



Jordan University of Science and Technology
Faculty of Agriculture
Natural Resources & Environment Department

NR421 Environmental Microbiology

First Semester 2020-2021

Course Catalog

3 Credit Hours. Nature and physiology of soil and water microorganisms. Current concepts in microbial biogeochemistry with emphasis on microbial dynamics in the environment. The course includes documentation, reports, seminars and group discussions. Basic techniques for isolation and characterization of environmental organisms from soil and water. Methods of enumeration and measurement of microbial physiological activity. (Prerequisite: BIO 232 Pass)

Text Book

Title	Microbial Ecology, Fundamentals and Applications.
Author(s)	Atlas, R. M., and R. Bartha
Edition	3rd Edition
Short Name	1
Other Information	Benjamin-Cummings (Pub.). Redwood City, CA. USA

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	The Nature and Properties of Soils	Brady, N. C., and R. R. Weil	12th Edition	Prentice-Hall (Pub.). Upper Saddle River, NJ. USA
3	Environmental Microbiology. .	Maier, R. M., I. L. Pepper, and C. P. Gerba	2nd Edition	Academic Press (Pub.)
4	Soil Microbiology and Biochemistry	Paul, E. A., and F. E. Clark. 1989. . .	1st Edition	Associated Press (Pub.)
5	Microbiology, An Introduction	Tortora, J. T., B. R. Funke, and C. L. Case. 1995	5th Edition	Benjamin-Cummings (Pub.)

6	Methods of Soil Analysis. Part 2. Microbiological and Biochemical Properties.	Weaver, R. W.	1st Edition	SSSA Inc. (Pub.). Madison, WI. USA.
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Instructor	
Name	Dr. Ragheb Tahhan
Office Location	C1L2
Office Hours	Sun : 09:00 - 10:00 Mon : 09:00 - 10:00 Mon : 11:30 - 12:30 Wed : 09:00 - 10:00 Wed : 11:30 - 12:30 Thu : 09:00 - 10:00
Email	tahhan@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 13:00 - 14:00 Room: منصة الكترونية

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Members of microbial ecosystems: Bacteria	From 1, From 4
Week 2	Members of microbial ecosystems: Fungi	From 1, From 4
Week 3	Members of microbial ecosystems: Algae, actinomycetes	From 1, From 4
Week 4	Members of microbial ecosystems: Actinomycetes, Viruses	From 1, From 4
Week 5	Microbial Habitats: Soil	From 2, From 4
Week 6	Microbial Habitats: Air, water	From 1
Week 7	Microbial Growth	From 5
Week 8	Environmental determinants: Organic matter, nutrients, temperature	From 1, From 2, From 4, From 6
Week 9	Environmental determinants: Moisture, water activity, salinity, acidity, alkalinity, radiation.	From 1, From 4
Week 10	Microbial interactions: Interactions among microbial populations	From 1

Week 11	Microbial interactions: Interactions between microorganisms and plants	From 1, From 4
Week 12	Water quality: Indicator and pathogenic organisms, Wastewater treatment.	From 1, From 3, From 4
Week 13	Biogeochemical cycling: Energy flow and carbon cycle	From 1, From 2, From 4
Week 14	Biogeochemical cycling: Nitrogen cycle	From 1, From 2, From 4
Week 15	Biogeochemical cycling: Sulfur cycle, Other nutrients cycles.	From 1, From 2, From 4

Relationship to Program Student Outcomes (Out of 100%)								
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9

Policy	
Absence policy	Here is another point of formality. Yes, I do count absence. You should know here that you are entitled to 10% of the number of the lectures without submitting an official excuse. You are also entitled to 10% more with an official excuse. An official excuse is usually a medical report accepted by the dean. I wouldn't use this entitlement if I were you. From experience, the grade record usually goes hand in hand with attendance record!
Grading policy	<p>1) Theory Part: (80 points) Midterm Exam 30 points Participation 10 points Final Exam 40 points</p> <p>2) Practical Part: (20 points) Midterm Exam 5 points Lab Reports 5 points Final Exam 10 points</p> <hr/> <p>Total 100 points</p>

Date Printed: 2020-12-27