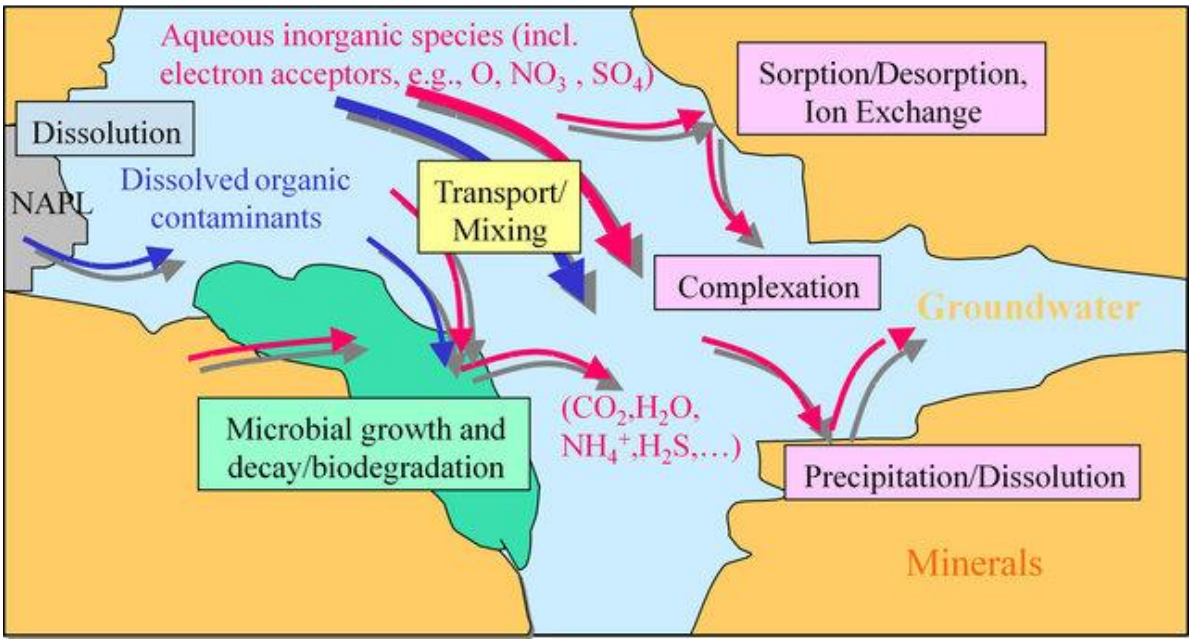
The University of Texas at El Paso
Department of Civil Engineering

Syllabus – Environmental Processes (CE5312)



Source: doi.org/10.31083/j.fbe1503016

Welcome to CE5312 – Environmental Processes! Here you will find important information about our meetings, instructional methods, assessment activities, grading, and resources available to UTEP students. Please read this document carefully and contact your instructor if you have any questions.

COURSE INFORMATION

CE 5312: Environmental Processes

Term: Spring 2025
CRN: 27591
Delivery Method: In-person
Class Meeting Day and Time: Mondays and Wednesdays, 6:00 – 7:20 pm
Location: Liberal Arts Building 206

COURSE DESCRIPTION

CE 5312 is a course for graduate and senior undergraduate students interested in understanding processes that affect the fate of contaminants in the environment. The primary goal of CE 5312 is to teach students the physical, chemical, and biological processes involved in the transport and transformation of organic and inorganic contaminants such as sorption, volatilization, oxidation-reduction, precipitation, radiodecay, and biotransformation. Students will be able to apply these

concepts to remediation of water and soil and solid waste disposal. We will also discuss current issues related to environmental justice, public health, and environmental legislation. As an instructor, I aim to help learners improve their critical thinking skills and achieve a higher level of comprehension of factors affecting the design of remediation strategies by providing hands-on activities and bringing real-world situations into the classroom. I strongly believe that collaborative learning can positively impact how much students can learn and retain by engaging in discussions with their peers. Thus, this course will involve in-class activities and projects performed in teams. I support an inclusive learning environment where different perspectives are valued and respected and everyone's contributions are encouraged and appreciated.

ABOUT YOUR INSTRUCTOR

My name is Camila Leite Madeira and I joined the Department of Civil Engineering at the University of Texas at El Paso in Fall 2023. I received my bachelor's degree (2013) in environmental engineering from the Federal University of Itajubá, Brazil, and my master's (2016) and PhD (2020) degrees in environmental engineering from the University of Arizona. I have worked as a postdoc at the Department of Sanitary and Environmental Engineering at the Federal University of Minas Gerais (2020-2022), and at the Institute of Chemistry at the State University of Campinas, Brazil (2022-2023). My research focuses on understanding the fate of emerging contaminants in the environment and designing microbial processes for their removal. I am also interested in the design of sustainable and reliable wastewater treatment processes to achieve equitable access to safe water and sanitation. As an instructor, I aim to promote inclusive education for underrepresented students in STEM programs. During my free time, I enjoy dancing salsa, making sourdough bread, reading, and bike riding. In addition to this course, I have been teaching Water and Wastewater Engineering (CE3342) to undergraduate students in Civil Engineering. I hope you enjoy our meetings as much as I do.

COMMUNICATION

You are always welcome to talk to me before or after class. For communication outside of class, please send me an email or a message on Blackboard. I will do my best to respond within 48 hours. Please check the Blackboard announcements frequently for any updates, deadlines, or other important messages. In-class announcements are usually written at the end of the slides presented in class.

Email: cleitemadeira@utep.edu
Office Location: Engineering Annex, Room 217

STUDY SESSIONS

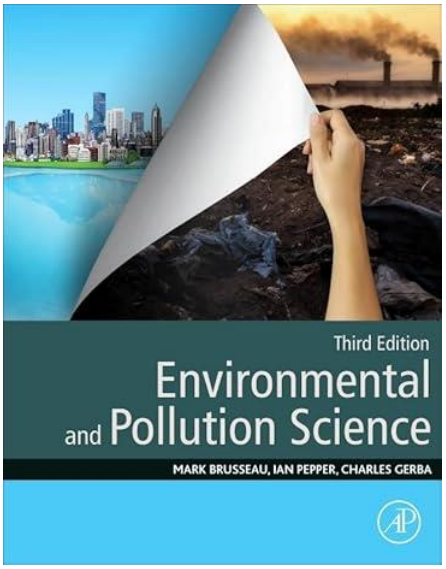
In-person study sessions will be scheduled according to the availability of most students on the first day of class. Virtual office hours through Teams can be scheduled by appointment. If you have any questions about the assessment activities used in this course, I encourage you to reach out to me at least 48 hours prior to the submission deadline.

COURSE OBJECTIVES AND UNIVERSITY LEARNING OUTCOMES

By the end of the course, students will be able to:

Student Learning Objective	**Outcome**
Explain the consequences of exposure to contaminants to human and environmental health.	Social Responsibility
Interpret local, national, and international regulations related to the emission of contaminants and remediation strategies.	Global Awareness
Estimate the distribution of contaminants in environments containing multiple media (water, soil, air)	Critical Thinking Skills
Predict the fate of contaminants in the environment based on their physicochemical properties.	Problem-Solving Skills
Work in teams to analyze the transport of contaminants in a specific environmental system and design remediation strategies.	Communication Skills Teamwork Skills

REQUIRED MATERIALS



Environmental and Pollution Science (Third Edition)

Authors: Brusseau, Mark L; Pepper, Ian L; Gerba, Charles P.

ISBN: 978-0-12-814719-1

The online version of this textbook is available free of charge through the UTEP Library using the campus network or VPN.

ASSIGNMENTS AND GRADING

Different assessment methods will be used in this course to acknowledge the variety of skills that a student may have.

Grade Distribution:

100-89.5 = A, 89.4-79.5 = B, 79.4-69.5 = C, 69.4-59.5 = D, 59.4 and Below = F

Grading scheme:

Activities	Percentages
Case studies	30%
Presentation of news article	5%
In-class activities	5%
Remediation project report	30%
Remediation project presentation	10%
Short paper	20%

a) Case studies: They include real-world environmental issues related to water, soil, or air pollution that require the use of engineering principles for the development of monitoring and remediation strategies. Students will have the opportunity to work on different case studies during the semester.

b) Presentation of news article: Students will select a news article written less than one year ago and make a brief presentation (3 to 5 minutes) about the article. The topic of the article must include one of the following subjects: Environmental pollution, pollutants in drinking water, federal, state or local regulations related to pollution control, and activities that may lead to environmental pollution.

b) In-class activities: Different activities will be used in the classroom to promote active learning and increase student engagement. Students are expected to submit a short reflection (Exit Ticket) at the end of each lecture describing the most important concept they learned that day and identifying the most confusing or least clear part of the lecture. For full credit, students are expected to submit at least 24 reflections. The grade will be calculated based on the number of reflections submitted by the student assuming that 24 reflections are equivalent to full credit (example: 11 reflections = 50%).

c) Remediation project report: Students will work in teams to propose a remediation strategy for a contaminated site. Each team must submit one report. Specific instructions for the report will be provided by the instructor. The reports will be assessed according to a rubric, which will be posted on Blackboard.

d) Remediation project presentation: Students will present their remediation project to their peers. Specific instructions for the presentation will be provided by the instructor. The presentations will be assessed according to a rubric, which will be posted on Blackboard.

e) Short paper: This is an individual assignment. Students will write a short paper (4 to 5 pages) about a topic related to environmental justice. The first draft of the papers will be peer-reviewed according to a rubric and the final version will be assessed by the instructor. Specific instructions for the paper and the rubric will be posted on Blackboard. The topic chosen for the paper must be previously approved by the instructor.

TECHNOLOGY REQUIREMENTS

Some course content is delivered via the Internet through the Blackboard learning management system. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop. You will need to download or update the following software: Microsoft Office, Adobe Acrobat Reader, Windows Media Player, QuickTime, and Java. Check that your computer hardware and software are up-to-date and able to access all parts of the course.

If you do not have word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP's Microsoft Office Portal. Click the following link for more information about Microsoft Office 365 and follow the instructions.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP Help Desk as they are trained specifically in assisting with technological needs of students.

iCLICKER

I will be using a cloud-based student response software by iClicker in class this semester. This will help me understand what you know, give everyone a chance to participate in class, and increase how much you learn when we are in class together. This will also provide you with feedback on how well you are comprehending course concepts and help you master challenging concepts. I will not be using this software to keep track of attendance; please refer to the attendance policy on page 5 of this syllabus. The use of iClicker in this course will not account for your final grade.

You are required to bring a device to participate in my iClicker sessions during class. You can participate with a smartphone, tablet, or laptop. You can download the iClicker student mobile app via the App Store or Google Play, or you can use the iClicker web app by signing in as a student at iclicker.com. It is your responsibility to set up your iClicker Student account in a timely fashion, as well as making sure your device is working properly. If you do not have an existing iClicker student account then you will need to create one to be able to participate in class. You will also need to connect to either UTEP's Wi-Fi (UTEPSecure) or to your mobile data plan while using iClicker.

COURSE COMMUNICATION

Here are the ways we can keep the communication channels open:

- Study sessions: I encourage every student to attend our study session. It is a great opportunity to discuss the content of our course, clarify any questions related to in-class exercises or homework problems, work with your peers, and also talk about career opportunities in water and wastewater engineering. Please find below information on our regular study session:
  Monday, 4:00 pm to 5:00 pm (to be confirmed)
  Tentative location: Hydrology laboratory (Engineering Building)

- Email: UTEP e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24 hours of receipt. When e-mailing me, be sure to email from your UTEP student e-mail account and please put the course number in the subject line. In the body of your e-mail, clearly state your question. At the end of your e-mail, be sure to put your first and last name.

ATTENDANCE AND PARTICIPATION

Attendance in the course is determined by participation in the in-class activities of the course, as previously explained. Your participation in the course is important not only for your learning and success but also to create a community of learners.

ILLNESS PRECAUTIONS

Please stay home if you have symptoms of a communicable illness. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations.

EXCUSED ABSENCES AND/OR COURSE DROP POLICY

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the Registrar's Office to initiate the drop process. If you do not, you are at risk of receiving an "F" for the course.

DEADLINES, LATE WORK, AND ABSENCE POLICY

The deadlines to submit the assignments will be posted on Blackboard. If you know you will not be able to submit an assignment prior to the deadline, contact me as soon as possible so we can work on appropriate accommodation. Otherwise, you will receive a penalty of 10% of the grade per late day. Late work will not be accepted after the solution has been posted on Blackboard (typically seven days after the assignment's due date).

MAKE-UP WORK

Make-up work will be given *only* in the case of a *documented* emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation,

and may be graded with penalty points. If you miss an assignment or exam and the reason is not considered excusable, you will receive a zero. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

ALTERNATIVE MEANS OF SUBMITTING WORK IN CASE OF TECHNICAL ISSUES

I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. I also suggest you save all your work (answers to discussion points, quizzes, exams, and essays) in a separate Word document as a backup. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through Blackboard, please contact the UTEP Help Desk. You can email me your backup document as a last resort.

INCOMPLETE GRADE POLICY

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

ACCOMMODATIONS POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

PREFERRED NAME AND PRONOUNS

This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is on the class roster, please let me know. Feel free to correct instructors on your preferred gender pronoun. If you have any questions or concerns, please do not hesitate to contact me directly in class or via email (instructor email).

SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

GUIDANCE ON ARTIFICIAL INTELLIGENCE

The use of generative AI tools such as Chat GPT is permitted in this course to assist in the elaboration of the remediation project report and the short paper. However, if students opt to use generative AI, they must disclose it and explain how they used the AI tool, as well as report if they were satisfied with the result. Simply copying and pasting AI-generated text is not permitted and will be considered plagiarism.

PLAGIARISM DETECTING SOFTWARE

Some of your course work and assessments may submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used review assignment submissions for originality and will help you learn how to properly attribute sources rather than paraphrase.

COURSE RESOURCES

UTEP provides a variety of student services and support:

Technology Resources

- Help Desk: Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources

- UTEP Library: Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- University Writing Center (UWC): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- Math Tutoring Center (MaRCS): Ask a tutor for help and explore other available math resources.
- History Tutoring Center (HTC): Receive assistance with writing history papers, get help from a tutor and explore other history resources.

- RefWorks: A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.
- The Miner Learning Center: Join peer-led study sessions in person or online to review content and discover study strategies in core curriculum courses.
- UTEP Edge: UTEP's cross-campus framework for student success and empowerment – develops students' assets through high-impact experiences made possible by the expertise and dedication of faculty, staff, alumni, and community partners.

Individual Resources

- Student Success Help Desk (SSHD): Students experiencing challenges or obstacles to academic success including registration, financial, food, housing, and transposition resources my submit a ticket request assistance to studentsuccess@utep.edu
- Military Student Success Center: Assists personnel in any branch of service to reach their educational goals.
- Center for Accommodations and Support Services: Assists students with ADA-related accommodations for coursework, housing, and internships.
- Counseling and Psychological Services: Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.
- UTEP Food Pantry: Non-perishable food items are available to students who are currently enrolled in classes. Bring a Miner Gold Card to Memorial Gym, Room 105, Monday through Friday, 10 a.m. to 2 p.m.

DISCLOSURE

This syllabus is subject to change at the instructor's discretion.

TENTATIVE COURSE SCHEDULE – SPRING 2025

Week	Dates	Topic
Week 1	Jan 21 - Jan 24	Sources of contaminants in the environment
Week 2	Jan 27 - Jan 31	Physicochemical properties of contaminants I
Week 3	Feb 3 - Feb 7	Physicochemical properties of contaminants II
Week 4	Feb 10 - Feb 14	Abiotic transformations of contaminants in natural environments
Week 5	Feb 17 - Feb 21	Biotic transformations of contaminants in natural environments
Week 6	Feb 24 - Feb 28	Environmental pollution: Soil and water
Week 7	Mar 3 - Mar 7	Environmental pollution: Atmosphere
Week 8	Mar 10 - Mar 14	Spring Break - no classes
Week 9	Mar 17 - Mar 21	Toxicology and risk assessment
Week 10	Mar 24 - Mar 28	Hazardous waste regulations
Week 11	Mar 31 - Apr 4	Pollution monitoring
Week 12	Apr 7 - Apr 11	Strategies for pollution prevention and control (*in-situ*)
Week 13	Apr 14 - Apr 18	Strategies for pollution prevention and control (*ex-situ*)
Week 14	Apr 21 - Apr 25	Environmental justice and public health
Week 15	Apr 28 - May 2	Special topics: Contaminants of emerging concern
Week 16	May 5 - May 8	Remediation project presentation