BS 171: Cell and Molecular Biology Laboratory
Fall Semester, 2019
Course Syllabus (Frequently Asked Questions)

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1. Who are my instructors and how do I contact them?

Course Coordinator

John W. Urbance, Ph.D.
Office: N215 North Kedzie Laboratory
Phone: 432-1316
Email: urbance@msu.edu
Office Hrs: Tuesdays & Wednesdays 1:00-2:00

Co-coordinator

Course Instructors and Class Times

Section	Day	Instructional Time	Location	Instructor	Email	Undergrad Assistant
001	M	11:30 AM - 2:20 PM	N216 North Kedzie	Macy Pell	pellmacy@msu.edu	John Ryan
	Tu	3:00 PM - 3:50 PM	S105 South Kedzie			
002	M	11:30 AM - 2:20 PM	N208 North Kedzie	Billy Poulos	pouloswi@msu.edu	Kevin Lesser
	Tu	3:00 PM - 3:50 PM	S105 South Kedzie			
003	M	3:00 PM - 5:50 PM	N216 North Kedzie	Dr. John Urbance	urbance@msu.edu	David Connolly
	Tu	3:00 PM - 3:50 PM	S105 South Kedzie			
004	M	3:00 PM - 5:50 PM	N208 North Kedzie	Dr. Mike Wiser	mwiser@msu.edu	Brian Haynes
	Tu	3:00 PM - 3:50 PM	S105 South Kedzie			
005	M	7:00 PM - 9:50 PM	N216 North Kedzie	Billy Poulos	pouloswi@msu.edu	Brian Haynes
	Tu	3:00 PM - 3:50 PM	S105 South Kedzie			
006	M	7:00 PM - 9:50 PM	N208 North Kedzie	Connor Buckley	buckl123@msu.edu	John Downey
	Tu	3:00 PM - 3:50 PM	S105 South Kedzie			
007	Tu	8:00 AM - 10:50 AM	N216 North Kedzie	Dr. Bethany Huot	huotbeth@msu.edu	Nicole Lasich
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
008	Tu	8:00 AM - 10:50 AM	N208 North Kedzie	Dr. Jinjie Liu	liujinj@msu.edu	Haley Velisek
	W	4:10 PM - 5:00 PM	2320 Engineering			
009	Tu	11:30 AM - 2:20 PM	N216 North Kedzie	Irving Salinas	salina51@msu.edu	Natalie Cruz
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
010	Tu	11:30 AM - 2:20 PM	N208 North Kedzie	Dr. Bethany Huot	huotbeth@msu.edu	Dean Wundrach
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
011	Tu	3:00 PM - 5:50 PM	N216 North Kedzie	Dr. Mike Wiser	mwiser@msu.edu	John Ryan
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
012	Tu	3:00 PM - 5:50 PM	N208 North Kedzie	Olivia Fitch	fitcholi@msu.edu	Andrea Nguyen
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
013	Tu	7:00 PM - 9:50 PM	N216 North Kedzie	Connor Buckley	buckl123@msu.edu	John Downey
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
014	Tu	7:00 PM - 9:50 PM	N208 North Kedzie	Irving Salinas	salina51@msu.edu	Sofia Kesler
	W	4:10 PM - 5:00 PM	1281 Anthony Hall			
015	W	8:00 AM - 10:50 AM	N216 North Kedzie	Macy Pell	pellmacy@msu.edu	Kevin Lesser
	Th	3:00 PM - 3:50 PM	S105 South Kedzie			
016	W	11:30 AM - 2:20 PM	N216 North Kedzie	Zoe Hansen	hansenzo@msu.edu	Kevin Lesser
	Th	3:00 PM - 3:50 PM	S105 South Kedzie			
017	W	11:30 AM - 2:20 PM	N208 North Kedzie	Dr. Bethany Huot	huotbeth@msu.edu	Natalie Cruz
	Th	3:00 PM - 3:50 PM	S105 South Kedzie			
018	W	3:00 PM - 5:50 PM	N208 North Kedzie	Zoe Hansen	hansenzo@msu.edu	Amanda Huang
	Th	3:00 PM - 3:50 PM	S105 South Kedzie			
019	W	3:00 PM - 5:50 PM	N216 North Kedzie	John Keven	kevenjoh@msu.edu	Andrea Nguyen
	Th	3:00 PM - 3:50 PM	S105 South Kedzie			
020	W	7:00 PM - 9:50 PM	N216 North Kedzie	Elizabeth Baird	bairdel1@msu.edu	Haley Velisek
	Th	3:00 PM - 3:50 PM	S105 South Kedzie			
021	Th	8:00 AM - 10:50 AM	N208 North Kedzie	Dr. Jinjie Liu	liujinj@msu.edu	Dean Wundrach
	F	9:10 AM - 10:00 AM	N331 North Kedzie			
022	Th	8:00 AM - 10:50 AM	N216 North Kedzie	Dr. Bethany Huot	huotbeth@msu.edu	Nicole Lasich
	F	9:10 AM - 10:00 AM	S105 South Kedzie			
023	Th	11:30 AM - 2:20 PM	N216 North Kedzie	John Keven	kevenjoh@msu.edu	Omar Effendi
	F	9:10 AM - 10:00 AM	S105 South Kedzie			
024	Th	3:00 PM - 5:50 PM	N216 North Kedzie	Dr. Katie Krueger	krueg172@msu.edu	Ariana Zimmerman
	F	9:10 AM - 10:00 AM	S105 South Kedzie			
025	Th	7:00 PM - 9:50 PM	N216 North Kedzie	Olivia Fitch	fitcholi@msu.edu	Ariana Zimmerman
	F	9:10 AM - 10:00 AM	S105 South Kedzie			
026	Th	7:00 PM - 9:50 PM	N208 North Kedzie	Elizabeth Baird	bairdel1@msu.edu	Sofia Kesler
	F	9:10 AM - 10:00 AM	S105 North Kedzie			

Labor Day week is different. Does it affect my section?
"Week 1" BS171 Schedule

MSU's "*Through the Looking Glass"* Week 1 can be confusing. Whatever your schedule for your other classes, the BS171 schedule is as follows:

Labs that normally meet on Mondays will meet on Wednesday, August 28.

ALL other BS171 sessions (ALL other labs and ALL recitations) follow their normal daily schedule Labor Day week (Sept 2-6).

August-September						
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
25	26	27	28 **Attend lab if your lab is normally on Monday**	29 **No 171 classes**	30 **No 171 classes**	31
1	2 **Labor Day University Holiday**	3 **Attend your normal Tuesday recitation or lab**	4 **Attend your normal Wednesday recitation or lab**	5 **Attend your normal Thursday recitation or lab**	6 **Attend your normal Friday recitation**	7

If I have questions, who do I contact?

Reason	Contact Person	Contact Information
You missed a lab and want to make up the lab or turn in the lab paper late or make up a test.	Contact your instructor and the instructor of the section you wish to attend for the make-up	See email addresses of the instructors listed above
You need help with the lab content, an assignment or a paper.	Dr. Urbance, your instructor or visit the help room (219 NKL)	See email addresses of the instructors listed above.
Administrative details (e.g., drops, adds, section changes, and related matters)	Ms. Shelly Smith 218 North Kedzie Laboratory BioSci Program Secretary	(517) 432 - 1316 smithsh@msu.edu
If you want help with course content, need to talk to someone about a problem with the lab or the recitation or an unresolved situation with your lab instructor.	Dr. John Urbance	(517) 432 - 1316 urbance@msu.edu
A problem that has not been resolved by talking to your lab instructor or the course coordinator	Dr. Jon Stoltzfus, BioSci Program Director (appointments are made through the program secretary)	(517) 432-1316 stoltzfu@msu.edu

Questions or Concerns: If you have a problem or question concerning the laboratory, see your lab instructor first. If the problem cannot be resolved by your lab instructor, then contact the course coordinator, Dr. Urbance. If you are unable to resolve the problem, then contact the Biological Sciences Program Director, Dr. Jon Stoltzfus at (517) 432-1316 (appointments are made through the program secretary) or stoltzfu@msu.edu.

2. What are the Course Materials and Resources?

Course Website: We will be using D2L (https://d2l.msu.edu) for our course website.

The general, course-wide D2L site will be administered by Dr. Urbance and will contain announcements and a general course information folder in the "Content Browser" section, containing lab exercises, syllabus, rubrics, etc. Each graduate teaching assistant will have a folder for their sections on the D2L site, where they will post section-specific materials

Textbooks and Required Materials

1. The laboratory exercise manual and associated documents will be made available on-line on the course D2L site.
2. ***Student Lab Notebook*****,** Hayden-McNeil Publishing, is mandatory and available from the student bookstores.
3. Lab safety goggles are required for working in the lab at all times. If you have goggles from your chemistry lab, those will work fine.
4. There will be a cost to the student (<$20) toward the cost of printing their group research poster. ***This is a requirement of the course and failure to contribute toward the cost of your team's poster will result in the student getting zero points for the poster.***.
5. It is *recommended* that you have access to your BS161 textbook to augment background knowledge on topics covered in the laboratory.

On-Line Lectures: Much of the underlying concepts and background science behind the lab exercises in this course will be presented as online lectures available on the course D2L website. These will be openable using your web browser.

Recitations: ***Attendance in recitation is mandatory and chronic absences and tardiness will result in loss of effort points and points for any in-class assignments*****.** Recitations will cover material related to the labs and readings, will go into greater detail and emphasize specific points and will include in-class exercises and assignments. Frequently students will be expected to present their data and data analyses to the class.

BS171 Help/Research Room: N219 North Kedzie Laboratory will be the BS171 Help Room and Research Lab. This is where instructors will hold their weekly office hours. Students can visit the help room to solicit help and advice at any instructor's office hours. The schedule of instructor office hours is posted online at the following site (www.tinyurl.com/BioSciHelp) (Note: this website also contains the help schedule for the other BioSci courses as well. Scroll down the document to find the BS171 schedule).

During the research portion of the course, research projects will require a certain amount of time in lab outside of your normal, weekly lab period (e.g. bacterial cultures need to be transferred to keep them alive or prepped for in-class analyses). This will also be conducted in N219.

3. What is the course about?

What would a biologist do?

That is the theme upon which BS171 exercises and content are based. The design of the BS171 laboratory course is to try to recreate, as best we can in our classroom setting, *a true research laboratory experience*. All known biological information was acquired through observation and experimentation. Biologists in the laboratory or in the field make observations of biological phenomena and, based on those observations, pose questions, formulate hypotheses and then design and carry out experiments to address those questions and test their hypotheses. They keep records of their results (the laboratory notebook) and have to analyze and interpret their data and then their findings and conclusions need to be reported to the scientific community (and society in general).

The faculty has designed the BS171 *exercise modules* to mimic this process as best we can in a classroom setting. Rather than mindless "cookbook-like" lab exercises where you simply follow a set of instructions (recipes) and go home (which may be your experience in laboratory classes thus far), *BS171 exercise modules are couched within the framework of using the Scientific Method*. We are going to ask you to be creative and to think for yourselves.

Students are first introduced to a set of laboratory techniques and relevant background science and then, armed with these research tools, asked to use their knowledge creatively. Students are allowed to formulate legitimate biological questions and hypotheses on topics that interest them and then design and carry out their own experiments to test their hypotheses. After proper analysis of their data, students then "report" their findings in the some of the same ways that professional biologists report their research; through lab notebooks, lab reports and, ultimately research posters. The goal is that students not only learn biological facts and principles but also how to solve problems and to think critically, to learn to apply their knowledge and analyze observations and new phenomena based upon their knowledge—in other words, *to begin your training as actual scientists*.

There are a number of basic course goals that go hand-in-hand with this overall course design and served as the foundation for designing BS171 exercises and assignments:

- *To provide students the opportunity to practice how biological knowledge is gained through the Scientific Method*
- *To develop critical thinking and problem-solving skills*
- *To teach fundamental lab techniques*
- *To introduce students to basic molecular methods and their practical applications*
- *To highlight the cellular processes associated with these molecular methods*
- *To develop communication skills*
- *To familiarize students with sources of scientific literature, biological information and on-line databases*
- *To integrate mathematics as applied to biological problems*
- *To simply prepare students for upper level courses*
- *To make the teaching laboratory as similar to a real research laboratory as possible*
- *To generate enthusiasm for biology (Biology is fascinating and fun!!!!)*

4. What do I do if I have to miss a class?

Attendance & making up a missed class:

Missed labs and recitations, and any points associated with them, can only be made up by prior arrangement, for a documented illness, or for a legitimate emergency (assessed by Dr. Urbance). If you do **miss a lab or recitation and a makeup is granted, you must contact** your lab instructor to determine if you can go to his or her other section, or some other section that week. If a student needs to make-up the session in another instructor's section, **it is the student's responsibility to contact the appropriate lab instructor to get permission to attend that lab or recitation. BOTH the student's TA and the TA of the section you are wishing to attend must be informed of, and agree to, the student attending the make-up section**. An instructor has the right to deny admittance to any student wishing to attend that section if prior arrangement has not been made.

While you have our sympathies, excuses such as "My car broke down", "I over slept because I've been studying for four exams this week" are *not* legitimate excuses for missing class. (Sorry)

Chronic tardiness for lab or recitation will affect your grade for the course. Also, pre-lab notebook assignments are due at the beginning of lab. These assignments cannot be made up if the student demonstrates a pattern of tardiness.

Grief Absences

In the unfortunate event of a death or serious illness in the family**,** University policy requires students to obtain a grief absence from the registrar's office. Students seeking a grief absence should be directed to the Grief Absence Request Form found on the RO home page (https://reg.msu.edu/) under "Student Resources StuInfo (https://stuinfo.msu.edu/) under "Academics - Enrollment Information and Services - Grief Absence Request Form." Students will be asked to supply information on the nature of the loss, the date they became aware, and the expected period of absence.

Once completed, the information is routed to the Associate Dean of the student`s college and must be received prior to the student leaving campus. The student will receive a confidential message confirming the submission and reminding them that supporting documentation must be provided and who to send it to. In addition, the appropriate dean`s office will be notified that a request has been submitted. Once the appropriate administrator has either approved or denied the request, the student will again receive a confidential message notifying them of the decision of the dean`s office. If approved, instructors will be notified by the appropriate dean`s office of the period of absence. Instructors are expected to arrange for students to make up the missed work.

5. How will my grade be calculated?

BS171 Fall 2019 Grade Determination: Points for the various assignments will be *approximately* distributed as per the following categories.

ASSIGNMENT	Overall %
Individual Pre-labs & Lab Notebook	**10%**
Quizzes and Exams *Before-lab Quizzes, Lab Skills Practical Exams, & Cumulative Final Exam*	**30%**
Individual Lab Reports *Two 1-page lab reports*	**10%**
Individual Worksheets & Assignments *In-lab worksheets, Cumulative Exam prep worksheet, surveys, etc.*	**5%**
Student Team Research *Literature Search, Progress reports, Research Notebook, Research Poster*	**35%**
Recitation In-class Activities *LonCapa exercises, in-class worksheets/activities*	**10%**
Total	**100%**

Grading Scale

Percentage	Grade
90-100%	4.0
85-89.99%	3.5
80-84.99%	3.0
75-79.99%	2.5
70-74.99%	2.0
65-69.99%	1.5
60-64.99%	1.0
59.99% or less	0.0

6. What are the course policies and student responsibilities?

E-Mail Expectations: Michigan State University's e-mail system will be used in this course. You should be sure to activate your free account before the end of the first day of classes. We will send out information about the lab or recitation via e-mail. We also recommend that you contact your laboratory or recitation instructor with any questions pertaining to lab or recitation via e-mail. If you e-mail your instructor, you should receive a response within 24 hours. If not, please send them a courteous reminder e-mail of your query. YOUR MSU EMAIL

ACCOUNT IS IMPORTANT! I know many of you use alternate email accounts, however, all class related announcements and work will be sent to your MSU account. ***You are responsible for any course information sent to your MSU email account*** **so check your MSU account frequently.**

Late Assignments, Missed Assignments and Re-grading Policy:

Late assignments will be penalized 10% for every day (including each weekend day) that they are late and will not be accepted after one week past the due date. If you need to hand in an assignment late, or *even think* you may need to hand in an assignment late, see your instructor *before* the assignment is due. If you turn in an assignment over the weekend you must submit an electronic version to receive the proper late penalty, otherwise it will be penalized as based on a Monday morning submission.

You MUST contact your lab instructor to determine if and how you can make up any missed assignments. All make-ups must be completed *within one week* of the absence. Permission to make-up a missed assignment is ***at the discretion of the instructor after consultation with Dr. Urbance***. If you miss the LCE exam, then you must contact Dr. Urbance about rescheduling the test or taking a make-up test *and turning in your verification* for the absence.

Any questions or challenges about scoring or score changes must be completed within two weeks after the graded assignment was returned. No score modifications will be made after that point. Dr. Urbance has final say on any scoring arbitration.

Laboratory Safety

In any laboratory setting, safety is a prime consideration. Potential hazardous chemicals and equipment may be used in the lab. It is critical that the lab is maintained in a safe and organized fashion at all times. Be aware of the safety features of the lab that your instructor will describe. Please discuss any special concerns (contact lenses, pregnancy or other conditions) with the lab instructor or course coordinator as soon as possible. Rolling in-line skates and open-toed shoes are not allowed in the lab room. Failure to comply with course guidelines and policies established during the semester may affect your final lab grade.

Protective Eye Wear

You are also required to wear protective eyewear whenever performing experiments in BS171 labs. If you have safety glasses that you used in your chemistry lab, then you can also use these same safety glasses for this course. If you do not have glasses, then you must purchase a pair (available from MSU Stores on Service Road or elsewhere).

Disability Accommodations

Requests may be made to Dr. Urbance. RCPD students need to provide *two copies* of their visa (one for your TA and one for Dr. Urbance) as soon as possible. Accommodations cannot be provided without the visa.

Inclusion in BS171

It is our intention that this class be a safe and productive learning environment for every person. However, we recognize that inclusion is a complex issue that we still have much to learn about from your diverse backgrounds and perspectives. If actions of the instructional team, or other students, make you feel uncomfortable, please let us know. We will do our best to correct the situation. If you do not feel comfortable discussing this directly, you can reach us through your academic advisor, GTAs and ULAs, or another avenue that is more comfortable.

Spartan Code of Honor and University Policy on Academic Honesty and Integrity

We expect biology students to embrace the Spartan Code of Honor (honorcode.msu.edu):
"As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these

values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do."

Some laboratory exercises will involve your working within a group and for several of these group exercises you may write homework assignments as a group effort. However, there are selected written assignments where you **must show individual thought** and you will be penalized greatly for work that too closely resembles that of another student. Honesty is an important component of academia and this course. I intend to follow the all-university rules governing dishonesty as described at: https://www.msu.edu/unit/ombud/academic-integrity/index.html

Examples of academic dishonesty include (but are not limited to):

- Fabricating or falsifying data on an assignment or project
- Claiming (or implying) that the work of others is your own—that is, copying another student's work or using the

  published written work (this includes internet resources) without proper citation.
- Helping someone else be academically dishonest by providing them your homework answers, exam or quiz questions, papers, etc.

According to the University's Policy on Dishonesty, penalties for academic dishonesty may include giving the student a failing grade (or a penalty grade) on the assignment or even a failing grade for the course. If the instructor feels that additional actions are justified, then he/she may report the case to departmental director or the college dean and the matter may be brought before a college-level hearing board for further disciplinary action.

My point is: don't cheat because it's just not worth it. It is far better for you to submit your own work—whether it is wrong, late, or incomplete—than it is to fabricate, copy, or plagiarize. Any student violating the conditions described above may face academic disciplinary sanctions.

Discrimination, Sexual Assault, Sexual Harassment, and Relationship Violence

In MSU's continuing effort to foster a safer, more respectful, inclusive community of Spartans, the university has clarified and expanded the jurisdiction of our General Student Regulations regarding off-campus student conduct.

These regulations make it clear that if students violate certain university regulations stated in the General Student Regulations 2.0, they may be held accountable through our conduct system, regardless of where the activity occurs. This includes relationship violence and sexual assault.

These conduct policies include:

- General Student Regulations, in particular 2.0 Protection of Individuals

  (http://splife.studentlife.msu.edu/regulations/general-student-regulations). Only members of the MSU community may file complaints related to this policy via: http://studentlife.msu.edu/sccr/student-conduct.
- University Policy on Relationship Violence and Sexual Misconduct (https://oie.msu.edu/policies/rsvm.html). Individuals may file complaints related to this policy via: www.oie.msu.edu.

  For more information on student rights and responsibilities or questions regarding these policies, students may visit the Office of the University Ombudsperson at https://ombud.msu.edu/.

7. What is the lab exercise schedule?

Dates	Laboratory Exercises/Activities	Recitation Topics/Activities	Associated Assignments*
Week 1† Aug. 28-Sept. 6	Molecular Laboratory Fundamentals *Laboratory Safety* *Micropipetting Exercise* In-class Math Worksheet 1		
Week 2 Week of Sept. 9-13	Bacterial Microbiology and Aseptic Technique *Streak plate technique* *Bacterial viable cell counts (spread plate technique)* In-class Math Worksheet 2		
Week 3 Week of Sept. 16-20	Protein Fingerprinting by SDS-PAGE *(Protein Analysis Methods)* Collection and Analysis of Week 2 Bacteria Data Work on Bacteria post-lab notebook	*Bacteria post-lab notebook due at start of recitation*	Assign bacteria 1-pg lab report
Week 4 Week of Sept. 23-27	Bacteriophage Microbiology *Phage plaque assays, phage subculture, phage broth cultures (broth lysates)* Collection and Analysis of Week 3 SDS-PAGE Data SDS-PAGE analysis in-class worksheet Work on SDS-PAGE post-lab notebook	*SDS-PAGE post-lab notebook due at start of recitation*	*Bacteria 1-pg lab report due by start of lab*
Week 5 Week of Sept. 30-Oct. 4	Polymerase Chain Reaction (PCR) (*DNA Analysis Methods*) Micropipetting Lab Practical Collection and Analysis of Week 4 Bacteriophage Data Work on bacteriophage post-lab notebook	*Bacteriophage post-lab notebook due at start of recitation*	/
Week 6 Week of Oct. 7-11	Agarose Gel Electrophoresis (*DNA Analysis Methods*) PCR/Electrophoresis in-class worksheet Work on PCR/Electrophoresis post-lab notebook Red Cedar River research planning & proposal	*PCR/Electrophoresis post-lab notebook due at start of recitation*	Assign PCR exercise 1-pg report
Week 7 Week of Oct. 14-18	Red Cedar River Research *(will require some open lab work)*		*PCR exercise 1-pg lab report due* *Assign poster introduction lit. search assignment*
Week 8 Week of Oct. 21-25	Red Cedar River Research *(may require some open lab work)* Research progress team presentation		*Poster introduction lit. search due*
Week 9 Week of Oct. 28-Nov. 1	Red Cedar River Research *(may require some open lab work)* Research progress team presentation		*1st draft of poster introduction section due*
Week 10 Week of Nov. 4-8	Red Cedar River Research *(may require some open lab work)* Research progress team presentation		*1st draft of poster methods section due*

Week 11 Week of Nov. 12-16	Red Cedar River Research *Data analysis and poster preparation* *Poster progress presentation/peer-review at end of lab*		
Week 12 Week of Nov. 18-22	Red Cedar River Research *Poster preparation in class* *Work on research notebook*	Poster Session	
Week 13 Week of Nov. 25-29	Thanksgiving		
Week 14 Week of Dec. 2-6	Final Lab Practical Work on research notebook (due at end of lab) Cumulative Quiz Review and Help Session	Cumulative Quiz	
Week 15 Finals Wk. Dec. 9-13	No Final Exam (Good Luck on your other finals)		

† Encompasses the start of classes through the Labor Day calendar week

**** Additional assignments will be added as needed***

*** Specific due dates will be announced in class. *Additional assignments may be added as needed to help ensure mastery of material.***