

ATMOSPHERE AND BIOSPHERE

Course Outline, Fall 2004

Instructor: Chris Ayles

Office: Fisher 342B

Phone: 370-

Email: cayles@camosun.bc.ca

COURSE DESCRIPTION

This course will provide students with a first exposure to two of the major subjects of physical geography: Earth's atmosphere and biosphere. The material is primarily theoretical, but a substantial lab component will introduce some practical skills relevant to these subjects. Topics will include earth systems, atmospheric composition and structure, atmospheric processes and weather, climate classification and change, soil processes and classification, and ecosystem structure, function and classification.

GENERAL POLICIES

My classes tend to be quite informal, and I encourage participation and discussion. My goal is to have you think and understand, so speak up if you are confused! Still, I take the material seriously and expect you to do the same. Group work is encouraged, and you should help each other learn. But this does not mean you can copy! Each student must do their own individual assignment reports, and if I catch people copying, all parties involved will get a mark of zero.

COURSE CONTENT

Lectures: This class has two three-hour blocks on Tuesdays and Thursdays. Usually, these will be evenly split between lecture and lab time. Lectures will generally provide the theory you need to understand the labs and pass the tests, so attendance is strongly suggested. I use printed overheads or PowerPoint, and I will post the notes on my web site: www.camosun.bc.ca/schools/artsci/envirotech/ayles.php. I will also place a reserve binder in the library, which will contain extra readings, sample test questions, and so on.

Labs: There are twelve labs in this class. You will be given roughly three hours of class time, either as a block or split over the two days, to work on these. Three labs are half-length, and one (the weather journal) is somewhat longer and requires more homework time. I will hand out lab assignments throughout the term. Attendance of labs is strongly suggested, and in some cases mandatory. Labs are generally due the following period, and I reserve the right to impose a 10% per day penalty on late assignments. Late assignments will not be accepted after I have returned them marked.

On lab days, you should bring pencils, paper, graph paper, calculator and ruler. Again, you may work in groups, but must each write your own answers and submit your own report.

Exams: There are two midterms and a final exam. The format for these will be a combination of multiple choice, short answer, calculation and long answer questions. They will emphasize the lecture material, though lab material will also be drawn upon. Midterms will only include recently covered material. The final will be cumulative, though material from the last third of the course will be more heavily weighted.

READING

Readings are an essential part of this course. The textbook sections I have assigned provide depth and context that are indispensable to your understanding of the course material, and they will be tested.

The required textbook for this course is:

Christopherson, R.W., 2002. *Geosystems – An Introduction to Physical Geography*, 5th Ed. Upper Saddle River, NJ: Pearson Education, Inc., 660 pp. plus appendices.

This book is available in the book store, and there will also be reserve copies in the library. Used copies should also be easy to find. You are welcome to use an older version, but if you do, you are responsible for any differences in material from the new edition. Some required readings from other sources may be assigned, and these will be placed in the reserve binder as needed. Do not steal the originals!

Specific reading requirements are provided below; these may be modified as the term goes on.

EVALUATION

Evaluation will be based on accuracy, thoroughness, and neatness. As a general rule, always show your work and keep track of units of measure! When I grade your work, I am looking for proof of your understanding, so do everything clearly and carefully – that way you may get partial credit, even for wrong answers. I endeavour to mark things fairly and consistently, but if you should have a question about my assessment, feel free to come to my office and ask about it.

| <u>Assignment</u> | <u>Value</u> | |
|---|--------------|------------------|
| Labs 1, 7, 8 (2.5% each) | 7.5% | } Labs Total 50% |
| Lab 2, 3, 4, 5, 6, 10, 11, 12 (4.5% each) | 36% | |
| Lab 9 (weather journal) | 6.5% | |
| Midterm 1 | 12.5% | |
| Midterm 2 | 12.5% | |
| Final Exam | <u>25%</u> | |
| | 100% | |

ILLNESS, ETC.:

If you miss a lab or exam due to illness or some other serious reason, I must ask you to provide a doctor's note or other documentation to support your story. Otherwise, a mark of **zero** for the missed assignment will be given. Exams are hard to reschedule, so you should not miss them unless you are too sick to perform at a normal level.

Students who miss an exam for a valid reason must contact me within 24 hours with an explanation. In such cases, one makeup exam time will be scheduled, and all students needing it will be expected to attend.

GRADING:

The standard grading scale of the School of Arts and Science will be used for this course:

| | | | |
|----|--------|----|--------|
| A+ | >95% | B- | 70-74% |
| A | 90-94% | C+ | 65-69% |
| A- | 85-89% | C | 60-64% |
| B+ | 80-84% | D | 50-59% |
| B | 75-79% | F | <50% |

COURSE SCHEDULE

| <u>Week of</u> | <u>Tuesday</u> | <u>Thursday</u> |
|----------------|---|---|
| Sep. 6 | Course Intro <i>No lab</i> | Earth Systems <i>Lab 1: Basic skills</i> <i>Reading: Ch. 1</i> |
| Sep. 13 | Atmospheric Composition, Structure & Solar Radiation <i>Reading: Ch. 2, 3 (pp. 65-72), 4 (pp. 93-100).</i> | <i>Lab 2: Weather on the Internet</i> |
| Sep. 20 | Radiation Balance and Temperature <i>Lab 3: Radiation and Temperature</i> <i>Reading: Ch. 4 (100-108), Ch. 5.</i> | Pressure and Wind <i>Lab 3 cont'd</i> <i>Reading: Ch. 6 (pp. 143-155).</i> |
| Sep. 27 | Atmospheric Circulation <i>Lab 4: Pressure and Wind</i> <i>Reading: Ch. 6 (pp. 155-169).</i> | Atmospheric Humidity <i>Lab 4 cont'd</i> <i>Reading: Ch. 7 (pp. 177-191).</i> |
| Oct. 4 | Clouds and Precipitation <i>Lab: Review for midterm</i> <i>Reading: Ch. 7 (pp. 192-204), Ch. 8 (pp. 215-221).</i> | Midterm 1 <i>No lab</i> |
| Oct. 11 | Air Masses and Fronts <i>Lab 5: Humidity and Instability</i> <i>Reading: Ch. 8 (pp. 211-221).</i> | Weather Systems <i>Lab 5 cont'd</i> <i>Reading: Ch. 8 (pp. 222-227).</i> |
| Oct. 18 | Violent Weather <i>Lab 6: Weather Maps</i> <i>Reading: Ch. 8 (pp. 227-240).</i> | Ocean Currents <i>Lab 6 cont'd</i> <i>Reading: Ch. 6 (pp.170-172), Ch 10 (pp. 278-280).</i> |
| Oct. 25 | Climate Classification <i>Lab 7: Learning MS Excel</i> <i>Reading: Ch. 10 (pp. 275-308).</i> | Climate Change <i>Lab 8: Paleoclimatology</i> <i>Reading: Ch. 10 (pp. 309-317).</i> |
| Nov. 1 | Soils I <i>Lab 9: Weather Journal (intro)</i> <i>Reading: Ch. 18 (pp. 557-566).</i> | Soils II <i>Lab: Review for midterm</i> |
| Nov. 8 | Midterm 2 <i>No lab</i> | <u>No class</u> (Remembrance Day) |
| Nov. 15 | Intro to Biogeography <i>Lab 10: Soil Classification</i> <i>Reading: Ch. 19 (pp. 587-598)</i> | Ecosystem Structure and Succession <i>Lab 10 cont'd</i> <i>Reading: Ch. 19 (pp. 602-621).</i> |
| Nov. 22 | Biogeochemical Cycles <i>Lab 11: Vegetation Mapping</i> <i>Reading: Ch. 19 (pp. 598-602).</i> | Productivity and Biodiversity <i>Lab 11 cont'd</i> <i>Reading: TBA.</i> |
| Nov. 29 | Ecosystem Classification <i>No lab (Lab 9 due)</i> <i>Reading: Handout on BGC zones</i> | Biomes <i>Reading: Ch. 20.</i> |
| Dec. 6 | <i>Lab 12: Plant Identification and Cover</i> <i>No lab</i> | Review for final exam |
| Exam Week | Final Exam | |

Note: All page numbers refer to *Geosystems, 5th ed.*