COURSE DESCRIPTION

The course will provide a detailed look into the chemical composition, cellular structure, and metabolism of microorganisms. Classes will consist of traditional lecture, use of multimedia resources, and classroom discussion. Student participation is expected. Out-of-class topical readings and primary literature pertinent to lectures will be provided.

OBJECTIVES

At the completion of the course, students should have: 1) developed a global view of how bacteria obtain energy, acquire nutrients, and subsequently convert nutrients into metabolites and ultra-structures required for bacterial growth, division, survival, and group interactions, 2) gained an understanding of how bacteria sense and respond to abiotic and biotic environmental stimuli, 3) a basic understanding of experimental methods used to study bacterial physiology, and 4) become comfortable reading and comprehending basic primary literature.

PREREQUISITE

Organic Chemistry; or consent of instructor.

RECOMMENDED TEXT


I will place a 3rd edition on reserve in the library. Not all of the chapters in the 3rd edition line up with the 4th edition and the 4th edition has material not found in the 3rd edition.

Lecture slides/notes, recommended reading materials, and old exams/practice questions will be made available on D2L.

FISHER RESEARCH BACKGROUND


https://scholar.google.com/citations?user=Y_NNihkAAAAJ&hl=en&oi=ao

https://orcid.org/0000-0002-1663-8389

http://micro.siu.edu/faculty-staff/faculty/fisher.php
CONTACT INFORMATION

LSIII 1007 (office), LSIII 1026/1032 (labs)
618-453-5201 (office phone)
dfisher@siu.edu or fisher@micro.siu.edu

Departmental Mailbox: LSII, Room 131

OFFICE HOURS

11 AM – 12 PM on Monday and Wednesday or by appointment.

GRADING OVERVIEW

SCALE: 
A ≥90%
B 89-80%
C 79-70%
D 69-60%
F <60%

1) Five one-hour exams plus the final, 70 points each, lowest score dropped:

   a) Lectures 1-9
   b) Lectures 10-17
   c) Lectures 18-25
   d) Lectures 26-33
   e) Lectures 34-39
   f) Final – Cumulative

Exam points: 350

2) 15 (weekly), 5-point quizzes/homework/group assignments; 12 count towards your grade, the remaining 3 are bonuses

3) Three literature assignments (packet grading, see below): 0/65/85/100

Due dates: Mon 9-17 Mon 10-22 Mon 12-3

Total 510

LITERATURE ASSIGNMENTS

Literature will be posted to D2L at least two weeks in advance of the scheduled due date. You must read the assigned literature and answer the three questions listed at the end of the: “How to read a scientific paper” PDF provided on D2L. Each assignment is due by the start of class on the scheduled due date. Assignments must be submitted as Word documents via the D2L assignment submission folder. A detailed rubric with formatting guidelines will be provided on D2L – follow the rubric and formatting guidelines! Each assignment will be graded as pass/fail using the provided rubric. Passing one assignment = 65/100, two = 85/100, three = 100/100.
GENERAL COURSE TIMELINE

Fall 2018 Holidays and Drop Information
(https://registrar.siu.edu/calendars/academic1819.php)

Semester Begins: Monday, August 20
Labor Day Holiday: Monday, September 3
Fall Break: NONE
Thanksgiving Vacation: November 17 – 25
Last day to file drop paperwork, eligible for a refund: Friday, August 31
Last day to file drop paperwork, NOT eligible for a refund: Friday, October 26

LECTURE/EXAM SCHEDULE*

<table>
<thead>
<tr>
<th>Day / Date</th>
<th>Topic</th>
<th>Recommended Reading</th>
<th>Lecture Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Aug 20</td>
<td>Introduction To Cell Structure &amp; Metabolism</td>
<td>Chps 1 and 2</td>
<td>1</td>
</tr>
<tr>
<td>W 22</td>
<td>Introduction To Cell Structure &amp; Metabolism</td>
<td>Chps 1 and 2</td>
<td>2</td>
</tr>
<tr>
<td>F 24</td>
<td>DNA Replication and Growth</td>
<td>Chps 2 and 3</td>
<td>3</td>
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<tr>
<td>M 27</td>
<td>Plasmids</td>
<td>D2L</td>
<td>4</td>
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<tr>
<td>W 29</td>
<td>RNA synthesis</td>
<td>Chp 11</td>
<td>5</td>
</tr>
<tr>
<td>F 31</td>
<td>Protein Synthesis</td>
<td>Chp 11</td>
<td>6</td>
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<tr>
<td>M Sep 3</td>
<td>No Class: Labor Day</td>
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<tr>
<td>W 5</td>
<td>Cell Envelope</td>
<td>Chp 12</td>
<td>7</td>
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<tr>
<td>F 7</td>
<td>Cell Envelope</td>
<td>Chp 12</td>
<td>8</td>
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<tr>
<td>M 10</td>
<td>Cell Envelope</td>
<td>Chp 12</td>
<td>9</td>
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<tr>
<td>W 12</td>
<td>Exam 1  Lectures 1-9</td>
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<tr>
<td>F 14</td>
<td>Solute Transport</td>
<td>Chp 17</td>
<td>10</td>
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<tr>
<td>M 17</td>
<td>Solute Transport Lit Assignment 1</td>
<td>Chp 17</td>
<td>11</td>
</tr>
<tr>
<td>W 19</td>
<td>Protein Transport and Secretion</td>
<td>Chp 18</td>
<td>12</td>
</tr>
<tr>
<td>F 21</td>
<td>Protein Transport and Secretion</td>
<td>Chp 18</td>
<td>13</td>
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<tr>
<td>M 24</td>
<td>Responses to Environmental Stress</td>
<td>Chp 16</td>
<td>14</td>
</tr>
<tr>
<td>W 26</td>
<td>Responding to Environmental Cues</td>
<td>Chps 19 and 20</td>
<td>15</td>
</tr>
<tr>
<td>F 28</td>
<td>Responding to Environmental Cues</td>
<td>Chps 19 and 20</td>
<td>16</td>
</tr>
<tr>
<td>M Oct 1</td>
<td>Biofilms / Cell to Cell Communication</td>
<td>Chps 21 and 22</td>
<td>17</td>
</tr>
<tr>
<td>W 3</td>
<td>Exam 2  Lectures 10-17</td>
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<tr>
<td>Day</td>
<td>Date</td>
<td>Activity</td>
<td>Chapter</td>
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<tr>
<td>F</td>
<td>5</td>
<td>Bioenergetics</td>
<td>Chp 8</td>
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<tr>
<td>M</td>
<td>8</td>
<td>Membrane Bioenergetics</td>
<td>Chp 4</td>
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<tr>
<td>W</td>
<td>10</td>
<td>Membrane Bioenergetics</td>
<td>Chp 4</td>
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<tr>
<td>F</td>
<td>12</td>
<td>Electron Transport</td>
<td>Chp 5</td>
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<tr>
<td>M</td>
<td>15</td>
<td>Electron Transport</td>
<td>Chp 5</td>
</tr>
<tr>
<td>W</td>
<td>17</td>
<td>Photosynthesis</td>
<td>Chp 6</td>
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<tr>
<td>F</td>
<td>19</td>
<td>Photosynthesis</td>
<td>Chp 6</td>
</tr>
<tr>
<td>M</td>
<td>22</td>
<td>Regulation of Metabolic Pathways</td>
<td>Chp 7</td>
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<td></td>
<td></td>
<td><strong>Lit Assignment 2</strong></td>
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<tr>
<td>W</td>
<td>24</td>
<td>Central Metabolism</td>
<td>Chp 9</td>
</tr>
<tr>
<td>F</td>
<td>26</td>
<td><strong>Exam 3  Lectures 18-25</strong></td>
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<tr>
<td>M</td>
<td>29</td>
<td>Central Metabolism</td>
<td>Chp 9</td>
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<tr>
<td>W</td>
<td>31</td>
<td>Central Metabolism</td>
<td>Chp 9</td>
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<tr>
<td>F</td>
<td>Nov 2</td>
<td>Fermentation</td>
<td>Chp 15</td>
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<tr>
<td>M</td>
<td>5</td>
<td>Fermentation</td>
<td>Chp 15</td>
</tr>
<tr>
<td>W</td>
<td>7</td>
<td>Metabolisms of Lipids/Nucleotides/Amino Acids</td>
<td>Chp 10</td>
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<tr>
<td>F</td>
<td>9</td>
<td>Inorganic Metabolism</td>
<td>Chp 13</td>
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<tr>
<td>M</td>
<td>12</td>
<td>Inorganic Metabolism</td>
<td>Chp 13</td>
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<tr>
<td>W</td>
<td>14</td>
<td>C1 Metabolism</td>
<td>Chp 14</td>
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<tr>
<td>F</td>
<td>16</td>
<td><strong>Exam 4  Lectures 26-33</strong></td>
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<td>M</td>
<td>19</td>
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<tr>
<td>W</td>
<td>21</td>
<td>No Class: Thanksgiving Break</td>
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<tr>
<td>F</td>
<td>23</td>
<td>No Class: Thanksgiving Break</td>
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<tr>
<td>M</td>
<td>26</td>
<td>C1 Metabolism</td>
<td>Chp 14</td>
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<tr>
<td>W</td>
<td>28</td>
<td>Bacterial development</td>
<td>Chp 23</td>
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<tr>
<td>F</td>
<td>30</td>
<td>Bacterial Virulence and Metabolism</td>
<td>D2L</td>
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<td>M</td>
<td>Dec 3</td>
<td><strong>Lit Assignment 3</strong></td>
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<td></td>
<td></td>
<td><strong>Bacterial Virulence and Metabolism</strong></td>
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<tr>
<td>W</td>
<td>5</td>
<td>Bacterial Virulence and Metabolism</td>
<td>D2L</td>
</tr>
</tbody>
</table>
Exam 5  Lectures 34-39

Final Date and Time TBD

*Lecture dates and material are tentative; exam dates and literature assignment due dates are not. Students will only be responsible for material covered in class prior to the exam date.

**ADDITIONAL INFORMATION**

HINTS for SUCCESS:

1) Attend class.
2) Study often, not just the night before an exam.
3) Review lecture material the evening after a lecture. This will help you learn the material and will make studying for exams much easier.
4) Read the chapters cited next to each lecture prior to class. It will help you better comprehend the lecture material.
5) Ask questions!
6) Seek out academic help before it is too late – it is very difficult to recover from two failed exams.
7) LEARNING ASSISTANCE and DISABILITY SERVICES:
   http://tutoring.siu.edu/index.html and http://disabilityservices.siu.edu/

ATTENDANCE:
Attendance is not mandatory, but absences are likely to negatively affect your grade as material covered exclusively in the classroom will appear on exams. In addition, weekly quizzes will be administered, and no make ups will be offered for missed quizzes.

ACADEMIC COURTESY (modified from Dr. Brad Stiles, Wilson College):
Please arrive to class on time and be prepared to discuss the material. Cell phones must be turned to silent or off during class. Ringing and buzzing cell phones bother others in the class (and the instructor) and detract from a fruitful educational environment. Sleeping, reading newspapers, talking to friends, texting, or other activities distracting the students and instructor are strictly forbidden.

SCHEDULING of EXAMS, ASSIGNMENTS, and QUIZZES:
Exams may only be rescheduled for extreme circumstances (death of an immediate family member, illness requiring hospitalization, etc.) or an absence due to a pre-approved academic/athletic conflict. Proof may be required (for example, a doctor’s note) and permission to reschedule will be granted on a case by case basis at the discretion of the instructor. Failure to take an exam on the scheduled date without an approved absence will result in a 0 (F) for the exam. Note – the first missed exam would be your drop exam. Make-up quizzes will not be offered. As 3 quizzes are bonuses, you essentially have 3 drops before points would be deducted from your overall score. Literature assignments will not be accepted after the due date.
ACADEMIC DISHONESTY POLICY (adapted from the College of Science policy http://www.science.siu.edu/_common/pdfs/oppaper):
Students may be subject to disciplinary proceedings resulting in an academic penalty or disciplinary penalty for academic dishonesty. Academic dishonesty includes, but is not limited to, cheating on a test, plagiarism, or collusion. Sanctions for academic dishonesty available to an instructor include: assigning a failing grade, or zero, for a paper or exam; assigning a failing grade for a course (the instructor shall assign an “incomplete” in lieu of a letter grade pending adjudication and final resolution of the complaint.); recommending that a student be dropped from a program; and recommending that a student be suspended from the University.

EMERGENCY PROCEDURES:

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at http://emergency.siu.edu/, Department of Safety's website http://www.dps.siu.edu/ (disaster drop down), and in the Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

I have read the syllabus.

Name – Sign and Print

Date

You will earn 10 bonus points for completing and turning in this form (cut below the dotted line). Must be received no later than the end of class on Wednesday August 29th, 2018 for points.
IMPORTANT DATES *
Semester Classes Begin ................................................................. 08/20/2018
Last day to add full-term course (without Dean’s signature): ............... 08/26/2018
Last day to withdraw from the University with a full refund: ............... 08/31/2018
Last day to drop a full-term course for a credit/refund: ...................... 09/02/2018
Last day to drop a full-term course (W grade, no refund): .................... 10/28/2018
Final examinations: ........................................................................ 12/10–12/14/2018

Note: Please verify the above dates with the Registrar calendar and find more detailed information on deadlines at http://registrar.siu.edu/calendars. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedule of Classes search results at http://registrar.siu.edu/schedclass/index.php

FALL SEMESTER HOLIDAYS
Labor Day Holiday 09/03/2018
Thanksgiving Break 11/17–11/25/2018

WITHDRAWAL POLICY ~ Undergraduate only
Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar’s office. For the proper procedures to follow when dropping courses and when withdrawing from SIU visit: http://registrar.siu.edu/students/withdrawal.php

INCOMPLETE POLICY~ Undergraduate only
An INC grade may be assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments for the course. An INC must be changed to a completed grade within one full semester (undergraduates), and one full year (graduate students), from the close of the term in which the course was taken or graduation, whichever occurs first. Should the student fail to complete the remaining course requirements within the time period designated, the incomplete will be converted to a grade of F and such grade will be computed in the student's grade point average. For more information visit: http://registrar.siu.edu/grades/incomplete.php

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit more than once. For students receiving a letter grade of A, B, C, D, or F, the course repetition must occur at Southern Illinois University Carbondale. Effective for courses taken Summer 2013 or later, only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. This policy will be applied to all transferrable credit in that only the last grade will be used to calculate grade point average. Only those courses taken at the same institution are considered repeats under this policy. See full policy at http://registrar.siu.edu/students/repeatclasses.php

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog at http://gradschool.siu.edu/about-us/grad-catalog/

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must contact DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM
See the Student Conduct Code http://srr.siu.edu/student-conduct-code/

MORRIS LIBRARY HOURS: http://libguides.lib.siu.edu/hours

ADVICEMENT: http://advisement.siu.edu/

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

SALUKI CARES
The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For Information on Saluki Cares: call(618) 453-1492, email siucares@siu.edu, or http://salukicares.siu.edu/

SIU’S EARLY WARNING INTERVENTION PROGRAM (EWIP)
Students enrolled in courses participating in SIU’s Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the Core Curriculum’s Overview webpage: http://corecurriculum.siu.edu/program-overview/

EMERGENCY PROCEDURES
We ask that you become familiar with Emergency Preparedness @ SIU. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness @ SIU website, and through text and email alerts. To register for alerts visit: http://emergency.siu.edu/

STUDENT MULTICULTURAL RESOURCE CENTER
The Student Multicultural Resource Center serves as a catalyst for inclusion, diversity and innovation. As the Center continues its work, we are here to ensure that you think, grow and succeed. We encourage you to stop by the Center, located in Grinnell Commons, to see the resources available and discover ways you can get involved on the campus. Visit us at http://inclusiveexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offer free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:
Tutoring: http://tutoring.siu.edu/
Math Labs: http://math.siu.edu/courses/course-help.php

WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit: http://write.siu.edu/

DIVERSITY
Southern Illinois University Carbondale’s goal is to provide a welcoming campus where all of our students, faculty and staff can study and work in a respectful, positive environment free from racism and intimidation. For more information visit: http://diversity.siu.edu/

MILITARY COMMUNITY
There are complexities of being a member of the military community and also a student, and military and veteran related developments can complicate academic life. If you are a member of the military community and in need of accommodations please visit Veterans Services at http://veterans.siu.edu/

SIU ONLINE: https://online.siu.edu/

Need help with an issue? Please visit SALUKI SOLUTION FINDER at http://solutionfinder.siu.edu/