- **Important Note: Course syllabus according to ABET guidelines for engineering programs only**
- **Important Note: Please use the following format for the course syllabi (2 pages maximum in Times New roman 12 point font)**

Course number: 04035271

Course: name: Environmental Engineering

Prerequisites by course: Water Treatment Engineering (1)

Prerequisites by topic: Students should have knowledge in basic mathematics, basic physics and chemistry, a knowledge of hydrology, hydraulics, and fluid mechanics.
Credit hours: 3 Credit hours (theory)
Contact hours: 3 Hours (theory)

Textbook: [*Introduction to Environmental Engineering and Science*], [Masters G.M.], [2004]

References:

1. Mackenzie L. Davis, David A. Cornwell. 2013. *"Introduction to Environmental Engineering"*, 5th editions, McGraw Hill, NY, USA.
2. Howard S. Peavy, Donald R. Rowe, George Tchobanoglous. 1985. "*Environmental Engineering*", McGraw-Hill, New York.
3. Peirce, J. J., Weiner, R., Matthews, R., & Vesilind, P. A. 2003. *"Environmental Engineering"*. Butterworth-Heinemann.

Course website: https://elearn.iu.edu.jo/course/view.php?id=2143

Schedule and duration: Mon – Wed, 16 weeks, 3 hours a week.

Minimum student material: Lectures, assignments, and a project will be applied to achieve the course objectives. The students have access to the e-learning portal where the presentations, lecture notes and lecture outlines are placed. The lecture outlines include the program of each lecture, reading materials and specific questions related to each lecture.

Minimum college facilities: Classroom, whiteboard, marker, eraser, computer and data show projector are available to provide an atmosphere conducive to learning.

Course objectives: The objective of this course is to introduce students to general aspects of environmental contamination and pollution control by providing principles of water resources and types of water pollution and methods of treatment and control. It also introduces students to the

concept of air treatment, physical and chemical principles, air pollutant standards, static, dynamic pollution sources, and methods of control, as well as principles of municipal solid waste collection, treatment and disposal. Overall, the course will familiarize students with current environmental problems and regulations from the national and global perspectives.

Course outcomes and relation to ABET student outcomes: (matrix)

ABET student outcomes	Course Outcomes
1	an ability to apply knowledge of mathematics, science, and engineering
2, 6	an ability to design and conduct experiments, as well as to analyze and interpret data
2, 6	an ability to design a system, component, or process to meet environmental regulations
5	an ability to function on multi-disciplinary teams
3	an ability to communicate effectively
4	an understanding of professional and environmental ethics
7	a knowledge of contemporary environmental issues

Course topics: Introduction (fundamental concepts and definitions), point source and nonpoint source pollutants. Environmental systems: water pollution and sources, types of pollutants in surface water, oxygen sag curve (Streeter-Phelps equation), engineering control of water quality in streams. Air: physical and chemical principles, air pollutant standards, static and dynamic pollution sources, and methods of control. Solid Waste: definition, sources, collection, its impacts over the environment and the engineering methods for treatment and disposal. Hazardous and Industrial Wastes: definitions, environmental impacts and methods of treatment and disposal, herbicides and pesticides: types, environmental impacts and alternatives.

Computer usage: low

Attendance:

A- *Attendance policies:* the maximum absences allowed is 15% of the lectures.
B- Absences from exams and handing assignments on time:
- First exam and second exam can be retaken based on approval of excused absence by the instructor's discretion.
- Final exam can be retaken based on approval of excused absence by department and the instructor's discretion.
- Not handing assignment on time will incur penalties.

Assessments: First Written Exam (Midterm), Final Written Exam, Quizzes, Homework, Projects, Participation in Lecture.

Grading policy: The evaluation of students will be based on a final exam (50%), midterm exam (30%), term project (10%) Quiz (5%) and two assignments (5%). Student's active participation during the lecture is welcomed and will be rewarded with bonus marks up to 3%.

Instructors: Dr. Abdelmajeed Adam Lagum

Class time and location: Mon -Wed: 12:30 – 02:00, Room 4236

Student Outcomes (SOs)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences.
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.
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Important note: Student outcomes are outcomes (1) through (7), plus any additional outcomes that may be articulated by the program.