

**EAS 100A Planet Earth**

*3 Credits, 3 Hours Lecture, 3 Hours Lab per week*

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 interaction with the Earth. Mineral and energy resources.

**Instructor**

Instructor: Neil O'Donnell  
Office location : S209G  
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**Office Hours (Fall 2016)**

Monday	1:00 – 1:50 pm
Tuesday	1:00 – 1:50 pm
Wednesday	1:00 – 2:50 pm
Friday	1:00 – 1:50 pm

Other times are possible, by appointment

**Hours of Instruction**

Tuesday	10:00 – 11:50 am	Room 224	Lecture (2 hours)
Thursday	9:00 – 11:50 am	Room S114	Lab Group 100X
Thursday	2:00 – 4:50 pm	Room S114	Lab Group 100Y
Friday	4:00 – 4:50 pm	Room 224	Lecture (1 hour)

**Required Resources**

**The Blue Planet**, Skinner & Murck: Wiley, 3<sup>rd</sup> Edition, ISN 978-0-470-55648-1 (3-ring binder, hard cover, or on-line version)

**Lab Manual:** U of A / Keyano Bookstore

**Course Outcomes**

Upon successful completion of the course, students will be able to:

- Establish and explain connections of course knowledge, as it applies to relevant current events, with emphasis on those of environmental concern.
- Apply theoretical knowledge through lab experiments.
- Build a perspective of the Earth as a dynamic system shaped by continuous interactions among its geological, physical, chemical, and biological components.
- Explain how the planet Earth functions and how its modern configuration has been achieved.

- Prepare to study any branch of earth science in future, and consider the impacts of humans on the planet.
- Demonstrate a holistic view of the planet, focusing not just on individual parts but on the system as a whole.
- Explain the interactions between the different parts of the Earth system.
- Illustrate the theory of plate tectonics, its relationship to the rock cycle, and the effect on the geosphere.
- Examine the totality of earth's water in the hydrosphere and its frozen component, the cryosphere.
- Examine the atmosphere as it supports life by virtue of its chemistry, as a storage of solar energy, and as an influence on our climate system.
- Arrange and relate what we know about life and its environment – the biosphere.

### Evaluation

Labs(9) & Assignments(2)	30 %
On-Line Quizzes (by Chapter)	5 %
1 <sup>st</sup> Half Exam (Week 6)	7½ %
2 <sup>nd</sup> Half Exam (Week 12)	7½ %
Final Lab Exam (Week 13)	10 %
Final Exam	40 %
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Total	100 %

### Lab Sessions

Laboratory work will be conducted weekly starting the 2<sup>nd</sup> week of classes. A short meeting will be held during the 1<sup>st</sup> week lab period. Labs will be graded. Completion of the labs and a passing grade on that component of the course are considered mandatory to pass EAS 100. There is a final lab exam, which will be administered in your lab section – all lab techniques are testable.

The labs will run 3 hours per week. Attendance is mandatory. For laboratory work in this course, the observations you record must be made individually by you. All lab assignments must be completed in the lab. You must carry out all calculations yourself, and written answers must be in words composed uniquely by you. Refer to remarks below on Page 5..

Students should hand in completed reports or assignments before or at the end of **that** lab session, or no later than one week following, with no penalty. Ordinarily, after one week, a late penalty will be assessed, as outlined below.

### Due Dates

- Due dates usually are set for one week following a lab, video assignment, report, field trip, or presentation.
- Unless specified differently by instructor, labs, reports, and assignments will be submitted electronically via Moodle.
- If submitted on or before the Due Date – full marks; *may be extended another 7 days for reasonable cause approved by instructor.*
- Otherwise, if submitted within one week (7 days) after the Due Date – 50% of regular mark.
- More than two weeks late – must be handed in, but will not be marked – zero assigned.
- Any changes due to special circumstances will be communicated by instructor via Moodle.

**Term Mark**

- Mark will be determined from all the labs, reports, and assignments.
- Mark will be weighted average of all submissions.
- If 20% or more of submissions (labs, reports, and assignments) are missing, student will not be allowed to write the final exam.

*A grade of C- is required for progression or transfer.*

**Grading System**

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory <b>Progression</b>	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor <b>Minimum Pass</b>	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

**Proposed Schedule of Topics (Lectures)**

Week No.	Lecture Topics
1	Introduction, Earth System, Energy (Ch. 1&2-
2	Our Place in the Solar System (Ch. 4; exclude pp.97-100))
3	Plate Tectonics (Ch. 5)
4	Earthquakes and the Earth's Interior (Ch. 6)
5	The Rock Record and Geologic Time (Ch. 7)
6	Minerals and Rocks (Ch. 3, 7) Mid-Term Lecture Exam
7	Water, Snow and Ice ( Ch. 8, 9)
8	The World Ocean (Ch. 10) ,
9	Composition of the Atmosphere (Ch. 11)
10	Dynamics of the Atmosphere (Ch. 12, 13)
11	Geochemistry and Life (Ch. 15) (Only 1 lecture, Week 11, 2015)
12	Organization of Life in Space and Time (Ch. 16) Late-Term Lecture Exam
13	Earth Resources (Ch.17, 18)
14	Global Change (Ch. 19), Review

**Proposed Schedule of Topics (Laboratory classes)**

Page No. In Lab Manual	Lab topics (full details in the lab manual)	Week No.
199	Introduction; Lab rules; WHMIS	(in lectures, Week 1, Sept.8)
15	Maps and topographic profiles, or alternate	Week 2, Sept.15
39	Earth materials: minerals and rocks	Week 3, Sept.22
3 (Equiv.)	Local Field trip; Water Intake Plant; Abasands Alternate: Mineral resources and the human footprint	Week 4, Sept.29
51	Mapping geologic history	Week 5, Oct.6
65	The tectonic system	Week 6, Oct.13
89	Water at and beneath the Earth's surface	Week 7, Oct.20
113	Glaciers and glaciations	Week 8, Oct.27
139	Solar radiation, atmosphere and oceans	Week 9, Nov.3
157	Reading Days – No Labs	Week 10, Nov.10
157	The life and times of planet Earth	Week 11, Nov.17
No lab		Week 12, Nov.24
---	Final Lab Exam	Week 13, Dec.1
No lab	(Final week of classes) - Review	Week 14, Dec.8

**Please Note:**

Date and time allotted to each topic is subject to change.

**Performance Requirements****Student Responsibilities**

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College Credit Calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies

**Laboratory Safety**

In the science laboratories, safety is important.

Students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

**Student Attendance**

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

**Academic Misconduct**

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College 2016-2017 credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found at [ilearn.keyano.ca](http://ilearn.keyano.ca). Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

**Specialized Supports****Counselling and Disability Services**

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

**SKILL Centre**

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

**Authorization**

This course outline has been reviewed and approved by the Program Chair.

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Neil O'Donnell, Instructor

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Louis Dingley, Chair

Date Authorized

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Guy Harmer, Dean

Date Authorized

**Signed copies to be delivered to:**

Instructor

Registrar's Office