ENVR 5350 – AIR QUALITY ASSESSMENT
Syllabus and Policy Statements

**TERM:** Spring 2024

**LECTURE:** Thu 3:30 – 6:15 PM FO 102

**SECTION:** 001

**CREDIT:** 3 semester hours

**TEXTBOOK:** None required. Lecture notes

**INSTRUCTOR:** Dr. Sheryll B. Jerez, Professor

**DEPARTMENT:** Environmental Science

**OFFICE:** Room 119, Forestry Building

**OFFICE HOURS:** TR 9:15 – 11:15 AM, R 1:00 - 3:00 PM OR by APPT

**PHONE:** Office (Forestry) – 936.468.6614; Cell – 217.493.2716

**EMAIL:** jerezs@sfasu.edu

**LECTURE MATERIALS AND GRADES:** You can download all lecture materials (and other pertinent documents) from Brightspace by D2L at least two days before the scheduled lecture. It is your responsibility to print lecture materials before coming to class. Your grades for all class requirements will be available at the D2L website as well.

**COURSE DESCRIPTION:** Basic concepts, techniques, methodologies, and practices related to air quality assessment will be discussed. Discussion will revolve around air pollution monitoring, source emission testing, impact prediction with AQ models, pollution control, and air quality permitting.

**PROGRAM LEARNING OUTCOMES:**

<table>
<thead>
<tr>
<th>Course</th>
<th>PLO 1 Environmental Regulation and Compliance</th>
<th>PLO2 Environmental Risk Assessment</th>
<th>PLO3 Occupational and Environmental Health</th>
<th>PLO4 Statistical Methods and Data Management</th>
<th>PLO5 Oral and Written Communication</th>
<th>PLO6 M.S. Thesis Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 5350</td>
<td>A</td>
<td>I</td>
<td>B</td>
<td>I</td>
<td>A</td>
<td>N/A</td>
</tr>
<tr>
<td>N/A – Not Applicable</td>
<td>B-Basic</td>
<td>I-Intermediate</td>
<td>A-Advanced</td>
<td>M-Mastery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Definition of Rating Categories:

1. **N/A** – Not Applicable – course does not support the Program Learning Outcome.

2. **B** – Basic – course supports Program Learning Outcome by providing students with fundamental information, definitions, concepts, and lab activities relative to the expected outcomes.

3. **I** – Intermediate – course supports Program Learning Outcome by providing students with topic-specific information, concepts, applications, and lab activities that increase the students’ skills in making tactical implementation decisions relative to the expected outcomes.

4. **A** – Advanced – course supports Program Learning Outcome by providing students with transitional, high level topic-specific information, activities, and opportunities that enable the students to apply their critical thinking and tactical skills to resolved increasingly challenging strategic situations.

5. **M** – Mastery – course supports Program Learning Outcome by providing students with opportunities to independently apply tactical and strategic planning skills to successfully accomplish real-world, non-academic management objectives. Completes students’ preparedness for entry-level professional activity accomplishment.

**STUDENT LEARNING OUTCOMES:**

1. Learn the procedures involved in conducting an air quality assessment.
2. Understand and apply the different methods and models used for the estimation of air quality in an area.
3. Become familiar with the general procedure of air quality permitting and compliance.

**PH.D. STUDENTS:**

If necessary, Ph.D. students should schedule a meeting with the instructor to discuss special course content deemed required to support their research.

**COURSE EVALUATION AND GRADING:**

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Group Project</td>
<td>25%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Special Topic</td>
<td>10%</td>
</tr>
</tbody>
</table>

**LETTER GRADES:**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 and above</td>
<td>A</td>
</tr>
<tr>
<td>80 – 89</td>
<td>B</td>
</tr>
<tr>
<td>70 – 79</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>
**Exams.** The Midterm exam is for one hour which will be given at the beginning of the class period. The final exam is comprehensive and will include a computer exercise on the application of AERMOD. Due to limited seating in the computer lab, some of the students will be asked to take the final exam in the morning of the scheduled exam day.

**Homework.** Homework will be assigned periodically; maximum of four for the whole semester. One homework will come from virtual attendance to the National Air Quality Conference 2024 which will be held on March 18-21. Please refer to the separate handout for additional information about this conference. Homework is due at the beginning of the class period. Late homework is penalized 20% of the grade per day.

Collaborations on homework and project/s are acceptable and strongly encouraged. However, you must still refrain from copying the works of others. Identical reports and/or homework will not be honored and repeated violations may result in getting a grade of F for the class. There will be no collaborations on quizzes and exams.

**Group Project.** Each group will complete an air quality analysis report for one of the metropolitan areas in Texas. Please refer to a separate handout for the specific requirements and deadlines.

**Quizzes.** There will be a quiz every meeting which will be given at any point during class time. There will be no makeup quiz unless the absence is excused with sufficient documentation.

**Special Topic.** A special topic related to air quality is required. It could be a part of your thesis research or on any of the following choices:

1. Quantification of Air Emissions from Fracking Operations
2. Assessment of Wildfire Impact on Air Quality
3. Biological Methods for Controlling Air Pollution
4. Comparison of Different Air Quality Models for Predicting Air Quality Impact

Selecting any of the first four choices requires a 10-min presentation that includes the following components: (a) sufficient background information on the topic, (b) methods/procedures applied, (c) advantages and disadvantages, (d) example studies, and (e) current state of knowledge. Additional topics involve the following scenarios:

5. There are several regions of the United States that are in non-attainment for nitrogen oxides (NOx). Locate all those regions then select at least two (preferably from different states) and explore why they are in non-attainment. Next, determine what the states are proposing to achieve compliance. Critique the state plan – do you believe it will work in a timely manner?

6. There are several regions of the United States that are in non-attainment for sulfur dioxides (SO2). Locate all those regions then select at least two (preferably from different states) and explore why they are in non-attainment. Next, determine what the states are proposing to achieve compliance. Critique the state plan – do you believe it will work in a timely manner?

7. Explore the methane emissions from natural gas production via fracking. Then, determine how they are currently regulated in the United States. Also, provide an update on the Methane Rule. How well is the regulation working? Comment also on the technical or political feasibility of regulating the fracking operations.
(8) Explore any existing indoor air quality (IAQ) laws and/or regulations in the United States. Then compare and contrast these with the laws and/or regulations in at least one developed country and at least one developing country. Do the US and the other two countries you selected address the needs of their citizens in an adequate and timely manner? Why or why not? What would you propose to better address the issue?

(9) Make a comparison of the local weather conditions and the weather predictions for any three cities in Texas. What is the difference between the actual and projected temperature, relative humidity, and rainfall? Do these projections differ for a two-day projection? Five-day projection? What do you think will be an acceptable difference? You will need at least a month’s worth of data for your discussion and analysis.

Choosing any of the scenarios in item #s 5 to 9 require a 10-min presentation. In addition to addressing the required information, the presentation should include sufficient background information to understand the given scenario.

Your topic should be submitted by Feb 1. No paper is due but electronic copies of references used and the PowerPoint presentation file should be submitted by Apr 25.

COURSE POLICIES on:

LATE ASSIGNMENTS: Make-up exams will only be given if arrangements are made with me before missing the scheduled exam. If there is an emergency and prior arrangements cannot be made, the student should contact me as soon as possible. Make up exams must be taken within a week after the student returned to class. Missing exams will be counted as zeroes in the overall grade computation. Late homework is penalized 20% of the grade per day.

ATTENDANCE: Attendance is required. Lectures will start promptly at their assigned time. If lectures are missed because of a university recognized excused absence, it will be the responsibility of the student to notify me in advance of the absence AND provide appropriate documentation before assistance is provided on missed information. If it is an emergency and early notification is not possible, the student must contact me within a week of his/her absence before assistance is provided.

RESPONSIBLE USE OF TECHNOLOGY
It is expected that all students will only use cell phones, PDAs, laptop computers, MP3 players and other technology outside of class time or when appropriate in class. Answering a cell phone, texting, listening to music or using a laptop computer for matters unrelated to the course may be grounds for dismissal from class or other penalties.

USE OF ARTIFICIAL INTELLIGENCE TOOLS
Use of AI tools, such as ChatGPT and Google Barb, in completing the writing assignments (i.e., environmental issue summary, online essay quizzes, and lab reports) is expressly forbidden. Anyone caught using an AI tool to complete an assignment will receive a zero for the assignment.

ACADEMIC INTEGRITY: The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.
Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

WITHHELD GRADES SEMESTER GRADES POLICY (5.5)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the coursework because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course to compute the grade point average. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

COURSE EVALUATIONS: Course evaluations should be completed online. It is the student’s responsibility to log on to mySFA and complete the evaluation.

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), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services promptly may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.
**STUDENT WELLNESS AND WELL-BEING**

SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**

**The Dean of Students Office** (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

**SFA Human Services Counseling Clinic** Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

**The Health and Wellness Hub** “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

www.sfasu.edu/thehub
936.468.4008
thehub@sfasu.edu

**Crisis Resources:**

- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- johCrisis Text Line: Text HELLO to 741-741
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Class Activity</th>
<th>Requirements due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 18</td>
<td>Class overview, Introduction &amp; Review of AQ Issues</td>
<td>AERMOD Overview</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Jan 25</td>
<td>NAAQS Exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Feb 1</td>
<td>Review of AQ Issues cont’d; Monitoring – Indoors, Ambient</td>
<td>Excel workshop (if necessary)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Feb 8</td>
<td>Monitoring continued</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Feb 15</td>
<td>Monitoring continued</td>
<td></td>
<td>Chapter I – Project Description</td>
</tr>
<tr>
<td>6</td>
<td>Feb 22</td>
<td><strong>Guest lecture – TCEQ AQ Modeling experts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Feb 29</td>
<td>AERMOD WORKSHOP</td>
<td>Computer work</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Mar 7</td>
<td><strong>MIDTERM (1-hour)</strong></td>
<td>AERMOD Workshop continued</td>
<td>Chapter II – Emission Inventory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Computer work</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mar 14</td>
<td><strong>SPRING HOLIDAYS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Mar 21</td>
<td>Modeling – Air Dispersion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mar 28</td>
<td><strong>EASTER HOLIDAY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Apr 4</td>
<td>Modeling – Air Dispersion</td>
<td></td>
<td>Chapter III – Modeling Methodology &amp; Results</td>
</tr>
<tr>
<td>13</td>
<td>Apr 11</td>
<td>Air Quality Permitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Apr 18</td>
<td>Air Quality Permitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Apr 25</td>
<td>Group Project &amp; Individual Presentations</td>
<td></td>
<td>Final Group Project Report</td>
</tr>
<tr>
<td>16</td>
<td>May 2</td>
<td><strong>Final Exam 3:30 – 5:30 PM</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>