SYLLABUS
MICROBIOLOGY
Biology 342  Spring 2000
lecture: MWF 11:45-12:45  ELVEY AUD.

Instructor: Dr. Joan Braddock and Dr. Kelly Auer
e-mail: fjjfb@uaf.edu e-mail: kauer@mosquitonet.com
Office: 474-6294 or 7991 Office: 474-2659
Office: 211 Irving Office: 257 AHRB
Hours: 10-11 am MWF Hours: 1-2 pm MWF
or by appointment (best) or by appointment

T.A.’s: Jeff Estensen, Sabrina Zimmerman


Lab Manual: Available from Biology and Wildlife (room 211 Irving I) for $10.00

Outline: This course covers the basics of microbial life with an emphasis on
bacteria. We will consider the following questions:

What are microbes?
An overview of the microbial world.

How do microbes function as organisms?
Microbial growth, physiology and genetics.

How do microbes interact with the world around them?
Medical microbiology, biogeochemical cycling & biodegradation.

Grading: Evaluation of the lecture portion of the course will include three term
exams, a final and a problem set. The final exam will be comprehensive. The exam
format will include multiple choice questions, short answer questions and a few short
problems or essays. The problem set will be handed out in four parts (one problem
per part, each worth ¼ of the total problem set grade). You may work in groups on
solving the problems but the final write-ups must be in your own words. The lab will
be graded on two formal lab reports (the labs to be written up will be announced), two
lab practicals and brief lab quizzes. The lab reports are to be written up in the format
described in your lab manual. If you have any questions talk to your T.A. BEFORE
THE LAB IS DUE. Your proficiency in basic laboratory skills will be assessed in two
lab practical exams. For safety considerations it is extremely important that you
come to lab prepared. Brief lab quizzes covering the material for that day’s lab will be
given promptly at the beginning of lab and will take about 5-10 minutes to complete.
These quizzes can not be make up. There will be no quiz for the first lab.

The course grading will be broken down as follows:

Lecture (≈ 2/3 of final grade):
Midterms 3 @ 13% each
Final 1 @ 13% each
Problem set (handed out in 4 parts) 1 @ 13% each

Lab (≈ 1/3 of final grade):
Lab Reports 2 @ 6% each
Lab Practicals 2 @ 7.5% each
Lab Quizzes 8 @ 1% each

1. Attendance at labs and exams is required. It will generally not be possible to
make up missed labs or exams. If you are going to have to miss something, talk to
one of us beforehand so we can resolve the problem.
2. Missing three labs may be taken to be equal to dropping the lab portion of the
class and will result in failing the class.
## APPROXIMATE SCHEDULE OF LECTURE TOPICS

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<td>Alaska Civil Rights Day</td>
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<td>Jan. 19</td>
<td>History and Techniques</td>
<td>50-69, 73-90 (skim), 90-93</td>
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<td>Microbial Growth</td>
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<td>Jan. 28</td>
<td>Environmental Effects on Growth</td>
<td>136-148; 678-692</td>
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<td>Control of Microbial Growth</td>
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<td>Feb. 02</td>
<td>Energetics/Enzymes</td>
<td>152-161</td>
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<td>Feb. 04</td>
<td>The Generation of Energy</td>
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<td>Feb. 07</td>
<td>Glucose to Pyruvate</td>
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<td>Feb. 09</td>
<td>Fermentation</td>
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<td>Feb. 11</td>
<td>Electron Transport and Oxidative Phos.</td>
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<td>Hand out Problem 1: DUE 02 Feb.</td>
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<td>Feb. 15</td>
<td>Aerobic and Anaerobic Respiration</td>
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<td>LAST DAY TO APPLY FOR SPRING GRADUATION</td>
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<td>Biosynthesis: DNA Replication</td>
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<td>Feb. 23</td>
<td>Biosynthesis: RNA Synthesis</td>
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<td>Regulation: Control of Enzyme Activity and Synthesis</td>
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<td>Mar. 01</td>
<td>Microbial Genetics: Genes, Mutations and DNA Repair</td>
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<td>Hand Out Problem 3: DUE Mar. 03</td>
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<td>Mar. 03</td>
<td>Transfer of Genetic Material</td>
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<td>Mar. 03</td>
<td>Transfer of Genetic Material</td>
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<td>Mar. 06</td>
<td>Recombinant DNA Technology Applications of Genetic Engineering</td>
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<td>Mar. 10</td>
<td>Viruses: General Properties, Cultivation</td>
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<td>LAST DAY FOR WITHDRAWALS</td>
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<td><strong>SPRING BREAK</strong></td>
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<td>Mar. 20</td>
<td>Bacteriophage</td>
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<td>Mar. 22</td>
<td>Animal Viruses</td>
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<td>Diseases Causes by Viruses (except AIDS)</td>
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<td>Symbiosis: Commensalism/Mutualism Normal Human Microbiota</td>
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<td>Symbiosis: Parasitism Non-Specific Host Defense</td>
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<td>The Immune System: Antigens and Antibodies</td>
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<td>The Immune System: B-cell and T-cell Biology</td>
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<td>The Immune System: Antigen-Antibody Reactions In Vivo/In Vitro</td>
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<td>Disorders of the Immune System AIDS</td>
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<td>Microbial Diseases- Airborne and Arthropod</td>
<td>767-777 (selected diseases)</td>
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<td>Apr. 14</td>
<td>Microbial Diseases- Direct Contact</td>
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<td>800-802 (Chlamydia)</td>
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<td>Microbial Diseases- Foodborne/Waterborne</td>
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<td>Apr. 19</td>
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<td><strong>FINAL EXAM</strong>: Wednesday 10:15 to 12:15</td>
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