

**UNIVERSITY OF ALBERTA**  
**DEPARTMENT OF EARTH AND ATMOSPHERIC SCIENCES**  
**EAS 201A1: EARTH SCIENCES I**

<http://easweb.eas.ualberta.ca/page/courses/?id=EAS+201>

**Syllabus / Course Outline Fall 2014**

**INSTRUCTOR**

Dr. Hans G. MACHEL  
ESB 4-15, phone: 780-492-5659  
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**OFFICE HOURS**

Wednesdays, 8 - 9:30 a.m. + "anytime"  
*But - for courses with prerequisites: students who do not have the required prerequisites at the time of taking the course should not expect supplementary professorial tutoring.*

**LECTURE LOCATION**

TL-12

**LECTURE TIMES**

Mon-Wed-Fri 10:00 - 10:50 a.m.

**REQUIRED TEXTBOOK**

*DYNAMIC EARTH, 5<sup>th</sup> edition.*  
Skinner, B.J. Porter, S.C., and Park  
(2004):  
John Wiley & Sons, 584 pp.+ CD-ROM  
ISBN 0-471-15228-5  
new @ UofA Bookstore - about \$ 145.00  
used @ UofA Bookstore - about \$ 110.00

**Optional textbook supplements**

*Study guide to accompany textbook:*  
***not recommended***

**FOR KEENERS**

*The Land Before Us - The Making of Ancient Alberta.*  
The Royal Tyrrell Museum of Paleontology (1994).

*A traveller's guide to geological wonders in Alberta.*  
Ron Mussieux and Marilyn Nelson, Provincial  
Museum of Alberta (1998).

*Edmonton Beneath Our Feet.*  
The Edmonton Geological Society (1993).

*How to shit in the woods.* Kathleen Meyer. Ten  
Speed Press (1994).

## COURSE DETAILS

### EAS 201 Earth Sciences I

A non-laboratory introduction to the origin and evolution of the Earth and the solar system. Introduction to plate tectonics and the rock cycle. Simple energy balances and interactions between radiation and the atmosphere, land, oceans, ice masses, and the global hydrological cycle. Evolution of life, biogeography, and global climate in the context of geologic time. The carbon cycle. Human interactions with the Earth. Mineral and energy resources.

Prerequisites: Not available to students with credit in EAS 100, 101, 102, 210 or SCI 100. (Note: EAS 201 and EAS 200 are considered to be equivalent to EAS 100 for prerequisite purposes)  
Prerequisite: Any 100-level Science course.

*The GFC Policy about course outlines can be found in [Section 23.4\(2\) of the University Calendar](#).*

## COURSE OBJECTIVES

The main course objective is to cover all the topics listed in the COURSE DETAILS, which includes the arguably most politicized geoscientific topics of these times: (1) Global Warming / Global Climate Change, and (2) the role of fossil fuels driving economies and as environmental hazards. A supplementary but no less important objective is to acquire a working knowledge of “The Scientific Method”, which is at the base of not only this course but of many other courses, especially in the Faculty of Science. Every citizen should have a working knowledge of The Scientific Method. The penultimate objective of this course thus is to help in becoming a conscientious member of society.

## READING ASSIGNMENTS

There will be no designated reading assignments. You are expected to read the chapters of the textbook that embody the material that was covered in the lectures. Throughout the term, browse through the textbook and read those passages carefully that have been covered in the lectures.

## MIDTERM AND FINAL EXAMINATIONS

EXAMS	weights	dates
midterm examination (multiple choice)	40%	Oct-10-2014
final examination (multiple choice)	60%	Dec-11-2014

*(verify the date of the final exam on BearTracks)*

Examples of previous exam questions are posted on this course’s website. Answers will NOT be provided. Students are expected to work out the answers for themselves. The actual exam questions will be somewhat different from the ones posted. Material not covered in the classroom will not be tested in any of the exams. The final exam is cumulative, i.e., it covers both halves of the term, with an emphasis on material covered in the second half of the term.

All assignments and examinations in this course will be given a numerical score in %. A cumulative course mark will be calculated from those scores, weighted as tabulated above. A final letter grade will be assigned based upon the cumulative mark and the instructor's analysis of the cumulative mark distribution of the class. Where possible, natural breaks in the cumulative mark distribution will be used in assigning grades, but no pre-determined distribution of grades will be imposed on the class. Each student's final letter grade will reflect a combination of his/her absolute achievement and relative standing in the class. In past years, the class average in this course has been in the B- range. The mean grade in this year will be based on the instructor's judgment of the overall caliber of this class relative to past years. Be aware that a total score of 50% or more in the course as a whole will not ensure a passing grade. Even if the final score is >50%, a student may fail the course in certain circumstances (such as in case of plagiarism or other forms of cheating). Such sanctions are determined by the office of the Dean of Science.

**Deferred exam policy** (see *Section 23.5 of the University Calendar*)

Midterm exam: Anyone missing the midterm exam must apply for a deferral in writing with the instructor at least one lecture prior to the exam date. Failing that and missing the midterm exam, s/he must provide a valid excuse in writing to the instructor latest on the date of the last lecture of the term. There will be no second chance to take the midterm exam. Rather, if validly excused from the midterm as outlined above, the weight of the midterm will be rolled into the final exam, thus the final exam will count for 100% of the total course mark. If the instructor does not receive a valid application for deferral or a valid excuse in writing, the midterm will be assigned a mark of zero %.

Final exam: Only the student's Faculty Office is allowed to grant deferrals for final exam. Students who are granted permission to sit a deferred final exam must do so on a specific time and date to be determined later (probably on a Saturday morning in early January 2015).

**OTHER DATES OF IMPORTANCE**

*Academic Schedule*

2014	
September 1	Labour Day; University buildings close
September 3	<b>Fall Session classes begin</b>
September 16	Fall Registration Deadline
October 13	Thanksgiving Day; University buildings closed
November 10	<b>Fall Term Class Break; no classes scheduled</b>
November 11	Remembrance Day Holiday; University buildings closed
November 26	Last day for withdrawal from Fall Term courses
December 3	<b>Last day of classes, 1st term</b>
December 6-18	Final examinations, 1st term
December 25-30	Christmas holiday period; University buildings closed

## TENTATIVE LECTURE SCHEDULE

Week	Date	<b>EAS 201A1 - 2014 _ M-W-F_ 10:00-10:50 _ TL 12</b>
<b>1</b>	SEPT 03 05	<ul style="list-style-type: none"> <li> 201A1_Lec-01_HANDOUT ONLY</li> <li> 201A1_Lec-02_Syllabus</li> </ul>
<b>2</b>	08 10 12	<ul style="list-style-type: none"> <li> 201A1_Lec-03_Scientific Literacy</li> <li> 201A1_Lec-04_Solar System, Planets, Systems+Cycles</li> <li> 201A1_Lec-05_Global Tectonics</li> </ul>
<b>3</b>	15 17 19	<ul style="list-style-type: none"> <li> 201A1_Lec-06_Minerals-1</li> <li> 201A1_Lec-07_Minerals-2</li> <li> 201A1_Lec-08_Minerals-3</li> </ul>
<b>4</b>	22 24 26	<ul style="list-style-type: none"> <li> 201A1_Lec-09_Igneous-1_Intrusive</li> <li> 201A1_Lec-10_Igneous-2_Extrusive-1</li> <li> 201A1_Lec-11_Igneous-3_Extrusive-2</li> </ul>
<b>5</b>	29 OCT 01 03	<ul style="list-style-type: none"> <li> 201A1_Lec-12_Weathering, Soils</li> <li> 201A1_Lec-13_Sedimentary-1_Erosion, Clastics</li> <li> 201A1_Lec-14_Sedimentary-2_Carbonates</li> </ul>
<b>6</b>	06 08 10	<ul style="list-style-type: none"> <li> 201A1_Lec-15_Metamorphics</li> <li> 201A1_Lec-16_Mineral and Rock Quiz, Exam pep talk</li> <li> 201A1_Lec-17_MIDTERM EXAM</li> </ul>
<b>7</b>	13 15 17	<ul style="list-style-type: none"> <li> 201A1_Lec-18_ --- (THANKSGIVING HOLIDAY)</li> <li> 201A1_Lec-19_Exam Review</li> <li> 201A1_Lec-20_Deformation</li> </ul>
<b>8</b>	20 22 24	<ul style="list-style-type: none"> <li> 201A1_Lec-21_Earthquakes+Earth's Interior</li> <li> 201A1_Lec-22_Geologic Time-1</li> <li> 201A1_Lec-23_Geologic Time-2_Fossils-1</li> </ul>
<b>9</b>	27 29 31	<ul style="list-style-type: none"> <li> 201A1_Lec-24_Fossils-2</li> <li> 201A1_Lec-25_Origin and Evolution of Life</li> <li> 201A1_Lec-26_Global Climate-1_Glaciers and Glaciation</li> </ul>
<b>10</b>	NOV 03 05 07	<ul style="list-style-type: none"> <li> 201A1_Lec-27_Global Climate-2_Primary Controls on Global Climate</li> <li> 201A1_Lec-28_Global Climate-3_Secondary Controls + Global Warming</li> <li> 201A1_Lec-29_Global Climate-4_Bad Dream</li> </ul>
<b>11</b>	10 12 14	<ul style="list-style-type: none"> <li> 201A1_Lec-30_ --- (PRE-REMEMBRANCE DAY HOLIDAY)</li> <li> 201A1_Lec-31_Global Climate-5_Pinko Kyoto Part 1</li> <li> 201A1_Lec-32_Global Climate-6_Pinko Kyoto Part 2</li> </ul>
<b>12</b>	17 19 21	<ul style="list-style-type: none"> <li> 201A1_Lec-33_Global Climate-7_Go Green</li> <li> 201A1_Lec-34_Resources-1_Gold, Diamonds</li> <li> 201A1_Lec-35_Resources-2_Evaporites, Coal</li> </ul>
<b>13</b>	24 26 28	<ul style="list-style-type: none"> <li> 201A1_Lec-36_Resources-3_Oil+Gas</li> <li> 201A1_Lec-37_Groundwater</li> <li> 201A1_Lec-38_Karst+Caves-1</li> </ul>
<b>14</b>	DEC 01 03	<ul style="list-style-type: none"> <li> 201A1_Lec-39_Karst+Caves-2</li> <li> 201A1_Lec-40_Finale</li> </ul>

Note: Because of an upcoming important conference engagement, the Instructor may not be in Edmonton on Nov 12+14. If so, a substitute instructor will cover one or both of these lecture slots with topics scheduled subsequently because the Instructor needs to keep parts 5+6+7 of the Global Climate block intact.

## **e-mail**

The class lists provided to the instructors contain only your UofA e-mail account. Memos will be sent only to that e-mail address. Make sure to check it, or link your “other” e-mail account(s) to your ualberta account. Also, memos that you may send to the instructor from an account other than your ualberta account will be classified as SPAM and likely will not reach him.

## **NO RECORDING**

Recording of lectures is not permitted. Recording of anyone's conversations or lectures without that person's permission is illegal. This instructor does NOT permit recording in the class room.

## **CELL PHONES / PAGERS/ iPods etc.:**

Please turn them off.

## **SSDS - Specialized Support and Disability Services**

<http://www.ssds.ualberta.ca/>

## **LITERACY (READING+WRITING) SKILLS (---> appended info)**

University students should have a good dictionary and a manual of style, such as **Turabian, K.L.**, *A manual for writers of term papers, theses, and dissertations.* UofA Bookstore There are writing competence classes offered at the University.

## **ACADEMIC INTEGRITY / CODE OF STUDENT BEHAVIOR (--> appended info)**

The University's Code of Student Behavior can be found in [Section 25 of the University Calendar](#).

*"The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour at*

<http://www.governance.ualberta.ca/en/CodesofConductandResidenceCommunityStandards/CodeofStudentBehaviour.aspx>  
*and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University."*

**CAREERS IN THE GEOSCIENCES (---> appended info)**

**DEPT. OF EARTH AND ATMOSPHERIC SCIENCES (---> appended info)**

**COLLECTIONS / MUSEUMS (---> appended info)**

EAS, Provincial Museum, Space Science Center, Royal Tyrrell

**FIELD TRIPS (---> appended info)**

We may go to a movie, or something else of earth science interest.

**A FIELD GUIDE TO CRITICAL THINKING (---> appended info)**

**ACADEMIC FREEDOM (---> appended info)**

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## **DISCLAIMERS**

*University Calendar Section 23.4(2)d: Nothing in any course outline, syllabus or course web-site may override or contravene any Calendar regulation or GFC policy. In resolving any discrepancy, GFC policy and Calendar regulations will take precedence.*

Any typographical errors in this Course Outline are subject to change and will be discussed in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus, if the dates listed in these sources do not coincide.

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