

MICROBIOLOGY 301

Principles of Microbiology Fall 2018

LECTURE: Lawson Hall, Room 161, 9:00 a.m. M/W/F

LABORATORY: Life Science II, Room 113 or 119

Section	Day	Time	Room
1	Monday	10:00–11:50 a.m.	119
	Wednesday	10:00–10:50 a.m.	119
2	Monday	10:00–11:50 a.m.	113
	Wednesday	10:00–10:50 a.m.	113
3	Monday	12:00–1:50 p.m.	113
	Wednesday	12:00–12:50 p.m.	113
4	Monday	12:00–1:50 p.m.	119
	Wednesday	12:00–12:50 p.m.	119
5	Tuesday	9:00–10:50 a.m.	113
	Thursday	9:00–9:50 a.m.	113
6	Tuesday	10:00–11:50 a.m.	119
	Thursday	10:00–10:50 a.m.	119
7	Tuesday	11:00 a.m.–12:50 p.m.	113
	Thursday	11:00–11:50 a.m.	113
8	Tuesday	2:00–3:50 p.m.	113
	Thursday	2:00–2:50 p.m.	113

PROFESSORS

OFFICES

OFFICE HOURS

Dr. Kelly Bender
e-mail: bender@micro.siu.edu

Life Science II, Room 106
Phone: 453-2868

M W 10:00 - 11:00
or by appointment

Dr. Vjollca Konjufca
e-mail: vjollca@micro.siu.edu

Life Science III, Room 1012
Phone: 453-8161

M W 10:00 - 11:00
or by appointment

TEACHING ASSISTANTS

SECTIONS

OFFICES

1. Adam Horton email: ahorton@siu.edu	1 and 7	LS-III 1011	(453-3812)
2. Nicole Szczepanik email: szczep@siu.edu	2 and 8	LS-II 110	(453-2930)
3. Kyle Gruber email: kyle.gruber@siu.edu	4 and 5	LS-III 112	(453-4797)
4. Erik Velkme email: erik.velkme@siu.edu	3 and 6	LS-II room 112	(453-4797)

Please take advantage of the people that are here to help you in MICR 301. If you need help with either lecture or laboratory material, don't wait until the week before an exam to see your instructors; get things straightened out early. TAs will post their office hours and give you their e-mail addresses during the first week of class. For help in MICR 301, feel free to see your own TA or any of the other TAs, in addition to your professors.

LABORATORIES BEGIN PERIOD 2 OF WEEK 1. During week 3, Monday labs will be affected by Labor Day. These labs are rescheduled; see the Laboratory Manual for detailed information.

COURSE OBJECTIVES:

Lecture: *To develop a fundamental understanding of the basic principles of microbiology.* Students will develop a working understanding of the structure, growth, nutrition, metabolism, genetics, diversity and ecology of prokaryotes, acquire basic knowledge of pathogenesis and immunology, and become familiar with medical, agricultural and some other applied aspects of the field of microbiology.

Laboratory: *To acquire the basic laboratory skills of microbiology.* At the end of the course students will be able to: (1) handle and grow pure cultures of microorganisms safely; (2) perform manipulations involved in aseptic technique, diluting, pipetting and enumerating microorganisms; (3) use a light microscope correctly; (4) sample and isolate bacteria from natural environments, including the human body, (5) perform and interpret basic immunological assays; and (6) accurately record, interpret and present microbiological data in written form.

REQUIRED RESOURCES:

Lecture: ***BROCK BIOLOGY OF MICROORGANISMS***, 15th edition, 2017, Michael T. Madigan, Kelly S. Bender, Daniel H. Buckley, W. Matthew Sattley, and David A. Stahl (Pearson). The textbook is available at the Student Center and 710 Bookstores, where you may choose between hardcover or loose leaf ("a la carte") edition. Alternatively, you may purchase the electronic version from various suppliers. A copy of the text is also available for checkout at the Reserves Desk in Morris Library. Assigned readings from the text (see lecture schedule below) are listed by section number.

Lab: *Laboratory Manual for MICR 301*, available at The Printing Plant (608 S Illinois Avenue). Some laboratory supplies (lab coat or apron, Sharpie marking pen, microscope slides, lens paper and notebook) are also required; these are available in all of the bookstores. In addition, the book "A Photographic Atlas to the Microbiology Laboratory" (M.J. Leboffe & B.E. Pierce) is available in the bookstores as well as electronically. You may find it helpful for laboratory work, but it is **not required**.

Web Sites: Lecture outlines and supplemental study materials will be posted on SIU Online (Desire2Learn). They are not a substitute for attendance and taking your own notes.

GRADES: A total of 615 points is possible. Of these 615 possible points, 415 are allotted to Lecture and 200 to the Laboratory. Grade and point distributions are as follows:

Lecture:	Exam 1	100 pts
	Exam 2	100 pts
	Exam 3	100 pts
	½ final exam (originally 200 pts)	100 pts
	½ final exam (see above)	100 pts
	pop quizzes (six 3 pt quizzes; drop lowest)	15 pts
	<i>Drop lowest exam score</i>	<u>-100 pts</u>

Maximum lecture points possible 415 pts

Three sectional exams (100 points, 1 hour each) will be given during the semester (see **LECTURE SCHEDULE** for exam dates) along with a comprehensive final exam (200 points, 2 hours). Your final exam score will be divided in half to give two "section-exam equivalents". Along with your 3 sectional exam scores, this will give you a total of 5 exam scores. At the end of the semester (and no sooner), the top 4 of these 5 scores will be summed to yield your lecture exam points. Six 3-point pop quizzes will also be given with the lowest score dropped (15 points total). **NO MAKEUP EXAMS OR QUIZZES WILL BE GIVEN.** All exams and quizzes will be multiple-choice and will cover material from both the lecture and the assigned readings. You are responsible for assigned readings whether or not the material is covered in lecture. Any bonus points that you may earn increase your score, but do not increase the number of points required to get a specific grade.

Lab:	1. Notebook (see instructions in your lab manual):	75 points
	2. Research project:	25 points
	3. Lab practical exam:	25 points
	4. Weekly 3-point lab quizzes (see lab manual; 42 points) plus a comprehensive 18-point quiz in week 13	60 points
	5. Technique Points (see below):	<u>15 points</u>
	TOTAL	200 points
	6. penalty for excessive absence/tardies (see below):	- 40 points
	7. penalty for not cleaning up (see lab manual):	- 10 points

How to do well in Lab:

- (1) Attend and be on time for every lab
- (2) Take the laboratory exercises and your notebook seriously
- (3) Be prepared for quizzes
- (4) Follow both written and oral directions

Your attendance is essential to meeting the objectives of the lab. For the lab to be meaningful and for you to do well in lab, you must attend every lab period and be well prepared as you come to lab. Attendance will be recorded. If you miss more than two lab sessions, you will lose 40 lab points. Three tardies (you are tardy, if you are more than 5 minutes late for class) equal one absence. There are **no make-up labs** in MICR 301. Because new materials are only available the first period of each week's labs, the labs are run on the stated schedule. Also note that laboratory quizzes are given at the beginning of lab periods; if you are late, you will miss the quiz or have less time to finish it than normal.

Your lab notebook is the written record of your laboratory experience. Your notebook will be collected three times during the semester and graded from 0 to 25 points each time (see grading criteria in the lab manual). Follow the protocol in the manual and do the laboratory manipulations as instructed. Up to 15 technique points will be awarded to you by your lab instructor based on their assessment of how well you are prepared for lab and follow directions and whether you do the required manipulations both correctly and consistently. If you are lazy or careless in your technique, expect to lose both technique points and points in the lab practical exam (see below). Also, if your TA has to constantly remind you how to do things, this will not help your technique points. During week 13 of the semester, a laboratory practical exam will be given. This exam is designed to test key microbiological skills (dilutions, plating, aseptic technique, etc.) you will develop by doing the weekly laboratory exercises (see the lab manual for details). On the same day, a comprehensive quiz (worth 18 points) will be given. In all other weeks (except week 14), expect a 3-point quiz to test your preparedness for the experiments of that week. **NO MAKEUP QUIZZES OR LAB PRACTICAL EXAM WILL BE GIVEN.**

FINAL COURSE GRADE

Points	Grade	%
≥ 553	A	≥ 90
492 - 552	B	80 - 89
430 - 491	C	70 - 79
369 - 429	D	60 - 69
< 369	F	<60

On exam days:

1. Be on time. If you are late, you will have less time to finish the exam.
2. After the first student has finished the exam and left the classroom, exams will no longer be given out to latecomers.
3. If you have a baseball cap on, turn it around.
4. Scantron answer sheets will be machine scored. Thus, bring a sharpened #2 pencil and an eraser. Do not use ink on scantron sheets.

5. Instructors will seat you as you come into the auditorium. If you seat yourself, the instructors may reseat you. Use only a single desk to do your work. **Do not look at your neighbor's exam!**
6. No resource materials may be open or operated during the test. This includes printed and hand-written materials and electronic devices.
7. Once an exam has started, you may not leave your seat without permission from an instructor until you have finished the exam.
8. It goes without saying that you will be academically honest and do your own work. Cheating will be dealt with according to SIU academic dishonesty policies.
9. It is your responsibility to turn in both your exam and scantron sheet to **your specific TA.**

MORE TIPS FOR DOING WELL IN MICR 301:

(1) Attend every class period, take careful notes and study with your classmates.

Nothing substitutes for being in class, listening, taking *your own* notes and asking questions. Many years of teaching this course have shown that students who get the best grades in MICR 301 are those who *come to class all the time*. During class instructors will emphasize key concepts and illustrate them with figures and tables from the text; it is important that you note which text figures and tables are shown (see next paragraph on this). Also, read the assigned text readings **BEFORE** you come to class so that the material rings bells when it is presented. As you sit in lecture, take careful notes — writing is a form of learning. In MICR 301 it is critical that you take good notes during class; your notes are your lifeline to success in the course. Finally, if at all possible, study with a classmate. After you've "heard it" and "written it", "say it". Explaining concepts to a classmate and vice-versa will strengthen your learning experience. Quiz each other, in order to detect those gaps that the own eyes easily overlook.

(2) Study on a continuous basis, not on a crisis basis. Review of lecture material *as soon as possible after the lecture* is the most effective way of studying. This means that the evening following a class period (if not before), you should sit down and go through your notes in detail, highlighting the important points and filling in any gaps. Think about the lecture while you are doing this; what points were emphasized or seemed most important? Then re-read the text passages relating to the lecture while you have your notes in front of you; pay particular attention to what you perceived as key points and to figures from the text that were presented in class. If you study two weeks (or even two days) following a lecture instead of *the day of* a lecture, you will not achieve the same learning benefit of *immediate* reinforcement. Staying on top of the material and eliminating gaps right away will make it much easier to follow along with the next lecture and to prepare for exams. In addition, careful review of the BigIdeas at the end of each chapter of your text and answering the Review and Application Questions will help enhance your progress in studying.

LECTURE SCHEDULE¹

WEEK	DATE	LECTURE NUMBER	TOPIC	READING ASSIGNMENT ²
1	Aug 20	1	Introduction—The Microbial World	Syllabus-Chapter 1
LABORATORIES BEGIN AUGUST 22/23				
	Aug 22	2	The Microbial World/Cell Morphology	Chapter 1 2.1 – 2.2
	Aug 24	3	Cell membrane, wall, and structures	2.3 – 2.9
2	Aug 27	4	Endospores and cell movement	2.10 – 2.13
	Aug 29	5	Metabolism: nutrition and energetics	3.1 – 3.7
	Aug 31	6	Glycolysis, fermentation & energy generation	3.8 – 3.12
3	Sep 3	LABOR DAY—NO CLASS (Laboratories will be held this week. M/W sections will have their 1st lab on Wednesday and 2nd lab on Friday)		
	Sep 5	7	Growth of microbial cells and populations	5.1 – 5.8
	Sep 7	8	Factors affecting microbial growth	5.9 – 5.17
4	Sept 10	9	Nucleic Acids and DNA replication	4.1 – 4.4
	Sept 12	10	Transcription of DNA to RNA	4.5 – 4.6
	Sept 14	11	Protein synthesis and secretion	4.7 – 4.13
5	Sep 17	12	Antimicrobials and persistence	7.10 – 7.11 28.10 – 28.12
	Sep 19	13	Review session	
	Sep 21	—	EXAM I (Lectures 1–12)	—
6	Sep 24	13	Regulation of gene expression	6.1 – 6.3
	Sep 26	14	<i>lac</i> operon and global regulation	6.4 – 6.5

	Sep 28	15	Viruses: structure and replication	8.1 – 8.8
7	Oct 1	16	Bacterial genetics	11.1 – 11.2,
	Oct 3	17	Bacterial genetics	11.5 – 11.9
	Oct 5	18	Genetic engineering and biotech	12.1 – 12.7
8	Oct 8	19	Phototrophy and the Calvin cycle	14.1 – 14.5 15.2 - 15.7
	Oct 10	20	Respiration, acetogenesis, methanogenesis	14.7, 14.13 – 14.7
	Oct 12	21	Fermentation	14.19 – 14.21
9	Oct 15	22	Chemolithotrophy and nutrient cycles	20.1 – 20.2, 21.1, 21.3 15.12 – 15.13, 15.9 – 15.11
	Oct 17	23	Microbiology of the built environment	22.1 – 21.7
	Oct 19	24	Microbial symbioses	23.1, 23.3, 22.7 – 22.8
10	Oct 22	25	Microbial symbioses	23.11 – 23.13
	Oct 24	26	Review session	
	Oct 26	—	EXAM II (Lectures 13–26)	—
11	Oct 29	27	Interactions of humans with microbes	24.1 – 24.5
	Oct 31	28	Microbial infection and pathogenesis	25.1 – 25.8
	Nov 2	29	Cells and organs of the immune system	26.1 – 26.4
12	Nov 5	30	Mechanisms of innate immunity	26.1, 26.5 – 26.7
	Nov 7	31	Complement	26.9
	Nov 9	32	Inflammation	26.8
13	Nov 12	33	Acquired (adaptive) immunity	26.1, 27.1 – 27.3, 27.5

****LAB PRACTICAL EXAM on November 12/13****

Nov 14	34	T cells and immune responses	27.7 – 27.8
Nov 16	35	B cells and antibodies	27.3 – 27.4

14 Nov 19- Nov 23 **THANKSGIVING BREAK—NO CLASS**

15	Nov 26	-	EXAM III (Lectures 27–35)	-
	Nov 28	36	Antigen processing and presentation	27.5 – 27.6
	Nov 30	37	Diseases caused by microbes/ Vectorborne and soilborne	30.1, 30.4, 30.6 - 30.8 30.13 – 30.15, 31.7, 31.9

16	Dec 3	38	Food-borne and water-borne infections	32.9 – 32.10, 32.13, 32.3
	Dec 5	39	Epidemiology	29.1 – 29.9
	Dec 7	40	Artificial immunity-Vaccination	27.2, 28.9

FINAL EXAM. The scheduled date for this comprehensive exam will be announced after the 4th week of class and will take place in Lawson Hall room 161.

¹Dr. Bender will lecture in weeks 1–10 and Dr. Konjufca will lecture in weeks 11–16.

²Reading assignments are from ***Brock Biology of Microorganisms***, 15th edition. Reading assignment numbers (4.2, 6.3 etc.) refer to numbered sections within a chapter. Instructors expect that students will have read the assigned sections **before** class. Syllabus readings and content are subject to changes announced in class.

FINALLY:

Page 10 of this syllabus provides a score sheet for you to keep track of all the points you collect from graded assignments in MICR 301. Each blank on this sheet stands for an opportunity to earn points towards the grade you want to reach; take every one seriously. Note that the "drop exam" applies no sooner than at the end of the semester. When you calculate your current standing in the course (with an INC in mind or just out of interest), do not drop any exam score; that would bend the mathematical truth.

Page 11 of this syllabus is SIU's official Syllabus Appendix for Fall 2018. It comprises information on emergency procedures, important dates, policies and various support services offered on our campus.

Your MICR 301 Grade Record

Laboratory: 200 points total

Lab Quizzes: 3 points each (maximum 42 pts), comprehensive: (maximum 18 pts)

week 1 _____ week 2 _____ week 3 _____ week 4 _____ week 5 _____
 week 6 _____ week 7 _____ week 8 _____ week 9 _____ week 10 _____
 week 11 _____ week 12 _____ week 14 break week 15 _____ week 16 _____

Comprehensive quiz (week 13) _____

Lab Quizzes total out of 60 _____

Notebook: (maximum 25 points each)

week 7 (Exercises 1-8) _____
 week 11 (Exercises 9-13) _____
 week 16 (Exercises 14-23) _____

Notebook total out of 75 _____

Independent Research Project (maximum 25 points) _____

Lab Practical Exam (maximum 25 points) _____

Technique Points (maximum 15 points) _____

Poor Attendance (missed 3 or more labs
and/or excessive tardies) **– 40 points**

(A) LABORATORY TOTAL _____

Lecture: 415 points total

Exam-1 _____ Exam-2 _____ Exam-3 _____
 Final Exam (1/2 score) _____ Final Exam (1/2 score) _____

Drop the lowest of these five and add the remaining for exam score _____

Six Lecture Pop Quizzes: maximum 3 points each, drop the lowest quiz score (total 15 pts)

quiz 1 _____ quiz 2 _____ quiz 3 _____ quiz 4 _____
 quiz 5 _____ quiz 6 _____

Drop the lowest of these six and add the remaining for lecture quiz total _____

(B) LECTURE TOTAL _____

GRAND TOTAL OF LAB AND LECTURE (A) + (B) _____

Syllabus Attachment

Fall 2018

MISSION STATEMENT FOR SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

SIU embraces a unique tradition of access and opportunity, inclusive excellence, innovation in research and creativity, and outstanding teaching focused on nurturing student success. As a nationally ranked public research university and regional economic catalyst, we create and exchange knowledge to shape future leaders, improve our communities, and transform lives.

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

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/#>

DISABILITY SUPPORT SERVICES

SIU Carbondale is committed to providing an inclusive and accessible experience for all students with disabilities. Disability Support Services coordinates the implementation of accommodations. If you think you may be eligible for accommodations but have not yet obtained approval please contact DSS immediately at 618-453-5738 or disabilityservices.siu.edu. You may request accommodations at any time, but timely requests help to insure accommodations are in place when needed. Accommodations and services are determined through an interactive process with students and may involve consideration of specific course design and learning objectives in consultation with faculty.

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/>

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 the Student Services Building Room 140, to see the resources available and discover ways you can get involved on the campus. *Visit us at* <https://smrc.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) 453-2461, email siucares@siu.edu, or <http://salukicare.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>

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

ADVISEMENT: <http://advisement.siu.edu/>

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

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>

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/>

CENTER FOR LEARNING AND SUPPORT SERVICES

Help is within reach. Learning support services offers 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/>

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/>

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

PLAGIARISM

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