GEOL 4343.001 – Optical Mineralogy – Fall 2020
College of Sciences and Mathematics – Stephen F. Austin State University

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Teaching Assistant: Hannah Chambers
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Course Modality: This is a full-semester Hybrid course that combines online (asynchronous) and livestream (Zoom; synchronous) modes. There will be no face-to-face class meetings.

Lecture Periods: We will not have traditional lectures; instead, you’ll complete online modules. I’ll hold dedicated office hours during what would’ve been our scheduled lecture periods (TR 8:00-8:50 a.m.). You aren’t required to attend, but I welcome you to join in anytime. See Brightspace for Zoom link and password.

Lab Zooms: Wednesdays, 2:30-5:00 p.m. Your attendance is required. We will use these periods to discuss the previous module and work on labs. See Brightspace for Zoom link and password.

Course Description: Optical Mineralogy (GEOL 4343) – Three semester hours (two lecture hours, three lab hours per week). Optical behavior of crystals and identification of rock-forming minerals with the polarizing microscope. Prerequisite: GEOL 2341. Corequisite: GOL 4043.

Course Materials:
- Access to a computer and internet. We will use: a browser, Zoom, Word, PowerPoint (you have access to Office 365 on campus), Adobe Acrobat Reader, etc., and possibly some smartphone apps.
- Other useful materials: pencil, lead refills, pencil sharpener, good eraser, colored pencils, ruler, and calculator (phone is fine).
Program Learning Outcomes:
  PLO 1. Demonstrate knowledge of fundamental geoscience concepts. (Concepts)
  PLO 2. Execute geoscience procedures and methods accurately, appropriately, and safely. (Geoscience Skills)
  PLO 3. Demonstrate proficiency in interpretation and communication of geoscience information. (Scientific Communication)
  PLO 4. Apply concepts, skills, and scientific communication to identify, analyze, and interpret geoscience phenomena. (Research)

Student Learning Outcomes: The student will understand and apply the following concepts to optical mineralogy:
  SLO 1. Know nature and application of polarized light microscopy to mineral identification.
  SLO 2. Apply optical microscopy techniques to characterize and identify solid substances.
  SLO 3. Understand and visualize the optics of isotropic and anisotropic solid substances.
  SLO 4. Identify minerals using transmitted light techniques.
  SLO 5. Identify minerals using reflected light techniques.

Course Format: We will study the interaction of light and minerals and apply our understanding of this knowledge to the practical skills of optical mineral identification and petrographic microscopy. This course is structured into weekly modules that start on Wednesday mornings and end on Tuesday nights. You will complete these modules independently (without classmates). All assignments for the week are due at 11:59 p.m. on Tuesday nights. Weekly Lab Zooms will highlight concepts from the previous week’s module, and you will start a new lab assignment. Coursework also includes a Final Project. Your progress during the semester will be assessed through weekly module activities, lab assignments, lab quizzes, the Mineral Project, and three lecture exams.

Workload: A unit of credit is the semester hour, defined as one class meeting per week (or its equivalent) for one 15-week semester. For each semester hour, you are expected to spend at least 2 hours per week in preparation and study. This 3-credit course meets for the equivalent of 2 lecture hours and 3 laboratory hours per week. To complete this course successfully, you are expected to spend 9+ hours per week on 1) completing weekly modules; 2) attending Lab Zooms; 3) preparing for class by reading the textbook, handouts, or reference materials, and completing assignments; 4) completing laboratory assignments; 5) reviewing your notes, modules, lab assignments and other course materials on a regular basis; and 6) studying for exams.

Brightspace/D2L: Modules, labs, any other course content, and useful resources are posted in the Brightspace learning environment, which you can access through mySFA. It is your responsibility to check the site regularly (at least every other day) for assignments and course announcements, and to complete assignments efficiently. Grades will be posted on Brightspace, but the grades Brightspace calculates may differ slightly from my Excel grades, which are final. Please do not email me through D2L; instead, contact me directly at stevenslm@sfasu.edu. For technical assistance with Brightspace, please contact 936-468-1919, d2l@sfasu.edu, or the Virtual Lab zoom hours (see purple box on the Brightspace home page).

Weekly Modules: Weekly modules present critical course concepts, and include activities, videos, discussions, quizzes, and review questions. You will work individually and at your own pace, but you must complete the weekly modules by 11:59 p.m. on Tuesday nights. It is your responsibility to complete the weekly modules in a timely manner – waiting until the last minute is not a good idea. You will likely have questions or encounter problems as you work, so do not hesitate to ask questions by email, drop into office hours, or post questions on the class FAQ.
**Laboratory Assignments**: Labs are assigned weekly (see course schedule). You will need a notebook, your textbook, and a pencil for each lab. We will use our regularly scheduled lab periods for Lab Zooms, which include lab quizzes, a review of key concepts from the previous week’s module, and lab work. You will likely need time outside of Lab Zooms to complete lab assignments. All lab assignments are due at 11:59 p.m. on the following Tuesday. You are expected to follow instructions and complete your work with academic integrity.

**Lab Quizzes**: Each Lab Zoom (starting with Lab Zoom 3) will begin with a brief, no-notes, 5ish-minute quiz testing concepts or mineral identification from the previous lab assignment.

**Mineral Project**: You will select a mineral to investigate over the course of the semester. You will have regular project deadlines, and you will share information about your mineral with your classmates. You will give a brief presentation at the end of the semester. You will have some flexibility in determining the form of your final product. You will receive detailed instructions in the first few weeks of the semester.

**Exams**: Three exams will test course concepts from your weekly modules (module material and activities, assigned readings; see course schedule). Exams will include a variety of question formats (e.g., multiple choice, fill in the blank, sketching and labeling diagrams, short answer, etc.). The final exam is cumulative.

**Zoom**: We will use Zoom this semester for our Lab Zooms and office hours. As an SFA student, you already have an account, there is no need to create your own. Open Zoom, and use the SSO log in button (don’t type in your email and password yet). When prompted, give “sfasu” as your domain. You should be transferred to an SFA page where you log in using your mySFA name and password. See Brightspace for links and passwords (which you may not need if you log in properly). For technical assistance with Zoom, please contact the Help Desk at 936-468-4357 or helpdesk@sfasu.edu.

**Life on Zoom**: During Lab Zooms I will ask you to keep your microphone muted (unless requested) and your video on. It is not required that you have your camera on, but I do prefer that we all be able to see each other when we’re interacting. If we should be “Zoom bombed” during a meeting, I will immediately end the session and send you an email with a new meeting link or other instructions. I will record Lab Zooms for your reference; you do not have my permission to photograph or record our Zooms – all resources (slides, handouts, assignments, etc.) are available on Brightspace. Zoom meetings are similar to face-to-face meetings in that you should be considerate of your classmates and of me. However, I ask that we all grant each other permission for the following: 1) To show up however you are; 2) To use a Zoom background (or not) that brings you joy (and is appropriate); 3) To not apologize for working from home/your room/your bed, having pets and/or children, or having a lived-in space; 4) To eat, and to eat with your camera on (you wouldn’t hide if we were F2F); 5) To stretch or quietly disappear for a bathroom break; and 6) To have pets and/or children present.

**Course Schedule**: The course calendar at the end of the syllabus outlines the schedule of module topics, lab activities, exams, and other course activities, as well as the due dates for all assignments. Note that all assignments are due at 11:59 p.m. on the Tuesday night at the end of the module week. Plan your time! I reserve the right to modify the schedule as needed, and I will notify you accordingly.

**Attendance**: You are expected to attend all course meetings (Lab Zooms).
If You Have Been Absent: I neither need nor expect an explanation, a doctor’s note, etc. You are responsible for making up missed work. Here’s what you should do: 1) Contact a classmate for a copy of any notes. 2) Check Brightspace for course materials. 3) Attend office hours or make an appointment. All info regarding what you missed is in the syllabus and on Brightspace. You do not need to contact me about an absence unless you need new deadlines or assistance with missed material.

Late Work: If you have an upcoming absence or are having trouble completing an assignment on time, please contact me at least 12 hours before the due date about alternative arrangements. Otherwise, a 5% per school day penalty (to a maximum loss of 50%) will apply to all assignments. No assignment will be accepted for credit after the assignment has been graded and returned – keep on top of your work!

Final Grades: Your final grade will be determined by summing the weighted averages of your grades in each of the categories below. Letter grades will be assigned as follows: A (90.0–100), B (80.0–89.9), C (70.0–79.9), D (60.0–69.9), F (< 60.0).

- Module Activities 30 %
- Lab Assignments 30 %
- Lab Quizzes 10 %
- Mineral Project 15 %
- Exams 15 %

Extra Credit: There are no extra credit assignments – focus your attention on the tasks at hand.

Success! Your academic achievement naturally depends on your level of involvement in this course. You improve your chances of success if you: complete all readings and assignments, attend all course meetings, keep course materials organized, take advantage of office hours, participate in activities and discussions, study regularly, form study groups, make use of available resources, and ask questions. I am committed to helping you be successful in all ways. My Zoom (office) is open to you and is a safe space. Do not hesitate to ask for help!

Office Hours: Office hours are the times when I guarantee my availability to you. This semester I will hold virtual office hours through Zoom. Meeting times for this semester are listed at the top of the syllabus. See Brightspace for meeting links and passwords. Office hours are open to all students. Office hours are a good time to discuss course topics, ask questions, discuss your course progress, talk about ways to improve your understanding, ask questions about your future (other courses, research, grad school, careers, etc.), or just chat. Feel free to email me to make an appointment for a different time, if needed.

Communication: Get in touch when you have questions or concerns. You are not pestering me. Not only is it my job to help you, but I really like doing it! Email me at stevenslm@sfasu.edu (please no D2L email), visit my office hours, or make an appointment with me. I typically respond to emails quickly during the workday, but if you email me late in the evening you may have to wait until the next day, and if you email me over the weekend, I’ll respond slowly, or possibly not until Monday. I don’t check my office voicemail when I’m off campus. When I have important information to communicate to you, I will either post a news item on Brightspace, or I will contact you directly through SFA email when privacy is required. It is your responsibility to make sure you check both Brightspace and your Jacks email multiple times a week – I suggest every day.
**Students with Disabilities:** To obtain disability related accommodations, alternate formats, and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Room 325, Human Services Building, 936-468-3004/1004 (TDD), as early as possible in the semester. Once verified, ODS will notify me and outline the accommodations and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices. Please be in touch with me at the beginning of the semester to discuss arrangements for accommodations.

**Color Vision Deficiency:** Color vision deficiency (CVD, aka color blindness) poses additional challenges to geoscientists working with samples and thin sections. If you experience CVD, please notify me so that I can better assist you.

**Getting Through It All:** It is challenging to do your best work if you are having trouble meeting basic needs like safe shelter, sleep, and nutrition. Throw in a global pandemic, and none of us is really “fine.” You are always welcome to talk to me, and my office is a safe space, but you do not owe me any personal information about your health or anything else. If you’re having trouble, I will not judge or think less of you, and I hope you’ll do the same for each other and for me. If you need help accessing sufficient food, a safe and stable place to live, physical or mental health resources, or other basic needs, please just ask. If I can’t help you I’ll direct you to the person who can. Also refer to the resources on Brightspace. We are here to help you.

**COVID-19 Mask Policy:** While we won’t be meeting face-to-face this semester, you may be in other courses or here in the department. Masks (cloth face coverings) must be worn over the nose and mouth at all times, and appropriate physical distancing must be observed. All incidents of not wearing a mask and/or not observing appropriate physical distancing will be reported to the Office of Student Rights and Responsibilities. Students who are reported for multiple infractions may be subject to disciplinary actions. Wash your hands and use sanitizer!

**Academic Integrity:** Academic integrity is the responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways, including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism. Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials on any class assignment or exam; (2) falsifying or inventing of any information, including citations, on assignment; and/or (3) helping or attempting to help other student(s) in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism include (1) submitting an assignment as if it were one's own work when it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from the Internet or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Policy 4.1: http://www.sfasu.edu/policies/academic_integrity.asp. You are encouraged to ask questions about completing your coursework with academic integrity.

**Withheld Grades:** At my discretion and with the approval of the chair of the department, a grade of WH will be assigned only if you cannot complete the course work because of unavoidable circumstances. You must complete the work by the deadline I set, which is not to exceed one calendar year from the end of the semester in which you receive a WH, or the grade automatically becomes an F, except as allowed through policy [i.e., Active Military Service (6.14)]. If you register for the same course in future semesters, the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. Policy 5.5.
# Course Schedule – GEOL 4343 – Optical Mineralogy – Fall 2020

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<tr>
<th>Week</th>
<th>Dates</th>
<th>Meetings &amp; Modules</th>
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| 1    | Start: Wed., Aug. 26, 8:00 a.m.  
Due: Tues., Sept. 1, 11:59 p.m. | Lab Zoom 1: Introductions  
Module 1: Getting Started  
Module 2: Crystallography Review  
*Office Hours begin Thurs., Aug. 27.* | Obtain: Textbook  
Schedule: Introduction Meeting  
Read: Syllabus  
Complete: Modules 1, 2 |
| 2    | Start: Wed., Sept. 2, 8:00 a.m.  
Due: Tues., Sept. 8, 11:59 p.m. | Lab Zoom 2: The Petrographic Microscope  
Module 3: Light & Matter | Complete: Lab 2  
Complete: Introduction Meeting  
Read: Ch. 1 (1-12)  
Complete: Module 3 |
| 3    | Start: Wed., Sept. 9, 8:00 a.m.  
Due: Tues., Sept. 15, 11:59 p.m. | Lab Zoom 3: Optical Properties of Minerals; Lab Quiz 1  
Module 4: Polarized Light & Microscopy | Complete: Lab 4  
Read: Ch. 1 (12-15); Ch. 2;  
Appendix A  
Complete: Module 4  
Select: Mineral Project |
| 4    | Start: Wed., Sept. 16, 8:00 a.m.  
Due: Tues., Sept. 22, 11:59 p.m. | Lab Zoom 4: Minerals in Thin Section; Lab Quiz 2  
Module 5: The Optical Indicatrix | Complete: Lab 5  
Read: Ch. 5; Ch. 6 (68-79); Ch. 7 (89-113)  
Complete: Module 6 |
| 5    | Start: Wed., Sept. 23, 8:00 a.m.  
Due: Tues., Sept. 29, 11:59 p.m. | Lab Zoom 5: Mineral Identification; Lab Quiz 3  
Module 6: Interference Phenomena | Complete: Lab 6  
**COMPLETED:** Exam 1  
Read: Ch. 6 (64-68); Ch. 7 (scattered)  
Complete: Module 7 |
| 6    | Start: Wed., Oct. 30, 8:00 a.m.  
Due: Tues., Oct. 6, 11:59 p.m. | Lab Zoom 6: Felsic Minerals; Lab Quiz 4  
EXAM 1: Modules 2-6  
Module 7: Uniaxial & Biaxial Minerals | Complete: Lab 7  
Read: Ch. 9; Appendix C  
Complete: Module 8 |
| 7    | Start: Wed., Oct. 7, 8:00 a.m.  
Due: Tues., Oct. 13, 11:59 p.m. | Lab Zoom 7: Mafic Minerals; Lab Quiz 5  
Module 8: Petrography | Complete: Lab 8  
Read: Appendix C.1  
Complete: Module 9  
Complete: Mineral Project Draft |
| 8    | Start: Wed., Oct. 14, 8:00 a.m.  
Due: Tues., Oct. 20, 11:59 p.m. | Lab Zoom 8: Metamorphic Minerals; Lab Quiz 6  
Module 9: Igneous Rocks in Thin Section | Complete: Lab 9  
Complete: Mineral Project Draft |
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| 9    | Starts: Wed., Oct. 21, 8:00 a.m. | **Lab Zoom 9**: Other Minerals; Lab Quiz 7 | Complete: Lab 9  
Read: Appendix C.2  
Complete: Module 10 |
|      | Due: Tues., Oct. 27, 11:59 p.m. | **Module 10**: Sedimentary Rocks in Thin Section | |
| 10   | Starts: Wed., Oct. 28, 8:00 a.m. | **Lab Zoom 10**: Igneous Petrography; Lab Quiz 8 | Complete: Lab 10  
Read: Appendix C.3  
Complete: Module 11 |
|      | Due: Tues., Nov. 3, 11:59 p.m. | **Module 11**: Metamorphic Rocks in Thin Section | |
| 11   | Starts: Wed., Nov. 4, 8:00 a.m. | **Lab Zoom 11**: Sedimentary Petrography; Lab Quiz 9  
**EXAM 2**: Modules 7-11  
**Module 12**: Refracted & Reflected Light Microscopy | Complete: Lab 11  
**COMPLETE**: Exam 2  
Read: Ch. 3, Ch. 8, Ch. 16  
Complete: Module 12 |
| 12   | Starts: Wed., Nov. 11, 8:00 a.m. | **Lab Zoom 12**: Metamorphic Petrography; Lab Quiz 10  
**Module 13**: Mineral ID by XRD and SEM | Complete: Lab 12  
Complete: Module 13 |
| 13   | Starts: Wed., Nov. 18, 8:00 a.m. | **Lab Zoom 13**: XRD & SEM Analysis; Lab Quiz 11  
**Module 14**: Final Project | Complete: Lab 13  
Complete: Module 14  
**DUE**: Final Project |
| 14   | Nov. 21-Nov. 29 | **Thanksgiving Break** | |
| 15   | Starts: Wed. Dec. 2, 8:00 a.m. | **Lab Zoom 14**: Final Project Presentations | Present: Final Project  
Complete: Module 15 |
|      | Sun., Dec. 6, 11:59 p.m. | **Module 15**: Review | |
| 16   | Starts: Mon., Dec. 7, 8:00 a.m. | **EXAM 3**: Modules 2-13 | **COMPLETE**: Exam 3  
Complete: Exam 3 |
|      | Due: Thurs., Dec. 10, 11:59 p.m. | | |

This schedule is subject to change. I will notify of any changes and provide an updated syllabus schedule.