College of Engineering

Department of Civil Engineering

CE 450 Air Pollution Control Engineering

Credit and Contact hours	3 / 3 (Lectures), 1 (Tutorials), 0 (Laboratory)
Required, or Elective	Elective for a BSCE degree
Course Description	Air pollution and sources; classification of air pollutants; units of measurements; effects of air pollutants on health, human welfare and environment; physical and chemical behavior of pollutants in the atmosphere; regulatory control of air pollution (air quality criteria and standards; indoor air quality, emission standards); preventing and controlling air pollution; air pollutants and global climate.
Prerequisites or Co-requisites	CE 448 (Water and Wastewater Treatment)
Course Learning Outcomes	Students completing this course successfully will be able to

Course Learning Outcomes	***Related Student Outcomes (SO)***
CLO1. Recognize the mechanisms of pollutant transport/dispersion in the atmosphere and global climate	**SO7**
CLO2. Explain physical and chemical behavior of pollutants	**SO7**
CLO3. Assess risks and problems associated with air pollution in global context using sampling methods for different air pollutants with the considerations of environmental factors	**SO4**
CLO4. Design selected systems for controlling gaseous pollutants with the consideration of related regulations (local, national, and international), public health, environmental and economic factors	**SO2**

Student Outcomes related to this Course	**SO 7.** an ability to **acquire** and **apply new knowledge** as needed, using **appropriate learning strategies**. [ABET 7] **SO 4**. an ability to recognize **ethical** and **professional responsibilities** in engineering situations and make **informed judgments**, which must consider the **impact of engineering solutions in global, economic, environmental, and societal contexts.[**ABET 4]

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<tr><td></td><td>SO 2. an ability to apply <u>engineering design</u> to produce solutions that meet specified needs with consideration of <u>public health</u>, <u>safety</u>, and <u>welfare</u>, as well as global, cultural, social, <u>environmental, and economic factors</u>. [ABET 2]</td></tr>
<tr><td>Topics Covered</td><td>
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<tr><th>List of Topics</th><th>Related CLOs</th></tr>
<tr><td>1. Air pollution and sources; classification, units of measurements</td><td>CLO1</td></tr>
<tr><td>2. Effects of air pollutants on health</td><td>CLO1</td></tr>
<tr><td>3. Sampling methods of air pollutants and associated risks</td><td>CLO3</td></tr>
<tr><td>4. Physical and chemical behavior of pollutants in atmosphere</td><td>CLO2</td></tr>
<tr><td>5. Regulatory control of air pollution</td><td>CLO2</td></tr>
<tr><td>6. Prevention and controlling of air pollution</td><td>CLO4</td></tr>
<tr><td>7. Air pollutants and global climate</td><td>CLO1</td></tr>
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<tr><td>Textbook(s) and Other Required Material</td><td>1. Air Pollution Control: A Design Approach, 4th Edition, Waveland Pr Inc; 4th edition</td></tr>
<tr><td>Grading System</td><td>Homeworks 10%
Two Midterm Exams 40%
Final Examination 50%</td></tr>
<tr><td>Instructors</td><td>Dr. Mohab Amin M. Kamal (Room 2A60), email; maamin@ksu.edu.sa</td></tr>
<tr><td>Date of Review</td><td>September 2020</td></tr>
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