



The Goodman
Faculty of Life Sciences
Bar-Ilan University

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Basic Microbiology

8020301, 8020310, 8020330

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Academic year: 2023-2024 Semester: B Hours/credits: 2 hours lecture / 1
credit Mandatory

Prerequisites: None

Year in program & how often given, if relevant: 2nd year undergraduates course given
once a year

Course Overview – Short abstract: Introduction to basic aspects of microbiology
related to physiology and its impact on health and disease.

Learning outcomes – The course aims to provide the students with a basic
understanding of the major physiological traits of microorganisms and their
impact on our environment and health.

Assessment: Coursework and Grade structure: 100% exam. Students must
get 60 or more in the final exam to pass the course.

Week-by-week content, assignments, and reading

Lesson #	Subject	
1	The structure of the prokaryotic cell in comparison to eukaryotic cells. Bacterial growth, parameters, measuring methods, growth in extreme environments	

2	The bacterial cell wall biosynthesis and the composition of Gram+/- cell walls. Bacterial inclusions (gas vesicles, carbon storage), Bacteria motility, flagella pili, chemotaxis	
3	Bacterial nutrition anabolism and catabolism, fermentation, respiration.	
4	Carbon, Nitrogen, Sulfate cycles, microbial mats	
5	Antimicrobials, Antibiotics and Antibiotic resistance	
6	Bacterial gene regulation, repression, induction, global regulation, two-component systems	
7	Bacterial genetic programs - Sporulation, stringent response and SOS repair	
8	Bacterial genetics-transformation, transduction, conjugation, plasmids	
9	Bacterial immunity – Restriction enzymes, abortive infection, CBASS, CRISPR	
10	Bacterial virulence and Host-Microbiome interactions	

Required text:

Brock Biology of Microorganisms edited by M.T. Madigan, J.M. Martinko, J.

Parker Prentice-Hall-Pearson Education International