ES302 QUANTITATIVE METHODS (3 Credits, CRN 30131)
POLICIES AND PROCEDURES
Western Oregon University
Spring Term 2023 – April 3 to June 16 – In Person / Hybrid

INSTRUCTOR: Dr. S. Taylor
VIRTUAL OFFICE HOURS: M-T 3-5 PM
(via Zoom) By Appointment

OFFICE: RM 210 Natural Sciences Bldg
PHONE: (w) 838-8398 (cell) 541-760-9216
E-MAIL: taylors@wou.edu
WEB SITE: www.wou.edu/taylor

TAYLOR PERSONAL OFFICE ZOOM MEETING URL:
https://wou-edu.zoom.us/j/8273666289?pwd=bitrNUtBNzNZNUYycFF6NlpzT2ZKUT09

COURSE MODALITY: This is a hybrid class that involves one in-person lab period per week, and asynchronous online homework assignments outside of class meeting times. Remote synchronous zoom lectures are not available for this course.

ES302 CANVAS SHELL: https://www.wou.edu/portal
ES302 CLASS WEB SITE: https://people.wou.edu/~taylors/g302/ES302_home.html

COURSE DESCRIPTION:
Class focuses on quantitative techniques in geology, applied mathematics, basic statistics, software applications, technology integration and field mapping techniques.

HYBRID MODE:
This course will be conducted in a hybrid synchronous in-person + remote asynchronous online learning mode format. Students will engage internet tools including email, class web site, Canvas learning management system, and web conferencing technology.

As a team, we will be using up to 6 possible modes of remote communication for this term, either separately or together in combination, these include: (1) Personal one-on-one mobile device interactions (e.g. voice calls, text messaging, whatsapp), (2) WOU email system (taylors@wou.edu), (3) ES302 Class Web Site: (https://people.wou.edu/~taylors/g302/ES302_home.html), (4) ES302 Class Canvas Site: (https://wou.edu/portal), (5) Zoom online conferencing tool and if necessary, (6) U.S. Postal Service and paper mail.

Canvas Class Access: To connect and log in, click on the Canvas button in your WOU Portal. For questions / help. click on "Help" on the Canvas toolbar to find links to the Help Guides, live chat and phone access to the support team, video tutorials, and more. For problems connecting or logging on to Canvas, contact WOU Center for Academic Innovation email: askai@wou.edu phone: 503.838.9300

Hybrid Class Meetings: The class assignments and homework will be conducted mostly online in asynchronous mode, however ***we will hold one synchronous, real-time in-person class lab meetings per week.*** Each week, at the scheduled in-person days and time, I will provide weekly class instructions and lesson overviews; plus answer any questions or assist with assignments. ***If a student needs to miss class for health or family reasons, please contact the Student Success and Advising Center to request a formal administrative excuse, and alternative make-up options will be provided by the instructor.*** *The web link for absence notification request is located at the following URL: https://wou.edu/advising/absence/*

Virtual Office Hours: Standing office hours will be held during the posted days / times above using the Zoom personal meeting tool. The instructor has an account with a virtual room set up that has a static web address with following URL: https://wou-edu.zoom.us/j/8273666289?pwd=bitrNUtBNzNZNUYycFF6NlpzT2ZKUT09 Each

week, at the listed day and time, I will have a meeting space open for students to drop in as needed. Enter the URL into a web browser, click link to join meeting, enter your full name and email address in the login box to enter virtual meeting room. Voice, video and text / chat options are available. If you experience difficulty connecting to the Zoom space during office hours, Plan B give me a call directly on cell phone at 541-760-9216, or email anytime, that works as well.

Weekly Planning and Time Management: ES302 is a 3-credit science class traditionally designed in a format that encompasses 1 hour of lecture and 2 hours of lab each week; for a total of 3 contact hours plus outside class homework time. While we are currently delivering the course in a hybrid format; with only 2 hours of real-time synchronous in-person meeting per week, **students should anticipate that all meetings, assignments, homework, readings and lab exercises will take a minimum of 3 to 5 hours of personal time per week** to successfully complete. Please plan your weekly work schedules accordingly, both during scheduled class time, and outside of scheduled class time.

Student Weekly Workflow and Scheduling: A significant portion of this class is completed by students in an asynchronous-online format, outside of formal synchronous class meeting times. Given the independent nature of completing outside class work, students commonly encounter time management issues due to the open-ended nature of self-structuring a weekly workflow. The recommended steps in successfully approaching the course from a time management perspective include the following: (1) attend and participate in the in-person, real time class meetings so that you understand the weekly logistics, homework instructions and premise of the class content, (2) set up a weekly class work schedule outside of synchronous class time, for example on three days of the week, schedule 1-2 hour work time for the class where that is all you focus on, (3) complete the assignments ahead of time before the last minute on the due date, (4) start by watching the assigned videos and answer review questions, follow by completing the reading assignments, and finish by completing the class exercises, practice quizzes and/or lab assignments, (4) submit your completed assignments via Canvas upload by the prescribed due date. **Weekly homework assignments are due on the following Monday of the next week via Canvas upload**.

COURSE GOALS AND LEARNING OBJECTIVES:

ES302 learning objectives are aligned with WOU Earth Science program outcomes and select components of the LEAP (Liberal Education and America's Promise; http://aacu.org/leap) learning outcomes developed by the Association of American Colleges and Universities. Upon successful completion of ES302 Quantitative Methods students will be able to demonstrate minimum competency in the following program areas:

1. Apply algebraic, trigonometric, and statistical principles to geologic data collection and analysis (Q)
2. Utilize surveying equipment, measurement instruments and map principles to collect and organize geologic data (PO2)
3. Use computer hardware and software to collect and analyze geologic data (PO2)
4. Employ 2-D and 3-D visualization techniques to organize geologic data and identify spatial patterns (PO2)

THE PROFESSOR'S PHILOSOPHY ON UPPER DIVISION EARTH SCIENCE / GEOLOGY COURSES:

The upper division Earth Science / Geology course sequence is designed for mature, serious students who are willing to work hard, play hard, have fun, and learn in-depth skills / concepts in a professional academic setting. By default, our student population is very diverse with a wide array of skills, interests, and career goals. The student population ranges from serious Earth Science majors with focused career objectives, to Geology / Earth Science minors to Geography and Science Education majors. As such, the professor is charged with serving a diverse array of student interests and career goals in the most professional manner possible. The problem-solving and technical skills acquired via training in the Earth Sciences are highly valuable (and marketable), regardless of career track. Students are expected to actively participate in the learning process and make a significant contribution to the academic integrity of the Earth Science program at Western Oregon University. The ultimate goal of the program is to provide graduates with the academic skills that will enable them to be highly competitive in graduate school or the career marketplace. *GO TEAM!*

TEXT AND READINGS (to be provided by instructor):
Waltham, D., 2000, Mathematics – A Simple Tool for Geologists, 2nd Edition: Blackwell Science, 201 p. ***(**We will be working problems out of this book).*** Additional tutorials, journal articles, and text readings to be provided by the instructor.

CLASS NOTES:
A comprehensive set of instructor class notes are available for download via the internet. The class web site is accessed via the following URLs http://www.wou.edu/taylor https://people.wou.edu/~taylors/g302/ES302_home.html and follow the links to the "ES302" home page, links will also be posted in Canvas. The class notes are available as Adobe Acrobat Reader files (*.pdf file), are in outline form and are very comprehensive. "Study Guides" will also be posted on the web site as the term progresses.

EVALUATIONS AND EXPECTATIONS:
Student performance will be evaluated on the basis of quizzes / exams (quizzes, mid-term, final), class/lab exercises, and weekly attendance/class participation. The following is a breakdown of evaluation points, dates, and letter grades:

Quiz 1	25 pts	(7.8%)	
Quiz 2	25 pts	(7.8%)	
Quiz 3	25 pts	(7.8%)	
Final Exam	60 pts	(18.8%)	
Weekly Class / Lab Exercises	135 pts		(42.2%)
Weekly Class Participation (5 pts per week x 10 weeks)	50 pts	(15.6%)	
TOTAL:	320 pts	(100%)	

Final Grading Scale

Percent Range of Total Points	Letter Grade	Percent Range of Total Points	Letter Grade
94-100%	A	77-79%	C+
90-94%	A-	73-76%	C
87-89%	B+	70-72%	C-
83-86%	B	67-69%	D+
80-82%	B-	63-66%	D
		60-62%	D-
		<60%	F

Quizzes and Exams: Quizzes and Exams will consist of closed-book knowledge demonstration and open-book homework-type problems with an emphasis on practicum-style demonstration of skills developed each week. ***Quizzes and exams will be administered either in remote online mode using the Canvas learning management system or in-person, to be determined by instructor.***

Make-Up Quizzes: Under NO circumstances will make-up quizzes be administered without prior arrangement (at least five days) and good reason. Please complete you online quizzes and exams in the time window allotted!

Weekly Class Participation: ES302 is a methods course that emphasizes hands-on activities and skill

building. Since this course is being offered in an online format, students are expected to engage active learning modules with their peers and instructor on a daily and weekly basis. Successful completion of the course is based on online student participation and collective interaction. As such, student work activities and progress will be checked via Canvas Login Records at the end of select class periods and each week. Students will be assigned weekly lab activities with a Virtual Class meeting that provides an introduction and overview of required methodology. Assessment will involve one-on-one debriefing with the instructor and clear demonstration of student achievement. Class participation points are available to students who demonstrate adequate weekly progress on their in-class assignments and show up as part of the team.

Class and Lab Assignments / Time Management: Class and lab assignments will be worked BOTH during class time and outside of class time each week. You will have lab, reading, and homework assignments that **may** take up to 3 or 4 hours to complete outside of class time, maybe more in some cases, depending on your skill levels and ability. Please plan your schedule accordingly. Due dates for class exercises will be prescribed by the instructor. Late work will be accepted up to 1 week after the due date, for reduced credit.

Due to the volume of students assigned to the instructor each term, he will not be able to grade the lab exercise work in detail. The homework and lab assignments will be checked for completeness, with questions randomly chosen for content and accuracy. Grade points will be assigned on the basis of these two criteria. Exercise answer keys will be posted on the class web site by the instructor. **It is your responsibility to: (1) check your work against the lab / homework keys, (2) make sure you understand how to complete the exercises, (3) find help if you have trouble with lab exercises, and (4) study / learn the exercise skills and material for the exams.**

Learning Resources and Grade Outcomes: The class knowledge base will be derived from a combination of the following: (1) independent student reading outside of class; (2) training videos, (3) independent student engagement of take-home lab exercises and quantitative problem solving; (4) independent student reading of web resources linked from the class web site; (5) systematic review and memorizing of class notes and ancillary reading materials, as directly linked from class web site and handed out in hard copy during class time; and (6) successful attendance, note taking, and engagement of online activities delivered by the instructor. Instructor lectures and Virtual Class Meetings are designed as interpretive translations to assist students in understanding the class content and to stay on track with the weekly schedule. Lectures are not intended as the primary knowledge transfer mechanism. Independent student engagement of readings, class notes and lab work outside of class time is the most important pathway to success.

DIGITAL LAB SUBMISSIONS: All assignments will be submitted digitally on a weekly basis via the class Canvas Course Shell (https://www.wou.edu/portal)

A NOTE ABOUT INCOMPLETES: No incomplete grades will be given during the last week of class. If you have a problem that warrants an incomplete, make arrangements prior to the last week (no exceptions!!).

A NOTE ABOUT LOST OR MISSING WORK

The instructor will only grade work that is received and physically visible. Any missing work (lab assignments, homework, quiz/test answer sheets) will receive a "0" on the grade sheet. This policy applies to work lost by the student or instructor. If the student demonstrates that the work was turned in, but is missing due to the instructor's incompetence, then the student will be afforded an opportunity to make up the work and resubmit it for graded credit. Otherwise, the student will not receive credit for lost or missing work.

CHANGE OF SYLLABUS - POP QUIZZES - UNANNOUNCED HOMEWORK ASSIGNMENTS

The instructor reserves the right to modify the syllabus and class schedule at any time during the term. Students will be notified of such changes in a timely manner. The instructor also reserves the right to administer pop-quizzes and assign unscheduled homework / class assignments at any time. All students will be responsible for completing this work and it will comprise part of the final class grade. The instructor

reserves the right to change the syllabus and class structure, as needed, given the dynamic nature of the situation, and the potential for glitches associated with the technology infrastructure. Much time will be provided for students to succeed and adjust to the new learning mode, as the term progresses.

FIELD TRIP(S) AND GUEST LECTURES:
There will be opportunities for on and off campus field trips this term, both during and outside of scheduled class time. As such there may be some additional appointment-based time commitments required as the term progresses, please plan your schedule accordingly. The instructor will keep you posted as these opportunities arise, recordings will be made available as possible.

STUDENT HONOR POLICY AND CODE OF CONDUCT:
Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations, including selling/buying and/or uploading/downloading instructors' classroom information without express permission from the instructor. Misconduct also includes copying others work, cutting-and-pasting computer results, and using cheat sheets on exams. However, students are encouraged to interact in small groups during class assignments, i.e. you can freely discuss concepts in all portions of the class, except exams. To avoid a problem in this regard, students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before acting. For more information, please see the WOU Code of Student Responsibility at https://wou.edu/studentconduct/files/2017/10/CSR-09.01.17.pdf

OTHER REQUIRED MATERIALS, SOFTWARE AND HARDWARE:
Students will also need a scientific calculator, ruler, protractor, colored pencils, and frequent access to a personal computer or compatible device connected to the internet. You will be required to use these materials during labs and exams. Given the online mode of delivery students will need access to computer hardware, software (including MS Office, MS Word, MS Excel or alternative compatible products), and a stable internet connection capable of streaming video. MS Office365, including Excel, is available free to all WOU students, for more information connecting visit the following URL: https://wou.edu/tech/remote-access/ You will be required to complete and electronically submit worksheets using MS Word and Adobe Acrobat PDF file formats derived from a Windows 10 Operating System. If you are using Apple IOS / MAC software products, you will be required to import and export to Windows-compatible MS word and Adobe PDF file formats. This process may involve scanning hand-written work with your phone or scanner, and / or converting to a windows-compatible image file format including JPG and PDF. Please plan accordingly, or you will have trouble successfully completing the class.

.
STUDENTS WITH DISABILITIES:
Any student who has a disability that requires accommodation, please make an appointment to chat with me.

ATTENDANCE AND ASSIGNMENT POLICY:
There is a direct correlation between attendance and student performance. Attendance is necessary for students to properly digest intellectual concepts presented in a college classroom format. The in-class assignments are designed to reward students who attend class on a regular basis. Absences with written excuses for medical reasons or university-related functions may be used to arrange make-up work with the instructor. For more information on how to submit a student absence notification request, please contact the Academic Advising and Learning Center at 503-838-8428 or email: https://wou.edu/advising/

Student Absence Notification: If for some reason you are absent due to an extenuating circumstance or medical situation, the instructor may ask you to report the incident through official channels before making exceptions to missed or late work. To complete the Student Absence Notification Form, visit

https://wou.edu/advising/ or contact the Student Success and Advising Center at 503-838-8428.

STUDENT TECHNOLOGY SUPPORT:
A website with detailed information about computer requirements and technology support for WOU students is available at the following URL: https://wou.edu/provost/keep-learning/ In addition, other important phone numbers and web links for WOU technology support are listed below:

Western Oregon University Canvas Support: 1-503-838- 9300 (askai@wou.edu)
Western Oregon University Computing Solutions (UCS): 1-503-838-8925 (ucshelpdesk@wou.edu)
WOU Remote Access Resource Page: https://wou.edu/tech/remote-access/
WOU Academic Affairs Resource Page: https://wou.edu/provost/instructional-resiliency/

Student Success Support: If you determine that your performance in this class is placing you at academic risk, you are highly encouraged to seek help from a member of the Student Success Team. A student support specialist is available to work with you to address issues and develop a success strategy. **All students are ultimately responsible for tracking their own progress in this course.** In addition to regularly consulting with your professor, if you would like to meet with a student success specialist regarding any academic struggles you are experiencing, please contact the Academic Advising and Learning Center at 503-838-8428 or email: https://wou.edu/advising/.

Tutoring Services at the WOU Science Center: Free Earth Science class tutors are available for student support at the WOU Science Center, located in room 124 of the library. For more information, visit the following URL: https://wou.edu/sciencecenter/

ANOTHER NOTE ABOUT LAB EXERCISES:
Lab exercises will be quantitative in nature with an expectation that students have or will develop skills in the areas of applied algebra and trigonometry. Students will learn computer applications with emphasis on data analysis and problem solving in the Earth sciences. As such, lab exercises will require an additional time commitment outside of the scheduled weekly meeting (i.e. you will have "homework" and "projects" to work on outside of the scheduled class time).

A NOTE ABOUT THE LAST WEEK OF CLASS:
Given that the Oregon University System employs the "quarter method" of academic scheduling, upper division courses are by nature "compressed" with much detailed information to cover in a relatively short period of time. Please note that most upper division text books are geared for courses at universities with a 16 week semester system (i.e. we are truly trying to pack 10 pounds of equations into a 5 pound calculator). As such, the 10th week of class is as critical to content coverage as the 1st week. Students should anticipate a full slate of "normal" activities during the last week of class, including lectures, lab exercises, written reports, etc. The class is not over until after the final exam! **Plan your schedule accordingly!**

STUDENT HONOR POLICY:
Plagiarism and cheating will not be tolerated. Cheating includes copying others work and using cheat sheets on exams. However, students are encouraged to interact in small groups during class assignments, i.e. you can freely discuss concepts in all portions of the class, except exams.

A NOTE ABOUT COMPUTER-BASED AND ONLINE COURSES:
This class will use technology, hardware, software, and the internet. As such, there are endless possibilities for software glitches, system failure, and total confusion. Your patience with lab exercises, assignments, course content, and software / hardware glitches will be greatly appreciated. **Our motto for this term: "expect the worst and hope for the best".**

INSTRUCTOR TIMELINE FOR ONLINE RESPONSE; GRADING EXAMS AND ASSIGNMENTS:
The instructor will respond to emails / messages ASAP and within 24 hours (usually much faster, but

understand that it could be up to a day before I respond). On weekends and in the evening, it may take a bit longer, but I will make a point of getting back to you as quickly as possible. The instructor's class grades are typically due to registrar's office the week following the class end date. All exams, lab materials, and assignments submitted by students throughout the term will be graded by that time, however the professor will make an effort to return graded materials within two weeks of the assigned due date. Answer keys and other resources will be posted to assist with students evaluating their work on a weekly basis. ***Grade Reports: I will be using the Canvas gradebook tool. In addition, I will be personally reviewing your work submitted via Canvas upload, grading it manually, and recording scores in my own spreadsheet / gradebook, outside of Canvas. I will send you individual grade updates via email as the session progresses.***

ES302 SPRING 2023 CLASS SCHEDULE: This outline should be considered tentative at best. The following schedule may be modified as the class framework evolves throughout the term. **Note 2**: Readings listed "Waltham" refers to the Geology Mathematics text chapters available on the Canvas and class web site.

Week	Dates	Class Content	Class Exercises	Readings
1	April 3-9	Class Policies, Team Building	Pre-Game Diagnostic Skills Assessment	Instructor Resources
	No Monday Class Meeting Week 1			
	Field Trip / Guest Speaker: Thursday April 6, 3 PM, NS218, Careers in Engineering Geology			
2	April 10-16	Algebraic Problem Solving, Math/Algebra Review, Units	See checklist / class web page	Instructor Resources Waltham Chap. 1
	In-Person Class Meeting Monday April 10; 1 PM			
	Week 1 Assignments Due for Canvas Submission by Monday April 10; 11 PM			
3	April 17-23	2-D Map Principles, Scale, Location, Bearings, Gradient	See checklist / class web page	Instructor Resources
	Field Trip Monday April 17, OSU Water Research Symposium, Departs 12:00 PM, Returns 4:30 PM			
	Week 2 Assignments Due for Canvas Submission by Monday April 17; 11 PM			
4	April 24-30	Equations, Geologic Variables, Equation Manipulation	See checklist / class web page	Waltham Chap. 2-3 Instructor Resources
	In-Person Class Meeting Monday April 24; 1 PM			
	Week 3 Assignments Due for Canvas Submission by Monday April 24; 11 PM			
	Online Quiz 1 – Thursday April 27 Canvas Drop-In Between 8:00 AM – 11:00 PM			
5	May 1-7	Map Applications to Geologic Problem Solving (Maps Part 2)	See checklist / class web page	Instructor Resources
	In-Person Class Meeting Monday May 1; 1 PM			
	Field Trip Thursday May 4, WOU Groundwater Drilling Project, 1-3 PM (TBD)			
	Week 4 Assignments Due for Canvas Submission by Monday May 1; 11 PM			
6	May 8-14	Intro to Trigonometry (Part 1)	See checklist / class web page	Waltham Chap. 5 Instructor Resources
	In-Person Class Meeting Monday May 8; 1 PM			
	Week 5 Assignments Due for Canvas Submission by Monday May 8; 11 PM			
	Online Quiz 2 – Thursday May 11 Canvas Drop-In Between 8:00 AM – 11:00 PM			
7	May 15-21	Trigonometry (Part 2), Geologic Applications	See checklist / class web page	Waltham Chap. 5 Instructor Resources
	Zoom Class Meeting Wednesday May 12; 1 PM			
	Week 6 Assignments Due for Canvas Submission by Monday May 15; 11 PM			
8	May 22-28	Intro to Graphing, Rose Plots, Ternary Plots, Stereonets	See checklist / class web page	Waltham Ch. 6 Instructor Resources
	In-Person Class Meeting Monday May 22; 1 PM			
	Week 7 Assignments Due for Canvas Submission by Monday May 22; 11 PM			
9	May 29-June 4	Geostatistics, Data Analysis	See checklist / class web page	Waltham Ch. 7 Instructor Resources
	No Class Meeting Monday May 29 – Memorial Day			
	Week 8 Assignments Due for Canvas Submission by Monday May 29; 11 PM			
	Online Quiz 3 – Thursday June 1 Canvas Drop-In Between 8:00 AM – 11:00 PM			
10	June 5-June 11	Geologic Site Analysis Applications to Geoscience		Instructor Resources
	In-Person Class Meeting Monday June 5; 1 PM			
	Week 9 Assignments Due for Canvas Submission by Monday June 5; 11 PM			
11	June 12-16	**No Class Meeting - Final Exam Wednesday June 14, 12-2 PM**		
		Week 10 Assignments Due for Canvas Submission by Monday June 12; 11 PM		