The University of Texas at El Paso
Civil Engineering Department
Syllabus
CE 4375/4376/4377/5326: Air Pollution Control
Fall 2025

COURSE INFORMATION

Class Reference Number: 14718, 14719, 13700, 17661
Class Meeting: 4:30 - 5:50 pm MW, August 25 - December 08
Classroom: **Classroom Building C304**

INSTRUCTOR INFORMATION

Mayra Chavez, Ph.D.
Assistant Professor of Research
Department of Civil Engineering
Office: E224
E-mail: mcchavez4@utep.edu
Office Hours: 3:00- 4:00 pm, MW or by appointment

COURSE DESCRIPTION

The primary objective of this course is to provide students with a comprehensive overview of the field of air pollution. The curriculum encompasses key topics relevant to air pollution studies, including air pollution meteorology, pollution sources, pollutant fate and transport, environmental and health impacts of air pollution, ambient air monitoring, and pollution control strategies. Additionally, the course will introduce and critically examine regulatory models used for estimating pollutant emissions and atmospheric concentrations.

Instructional materials will consist of instructor-provided notes and selected excerpts from authoritative reference texts, which will be distributed to supplement textbook readings. Students are expected to review assigned textbook chapters, lecture notes, and supplementary readings prior to each class session. A list of required and recommended reference texts is provided in the syllabus, with additional resources to be introduced throughout the semester.

Assessment of student performance will be based on evaluations of homework assignments, quizzes, and examinations, which will collectively determine the final grade.

COURSE OBJECTIVES

1. Understand the fundamentals of Air Pollution
2. Analyze air pollution sources and emissions
3. Apply meteorology and dispersion principles
4. Evaluate health impacts
5. Design and assess control technologies
6. Basic introduction to air quality regulations

EDGE ADVANTAGES

Student Learning Objective	Outcome
Demonstrate the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	Teamwork Skills
Draw on existing knowledge bases to create "new" or "transformed" knowledge	Critical Thinking Skills
Engage through effective exchange of information and ideas.	Communication Skills
Find solutions to complex problems/issues.	Problem Solving

REQUIRED MATERIALS

Textbook: Air Pollution Control Engineering, 3rd edition by Noel De Nevers , ISBN 10: 1-4786-2905-3 ISBN 13: 978-1-4786-2905-4

ASSIGNMENTS AND GRADING

Your grade for this course will be based on your performance in the homework (20%), quizzes (25%), 3 mid-term exams (55%). Several quizzes will be given throughout the semester. The content of a quiz may be the materials covered in previous sessions or to be covered that day. There will be no make-up quizzes. Your lowest quiz will be dropped. Three exams will be given during the semester. Every student is required to take the exams. Every exam will be counted towards your final grade.

Your final grade will be calculated based on the points you have accumulated as follows:

A ≥90
B ≥80 but <90
C ≥70 but <80
D ≥60 but <70
F <60

The instructor reserves the right to revise this grading plan. However, students will be informed of any changes during the semester.

Homework

Homework will be assigned in class and is intended to assess your understanding of the material. Homework may include calculations, design problems, projects, and case studies. All homework assignments will be graded and submitted in class.

Course Portfolio

Students are strongly advised to prepare a course portfolio documenting all materials relevant to the course. The portfolio shall contain the class notes, quizzes, exams, homework, study notes, and any relevant materials accumulated during the semester.

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.

COURSE COMMUNICATION

Office Hours: I will have office hours for your questions and comments about the course. My office hours are in-person, however, you can request a virtual meeting and I will send you a TEAMS link. Please see the days and times at the top of this syllabus.

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, and your university identification number.

Announcements: Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

ATTENDANCE AND PARTICIPATION

Attendance is mandatory. Absence can be checked by the instructor through exams, roll calling, randomly picked names for problem solving in class, or other mechanisms. You could receive an F grade if you miss more than 5 classes without the instructor's consent. The instructor appreciates all efforts to attend the class. There will be no penalty for being late. You are always welcome to attend the class. However, all exams and quizzes will be given at *the beginning of the classes*. No additional time will be allowed for late attendees.

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 accommodation.

EXCUSED ABSENCES AND/OR COURSE DROP POLICY

According to UTEP Catalog, "At the discretion of the instructor, a student can be dropped from a course because of excessive absences or lack of effort. A grade of "W" will be assigned before the course drop deadline and a grade of "F" after the course drop deadline." See Policies and Regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24 hours advanced notice via email.

STUDY GUIDE

Read the text to be discussed prior to the scheduled class and review the subject thoroughly after the class. Read the textbook carefully. Work on all examples given in the text and solve as many unassigned problems as you can. Expect to spend 5-8 hours each week on the subject. Establish a good study habit and you will do very well in the class.

ACCOMMODATIONS POLICY

The University is committed to providing reasonable accommodations to students with documented disabilities. Students who become pregnant may also request reasonable accommodations, in accordance with state and federal laws and regulations and University policy. Accommodations that constitute undue hardship are not reasonable. To make a request, please register with the UTEP Center for Accommodations and Support Services (CASS). Contact CASS at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

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 Community Standards for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

GUIDANCE ON ARTIFICIAL INTELLIGENCE

AI prohibited

Use of AI technologies or automated tools, particularly generative AI such as ChatGPT or DALL-E, is *not allowed* for assignments in this class. Each student is expected to use critical and creative thinking skills to complete tasks and not rely on computer-generated ideas. Any direct use of AI-generated materials submitted as your own work will be treated as plagiarism and reported to the Office of Community Standards.

COURSE RESOURCES

UTEP provides a variety of student services and support. Please refer to the link for a listing of campus resources: https://www.utep.edu/advising/student_resources/student-success-resource-hub.html.

Class Schedule

Week	Date	Class overview	Notes	Reading Assigned
1	**25-Aug**	Introduction to Air Pollution: The history of air pollution, problems of air pollution, air pollutants and associated health effects, air concentrations.		DeNevers Chap 1
	27-Aug			Arya: Chap. 1
2	**1-Sep**	**Holiday No class**	Labor Day	
	3-Sep	Elements of Air Pollution: Impacts of air pollution on social, economic, environment, health, and other issues		DN: Chap. 2 SP: Chap. 2
3	**8-Sep**	Atmospheric Pollutants: Vapors and particulate, atmospheric pollutants categorized by chemical compounds, HAPs.		DN: Chap. 2, 3
	10-Sep	Atmospheric Pollutants: (Continued)		
4	**15-Sep**	Effects of Air Pollution Air Pollution Control Law and Regulations		
	17-Sep	Air Pollution Measurements: Ambient air sampling of PM and VOCs, sampling and siting criteria, data analysis		DN: Chap. 4
5	**22-Sep**	Emission Monitoring: Emission inventory, emission modeling, application of EPA emission models.		
	24-Sep			
6	**29-Sep**	EXAM #1		
	1-Oct	The Atmosphere: Layers of the atmosphere, atmospheric circulation, water vapors in the atmosphere, Coriolis force, atmospheric air movements.		DN: Chap. 5 SP: Chap. 1 Arya: Chap. 2
7	**6-Oct**	the Atmospheric Boundary Layer: Structure of the atmospheric boundary layer, geostraphic winds, velocity profile, turbulence, building wakes, equation of motion.		DN: Chap. 5, 6 SP: Chap. 14
	8-Oct	Air Pollution Meteorology: Pressure and temperature in the lower atmosphere, atmospheric stability, temperature inversions.		
8	**13-Oct**	Air Pollution Meteorology		DN: Chap. 5, 6 SP: Chap. 17
	15-Oct			
9	**20-Oct**	Air Pollution Meteorology		DN: Chap. 5, 6
	22-Oct			SP: Chap. 17
10	**27-Oct**	Air Pollution Modeling: Application of EPA regulatory models:		
	29-Oct		Drop deadline	
11	**3-Nov**	EXAM #2		
	5-Nov	Air Pollution Modeling: Application of EPA regulatory models:		DN: Chap. 6
12	**10-Nov**	Particulate Pollution Control		DN: Chap. 8
	12-Nov			DN: Chap. 9
13	**17-Nov**	Particulate Pollution Control: Principles of PM pollution control, PM pollution control technologies		DN: Chap. 10, 15
	19-Nov			
14	**24-Nov**	Control of Gaseous Pollutants controls of VOC, controls of mobile source emissions		DN: Chap. 11
	26-Nov			Thanksgiving
15	**1-Dec**	Atmospheric Chemistry: Atmospheric photochemistry and chemical kinetics, chemistry in the troposphere.		DN: Chap. 11
	3-Dec			DN: Chap. 13
16	**8-Dec**	Monday, December 8th 4:00 pm – 6:45 pm, Final		

DN: Air Pollution Control Engineering, 3rd edition
SP: Atmospheric Chemistry and Physics
Arya: Air Pollution Meteorology and Dispersion

The above schedule, policies, and assignments in this course are subject to change in the event of extenuating circumstances or by mutual agreement between the instructor and the students.