

**Course Title: A Foundation For Medical and Forensic Geology****Earth Sciences 088F**

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

- a) The application of geological concepts to medical and forensic issues
- b) Principles of human interaction with the Earth System
- c) The significance of geological materials and processes to humankind

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**Lectures: 5:30– 6:20 pm, Mondays, Tuesdays and Thursdays, Natural Sciences Rm. 1**

**Instructor:** Dr. Cameron J. Tsujita, Office: B&G Rm. 110, Email: [ctsujita@uwo.ca](mailto:ctsujita@uwo.ca)

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

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

**Course website:** <http://instruct.uwo.ca/earth-sci/088f/>

Note: For note-taking purposes, powerpoint slides used in each lecture (in ppt and pdf format) will be posted the night before the lecture date (by the latest) and will remain on the website for 1 week only. It is the student's responsibility to download each presentation during its period of availability if he/she wishes to download a copy (**they will not be reposted later- you have been warned !**). Internet readings for background information or for general interest will be indicated for each lecture topic listed on the website.

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**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 the course website)

**Note: Submit all assignments and essays in the drop box located outside B&G Rm. 118 (do not slip material under office doors). If you have questions regarding the 3 short practical assignments, contact David Dillon or one of your TAs. For anything else, contact Cam Tsujita.**

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**Background:** This course is intended for (but not limited to) students registered in faculties other than Science.

**Prerequisites:** None      **Antirequisites:** Earth Sciences 020 and former Geology 020, 024a, 024 F

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### 2006 Course Outline

<i>Lecture Weeks/Dates</i>	<i>Lecture Topics</i>
Week 1	
Sept. 7	<b>Introduction to Medical and Forensic Geology</b>
Week 2	
Sept. 11	<b>The Earth System:</b> Connections among the great spheres
Sept. 12	<b>Medicine and Myth to Modern:</b> Thoughts on geology and human health
Sept. 14	<b>Tales of the Crypt:</b> Early history of forensic geology
Week 3	
Sept. 18	<b>Big Circumstance:</b> Earth's early history and why our planet is unique
Sept. 19	<b>Minerals</b>
Sept. 21	<b>Mineral exercises</b> ( <i>mineral exercises assigned – due 4:00 pm, Sept. 28</i> ).
Week 4	
Sept. 25	<b>Earth Rocks !</b> Igneous and Sedimentary environments
Sept. 26	<b>Earth Rocks II !</b> Sedimentary and Metamorphic environments
Sept. 28	<b>Rock exercises</b> ( <i>rock exercises assigned – due 4:00 pm, Oct. 5</i> )
Week 5	
Oct. 2	<b>Rocks as time machines:</b> principles of geologic time
Oct. 3	<b>To Be or Not To Be:</b> Tissue preservation and information loss
Oct. 5	<b>Fossil exercises</b> ( <i>fossil exercises assigned – due 4:00 pm, Oct. 12</i> )
Week 6	
Oct. 9	<b>Thanksgiving (no classes)</b>
Oct. 10	<b>Spreading Seas and Dancing Plates:</b> the plate tectonic revolution
Oct. 12	<b>Plate Tectonics, cont'd</b>
Week 7	
Oct. 16	<b>Where Did We Come From ?:</b> Evolutionary trends through time
Oct. 17	<b>Where Are We Going ?</b> Implications of long-term evolution on human health
Oct. 19	<b>Midterm exam: material up to including lecture of Oct. 12 (end of plate tectonics) – regular lecture time and room (5:30 – 6:20 pm, NS-1)</b>
Week 8	
Oct. 23	<b>Man, Metals and Mayhem:</b> Geology of mineral resources
Oct. 24	<b>World Over a Barrel:</b> Geology of conventional fossil fuels

	<b>Oct. 26</b>	<b>Dust to Dust:</b> Effects of airborne particulates on human health ( <i>short written assignment due at 4:00 pm</i> )
<b>Week 9</b>		
	<b>Oct. 30</b>	<b>Too Little or Too Much ?:</b> Trace elements and dose response theory
	<b>Oct. 31</b>	<b>Mercury and Madhatters:</b> Implications of dose response
	<b>Nov. 2</b>	<b>The Hydrologic Cycle and Bioavailability:</b> tracking contaminants
<b>Week 10</b>		
	<b>Nov. 6</b>	<b>Arsenic and Old Lace:</b> Examples of trace metal-related illnesses
	<b>Nov. 7</b>	<b>You Are What You Eat:</b> Contaminants in food
	<b>Nov. 9</b>	<b>The Colgate Crisis:</b> Fluoridation and health
<b>Week 11</b>		
	<b>Nov. 13</b>	<b>Ancient Materials for a Modern Society:</b> uses of geological materials in medicine
	<b>Nov. 14</b>	<b>A Wake-Up Call for Walkerton:</b> forensics and groundwater contamination
	<b>Nov. 16</b>	<b>Earthquakes and Geophysical Forensics</b>
<b>Week 12</b>		
	<b>Nov. 20</b>	<b>Down and Dirty:</b> The formation of soils
	<b>Nov. 21</b>	<b>Dirt for Detectives:</b> The use of soils in criminal investigations
	<b>Nov. 23</b>	<b>Rock, Stock and Barrel:</b> rocks and minerals nab the criminal ( <i>term paper due at 4:00 pm</i> )
<b>Week 13</b>		
	<b>Nov. 27</b>	<b>Geophysics and Forensics:</b> use of technology to locate burial sites and other subsurface anomalies
	<b>Nov. 28</b>	<b>Paleoforensics:</b> Examining the hidden world of ancient remains
	<b>Nov. 30</b>	<b>Archaeoraptor and other cases of paleo-fraud</b>
<b>Week 14</b>		
	<b>Dec. 4</b>	<b>What Goes Around Comes Around:</b> Humankind and the Earth System revisited
	<b>Dec. 5</b>	<b>The Last Word: Pre-Final Question Period</b>

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**Evaluation Scheme:**

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

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Comments on Assignments:

1. **All assignments and essays** submitted for marking are to be deposited in the **drop box in the Biological and Geological Sciences Building, 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 1 weekend will count as 1 day)
  2. Four very short practical assignments will be assigned in the early part of the course. These will be assigned during the lectures of Sept. 21, Sept 28, and Oct. 5; each is due at 4:00 pm on the Thursday of the week following the date it is assigned.
  3. A short written will be assigned later in the term (details to come). This is due on October 26, at 4:00 pm in the drop box.
  4. A 2500 word report (details to come) will be due by 4:00 pm, November 23, 2006. A complete set of instructions for preparing your report will be provided in class later in the term. Please submit your essay by the deadline in the drop box.
  5. It is very important that you follow the instructions provided for all assignments. ***Any marks lost from not properly following the instructions provided for assignments are non-negotiable.***
- Note: Cheating and plagiarism will not be tolerated. Evidence of either activity will result in your failure the course and possible expulsion from UWO.**