***GEOGRAPHY OF MICHIGAN & THE GREAT LAKES REGION***

**GEO 333**

Spring Semester, 2014

Instructor: Dr. **Randall Schaetzl**

Office: 128 Geography Building email: [soils@msu.edu](mailto:soils@msu.edu)

Office Hours: 9:00 – 12:00 Tuesdays, and 2:00-2:45 Thursdays, and by appt.

Mailbox: 106 Geography Bldg.

Contacts, emergency or otherwise: Ph. 517-353-7726 (office)

648-0207 (cell) 347-0164 (home) -- please, no calls after 9 pm

Teaching Assistant: **Caitlin Clark**

Office hours: 12:00-1:30 Tu and Th (Room 19 Geography Bldg)

email: [clarkc56@msu.edu](mailto:clarkc56@msu.edu)

**Course Goals**: This course is intended for those students who want an overview of the basic geography of Michigan. Emphasis will be on the *physical* resources of the state, and how *humans have utilized* those resources. Geographic patterns - their occurrence, relevance, and influence on human society - will be stressed, and in order to better comprehend and follow the lectures, knowledge of geographic patterns and basic place names in Michigan is expected. The course has no prerequisites.

**Text (required):** Schaetzl, R.J., Darden, J.T. and D. Brandt. (editors) 2009. Michigan Geography and Geology. Pearson Custom Publishing, Boston, MA.

**Other Resource Materials**: I strongly urge everyone in this class to download and print out the FREE course handouts and note pages. I will email you the first few files, and after that he will upload the course handouts as Word documents, onto the class’s Angel site. The documents contain maps and graphics that I use in lecture – two per page. Print these out (color or B&W), hole-punch them, place them in a 3-ring binder, and bring them to class. These materials will serve as an invaluable help for note-taking. Each student is also expected to examine, read and study the web page designed for this course on a frequent basis.

Web page (bookmark it!): **web2.geo.msu.edu/geogmich/** Material for a given lecture may not all be on one page, but may be scattered throughout a few different sections of the web page.

Exam questions may come directly from these two sources (book and web page), even if the specific topics have not been explicitly covered in lecture.

**Lectures**: Tu, Th, 3:00 - 4:20, Room 128 Natural Sciences Bldg. Because so much of the material in this class is NOT available in a textbook or even on the web page, attendance at lecture is *essential*.

**Exams and Quizzes**: There will be two quizzes, two mid-semester exams, and a final exam in GEO 333. *The final exam is cumulative.* There are also “end-of-lecture” questions, worth 2 points each (see below). Point totals, and dates of the various quizzes and exams, are listed below.

Quiz 1: 40 points

Quiz 2: 60 points

First exam: 80 pts

Second exam: 90 points

Final exam (cumulative): 110 points

End-of-lecture questions: 20 points

Extra credit (see below): (some is available)

TOTAL: **400 points**

**Grading**: Based on your total points, your percentage will be calculated (out of 400 possible) and rounded to the nearest tenth of a percentile. Based on that number, a final course grade will be assigned, using the grade scale shown below.

87% or greater = 4.0

83% - 86.9% = 3.5

75% - 82.9% = 3.0

71% - 74.9% = 2.5

62% - 70.9% = 2.0

58% - 61.9% = 1.5

50% - 57.9% = 1.0

less than 200 points (50%) is **not** passing. **No exceptions**.

End-of-Lecture questions

Class attendance continues to be a problem of increasing importance at MSU, and GEO 333 is no exception. My way of addressing this is as follows. Randomly, at the end of 12 lectures during the course of the semester, I will end the class 2-3 minutes early and post a 2-point question on the screen. I call these “end of lecture” (EOL) questions. The question will come from that day’s lecture, and the answer to it will be *easy*, if you are there and were paying attention. You MAY use your notes to answer the question, but you may not discuss the answer with anyone – no cheating. Each student will write their name, student number, and the answer to the question on a piece of paper, and hand it to the TA. You’ll be emailed the results of this brief “quiz” the next day. This is my way of promoting attendance and, in turn, raising everyone’s grade. Each student will be allowed to drop their lowest EOL two scores, as a way of not penalizing someone who legitimately had to be absent.

Exams and quizzes

Students will not be allowed to turn in their exams or take a quiz without first presenting a valid MSU ID or another form of identification with a photo on it. There will be no exceptions to this policy!

Exams will contain some T/F and multiple choice questions. Each exam will also have 2-5 short answer/short essay type questions, 20-25 visual questions, some questions will involve maps (of course - this is a geography class!). The first exam will cover material discussed since the beginning of the course. The second exam will cover only material discussed since the first exam. The final exam is comprehensive but stresses material covered since the second exam. Material from both the lecture and (to a lesser extent) the book and web page will be covered on exams. The essay and map portions of the exams will be returned to the students, as well as the computer-derived answer sheet, which details the student's responses to the objective questions and provides a list of the correct responses. Keys to all exams are available in the TA’s and professor's offices, and students may look over any and all of their exams during office hours. *If you miss the first or second exam*, you will normally be assigned, for the missed exam, the average grade from your other two exams - but ONLY provided that you have a valid excuse. Make-up exams are rarely given, and are generally only allowed in cases where a doctor's excuse is presented or if the student discusses their particular dilemma with the professor well *before* the exam date. If an exam is missed due to a family funeral, a newspaper obituary (with the date of the newspaper issue clearly shown) must be presented to the instructor within five class days of the missed exam or the student will receive a grade of zero for the exam.

Two quizzes will be given during the course of the semester, each during the last 20 minutes of class. Quiz #1 will be involve naming **all** the counties of Michigan on a county outline map. Quiz #2 will be similar to the first, except that identification will involve major cities, rivers, lakes, bays, islands and landforms. For each quiz, the number of correct answers will be determined and then that score will be adjusted, to arrive at a final grade out of 40 (1st quiz) or 60 (2nd quiz). There are no secrets as to what is on the quizzes. Heres what you can expect:

QUIZ 1: You will be given a blank county outline map of Michigan and will be expected to fill in the name of each of Michigans 83 counties (names are not provided, spelling must be very close" to be judged correct).

QUIZ 2: You will be given several blank maps of Michigan, and will be expected to fill in or identify physical and cultural features on the map.

RIVERS: Presque Isle, Ontonogan, Sturgeon (there are TWO of them, both in the UP; you need only find one), Michigamme, Menominee, Escanaba, Tahquamenon, Manistique, St. Joseph, Kalamazoo, Grand, Muskegon, Manistee, St. Marys, St. Clair, Detroit, Pere Marquette, Thunder Bay, Au Sable, Rifle, Tittabawassee, Shiawassee, Flint, Cass, Saginaw, Huron, Raisin, Black (the one in Sanilac County). The rivers are drawn on the map and the names are given; the student must match the correct number to the correct river.

LAKES (largest to smallest): St. Clair, Houghton, Torch, Burt, Charlevoix, Mullett, Gogebic, Portage, Crystal, Manistique, Black, Higgins, Hubbard, Indian. Locations are indicated on the maps but names are NOT given (spelling must be close).

CITIES: Detroit, Grand Rapids, Lansing, Flint, Ann Arbor, Warren, Alpena, Traverse City, Houghton, Marquette, Munising, Battle Creek, Kalamazoo, Benton Harbor, St. Joseph, Muskegon, Ludington, Charlevoix, Gaylord, Bay City, Monroe, Midland, Saginaw, Port Huron, Sault Ste. Marie, Manistique, Escanaba, Ironwood, Iron Mountain, Jackson, Niles, Adrian, Cadillac, Mt. Pleasant, Menominee, Dearborn, Petoskey, Manistee. Cities are represented on the map as labeled dots, you must provide the name for each city/dot.

BAYS: Keweenaw Bay, Big Bay de Noc, Grand Traverse Bay, Whitefish Bay, Huron Bay, Thunder Bay, Saginaw Bay, Little Traverse Bay. Locations are indicated on the maps but names are NOT given (spelling must be close).

LANDFORMS: Huron Mountains, Garden Peninsula, Whitefish Point, St. Clair Delta, Seney Swamp, Keweenaw Range/Copper Country, Chippewa County Clay Plains, Sleeping Bear Dunes, SE Michigan Interlobate moraine, Grayling Fingers, Porcupine Mountains, Antrim-Charlevoix drumlin field, Menominee drumlin field, Leelanau peninsula. The landforms are drawn on the map and the names are given; the student must match the correct number to the correct landform.

ISLANDS: Less Cheneaux Islands, Beaver Island, North and South Manitou Islands, Mackinac Island, Bois Blanc Island, Isle Royale, Sugar Island, Neebish Island, Drummond Island. Locations are indicated on the maps but names are NOT given (spelling must be close).

**Extra Credit**: It is possible to earn extra credit in GEO 333 by going the extra mile and helping make this course better for future students. To do this, you must provide Dr. Schaetzl with newspaper or magazine articles, images, rocks, items of historical interest, or other information that can be used to bolster the class or the web page in the future. For this type of contribution students may earn up to **5 EC points for each item**. Extra credit points are limited to 20 per person, total. I am also open to other ideas for extra credit, within reason.

ALL EXTRA CREDIT IS DUE NO LATER THAN THE DATE OF THE LAST LECTURE.

**RELATED COURSES**

GEO 208: Physical Geography of National Parks

GEO 330: Geography of the United States and Canada

GEO 410: Geography of the Plants of North America

GEO 407: Regional Geomorphology of the United States

GEO 408: Soil Geomorphology Field Study

GEO 453: Metropolitan Environments

ANP 491: Great Lakes Archaeology

ANP 438: Great Lakes Indians

GLG 302: Geology of Michigan

FOR 101: Michigans Forests

FW 207: Great Lakes Biology and Management

FW 284: Natural History and Conservation in Michigan

HST 320: History of Michigan

PLB 218: Plants of Michigan

PRR 100: Recreation in Michigan Natural Resources

RD 440: Resource Development Public Policy Process in Michigan

ZOL 361: Michigan Birds

(Please let me know if you have any additional suggestions for this list)

**LECTURE AND READINGS OUTLINE**

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| --- | --- | --- |
| Date | Lecture topics | web page URLs for and book chapters - assigned readings |
| Jan 9 | Introductory comments, course structure, goals and grading; the GEO 333 web page | [web2.geo.msu.edu/geogmich/](http://www.geo.msu.edu/geogmich/)  [web2.geo.msu.edu/geogmich/part‑one.html](http://www.geo.msu.edu/geogmich/partone.html)  **BOOK chapter 1** |
| Jan 14 | **PART I: The geologic basement**  Geologic concepts; geologic time;  the Precambrian Era in Michigan; discovery and geography of Michigans iron ranges | [web2.geo.msu.edu/geogmich/part‑two‑A.html](http://www.geo.msu.edu/geogmich/parttwoA.html)  Look at the iron mining parts of this page:  [web2.geo.msu.edu/geogmich/part‑five‑G.html](http://www.geo.msu.edu/geogmich/partfiveG.html)  **BOOK chapters 2 and 3** |
| Jan 16 | Geology of iron ore; history and development of iron mining | Look at the iron mining parts of this page:  [web2.geo.msu.edu/geogmich/part‑five‑G.html](http://www.geo.msu.edu/geogmich/partfiveG.html)  [web2.geo.msu.edu/geogmich/Marquette‑iron‑range.html](http://www.geo.msu.edu/geogmich/Marquetteironrange.html)  **BOOK chapter 11** |
| Jan 21 | The geography of iron and steel; the Soo Locks;  shipping on the Great Lakes | [web2.geo.msu.edu/geogmich/part‑five‑E.html](http://www.geo.msu.edu/geogmich/partfiveE.html)  Also see the iron and steel parts of this page:  [web2.geo.msu.edu/geogmich/part‑five‑B.html](http://www.geo.msu.edu/geogmich/partfiveB.html)  **BOOK chapter 30** |
| Jan 23 | Moving iron ore to the steel mills;  steelmaking: the end point of iron; **QUIZ 1** | [web2.geo.msu.edu/geogmich/iron\_ore\_\_taconite.html](http://www.geo.msu.edu/geogmich/iron_ore__taconite.html)  Examine the iron and steel parts of this page:  [web2.geo.msu.edu/geogmich/part‑five‑B.html](http://www.geo.msu.edu/geogmich/partfiveB.html) |
| Jan 28 | Geology of the Copper Range and Isle Royale;  History and development of copper mining | the copper parts of this page:  [web2.geo.msu.edu/geogmich/part‑five‑G.html](http://www.geo.msu.edu/geogmich/partfiveG.html)  Precambrian parts of this page:  [web2.geo.msu.edu/geogmich/part‑two‑A.html](http://www.geo.msu.edu/geogmich/parttwoA.html)  [web2.geo.msu.edu/geogmich/copperrange.html](http://www.geo.msu.edu/geogmich/copperrange.html)  **BOOK chapter 12** |
| Jan 30 | Sandstones of the UP; waterfalls, cuestas and the Michigan Paleozoic basin | most everything after Paleozoic Era on this page:  [web2.geo.msu.edu/geogmich/part‑two‑A.html](http://www.geo.msu.edu/geogmich/parttwoA.html)  [web2.geo.msu.edu/geogmich/niagara.html](http://www.geo.msu.edu/geogmich/niagara.html)  [web2.geo.msu.edu/geogmich/picturerock.html](http://www.geo.msu.edu/geogmich/picturerock.html)  [web2.geo.msu.edu/geogmich/waterfalls.html](http://www.geo.msu.edu/geogmich/waterfalls.html)  **BOOK chapter 4** |
| Feb 4 | Early Paleozoic rocks of the Michigan basin; glass;  Silurian rocks in the Michigan basin-a little bit of everything; limestone and cement | [web2.geo.msu.edu/geogmich/sandstones.html](http://www.geo.msu.edu/geogmich/sandstones.html)  [web2.geo.msu.edu/geogmich/paleozoic‑limestone.html](http://www.geo.msu.edu/geogmich/paleozoiclimestone.html)  [web2.geo.msu.edu/geogmich/limestone‑mining.html](http://www.geo.msu.edu/geogmich/limestonemining.html)  [web2.geo.msu.edu/geogmich/portland\_cement.html](http://www.geo.msu.edu/geogmich/portland_cement.html)  [web2.geo.msu.edu/geogmich/maxton\_plains.html](http://www.geo.msu.edu/geogmich/maxton_plains.html) |
| Feb 6 | More Silurian wealth: hydrocarbons **QUIZ 2** | everything under the heading hydrocarbons (oil and gas) on this page:  [web2.geo.msu.edu/geogmich/part‑five‑G.html](http://www.geo.msu.edu/geogmich/partfiveG.html)  **BOOK chapter 10** |
| Feb 11 | Salt and brines; Devonian and Mississippian rocks in the Michigan basin; the story of Dow chemical;  shale, clay and bricks | [web2.geo.msu.edu/geogmich/evaporite.html](http://www.geo.msu.edu/geogmich/evaporite.html)  [web2.geo.msu.edu/geogmich/dow.html](http://www.geo.msu.edu/geogmich/dow.html)  everything under salt on this page:  [web2.geo.msu.edu/geogmich/part‑five‑G.html](http://www.geo.msu.edu/geogmich/partfiveG.html)  [web2.geo.msu.edu/geogmich/shale\_and\_clay.html](http://www.geo.msu.edu/geogmich/shale_and_clay.html) |
| Feb 13 | Coal; gypsum  Major aquifers of the Michigan basin; the period of erosion and weathering; karst landscapes, sinkholes and caves | [web2.geo.msu.edu/geogmich/coal.html](http://www.geo.msu.edu/geogmich/coal.html)  [web2.geo.msu.edu/geogmich/gypsummining.html](http://www.geo.msu.edu/geogmich/gypsummining.html)  [web2.geo.msu.edu/geogmich/strat\_column.html](http://www.geo.msu.edu/geogmich/strat_column.html)  [web2.geo.msu.edu/geogmich/NE‑MIkarst.html](http://www.geo.msu.edu/geogmich/NEMIkarst.html)  [web2.geo.msu.edu/geogmich/groundwater.html](http://www.geo.msu.edu/geogmich/groundwater.html)  **BOOK chapter 16** |
| Feb 18 | **EXAM 1** |  |
| Feb 20 | **PART II: The last 2 million years**  Glaciation: onset of the ice, major ice lobes; deglaciation | The first five web pages listed on this page:  [web2.geo.msu.edu/geogmich/part‑two‑B.html](http://www.geo.msu.edu/geogmich/parttwoB.html)  **BOOK chapter 17** |
| Feb 25 | EXAMS back. Continued retreat of the ice; end moraines, outwash plains and lake plains | The three-part deglaciation sequence listed here:  [web2.geo.msu.edu/geogmich/part‑two‑B.html](http://www.geo.msu.edu/geogmich/parttwoB.html)  [web2.geo.msu.edu/geogmich/moraines.html](http://www.geo.msu.edu/geogmich/moraines.html)  [web2.geo.msu.edu/geogmich/drumlins.html](http://www.geo.msu.edu/geogmich/drumlins.html) |
| Feb 27 | Glacial sediments, proglacial lakes, and glacial landform regions | The pages associated with glacial lakes, on this page:  [web2.geo.msu.edu/geogmich/part‑two‑B.html](http://www.geo.msu.edu/geogmich/parttwoB.html)  The glacial landforms listed on this page:  [web2.geo.msu.edu/geogmich/part‑two‑C.html](http://www.geo.msu.edu/geogmich/parttwoC.html)  Many of the pages found here also are associated with glaciation:  [web2.geo.msu.edu/geogmich/part‑three.html](http://www.geo.msu.edu/geogmich/partthree.html)  [web2.geo.msu.edu/geogmich/mackinacchannel.html](http://www.geo.msu.edu/geogmich/mackinacchannel.html)  [web2.geo.msu.edu/geogmich/Autrain‑whitefish.html](http://www.geo.msu.edu/geogmich/Autrainwhitefish.html)  [web2.geo.msu.edu/geogmich/St.Clair‑delta.html](http://www.geo.msu.edu/geogmich/St.Clairdelta.html)  **BOOK chapter 13** |
| Mar 3-7 | Spring Break – enjoy! |  |
| Mar 11 | The Great Lakes in postglacial time;  Michigans dunes and sand mining | Many pages here have Great Lakes topics included within them:  [web2.geo.msu.edu/geogmich/part‑two‑E.html](http://www.geo.msu.edu/geogmich/parttwoE.html)  Dunes are found on several pages here:  [web2.geo.msu.edu/geogmich/part‑two‑C.html](http://www.geo.msu.edu/geogmich/parttwoC.html)  **BOOK chapter 18** |
| Mar 13 | The Great Lakes: diversions of water into and out of them;  Coastal issues: how coasts function; coastal development and contemporary erosion problems | Many pages here have Great Lakes topics included within them:  [web2.geo.msu.edu/geogmich/part‑two‑E.html](http://www.geo.msu.edu/geogmich/parttwoE.html)  **BOOK chapter 14** |
| Mar 18 | **Part III: The last 500 years**  Native American Indians, French invaders and the British | All the pages within this one:  [web2.geo.msu.edu/geogmich/part‑four‑A.html](http://www.geo.msu.edu/geogmich/partfourA.html)  Several pages within this one:  [web2.geo.msu.edu/geogmich/part‑four‑B.html](http://www.geo.msu.edu/geogmich/partfourB.html)  **BOOK chapters 26 and 27** |
| Mar 20 | Early Michigan, statehood and the Toledo War;  Michigans external boundaries and internal land divisions | Several pages within this one:  [web2.geo.msu.edu/geogmich/part‑four‑B.html](http://www.geo.msu.edu/geogmich/partfourB.html)  **Parts of BOOK chapter** 1 |
| Mar 25 | The USPLS system of land subdivision; Michigan fever | It should be obvious which pages on this page:  [web2.geo.msu.edu/geogmich/part‑four‑B.html](http://www.geo.msu.edu/geogmich/partfourB.html) are pertinent  **BOOK chapter 28** |
| Mar 27 | **EXAM 2** |  |
| Apr 1 | Lumbering: the start, its heyday and the end game;  Lumbering video | Lumbering era materials are all located here:  [web2.geo.msu.edu/geogmich/part‑four‑C.html](http://www.geo.msu.edu/geogmich/partfourC.html)  **BOOK chapter 40** |
| Apr 3 | EXAMS back. Post-lumbering issues; stumped wastelands; post-logging fires, the CCC | [web2.geo.msu.edu/geogmich/ccc.html](http://www.geo.msu.edu/geogmich/ccc.html)  [web2.geo.msu.edu/geogmich/nationalforests.html](http://www.geo.msu.edu/geogmich/nationalforests.html)  and most of these pages:  [web2.geo.msu.edu/geogmich/part‑five‑D.html](http://www.geo.msu.edu/geogmich/partfiveD.html)  some of the latter pages on this page are useful:  [web2.geo.msu.edu/geogmich/part‑four‑C.html](http://www.geo.msu.edu/geogmich/partfourC.html) |
| Apr 8 | Michigans population trends, migration; urban sprawl and the rural-urban transition | [web2.geo.msu.edu/geogmich/cities.html](http://www.geo.msu.edu/geogmich/cities.html)  [web2.geo.msu.edu/geogmich/city\_character.html](http://www.geo.msu.edu/geogmich/city_character.html)  [web2.geo.msu.edu/geogmich/land%20conversion.html](http://www.geo.msu.edu/geogmich/land%20conversion.html)  some of these pages are pertinent:  [web2.geo.msu.edu/geogmich/part‑four‑F.html](http://www.geo.msu.edu/geogmich/partfourF.html)  Some pages here:  [web2.geo.msu.edu/geogmich/part‑four‑E.html](http://www.geo.msu.edu/geogmich/partfourE.html)  [web2.geo.msu.edu/geogmich/cities\_of\_the\_future.html](http://www.geo.msu.edu/geogmich/cities_of_the_future.html)  Some of these pages are more pertinent than others:  [web2.geo.msu.edu/geogmich/part‑four‑E.html](http://www.geo.msu.edu/geogmich/partfourE.html)  **BOOK chapters 32 and 34** |
| Apr 10 | **Part IV: How we use Michigans physical environment**  Soils of Michigan; peat and muck, sod, soil quality | Look here:  [web2.geo.msu.edu/geogmich/part‑two‑D.html](http://www.geo.msu.edu/geogmich/parttwoD.html)  **BOOK chapter 20** |
| Apr 15 | Major vegetation patterns in Michigan; post-lumbering changes and modern challenges; early agriculture | All of the pages here:  [web2.geo.msu.edu/geogmich/part‑two‑F.html](http://www.geo.msu.edu/geogmich/parttwoF.html)  **BOOK chapter 21** |
| Apr 17 | Agriculture: early and later crop rotations;  dairying and corn belt agriculture | [web2.geo.msu.edu/geogmich/agriculture\_in\_mi.html](http://www.geo.msu.edu/geogmich/agriculture_in_mi.html)  [web2.geo.msu.edu/geogmich/settle.html](http://www.geo.msu.edu/geogmich/settle.html)  Dont ignore the many fine pages here:  [web2.geo.msu.edu/geogmich/part‑five‑C.html](http://www.geo.msu.edu/geogmich/partfiveC.html)  **BOOK chapter 36** |
| Apr 22 | Agriculture: specialty crops: dry beans, sugar beets, potatoes, mint | Dont ignore the many fine pages here:  [web2.geo.msu.edu/geogmich/part‑five‑C.html](http://www.geo.msu.edu/geogmich/partfiveC.html)  **BOOK chapter 37** |
| Apr 24 | Michigan climate and weather: factors and controls;  Michigans fruit belt and the lake effect | Lake effect and climate pages are here:  [web2.geo.msu.edu/geogmich/part‑two‑H.html](http://www.geo.msu.edu/geogmich/parttwoH.html)  Fruit pages are here:  [web2.geo.msu.edu/geogmich/part‑five‑C.html](http://www.geo.msu.edu/geogmich/partfiveC.html)  **BOOK chapters 19 and 38** |

**Wednesday, April 30 FINAL EXAM 3:00-5:00 pm 128 Natural Sciences Building**