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Office: 003C Cavness Science Building
Office Hours: Mon 9-10, 1-2, 4-6; Tues 12:30 - 5
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Text (Gladdin & Trattler, Clinical Microbiology Made Ridiculously Simple. Edition 6)

University Academic Honor Code: Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

Disability Statement: Persons with disabilities which may warrant academic accommodations must contact the Student Life Office in order to request & to implement academic accommodations. Bring the appropriate paperwork to the instructor.

Religious holy day: “ A student who intends to observe a religious holy day during the semester should make that intention known in writing to the instructor during the first week of the semester and one week prior to the absence. If this submission is completed, a student who is absent from classes for the observance of a religious holy day shall be allowed to take make up missed exams or assignments scheduled for that day in accordance with syllabus policy.”

Attendance: Roll will be recorded at each lecture & lab meeting. Most lab exercises cannot be made up due to limitations in storage life/amounts of shared media.

Scope: Emphasis on clinical lab aspects of microbial pathogens. There are also components examining the treatment/prevention of infectious diseases, the nature of microbial virulence factors & immunity to infection.

Overall Goals: 1. To impart factual knowledge in the field of infectious diseases.
   2. To teach fundamental principles and theories.
   3. Case studies will introduce medical terminology & critical thinking pertinent to infectious diseases
   4. To provide experience in scientific writing.

Student Learning Objectives/Outcomes/Assessment:

A successful student in pathogenic microbiology should be able to achieve the following course related learning outcomes:

- Be able to read, comprehend and analyze case histories in clinical microbiology
- Be familiar with medical terminology as it relates to clinical microbiology
- Be familiar with normal laboratory values as they relate to clinical microbiology
- Be familiar with the major groups of microbial pathogens including their identifying features, their etiology of disease, their virulence factors and their treatment regimens
- Appreciate the importance of aseptic technique in clinical and laboratory environments
- Be able to generate a hypothesis driven research term project, obtain laboratory results, evaluate the significance of the research results and communicate this effectively in both written and oral form.

For Departmental, State, and Accreditation purposes this course will assess the following learning objectives:

- Biology Department Learning Goal #5 – Student ability to communicate & critically evaluate information in oral & written forms. This will be accomplished by assessing the outcome of the research term project. Exceeding departmental goals requires a 95 or better score & oral presentation of the project; meeting departmental goals requires a score of 90—94 and oral presentation of the project; approaches departmental goals requires a score of 85—89; & below departmental goal is a score of <85.

- Biology Department Learning Goal #4 – Student will develop expertise in science process skills, inquiry, and investigative methodologies (research, technical, analytical, problem—solving, and evaluative skills) in the clinical lab sciences. This will be accomplished by assessing the student’s performance on a 50 point laboratory practical examination that covers the semester’s laboratory work including the ability to perform experimental procedures, evaluate & analyze results & apply this information to a research term project. 45 or more points represents exceeding departmental goals; 40—44 represents meeting departmental goals; 35---39 represents approaching departmental goals and <35 represents a below departmental goal performance.
Exams: February 14 (Wed) 2-5 PM, March 28 (Wed) 2-5 PM, and May 8 (Tues) 10:30-12:30. No make-up exams will be administered. See the instructor if an emergency prevents you from taking an exam.

Nature of Exams: Each exam is worth 125 points and will consist of both lecture and lab material (see sample exams in this syllabus). Each exam will also include at least one case study plus questions using medical terminology from the assigned pages of the glossary (see appropriate pages in this syllabus).

Book Quizzes: Multiple choice quizzes worth 25 points each will be administered prior to the start of 5 laboratory periods (see lab schedule for the dates). These quizzes will cover reading assignments from the Gladwin & Trattler text. You will not be held responsible for this information on lecture exams but it is important to note that there is considerable overlap between the information in the book and that presented in lecture----so use the quizzes to help you study & understand lecture information. Pay particular attention to the information in boldfaced type and the illustrations. Your best four scores from among the five quizzes will be used in determining your final grade (i.e., the lowest book quiz score will be dropped if all 5 quizzes are taken).

<table>
<thead>
<tr>
<th>Possible points:</th>
<th>Grade:</th>
<th>Bonus opportunities:</th>
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</thead>
<tbody>
<tr>
<td>375 = 3 exams</td>
<td>&gt; 653 pts = A</td>
<td>16 pts max for oral presentation</td>
</tr>
<tr>
<td>100 = lab write-ups</td>
<td>580-653 = B</td>
<td>of your research project; 5 pts for</td>
</tr>
<tr>
<td>100 = research paper</td>
<td>507-579 = C</td>
<td>being a blood donor at the TriBeta</td>
</tr>
<tr>
<td>50 = lab practical</td>
<td>420-506 = D</td>
<td>sponsored drive (you or your recruit</td>
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<tr>
<td>100 = book quizzes</td>
<td>&lt; 420 pts = F</td>
<td>will earn you credit)</td>
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Instructions for laboratory exercise write-ups:
Each write-up must have a title page that includes only the title of the exercise & your name. The second page (or pages) must be entitled “Results”. Where appropriate, information in the results section must be in the form of fully labeled tables, graphs, figures, photos, drawings, etc. Narrative must be kept to a minimum. Results must not include descriptions of methods/background and/or explanations for results. Do not describe the appearance of results but rather the actual results (e.g. do not say "yellow" in describing a tube of glucose fermentation broth. The proper phrasing is "positive glucose fermentation")

The last section of the write-up must be entitled “Explanations” (re-stating your results is not the same thing as explanation!). Discuss the meaning of your results using what you have learned in lecture and/or the discussion section at the end of the lab handout that provides hints on what & how to discuss. For example, if one of the goals of the exercise is unknown identification, you should describe, with specifics, how you deduced the identity of each unknown (e.g. What tests supported your identification? What tests did not? What problems did you encounter? What might account for these problems?). For some experiments, you may want to state your expected results, why you expected what you did & then compare your expectations to your actual results. Did they come out as expected? If not, provide some possible reasons. Where you can cite numbers/stats/percentages to support your statements, do so.

Each of the 16 lab exercises is worth 6 points. Each exercise will be evaluated for 3 criteria:
[1] Complete results --3 points
[2] Quality of explanations--3 points
[3] If you did not present “show-me” results to the instructor in lab for those exercises requiring that, 1 pt will be deducted from that write-up.

The write-ups for Exercises #1-8 are due in lab February 21 (Wed) & Exercises #9-16 are due in lecture on April 12 (Thurs). Write-ups will not be accepted beyond one day late. A one-day late set of write-ups will have -5 points deducted from the maximum total. Each set of 8 exercises (worth a maximum total of 48 points) will be awarded an additional 2 points if all format requirements are adhered to (i.e. title page, appropriately labeled sections, appropriate content in each section, etc).
**Laboratory practical exam:**  
Students will be assigned specific times to enter the lab and will be allowed to spend time at each station. Each station will have a question related to demonstration materials present at the station. The emphasis of the exam will be on interpretation of the results of various tests and on the recognition of specific microorganisms from media, slides, etc. Scheduled date for this exam is April 25.

**Lab research project:**  
May be done individually or in pairs (if done in pairs, only one paper is to be submitted and the same grade will be assigned to both people). Each project must be designed so that it compares the numbers or types of bacteria found in a before/after location or between different but related locations. Each project, where appropriate, should attempt to identify isolated bacteria that appear to be significant to the project. The comparisons & identifications must be done using only the supplies distributed plus wet mounts, gram stains, spore stains, oxidase and catalase tests.

On March 29 (Th), an outline of the project must be submitted to the instructor including:

1. name of the person(s) proposing the project;
2. what site(s) you are going to study
3. how many sites you will sample
4. how many times you will sample each site and
5. whether or not you are looking for specific organisms and if so, which ones; if not, state what you hope to show

The instructor will return this proposal with a suggested list of media and materials that you will need for the project you proposed. After you have completed the project you will be required to write and submit a paper detailing your work. The paper is due at Noon on April 30 (M).

**Project Paper Grading Criteria:**

1. Spelling, grammar, neatness & a clearly stated hypothesis included in an introduction where you also explain why you chose the topic you are studying, citing references where appropriate. *(20 points)*

2. Exact conformity (except that no abstract is required) to the format of long research papers published in *Applied and Environmental Microbiology*; a bibliography of at least 10 references referring to some aspect of your topic. *(20 points)*

3. Precise and complete outline of experimental procedures, incubation times and temperature, media used, appropriate controls, etc. (but do not describe how each biochemical test was performed). *(20 points)*

4. Complete results, with effective and liberal use of tables and/or figures; use of quality photographs; use of color where appropriate. *(20 points)*

5. Evaluating whether your results support your hypothesis /possible explanations for your findings citing references /Suggestions for why & how you could improve the study/Practical significance of your results. *(20 points)*

In the time set aside for lab during Dead Week, you may give an oral presentation of your project for bonus points. A pair of individuals can receive credit for each member if both give some aspect of the study. The talk (not counting the Q&A session) must be 5-8 minutes long.

**Evaluation criteria:**

1. **Visual aids →4 pts max** (e.g. slides, transparencies, poster, handouts, power point with photos--anything beyond words is counted as a visual aid)

2. **Effective use of time →4 pts max** (avoid citing lots of monotonous data, background information or redundant experimental details; do not leave out information necessary for your audience to clearly understand how you did the project; adhere to the time limit)

3. **Response to relevant questions from the audience →4 pts max** (demonstrate that you know a little more about your project than you had time to present in your formal talk--but keep your answers brief enough so that you have time to answer several questions)

4. **For giving the presentation and being present at all other bonus talks → 4 pts max**
Laboratory schedule:  (Lecture topics will coincide with the sequence of these dates)

January 17:  [Lab orientation]  [Analysis of Blood Slides]  [Epidemiology]
January 24:  [Bacillus & Clostridium]  [Selective & Differential Media]
January 31:  [Book quiz #1]  [Staphylococcus]  [Streptococcus]
February 7:  [Pseudomonas]  [Gram Negative cocci]
February 14:  [EXAM #1]
February 21:  [Book quiz #2]  [Enterobacteriaceae]
February 28:  [Urinalysis]  [Mycobacterium]
March 7:  [Book quiz #3]  [Pathogenic Fungi]  [Pathogenic Protozoa]
March 21:  [Antiseptics]  [Dental Microbiology]
March 28:  [EXAM #2]
April 4:  [Book quiz #4]  [Antibiotics]
April 11:  [Open lab/project work]
April 18:  [Book quiz #5]  [Review for lab practical & discussion of research paper]
April 25:  [Lab practical exam]
May 2:  [Project presentations in lab for extra credit]

Format style for research paper references *(Journal of Applied and Environmental Microbiology)* See instructor if you encounter problems in how to list a reference.

**Scientific journal article:**


**Personal communication:** (this type of reference can not be used more than once)


**Class notes:** (this type of reference can not be used more than once)


**Single Author Book:** (Use #1 above as a guide for showing how multiple authors should be listed)


**Book with an editor:** (Citing an authored article within a book that lists just editors in the title)


**Magazine, newspaper, brochure, bulletin article.** (Author not mentioned. Where appropriate, the citation should also include day (e.g. July 24, 1984) and bulletin or brochure number)


**Internet article:** (If the article does not cite an author, the organization name is used instead. For example in #7 you would use—On Health Network Company—where Woznicki, K. is shown)
