Syllabus for MICR 450/650
INFECTIOUS DISEASE PATHOGENESIS
3 Credits
Prerequisite MICR 470

Office hours are by appointment.

Instructor’s contact information:

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Course description:
Students will study mechanisms of bacterial, viral, fungal, and parasitic pathogenesis and the immune response to pathogens.

Course objectives:
1. Students will understand the general disease mechanisms for the major classes of pathogens.
2. Students will be able to identify the key elements of the host immune system and understand how these elements work together in response to an infectious disease.
3. Students will be able to apply fundamental principles of infectious disease pathogenesis to the analysis of clinical case studies.
4. Students will be familiar with current areas of research in the pathogenesis of infectious disease.
5.

Evaluation procedures and criteria:
1. Students will be given 3 in-class exams, each worth 100 points. Exams will include short answer, discussion, and case study questions.
2. Students will be assigned 5 short (up to 2 pages, single-spaced) reading response essays, each worth 20 points. The students will be given a current primary research paper and asked to respond to several questions specific to that specific paper. Evaluation will be based on the form attached to this syllabus.
3. Also, students will complete a term paper worth 100 points on a topic relevant to infectious disease pathogenesis. The topic will be selected in consultation with the instructors. The requirement for the term paper is that it be at least 10 double-spaced pages.

The exams, writing assignments, and term paper will be graded for accuracy and relevance to the topic.

The course grading scale will be 0-59.5% F, 60-69.5% D, 70-79.5% C, 80-89.5% B, 90-100 A.

Course outline:
1. Bacterial classification, structure, and replication
2. Viral classification, structure, and replication
3. Fungal classification, structure, and replication
4. Parasitic classification, structure, and replication
5. Immune response to pathogens
   a. Intrinsic and innate host defenses
   b. Adaptive immune response
   c.
5. Mechanisms of bacterial pathogenesis
   a. Attachment/colonization
   b. Invasion
   c. Evasion
d. Toxin production  
e. Immunopathogenesis

7. Mechanisms of viral pathogenesis  
a. Basics of virus infections – attachment to tropism  
b. Viral virulence  
c. Immunopathology  
d. Patterns of disease

8. Mechanisms of parasite pathogenesis  
a. Susceptibility and resistance  
b. Innate defense mechanisms  
c. Cellular defenses  
d. Immunopathologic reactions in the host  
e. Accommodation and tolerance

**Required student resources:** There is no textbook requirement for this course

**Disabilities:** Any student with disabilities, or others who need special accommodations in this class, are invited to share their concerns or requests with the instructor as soon as possible. See the Counseling and Disability Services website at http://www.ndsu.nodak.edu/counseling/disability/index.shtml.

**Academic Dishonesty/Plagiarism:** All work in this course must be completed in a manner consistent with NDSU University Senate Policy, section 335: Code of Academic Responsibility and Conduct (http://www.ndsu.nodak.edu/policy/335.htm), and with the College of Agriculture Honor System (http://www.ndsu.nodak.edu/instruct/mcclean/ag_www/honor.htm).