FORMAN CHRISTIAN COLLEGE

(A Chartered University)

Spring Semester 2023

Department of Environmental Sciences

COURSE INFORMATION:

ENVR 252: Environmental Pollution 03 Credits (3-0)
Prerequisite: None

Lecture Time: Tuesday and Thursday: 11:00 – 12:15
Lecture Room: S-321

COURSE INSTRUCTOR:

Dr. Sohaib Aslam
Assistant Professor
Office: **S-037**, Armacost Science Building
Office Hours: Tuesday, Wednesday and Thursday: 14:00 - 15:30

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TEXT BOOKS:

1. Understanding Environmental Pollution, Hill, M.K., 3rd Edition. Cambridge University Press, Cambridge UK, 2010.
2. Environmental Pollution and Control. Peiece, J.J., Weiner, R.F.,and Vesilaind, P.A. 4th Edition, Butterworth-Heinemann, (Elsevier) USA,1998.
3. Environmental Contaminants: Assessment & Control Dairel, A.V., Academic Press, USA, 2005.

All supporting material of this course will be available via the Moodle at:

http://tmoodle.fccollege.edu.pk/moodle/

COURSE DESCRIPTION:

This course deals with major problems of pollution of water, soil and air. It covers processes responsible for the occurrence and release of pollutants in the environment, dispersion mechanisms, the hazards associated with different types of pollutant, problems of accumulation

of toxic substances, and procedures for the reduction of emissions and remediation of contaminated environments.

OBJECTIVES:

The course will provide:

- An overview of environmental science, current global environmental concerns and a brief history of environmental ethics, resource use and conservation.
- The insight into the interaction between society and our environment.
- An understanding of human intervention leading to environmental degradation.
- An outlook to sustain the environment and possible remedial measures for checking further degradation of the environment.

LEARNING OUTCOMES:

By the end of the course, the students will:

- have gained an overview of the more common forms of environmental pollution and their relative impact on the environmental & human health,
- have gained an understanding of the fundamental principles governing the fate and transport of pollutants in the environment,
- be able to apply this knowledge to manage problems and assess control measures and techniques concerning atmospheric, water or terrestrial problems

COURSE CONTENTS AND WEEKLY BREAKUP

Week	Week begins	Contents	Assessments
1	Feb. 13, 2023	**Introduction to Course:** Course content and grading criteria **Understanding the significance of the environment** for human health; Human population pressures and pollution dynamics Nature's Services and Human Impact on them	
2	Feb. 20, 2023	**Environmental pollution:** Common terms and definitions Defining and understanding pollution; Root causes Physical and chemical processes relating to pollution	**Assignment 1**
3	Feb. 27, 2023	**Forms/Types of Environmental pollution:** Water pollution, Thermal, Marine & Industrial pollution Sources of water pollution; Water pollutants; Effects of water pollution; Eutrophication; Food chain toxicity Water pollution control; Case Studies	**QUIZ 1**

4	March 6, 2023	**Forms of Environmental pollution:** Soil pollution: Sources of soil pollution Impacts of soil pollution; Soil pollution control Radiation pollution: Types of radiation and their toxicity; Sources of radiation exposure Noise pollution: Sources of indoor and outdoor noise pollution Control of noise pollution	
5	March 13, 2023	**Forms of Environmental pollution:** Air pollution: Sources of air pollution; Major air pollutants and their health impacts; Criteria air pollutants, control measures of air pollution	**Assignment 2**
6	March 20, 2023	**Forms of Environmental pollution:** Indoor Air Pollution Sources; Indoor air pollutants and their impacts Acid depositions: Acids in the environment and their impacts	**QUIZ 2**
7	March 27, 2023	**Global climate change** Natural greenhouse effect, major greenhouse gases Environmental impacts of Global warming, Impacts of global warming in Pakistan **Stratospheric ozone depletion** Basics of Ozone depletion Consequences of ozone depletion	
8	April 3, 2023	**Stratospheric ozone depletion** Ozone-depleting pollutants; Reducing atmospheric levels of ozone-depleting substances **Review**	**Mid-Exam**
9	April 17, 2023	**Chemistry of Environmental Pollution:** Transport and Fate of Environmental Pollutants Biodegradation, Adsorption-desorption, leaching and run-off, Volatilization Environmental factors influencing these processes	
10	May 1, 2023	**Toxicology:** Toxicity of pollutants; Exposure and risk assessment Exposure, absorption, distribution, storage and bio-transformation processes Environmental and Biological factors influencing these processes	**Assignment 3**
11	May 8, 2023	**Classification of Environmental Pollutants:** Organic pollutants; Natural and synthetic persistent organic pollutants: Pesticides, PAHs, PCBs Routes of exposure and their health effects	**Presentations**

12	May 15, 2023	**Classification of Environmental Pollutants:** Biological pollutants; household cleaning agents, Inorganic pollutants: heavy metals, Ionizing radiations	**QUIZ 3**
13	May 22, 2023	**Solid wastes & their management:** Types & sources of solid waste Municipal waste management and disposal techniques Pollution prevention and Recycling Composting, Anaerobic digestion	
14	May 29, 2023	**Hazardous Waste Management:** Types, sources of hazardous waste management and disposal techniques for hazardous wastes **Pollution Control Strategies:** Wastewater treatment	**Presentations**
15	June 5, 2023	Reducing pollution; Zero waste, zero emissions **Reclamation and remediation:** Phyto-remediation and Bioremediation Possibility of field trip to wastewater treatment plant	
16	June 12, 2023	Revision and feedback	**Final-Exam**

Course Requirement:

Course content will be covered from the text; however the students will be encouraged and guided for securing additional information from other sources.

Course Policies:

Attendance: Students must attend all class meetings to assure the best possible grades; failure to do so will drastically affect the grade. **If a student fails to attend 75% of the classes, he/she will not be allowed to appear in the Final Examination.** Excused absence on account of family emergency and/or participation in university activities will not count towards class attendance.

Exams: There will be two lecture exams during the term. Mid Term Exam will be of one-hour duration and the Final Exam will be of two-hour duration. Mid Term Exam will constitute 20% and the Final Exam will constitute 30% of the grade.

Quizzes and Assignments: There will be three quizzes and four assignments apart from, midterm and final exams. The quizzes and assignment will carry 15% and 20% weight-age of the grades, respectively. In addition, each student will have to prepare and conduct presentation on allocated projects.

Missed Exam: Students must take all the exams. If you do not appear in the exam you will be awarded zero point and your grade will be drastically affected.

Cheating and Plagiarism: There will be no tolerance for cheating/plagiarism. Any student caught cheating on the exam will be awarded zero point and may be dropped from the course. Detailed policy of classroom misconduct, cheating and plagiarism given in the Student Handbook will be strictly followed. Students are responsible for these directions given about dishonesty and plagiarism.

Course evaluation:

Weight-age and Grading:

ACTIVITY	WEIGHT AGE
Midterm exam	25%
Final exam	30%
Quizzes	15%
Assignments + Presentations	25%
Class participation	5%
Total	**100%**

The grading system for the course is as follows:

GRADES	QUALITY POINTS	NUMERICAL VALUE	MEANING
A	**4.00**	**93-100%**	**Superior**
A-	**3.70**	**90-92%**	
B+	**3.30**	**87-89%**	
B	**3.00**	**83-86%**	**Good**
B-	**2.70**	**80-82%**	
C+	**2.30**	**77-79%**	
C	**2.00**	**73-76%**	**Satisfactory**
C-	**1.70**	**70-72%**	
D+	**1.30**	**67-69%**	
D	**1.00**	**60-66%**	**Passing**