

## Course Syllabus

**1. Course Title:** Oral Microbiology and Immunology

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**Course pre-requisites:** Fundamentals of microbiology course or equivalent

**Co-requisites:** None

**2. Office Hours:** By appointment

**3. Course Objectives:** The goal of this course is to provide an in-depth understanding and knowledge of oral microbiology, oral immunology and how host-pathogen interactions in the oral cavity determine health or disease outcomes. Upon successfully completing this course, students will be able to:

- a. Appreciate the diversity and complex microbial interactions within the oral microbiome and understand how the oral microbiota is shaped.
- b. Describe the major characteristics of supragingival and subgingival biofilms.
- c. Understand the innate and adaptive immune responses in the oral cavity.
- d. Understand the mechanisms utilized by bacteria to colonize the different niches in the oral cavity.
- e. Identify and describe the major characteristics of bacterial, fungal and viral pathogens associated with disease.
- f. Recognize the multifactorial aspects of dental caries and periodontitis.
- g. Recognize the possible associations of oral bacteria with systemic infections and cancer.
- h. Describe the available options for treatment and prevention of oral infections, recognize the benefits and limitations of the current therapeutic approaches, and identify areas for future research in this area.

**Topics covered:**

- **The oral environment**
  - The Oral Microbiome
  - Oral Microbial Ecology
  - Oral Microbial Physiology
  - Oral Immune Responses
  - Mechanisms of Colonization

- **Cariology**
  - Supragingival plaque
  - *Streptococcus mutans* as a model organism for caries studies
  - Other acidogenic/aciduric bacteria
  - Caries microbiome studies
- **Periodontology**
  - Subgingival plaque
  - Orange complex bacteria
  - Red complex bacteria
  - Gingivitis
  - Periodontitis
  - Immunology of the oral cavity
- **Oral health and systemic diseases**
  - Cardiovascular disease
  - Diabetes
  - Low birth weight
- **Fungal infections**
  - Definition of fungi and its lifecycle
  - The Oral Mycobiome
  - *Candida* and oral candidiasis
  - Histoplasmosis
- **Oral bacteria and cancer.**
  - Microbiota composition in health in disease
  - Oral Cancer
  - Oral bacteria in other types of cancer
- **Prevention and treatment of oral infections**
  - Probiotics and vaccines
  - Antibiotics
  - Antibiotic resistance
- **Viral infections**
  - Introduction to viruses
  - Human Herpesvirus
  - Human Papillomavirus
  - Human immunodeficiency Virus
  - Other relevant viruses with oral manifestations

#### 4. Weekly course schedule

##### Week 1

**L1:** Oral Microbial Ecology

**L2:** The Oral Microbiome

##### Week 2

**L3:** Immunology of the Oral Cavity

**L4:** Paper-driven discussion

### **Week 3**

**L5:** Mechanisms of Oral Colonization

**L6:** Paper-driven discussion

### **Week 4**

**L7:** Microbiology of Dental Caries 1

**L8:** Paper-driven discussion

### **Week 5**

**L9:** Microbiology of Dental Caries 2

**L10:** Paper-driven discussion

### **Week 6**

Exam 1

### **Week 7**

**L11:** Microbiology of Periodontal Diseases

**L12:** Paper-driven discussion

### **Week 8**

**L13:** Immunology of Periodontal Diseases

**L14:** Paper-driven discussion

### **Week 9**

**L15:** Fungal Infections of the Oral Cavity

**L16:** Paper-driven discussion

### **Week 10**

**L17:** Viral Infections of the Oral Cavity

**L18:** Paper-driven discussion

### **Week 11**

**L19:** Oral Bacteria and Cancer

**L20:** Paper-driven discussion

### **Week 12**

**L21:** Systemic Diseases Associated with Oral Bacteria

**L22:** Paper-driven discussion

### **Week 13**

**L23:** Chemotherapy and Prophylaxis of Oral Infections

**L24:** Paper-driven discussion

### **Week 14**

Exam 2

- 5. Methods of evaluating and grading:** Students will be evaluated based on in-class presentations and participation, and performance in two written exams. The exams will consist of multiple choice and short answer questions. The final overall grade will be determined as follows:

In-class participation: 30%

Exam 1: 35%

Exam 2: 35%

The following grading scale will be used for this course:

A 93-100%  
A- 90-92%  
B+ 87-89%  
B 84-86%  
B- 80-83%  
C+ 77-79%  
C 74-76%  
C- 70-73%  
D+ 67-69%  
D 64-66%  
D- 60-63%  
F < 60%

6. **Attendance:** Attendance is mandatory. Requirements for class attendance and make-up exams, assignments and other work in this course are consistent with university policies that can be found at:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>
7. **Accommodations for students with disabilities:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.
8. **Required and recommended textbooks:** Lecture materials (slides and scientific papers) will be provided in pdf format. Use of textbook is suggested but not required.  
Suggested textbook  
Oral Microbiology and Immunology, 2<sup>nd</sup> Edition. (Suggested)  
Editors: Richard Lamont George N. Hajishengallis, Howard F. Jenkinson (ASM Press)  
Publication Year: 2014  
Print ISBN : 9781555816735  
e-ISBN : 9781555818906
9. **Information on current UF grading policies:** please consult the following website:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>
10. **Evaluation process:** Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at:  
<https://evaluations.ufl.edu>
11. **University policy on academic misconduct:** Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

- 12. University Honesty Policy :** UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.
- 13. Student Privacy:** There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

**14. Campus Resources:**

Health and Wellness

**U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

**Counseling and Wellness Center:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

**Writing Studio, 302 Tigert Hall**, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

**Student Complaints Campus:**

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**On-Line Students Complaints:** <http://www.distance.ufl.edu/student-complaint-process>.