Name of course: DENT 5226Q- Bacteriology and Oral Disease.
Number of credits: 2

Time to be offered: Fall 2025.
From Sep 2025 to Nov 2025. Tuesday, and Thursday 10:00am – 12:00pm.

Location: Remote via Canvas.

Not open to students that had taken Bacteriology and Oral Infectious Diseases DENT 5225.
Students who have taken Oral Microbiology DENT 5300Q will need to obtain approval from the course director.
No limit on student enrollment.

Brief description of the course:
The course in bacteriology and oral diseases is intended for Ph.D. and master's students, mainly students in the pre-dental program interested in microbiology and oral biology and requiring microbiology for their dental school applications. The course will be given as oral presentations covering fundamentals in bacteriology, microbial pathogenesis, biofilms, and oral infectious diseases.

Course goals:
To learn basic principles of bacteriology, microbial pathogenesis, microbial biofilms, and oral infectious diseases. To understand the etiologies of major bacterial-mediated oral diseases.
The course lectures will cover basic aspects in bacteriology and methods in microbiology research; microbial cell structure; microbial genetics and horizontal gene transfer; bacterial growth and control; basic diagnostic methods in microbiology; main classes of antibiotics; mechanisms involved in antibiotic resistance; key aspects of biofilm development, oral biofilms, biofilm-driven antimicrobial resistance, and biofilm control. Students will learn about the mechanisms of bacterial pathogenesis and the bacteria associated with the oral microbiome, dental plaque, caries, and periodontal disease. The course will also cover tooth anatomy and the development of caries, periodontal disease, as well as the host response to infection.

Contact hours:

Lecture: 15, two-hour lectures:	30
Exams: 2 two-hour exams:	4
Total:	**34**

Recommended text:
Brock Biology of Microorganisms.15th Edition by Michael T. Madigan, Kelly S. Bender, Daniel H. Buckley, W. Matthew Sattley, David A. Stahl. ISBN-13: 978-0134261928 / ISBN-10: 9780134261928

Criteria for assessing student learning:

1. Midterm exam: 50% of student grade.
2. Final exam, cumulative knowledge of all material covered in class: 50% of student grade.

Grading Policy:

Each exam is worth 50% of the final grade. The total number of points in the class will be 200, and the final grade will be based on the overall average. The course will be graded on a curve, where the mean and standard deviation are calculated. The mean grade will be set at a B. A standard deviation above the mean will be an A, and below will be a C, and so forth.

Course Director:
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Academic Integrity:

Principles of academic integrity require that every Rutgers University student:
• Properly acknowledge and cite all use of the ideas, results, or words of others.
• Properly acknowledge all contributors to a given piece of work.
• Make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of unsanctioned materials or unsanctioned collaboration.
• Treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.

Violations of academic integrity will be treated in accordance with university policy, and sanctions for violations may range from no credit for the assignment, to a failing course grade to (for the most severe violations) dismissal from the university.
For more information, please see Rutgers academic integrity website (http://academicintegrity.rutgers.edu)

Syllabus for Fall 2025

	Hours	Topic	Lecturer	Lecture/Seminar
1 9/2	2h	Introduction to microorganisms. Microbial cell structure I- Cell wall, Gram-positive and Gram-negative	Kadouri	Lecturer
2 9/4	2h	Microbial cell structure II- Capsule, EPS and membrane proteins	Kadouri	Lecturer
3 9/9	2h	Microbial cell structure III- Pili, fimbriae and flagella	Kadouri	Lecturer
4 9/11	2h	Prokaryotic Molecular Biology I	Kadouri	Lecturer
5 9/16	2h	Prokaryotic Molecular Biology II- Horizontal gene transfer and microbial diagnostics	Kadouri	Lecturer
6 9/18	2h	Microbial growth and control	Kadouri	Lecturer
7 9/19	2h	Antibiotics and antibiotic resistance	Kadouri	Lecturer
8 9/23	2h	Biofilms I- Biofilm formation, tools in biofilm research	Kadouri	Lecturer
9 9/25	2h	Midterm	-	-
10 9/30	2h	Tooth biology, anatomy, and dental caries	Markowitz	Lecturer
No class 10/2-10/10				
11 10/14	2h	Biofilms II- Oral and medical biofilms, biofilm resistance and control	Kadouri	Lecturer
12 10/16	2h	Mechanisms of bacterial pathogenesis	Kadouri	Lecturer
13 10/21	2h	*Viridans streptococci*, dental caries and *Staphylococcus*	Kadouri	Lecturer
14 10/23	2h	The human microbiome	Cugini	Lecturer
15 10/28	2h	The oral microbiome, periodontal pathogens and periodontitis- I	Cugini	Lecturer
16 10/30	2h	Periodontal pathogens and periodontitis- II	Cugini	Lecturer
17 11/4	2h	Final Exam	-	-