

Course Syllabus

Course Number and Name: Dental Hygiene 3325 Microbiology

Course Type: Lecture Laboratory Clinical Seminar Selective

Academic Year/Semester Offered: Spring 2024

Course Directors: Phillip Kramer and Mikhail Umorin, Ph.D.

Course Description: A lecture course designed to teach the basic principles of medical microbiology, immunology, and the infectious disease process with an emphasis on dental issues.

Course Objectives: Upon completion of the course, the student should:

- 1.) Understand the founding principles of basic microbiology and immunology. The students will build upon this knowledge base to expand their understanding of both infectious and immunologic diseases and their pathogenesis.
- 2.) Have an understanding of infectious diseases having oral-facial manifestations or implications and to become acquainted with diseases of microbial etiology that do not have an oral-facial manifestation.
- 3.) Understand the basic principles of the infectious and immunologic processes and be able to apply them to understand the mechanisms of interactions that occur between microorganisms and human beings. Students should be able to recognize the signs and symptoms of diseases, disease epidemiology, risk factors that increase disease incidence or severity, and mechanisms of pathogenesis (including the contributions of host responses to disease progression) of diseases associated with particular microorganisms.
- 4.) Know how the physiologic and biochemical properties of microorganisms relate to the pathogenesis of infectious diseases and their treatments. Learn the common properties of each class of microbes (e.g. bacteria vs. viruses) as well as properties that distinguish genus and species. The students should have an understanding of mechanisms of virulence and pathogenesis of clinically important microbes.
- 5.) Be able to differentiate microorganisms from each other and begin to understand how the identity and characteristics of an infectious agent determines its pathogenesis. Students need to learn the properties that distinguish genus and species and allow for the microbes' detection and identification.
- 6.) Appreciate how protective immunity against infection develops, from knowledge of the cellular and biochemical interactions that are the basis of the immune response. Learn the various components of the immune system, how they are generated, how they function, and what normal or pathologic processes they participate in.
- 7.) Understand how functions and/or dysfunctions of the immune system provide clearer understanding of immunologic diseases, such as allergy and autoimmunity, and how infectious agents modulate immunity. Students should know normal immune functions and how components of the immune system contribute to immune mediated host functions.
- 8.) Appreciate the importance of life-long continuing education, which is required for the practice of dentistry.

Learning Outcomes/Competencies:

- 2.1 - Apply critical thinking skills and evidence-based decision making to the practice of dental hygiene.
- 2.2 - Commit to self-assessment and lifelong learning in order to provide contemporary clinical care.
- 3.1 - Prepare for career opportunities within health care, industry, education, research, and other roles as they evolve for the dental hygienist.
- 3.3 - Contribute to the knowledge base of dental hygiene.
- 4.1 - Promote positive values of overall health and wellness to the public and organizations within and outside of dentistry.
- 4.2 - Identify the health needs of individuals and assist them in the development of appropriate and individualized self-care regimens.
- 6.1 - Determine medical conditions that require special precautions or consideration prior to or during dental hygiene treatment.
- 6.4 - Recognize predisposing, etiologic risk factors, and life style choices that may require intervention to prevent disease.
- 6.5 - Analyze and interpret the assessment data to formulate a dental hygiene diagnosis related to and congruent with the diagnosis of the dentist and other health professionals.
- 6.6 - Determine the need for referral to the appropriate health professional.
- 7.3 - Establish a planned sequence of educational and clinical services based on the dental hygiene diagnosis using the problem-based approach.
- 7.4 - Communicate the plan for dental hygiene services to the dentist or other interdisciplinary health team members to determine its congruence with the overall plan for oral health care.
- 8.1 - Provide an environment conducive to health by using accepted infection control procedures.
- 8.3 - Select and administer the appropriate preventive and/or antimicrobial (chemotherapeutic) agents and provide pre- and post-treatment instructions.

Evaluation Criteria/Methods: Five major exams, each worth 100 points, results in a total of 500 points. Students must be able to demonstrate their knowledge of material presented in the following: the assigned textbook sections, the lectures and the current event discussions. The exams may consist of a combination of multiple choice, true/false, and/or matching questions. If necessary, exams may be conducted using Exam ID and Exam Monitor. It is the student's responsibility to maintain their computing resources in a state that will enable these procedures. The class performance **MAY BE** curved up to a 79% on major exams. At this time, the final grades will be based on the percentage of total points accumulated. However, if the course director feels that the students are not reviewing the materials prior to the class discussions, he may introduce quizzes into the course as required.

Grading Scale:

A=90-100 B=80-89 C=75-79 D=70-74 F=<70

Laboratory/Clinic Policies and Procedures: NA

Learning Materials:

- **Text:** *Sherris MEDICAL MICROBIOLOGY*, sixth ed., Ryan et al., 2014.
- **Text:** *Principles of anatomy and physiology*, 15th ed., Tortora and Derrickson, 2014.
- PowerPoint presentations and recordings will be posted to Blackboard.

Remediation Policy: Students with poor performance on exams are encouraged to meet with the course director to determine the source of their performance problem(s). Joining a study group of fellow students is encouraged. Tutors from the senior dental hygiene class may be made available by consultation with Dr. Alicia Spence in the Office of Student Development. Should an individual fail to achieve a passing grade, the Student Promotions Committee may be encouraged to have that

student repeat the course at its next scheduled offering, provided the student is performing well in all other course work.

Attendance and Make-up Policy: Attendance is required. If a student misses a major exam with an excused absence, a makeup exam will be made available. However, there may be no basis for a curve on make-up exams. Refer to Rule 7 for details (<http://student-rules.tamu.edu/rule07>).

Special Accommodation for Persons with Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Dr. Paul Dechow, Associate Dean for Academic Affairs in charge of Disability Services, Room 514, or call 214-828-8207 for additional information.

Academic Integrity: Another characteristic of a professional is to uphold the highest standards of personal and intellectual ethical conduct. As a student in this course, the faculty expects you to adhere to such standards of academic integrity, which include not being a participant in cheating or misrepresentation of facts, nor withholding information if you know of such acts being committed. While the faculty will take steps to minimize cheating on exams, it is your responsibility as a professional to not only refrain from such activities but to report those who participate in them.

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. Details are found at <http://aggiehonor.tamu.edu>.

Tentative Schedule BMS 3325 Course Schedule for 2024

Tuesday - Wednesday - Thursday (11:00 am to noon),
Room 310 OR **MediaSite Collection**

Date	Ses sion	Session Title/Topic Power point file	Instructor Or prerecording
1/09/2023	1	History of Microbiology	Umorin
1/10/2023	2	Bacterial and Viral Structure	Umorin
1/11/2023	3	Bacterial Growth and Energy	Umorin
1/16/2023	4	Growth Requirements and Genetics	Umorin
1/17/2023	5	Diagnostic Microbiology	Umorin
1/18/2023	6	Antimicrobials	Umorin
1/23/2023	7	Overview of Immunology	(recording) (Jan 24, 2023)
1/24/2023	8	Innate Immune system	(recording) Innate LAS (Jan 25, 2023)
1/25/2023		Exam I (1-6)	
1/30/2023	9	Adaptive Immunity 1	(recording) (Jan 30, 2023)
1/31/2023	10	Adaptive Immunity 2	(recording) (Feb 1, 2023)
2/01/2023	11	Mucosal Immunity and Oral Immunity	(recording) Mucosal Immunity (Feb 2 2023)
2/06/2023	12	Vaccines and Vaccination	(recording) (Feb 7, 2023)
2/07/2023	13	Epidemiology	(recording) (Feb 8, 2023)
2/08/2023		Review	Email to class
2/13/2023	14	Introduction to Microbial Pathogenesis	(recording) Microbial Pathogenesis (Feb 14, 2023)
2/14/2023	15	Staphylococcus	(recording) (Feb 15, 2023)
2/15/2023		Exam II (7-13)	
2/20/2023	16	Streptococcus	(recording) (Feb 21, 2023)
2/21/2023	17	Gram Positive (Gm+) Rods I	(recording) Gram Positive Rods (Feb 23, 2023)
2/22/2023	18	Gram Positive Rods II	(recording) Gram Positive Rods (Feb 24, 2023)
2/27/2023	19	Biofilms/Dental Plaque/ Caries	(recording) Biofilms

			(Feb 28, 2023)
2/28/2023	20	Oral Inflammation and <i>P. gingivalis</i>	(recording) (Mar 1, 2023)
2/29/2023	21	Respiratory Pathogens	(recording) (Mar 2, 2023)
		Review	(recording) (Mar 4, 2023)
3/05/2023	22	Enterobacteriaceae	(recording) Enterobacteriaceae (Mar 7, 2023)
3/06/2023	23	Enterobacteriaceae	(recording) Enterobacteriaceae (Mar 8, 2023)
3/07/2023		Exam III (14-21)	
		SPRING BREAK	
3/19/2023	24	Vibrios	(recording) (Mar 21, 2023)
3/20/2023	25	Mycobacteria	(recording) (Mar 22, 2023)
3/21/2023	26	Spirochetes	(recording) (Mar 23, 2023)
3/26/2023	27	Zoonoses	(recording) Zoonotic Diseases (Mar 28, 2023)
3/27/2023	28	Chlamydia/Mycoplasma	(recording) Mycoplasma and Chlamydia (Mar 29 2023)
3/28/2023		Review	Email to class
4/02/2023	29	Mycology	(recording) (Apr 4, 2023)
4/03/2023	30	Parasites I	(recording) Parasitology 1 (Apr 5, 2023)
4/04/2023		Exam IV (22-28)	
4/09/2023	31	Parasites II	(recording) (Apr 12, 2023)
4/10/2023	32	Virology Intro	(recording) (Apr 12, 2023)
4/16/2023	33	DNA Viruses	(recording) (Apr 13, 2023)
4/17/2023	34	RNA Viruses	(recording) (Apr 18, 2023)
4/18/2023	35	Review	Email to class
4/23/2023	36	Sterilization	(recording)
4/24/2023		Exam V (29-36)	