter 9, pp. 203 - 219
Review Questions (p. 219): 1 - 4
Read: Chapter 10, pp. 223 - 247
Review Questions (p. 247): 1, 2, 3, 4, 10, 11, and 13
- Week 13 **Global Climate and Vegetation, cont.**
- LAB EXAM**
- Week 14/15 **FINAL EXAM PERIOD**

EVALUATION PROFILE:

Quiz (Two Part)	10%
Fourth Hour Assignments	5%
Term Project.....	15%
Lab Exam	20%
Midterm Exam	25%
Final Exam	<u>25%</u>
	100%

The lab portion of the course includes the lab portion of the quiz, the term project, the fourth hour assignments, and the lab exam. A passing grade (50% or more) is required on the lab portion of the course for the student to obtain a passing grade for the entire course.

GRADING PROFILE:

A+ = 90 - 100%	B+ = 77 - 79%	C+ = 67 - 69%	D = 50 - 59%
A = 85 - 89	B = 73 - 76	C = 63 - 66	F = 0 - 49
A- = 80 - 84	B- = 70 - 72	C- = 60 - 62	

OPERATIONAL DETAILS:

Capilano University has policies on Academic Appeals (including appeal of final grades), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. These and other policies are available on the University website.

Office Hours:

Fourth Hour: Fourth hour exercises will be assigned roughly once a week.

Materials needed for class:

- . pencil
- . eraser
- . a few coloured pencils
- . 12"/30 cm ruler
- . calculator

Attendance: Regular attendance is highly recommended.

Responsibility for Material covered during a missed class:

When students are absent from class, they are still responsible for the material covered during their absence, including announcements, assigned readings, hand-outs and labs. Some of the lab assignments will require the use of equipment, which will not be available outside the scheduled lab hours.

Missed exams:

Students who are unable to write the exams must have an acceptable excuse and are expected to contact the instructor before the exam. The exam must be completed as soon as possible after returning to class.

Operational details - continued**Study Time:**

Because this course has a two-hour lab component, the amount of required study time will be greater than a regular three-credit course. Additional study time may be also required if a student's background in math and science needs to be reviewed or upgraded. Help is available through the Math Learning Centre (BR289).

Incomplete Grades:

Grades of Incomplete "T" will be granted only if there is a valid reason for extending the evaluation deadline and if the student has a reasonable chance of improving their grade to pass the course.

English Usage:

All written work submitted must use good academic English and follow the guidelines provided in the "*Capilano University Guide to Writing Assignments*" (available from the University Bookstore).

Cheating/ Plagiarism:

Plagiarism is the presentation of another person's work or ideas as if they were one's own. Plagiarism is both dishonest and a rejection of the principles of scholarship. Information about how to avoid plagiarism by proper documentation of sources is available from the Library and the Writing Centre. All students should familiarize themselves with the *University Policy on Cheating and Plagiarism* (See the *University Website*) as such behavior can result in suspension from the University.

Cell Phones:

During all classes, turn off cell phones and remove them from the desk.

Emergency Procedures:

Please read the emergency procedures posted on the wall of the classroom.