

## Course Title: Life on Planet Earth

Earth Sciences 083F

**Aims of the Course:** To provide the student with a non-science background a basic understanding of:

- The history of life on Earth in the context of geological time and Earth processes
- Principles of biological evolution
- Evolutionary trends in major animal groups

**Course Instructor:** Dr. Cameron J. Tsujita (Email: [ctsujita@uwo.ca](mailto:ctsujita@uwo.ca); Office: Biological and Geological Sciences, Rm. 110)

**Earth Sciences Tel:** (519) 661-3187; **Fax:** (519) 661-3198

**Office Hours:** 10:30-12:30 pm Tuesdays and Thursdays

**Lectures:** Mondays, Wednesdays and Fridays, 9:30-10:20 am, Biological and Geological Sciences Rm. 52.

**Lecture Resources Website:** <http://instruct.uwo.ca/earth-sci/083f/>

**Note:** For note-taking purposes, powerpoint slides for each lecture in ppt and pdf format will be posted on the course website the evening before the lecture, and will remain on the website for one week. It is up to you to download the presentations when they are available (they will not be reposted later). **It is emphasized that merely downloading the lecture presentations is not a substitute for coming to class. Some material discussed in class will not appear on the lecture slides (partly because some concepts are better demonstrated by other means). If you are having trouble understanding any of the course material, please ask Cam for help before it becomes a problem.**

**Lecture Assistant:** David Dillon (Email: [davidd@uwo.ca](mailto:davidd@uwo.ca); Office: Staging Building Rm. 111c)

**Teaching Assistants:** TBA (names and contact information will be provided on course website).

**Note: The drop box for all ES 083F assignments and essays is located outside B&G Rm. 118. Do not slip assignments under office doors. If you have questions about the 3 short practical assignments, contact David Dillon or one of your TAs. For anything else, contact Cam.**

**Background Required:** This course is intended (but not limited to) students registered in faculties other than Science (no prerequisites).

### 2006 Course Outline

#### *Lecture Weeks (and Dates)*

#### *Lecture Topics*

|              |                 |   |
|--------------|-----------------|---|
| <i>Wk. 1</i> | <i>Sept. 8</i>  | <b>The Joy of Rex:</b> Introduction to paleontology and evolution   |
| <i>Wk. 2</i> | <i>Sept. 11</i> | <b>The Holy and the Heretical:</b> Pre-Darwin concepts of fossils and evolution   |
|              | <i>Sept. 13</i> | <b>Confessions of a Seasick Naturalist:</b> Charles Darwin, hurling chunks on the Beagle, and early thoughts on natural selection                               |
|              | <i>Sept. 15</i> | <b>Darwin's Big Breakthrough:</b> natural selection as a fundamental driving force in evolution   |
| <i>Wk. 3</i> | <i>Sept 18</i>  | <b>Mendel:</b> Musings of a Chipmunk-Czech Monk   |
|              | <i>Sept. 20</i> | <b>All Along the Ivory Tower:</b> the Modern Synthesis of Evolution, and Punctuated Equilibrium   |
|              | <i>Sept. 22</i> | <b>The Earth System:</b> Connections among the great spheres  |
| <i>Wk. 4</i> | <i>Sept. 25</i> | <b>Minerals</b>   |
|              | <i>Sept. 27</i> | <b>Minerals, cont'd</b>   |
|              | <i>Sept. 29</i> | <b>Earth Rocks !:</b> Rock-forming environments   |
| <i>Wk. 5</i> | <i>Oct. 2</i>   | <b>Earth Rocks !, cont'd</b>  |
|              | <i>Oct. 4</i>   | <b>Rocks assignment and overview</b> ( <i>assignment due 4:00 pm, Tuesday, Oct. 10</i> )  |
|              | <i>Oct. 6</i>   | <b>To Be or Not To Be:</b> Fossilization processes and information loss   |
| <i>Wk. 6</i> | <i>Oct. 9</i>   | <b>Thanksgiving (no classes)</b>  |
|              | <i>Oct. 11</i>  | <b>Fossils assignment and overview</b> ( <i>assignment, due 4:00 pm, Tuesday, Oct. 17</i> )   |
|              | <i>Oct. 13</i>  | <b>Rocks as time machines:</b> Principles of geologic time  |
| <i>Wk. 7</i> | <i>Oct. 16</i>  | <b>Drifting Continents and Dancing Plates:</b> The plate tectonic revolution  |
|              | <i>Oct. 18</i>  | <b>Plate Tectonics assignment and overview</b> ( <i>assignment, due 4:00 pm, Tuesday, Oct. 24</i> )   |
|              | <i>Oct. 20</i>  | <b>Midterm exam: material up to including lecture of "Rocks as time machines" – regular class time (9:30 – 10:20 am), regular lecture room (B&amp;G Rm. 52)</b> |
| <i>Wk. 8</i> | <i>Oct. 23</i>  | <b>Primordial Soup in the Kitchen of Life:</b> Origin of Life   |
|              | <i>Oct. 25</i>  | <b>Of Microbes....and Martians ?:</b> Earth's Earliest Life   |

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|---------------|---------|---|
|               | Oct. 27 | <b>Sex and the Simpleton:</b> Evolution of Sex and the Rise of Eukaryotes ( <i>Short Written Assignment due 4:00 pm</i> ) |
| <b>Wk. 9</b>  | Oct. 30 | <b>Ooey Goey Goodness:</b> Oldest (Soft-bodied) Metazoa   |
|               | Nov. 1  | <b>Skeletons in the Closet:</b> the Evolution of Hardparts in Metazoa   |
|               | Nov. 3  | <b>Spineless Wonders:</b> Survey of the Invertebrates   |
| <b>Wk. 10</b> | Nov. 6  | <b>Sole Mates:</b> Evolution of Fishes  |
|               | Nov. 8  | <b>Lungs for Land:</b> Evolution of Amphibians  |
|               | Nov. 10 | <b>From Slime to Scales:</b> Evolution of Reptiles  |
| <b>Wk. 11</b> | Nov. 13 | <b>Dig These Dragons:</b> Evolution and Diversification of Dinosaurs  |
|               | Nov. 15 | <b>Serpents and Spitfires:</b> Marine Reptiles and Flying Reptiles  |
|               | Nov. 17 | <b>Barney to Big Bird:</b> The Origin of Birds ( <i>Final Term Paper due 4:00 pm</i> )                                    |
| <b>Wk. 12</b> | Nov. 20 | <b>Cretaceous Calamity:</b> The Cretaceous-Tertiary Mass Extinction   |
|               | Nov. 22 | <b>The Advantage of Being a Furball:</b> Diversification of Mammals   |
|               | Nov. 24 | <b>Brontotheres and Other Big Brutes:</b> Evolution of Large Mammals  |
| <b>Wk. 13</b> | Nov. 27 | <b>Monkey Business:</b> Evolution of the Primates   |
|               | Nov. 29 | <b>A Recipe for Disaster:</b> Rise of the Hominids  |
|               | Dec. 1  | <b>What Goes Around Comes Around:</b> Humankind and the Future of Life on Earth   |
| <b>Wk. 14</b> | Dec. 4  | <b>Catch Up Time (Due to falling behind in lecture topics)</b>  |
|               | Dec 6   | <b>The Last Word (Final housekeeping for the course and pre-exam questions)</b>   |

**Evaluation Scheme:**

- 3 Very Short Assignments (10 % total)
- 1 Short Written Assignment: 10 %
- 1 Final Term Paper: 20 %
- Midterm Exam: 20%
- Final exam: 40%

**Comments on Assignments:**

1. *All assignments and essays* submitted for marking will be deposited in the **ES 083F drop box in the Biological and Geological Sciences Building located just outside room 118**. All assignments and essays missing from the drop box at the prescribed time and date will automatically be deducted 10% within the first 24 hours late and 10% for each subsequent day late (but a weekend counts as 1 day late).
2. Three very short practical assignments will be assigned in the early part of the course. Each is due in the drop box at 4:00 pm on the Tuesday of the week following the date it is assigned.
3. A short (approximately 4 page) project will be assigned in later in the term. A complete set of instructions will be provided in class. Deposit your completed assignment into the drop box by 4:00 pm, Oct. 27.
4. A 2500 word essay addressing some aspect of biological evolution will be assigned in later part in the term. A complete set of instructions for preparing your essay will be provided in class. Please deposit your final essay into the drop box by 4:00 pm, Nov. 17.
5. It is very important for you to follow the instructions provided for all assignments. Any marks lost from not properly following instructions are non-negotiable.

**Comments on class attendance and evaluation:**

Your exams will be based entirely on the lectures and supplementary handouts provided. As there is no required textbook for the course, it is extremely important that you attend all lectures so that you understand the subject matter. If you miss a lecture, it is your responsibility to obtain notes from your classmates – the instructor will not provide notes for lectures you have missed or repost lecture slides that you neglected to obtain when originally made available). Internet readings for background information and/or general interest will be indicated for each lecture topic listed on the website. **Note: Cheating and plagiarism will not be tolerated. Evidence of either activity will result in your failure in the course and possible expulsion from UWO.**