COURSE OUTLINE

BIO 215  
Principles of Microbiology  
Course Number  
Course Title  
____3____  
____3____  
Credits  
Hours: lecture/laboratory  

Catalog description:

The study of the morphology, taxonomy, physiology, transmission, and control of microbes, especially those which cause disease in humans. The process of infectious disease and defense mechanisms of disease will be covered as well as an introduction to the basic fundamental principles of organic chemistry and biochemistry. This course is designed for funeral education students and is based on the most recent information in the American Board of Funeral Service Education Curriculum Guidelines.

Prerequisites: BIO103 & 104, or BIO106 and CHE100 or CHE 106

Required texts:

TITLE: PATHOLOGY AND MICROBIOLOGY FOR MORTUARY SCIENCE  
AUTHOR: DAVID MULLINS  
PUBLISHER: THOMSON  

TITLE: BIO215 PRINCIPLES OF MICROBIOLOGY COURSE MANUAL  
AUTHOR: PROFESSOR DIANE N. HILKER  
PUBLISHER: MCCC  
EDITION: 3RD

Last revised: March 2019

Course Coordinator: Professor D.N. Hilker; 609-570-3367; hilkerd@mccc.edu
Information resources:
MCCC library website for database of holdings:
http://www.mccc.edu/student_library.shtml
There are numerous MCCC library holdings for Funeral Service.
The call designations are:
RA622 Funeral Service science and practice
HD9999 Funeral Service business and profession
GT3202 Funeral customs, sociology, and history

Course Competencies/Goals:

The student will be able to:
1) Appraise the historical influence of scientists on the evolution of microbiology
2) Differentiate the classification of microorganisms, categories of cells and divisions of microbiology
3) Distinguish the anatomy and physiology of bacteria
4) Evaluate physical and chemical methods used to control microorganisms and their implications for the embalmer
5) Analyze the relationship between microorganisms and disease and the factors that influence the occurrence of disease
6) Synthesize the etiology of disease of specific pathogenic microorganisms with the appropriate embalming and restorative art treatments

Course-specific General Education Knowledge Goals and Core Skills:

General Education Knowledge Goals

Goal 1. Communication. Students will communicate effectively in both speech and writing.
Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
Goal 7. History. Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.
Goal 8. Diversity. Students will understand the importance of a global perspective and culturally diverse peoples.

MCCC Core Skills

Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.
Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.
Goal C. Ethical Decision-Making. Students will recognize, analyze and assess ethical issues and situations.
Goal D. Information Literacy. Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.
Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.
Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.
Units of study in detail:

Unit #1 – Topics:
- Introduction to Microbiology
- Spontaneous Generation
- Germ Theory
- Classification of Microorganisms
- Categories of Cells
- Divisions of Microbiology

Preparation:
1. Attend class and participate in class discussions.
2. Lecture: Chapter 20 (P&M for MS); pages 3-7 (BIO215CM)
3. Online: “History”

Objectives:
Having completed the assigned readings and online module, attended class and participated in class discussion, the student will be able to:

1. Distinguish the influence of van Leeuwenhoek on the evolution of microbiology. (Course Competencies 1; Gen. Ed. Goal 1 & 7; Core Skill A, B & E)
2. Correlate the concept of “spontaneous generation” with the work of Redi, Needham and Pasteur. (Course Competencies 1; Gen. Ed. Goal 1, 3 & 7; Core Skills A, B & E)
3. Differentiate the Germ Theory of Disease with the research of Bassi, Semmelweis, Pasteur and Lister. (Course Competencies 1; Gen. Ed. Goals 1, 3 & 7; Core Skills A, B & E)
4. Evaluate the influence of Koch on modern bacteriology and explain “Koch’s Postulates”. (Course Competencies 1; Gen. Ed. Goals 1, 3 & 7; Core Skills A, B & E)
5. Explain the order of classification used for all biological forms. (Course Competencies 2; Gen. Ed. Skills 1 & 3; Core Skills A)
6. Compare and contrast eukaryotic and prokaryotic cells. (Course Competencies 2; Gen. Ed. Goals 1 & 3; Core Skills A & B)
7. Explain the five divisions of microbiology. (Course Competencies 2; Gen. Ed. Goals 1 & 3; Core Skills A & B)

Unit #2 – Topics:
- Anatomy of Bacteria
- Binary Fission and Morphology of Bacteria
- Structure and Function of Bacteria
- Endospores
- Flagella and Pili
- Gram-staining

Preparation:
1. Chapter 21 (P&M for MS); pages 23 – 34 (BIO215CM)
2. Online: “Anatomy”

Objectives:
Having completed the assigned readings and online module the student will be able to:

1. Explain the process of binary fission. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A & E)
2. Evaluate the morphology and differentiate basic shapes and arrangements of bacteria. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skills A, B & E)
3. Synthesize the nucleoid, ribosomes, cell membrane, cell wall and capsule with their contribution to cell structure and function. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A, B & E)

4. Distinguish the characteristics of endosporers and their implications for embalmers. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A, B, & E)

5. Differentiate the various structures used for bacterial motility. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skill A, B & E)

6. Compare and contrast gram-positive and gram-negative bacteria. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skill A, B & E)

Unit #3 – Topics: Physiology of Bacteria
Chemical and Physical Requirements for Bacterial Growth
Microbial Associations

Preparation:
1. Attend class and participate in class discussions.
2. Lecture: Chapter 22 (P&M for MS); pages 71-76 (BIO215CM)

Objectives:
Having completed the assigned readings, attended class and participated in class discussions, the student will be able to:

1. Differentiate the physical and chemical requirements for bacterial growth. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skills A, B & F)

2. Compare and contrast psychrophiles, mesophiles and thermophiles. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skills A, B & F)

3. Describe the pH scale and its implication on bacterial growth. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skills A, B & F)

4. Examine osmotic pressure and its influence on the cell. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A & B)

5. Differentiate autotrophic and heterotrophic bacteria. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A & B)

6. Compare and contrast obligate aerobes and obligate anaerobes. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A & B)

7. Differentiate microaerophilic, facultative and aerotolerant organisms. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skills A, B & F)

8. Synthesize the microbial associations of mutualism, commensalism, parasitism, synergism and antagonism. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A, B & F)

Unit #4 - Topics: Control of Microorganisms
Actions of Antimicrobial Agents
Physical and Chemical Methods of Controlling Microorganisms

Preparation:
1. Attend class and participate in class discussions.
2. Lecture: Chapter 23 (P&M for MS); pages 115-120 (BIO215CM)

Objectives:
Having completed the assigned readings, attended class and participated in class discussions, the student will be able to:

1. Demonstrate the appropriate applications of antimicrobial agents for the embalmer. (Course Competencies 4; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
2. Differentiate sterilization, disinfection and antisepsis. (Course Competencies 4; Gen. Ed. Goals 1 & 3; Core Skills A & D)

3. Examine the influence of membrane permeability and enzymes on the efficacy of antimicrobial agents. (Course Competencies 4; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)

4. Critique physical and chemical methods of controlling microorganisms and their appropriate applications for the embalmer. (Course Competencies 4; Gen. Ed. Goals 1, 3 & 9; Core Skills A, B, D & F)

5. Identify factors that influence the properties of chemical agents. (Course Competencies 4; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & F)

6. Compare and contrast halogens, alcohols, aldehydes, phenols and quaternary ammonium compounds. (Course Competencies 4; Gen. Ed. Goals 1 & 3; Core Skills A,B D & F)

**Unit #5 – Topics:**

Microorganisms and Disease
Defense Mechanisms
Factors Influencing the Occurrence of Disease
MRSA (Methicillin-resistant Staphylococcus Aureus
Infection vs. Disease
Endemic/Epidemic/Pandemic/Sporadic Disease
Universal Precautions
Immunology

**Preparation:**
1. Attend class and participate in class discussion.
2. Lecture: Chapter 24 (P&M for MS); pages 105-113 (BIO215CM)
3. Online: “Microorganisms”

**Objectives:**
Having completed the assigned readings and online module, attended class and participated in class discussions, the student will be able to:

1. Distinguish defense mechanisms and their relationship to pathogens. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & E)
2. Describe the “chain of infection”. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A & E)
3. Examine the factors that influence the occurrence of disease. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, E & F)
4. Evaluate Methicillin-resistant Staphylococcus Aureus and its implications for the embalmer. (Course Competencies 5 & 6; Gen. Ed. Goals 1, 3 & 9; Core Skills A, B, C,D, E & F)
5. Compare and contrast exogenous, endogenous, local, focal, general, primary and secondary infections. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A & E)
6. Distinguish endemic, epidemic, pandemic and sporadic diseases. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, E)
7. Examine direct and indirect methods of transmission and their implications for the public and the embalmer. (Course Competencies 5 & 6; Gen. Ed. Goals 1, 2 & 9; Core Skills A, B,D, E & F)
8. Synthesize mechanical, physiological and chemical defenses. (Course Competencies 4; Gen. Ed. Goals 1 & 3; Core Skills A & F)
9. Correlate the concept of “universal precautions” with implications for the embalmer. (Course Competencies 6; Gen. Ed. Goals 1, 3 & 9; Core Skills A, B, C, D, E & F)
**Unit #6** - Topics:  
- *Staphylococcus*
- *Streptococcus*
- *Neisseria*
- *Clostridium*
- *Corneybacterium*
- *Francisella tularensis*
- *Salmonella typhi*

**Preparation:**
1. Attend class and participate in class discussions.
2. Lecture: pages 338 - 365 (P&M for MS); pages 123-130 (BIO215CM)
3. Online: “Pathogens”

**Objectives:**
Having completed the assigned readings and online module, attended class and participated in class discussions, the student will be able to:

1. Synthesize the characteristics of *Staphylococcus* and *Streptococcus* with their specific pathogenicity’s. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)
2. Evaluate the embalming and restorative art implications for *Staphylococcal* and *Streptococcal* diseases. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
3. Analyze the characteristics of *Neisseria* and *Corneybacterium* in relation to pathogenicity. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D E & F)
4. Determine embalming and restorative art implications for *Neisseria* and *Corneybacterium* pathogenicity’s. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B,D,E & F)
5. Analyze the genus *Clostridium* with respect to its unique characteristics and determine embalming and restorative art implications. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
6. Examine the characteristics of *Francisella tularensis* and *Salmonella typhi* bacterium and their pathogenic qualities. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D, E & F)
7. Explain the embalming and restorative art implications for *Francisella tularensis* and *Salmonella typhi*. (Course Competencies 3, 5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D, E & F)

**Unit #7** – Topics:  
- *Mycobacterium*
- Spirochetes
  - *Leptospira interrogans*
  - *Borrelia burgdorferi*
  - *Treponema pallidum*

**Preparation:**
1. Attend class and participate in class discussion.
2. Lecture: pages 355 - 360 (P&M for MS); pages 130 - 131 (BIO215CM)
3. Online: “Mycobacterium and Spirochetes”

**Objectives:**
Having completed the assigned readings, attended class and participated in class discussions, the student will be able to:
1. Synthesize the characteristics of *Mycobacterium avium* and *Mycobacterium tuberculosis* with their specific pathogenicity’s. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)

2. Explain diagnosis, treatment and vaccines for tuberculosis. (Course Competencies 3& 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)

3. Analyze embalming and restorative art implications for *Mycobacterium avium* and *Mycobacterium tuberculosis* infections. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

4. Examine the characteristics of Spirochetes and their pathogenicity. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

5. Distinguish *Leptospira interrogans*, *Borrelia burgdorferi* and *Treponema pallidum* with respect to their specific pathogenicity’s. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

6. Analyze the restorative art and embalming implications for *Leptospira interrogans*, *Borrelia burgdorferi* and *Treponema pallidum*. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

**Unit #8:** - Topics:  
*Vibrio cholerae*  
*Bacillus anthracis*  
*Bordetella pertussis*  
*Enterobacteriaceae*  
*Klebsiella pneumoniae*  
*Proteus*  
*Salmonella*  
*Shigella*  
*Yersinia pestis*

**Preparation:**
1. Attend class and participate in class discussions.
2. Lecture: pages 360 – 366 (P&M for MS); page 132 (BIO215CM)
3. Online: “Enterics”

**Objectives:**
Having completed the assigned readings and online module, attended class and participated in class discussions, the student will be able to:

1. Synthesize the characteristics of *Vibrio cholera* with its specific pathogenicity’s and embalming and restorative art implications. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

2. Examine the characteristics of *Bacillus anthracis* and the three forms that affect humans with consideration for embalming implications. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & F)

3. Analyze the characteristics of *Bordetella pertussis* and its toxins with diagnosis and treatment options.(Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

4. Explore the embalming and restorative art implications inherent with *Bordetella pertussis*. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & F)

5. Synthesize the pathogenic characteristics of *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis* and *Proteus vulgaris* with appropriate embalming and restorative art techniques. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B,D,E & F)
6. Compare and contrast salmonellosis and shigellosis with respect to source, mode of transmission, treatment and prevention. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D,E & F)
7. Evaluate *Yersinia pestis* with respect to virulence, mode of transmission and diagnosis. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D,E & F)

**Unit #9** – Topics:  
*Haemophilus*  
*Campylobacter jejuni*  
*Legionella*  
*Listeria monocytogenes*  
*Pseudomonas*  
*Mycoplasma*  
*Rickettsia*  
*Coxiella*  
*Chlamydia*  
*Prions*

**Preparation:**  
1. Attend class and participate in class discussions.  
2. Lecture: pages 367 - 386 (P&M for MS); pages 79 – 84, 102 & 131 (BIO215CM)  
3. Online: “Haemophilus”

**Objectives:**  
Having completed the assigned readings, online module, attended class and participated in class discussions, the student will be able to:  
1. Analyze the virulence of the genus *Haemophilus* and its associated diseases. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & E)  
2. Compare and contrast *Campylobacter jejuni* and *Listeria monocytogenes* with respect to source, mode of transmission and symptoms. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & E)  
3. Synthesize the characteristics of *Legionella* with its pathogenicity and mode of transmission. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & E)  
4. Examine the genus *Pseudomonas* and its responsibility for nosocomial infections. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B,D & E)  
5. Differentiate the characteristics of the genus *Mycoplasma* with respect to its virulence. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)  
6. Compare and contrast *Ricketttsia rickettsii, Rickettsia prowazekii* and *Rickettsia typhi* with respect to mode of transmission, signs and symptoms, treatment and embalming implications. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)  
7. Examine the characteristics of the bacterium *Coxiella burnetti* and appropriate preventive measures for the disease “Q Fever”. (Course Competencies 3,4 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)  
8. Compare and contrast *Chlamydia trachomatis, Chlamydia psittaci* and *Chlamydia pneumonia* with respect to mode of transmission, signs and symptoms, treatment and embalming implications. (Course Competencies 3,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & F)  
9. Synthesize the virulence of prions with pathologies of the human central nervous system and removal/transfer/embalming implications. (Course Competencies 3,4,5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A,B, E & F)
**Unit #10** – Topics: Viruses
- Dermatropic and Pneumotropic Diseases
- Neurotropic and Viscerotropic Diseases
- Immunological Disease

Preparation:
1. Attend class and participate in class discussions.
2. Lecture: pages 386 – 404 (P&M for MS); pages 87 - 101(BIO215CM)
3. Online: “Viruses”

Objectives:
Having completed the assigned readings, attended class and participated in class discussions, the student will be able to:

1. Explain how viruses replicate and methods for their deactivation. (Course Competencies 3 & 4; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
2. Compare and contrast smallpox and monkeypox with respect to clinical presentation, mode of transmission and prevention. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
3. Evaluate embalming and restorative art implications for smallpox and monkeypox. (Course Competencies 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
4. Compare and contrast rubeola and rubella with respect to clinical presentation, mode of transmission, treatment and prevention. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
5. Evaluate embalming and restorative art implications for rubeola and rubella. (Course Competencies 6; Gen. Ed. Goals 1 & 3; Core Skills A,B, D & F)
6. Examine the correlation between chickenpox and shingles and determine appropriate embalming and restorative art techniques. (Course Competencies 5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
7. Compare and contrast Herpes Simplex 1 and 2 with respect to clinical presentation, mode of transmission, treatment, embalming and restorative art implications. (Course Competencies 5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
8. Compare and contrast Influenza, Hantavirus Pulmonary Syndrome, Severe Acute Respiratory Syndrome and the common cold with respect to clinical presentation, mode of transmission and treatment. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B & D)
9. Distinguish the viruses responsible for rabies, poliomyelitis and viral encephalitis with their specific pathogenicity’s. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A,B & D)
10. Explain the vaccines that are available for rabies and polio. (Gen. Ed. Goals 1 & 3; Core Skills A & D)
11. Examine the history and characteristics of the West Nile Virus. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A & D)
12. Compare and contrast Hepatitis A, B & C with respect to mode of transmission, virulence, treatment and prevention. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, C & F)
13. Describe the OSHA regulation regarding the HBV vaccine and its implication for funeral home employees. (Gen. Ed. Goals 1, 3, 8 & 9; Core Skills A, B, C,D & F)
14. Synthesize embalming implications for Hepatitis A, B & C. (Course Competencies 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
15. Analyze the viruses responsible for infectious mononucleosis, inclusion disease and epidemic parotiditis with appropriate actions to limit transfer of these microorganisms. (Course Competencies 3, 4 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)

16. Evaluate the characteristics of the Human Immunodeficiency Virus and correlate appropriate embalming and restorative art techniques. (Course Competencies 3, 4, 5 & 6; Gen. Ed. Goals 1, 3, 8 & 9; Core Skills A, B, C, D & F)

**Unit #11 – Topics:** Fungi
- Dermatomycosis
- Coccidioidomycosis
- Histoplasmosis
- Candidiasis
- Cryptococcosis
- Aspergillosis
- Pneumocystis Pneumonia (PCP)

**Preparation:**
1. Attend class and participate in class discussions.
2. Lecture: pages 409 - 416 (P&M for MS); pages 9 - 16 (BIO215CM)
3. Online: “Fungi”

**Objectives:**
Having completed the assigned readings, attended class and participated in class discussions, the student will be able to:
1. Differentiate the three fundamental categories of fungi. (Course Competencies 3; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
2. Compare and contrast dermatomycosis, coccidioidomycosis, histoplasmosis, candidiasis, cryptococcosis and aspergillosis with respect to etiology, mode of transmission, characteristics, diagnosis and treatment. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
3. Synthesize trichophyton, microsporum and epidermophyton with their corresponding infections. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
4. Formulate embalming and restorative art implications for dermatomycosis, coccidioidomycosis, histoplasmosis, candidiasis, cryptococcosis and aspergillosis. (Course Competencies 3, 5 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
5. Evaluate the microorganism Pneumocystis carinii/Pneumocystis jiroveci with respect to its characteristics, pathogenicity, diagnosis and treatment. (Course Competencies 3 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)
6. Examine embalming and restorative art implications for PCP. (Course Competencies 3 & 6; Gen. Ed. Goals 1 & 3; Core Skills A, B, D & F)

**Unit #12 – Topics:** Protozoa
- Amoebiasis
- Malaria
- Toxoplasmosis

**Preparation:**
1. Attend class and participate in class discussion.
2. Lecture: pages 416 - 419 (P & M for MS); pages 17 - 20 (BIO215CM)
3. Online: “Protozoa”
Objectives:
Having completed the assigned readings, attended class and participated in class discussions, the student will be able to:

1. Explain the characteristics of protozoa. (Course Competencies 3; Gen. Ed. Goal 1 & 3; Core Skills A & D)
2. Differentiate the etiology, symptoms, diagnosis and treatment of amoebiasis with the characteristics of *Entamoeba histolytica*. (Course Competencies 3, 4 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
3. Synthesize the disease malaria with the genus *Plasmodium*, its mode of transmission, signs and symptoms, virulence, diagnosis and treatment. (Course Competencies 3,4 & 5; Gen. Ed. Goals 1 & 3; Core Skills A, B & D)
4. Explain the Life Cycle of Malaria and associated embalming and restorative art treatments. (Course Competencies 5& 6; Gen. Ed. Goals 1 & 3; Core Skill A,B & D)
5. Analyze toxoplasmosis with respect to is etiology, mode of transmission, symptoms and appropriate preventive measures. (Course Competencies 5; Gen. Ed. Goals 1 & 3; Core Skills A & D)

Assessment of student learning:

Student learning will be assessed using examinations, tests, quizzes, research papers and case studies. Multiple-choice, matching, case studies, short essays, and fill-in-the-blank questions will be given. The final examination will be multiple-choice and will be inclusive. Case studies will be completed in groups as well as individually on tests.

The students will complete a research paper based on an assigned microorganism. The paper will include mode of transmission, incubation period, portal of entry and exit, pathogenicity, factors influencing virulence, embalming and restorative art implications.

The final grade will be determined as follows:

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Quizzes:</td>
<td>5%</td>
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<td>Tests:</td>
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<td>Research Paper:</td>
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<td>Midterm Exam:</td>
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<tr>
<td>Final Exam:</td>
<td>35%</td>
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NOTE: A minimum “C” grade is required to pass this course.

100-94  A
93-90  A-
89-87  B+
86-83  B
82-80  B-
79-78  C+
77-75  C
74-60  D
<60  F

Accessibility and Academic Accommodations

A student who has special needs because of a disability is entitled to receive accommodations (Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973). Students are to give the accommodation form to the instructor at the start of the semester and to discuss how to best implement accommodations. For more information, contact Arlene Stinson, Director of the Center for Inclusion, Transition and Accessibility, LB 217, 570-3525, stinsona@mccc.edu
**Academic Integrity**

Students are required to perform all the work specified by the faculty and are responsible for the content and integrity of all academic work submitted, such as papers, reports, and examinations. A student will be guilty of violating the Rule of Academic Integrity if he or she:

- uses or obtains unauthorized assistance in any academic work;
- gives fraudulent assistance to another student;
- knowingly represents the work of others as his or her own or represents previously completed academic work as current;
- fabricates data in support of an academic assignment;
- inappropriately or unethically uses technological means to gain academic advantage.

**Classroom decorum**

The college welcomes all students into an environment that creates a sense of community, pride and respect; we are all here to work cooperatively and to learn together.

Students are expected to follow ordinary rules of courtesy during class sessions. Engaging in private, side conversations during class time is distracting to other students and to the instructor. Leaving class early without having informed the instructor prior to class is not appropriate. Unless there is an emergency, leaving class and returning while the class is in session is not acceptable behavior. Disruptive behavior of any type is not appropriate. All electronic devices are to be placed on silent alarm during class sessions. Texting and other forms of electronic communication will not be tolerated during class sessions. Students who engage in such activity will be asked to leave the class by the instructor.

**Attendance**

It is the students’ responsibility to attend all classes. If classes are missed for any reason, students are still responsible for all content that is covered, for announcements made in their absence, and for acquiring any materials that may have been distributed in class. Students are expected to be on time for classes. If students walk into a class after it has begun they should select a seat close to the entrance in order to minimize the disruption.

Make-up tests and exams will not be given. In the event of an emergency it is the student’s responsibility to notify the instructor of the situation prior to the administration of the test or exam. Should the instructor decide that a make-up test or exam is warranted because of the circumstances resulting in the absence, it will be administered at a scheduled time. The student must take the test or exam at the scheduled time or they will receive a grade of “0”. This “exception” will only be considered once for the entire semester. Any additional tests or exams that are not taken with the rest of the class will receive a grade of “0”.