

BIOL 4030 Microbiology
The University of Toledo
College of Natural Science and Mathematics
BIOL 4030-001 (and 4030-091)
3 Credit Hours

Instructor:	John Gray	Term:	Spring 2017
Office Hours:	Friday 2 to 3pm	Class Location/Times:	MWF 1.00 to 1.50 pm WH 1201
		<i>Note schedule for actual class sessions</i>	
Office Location:	WO 3232A	Lab Location/Times:	N/A
Office Phone:	419 530 1537	Course Website:	https://blackboard.utdl.edu
Email:	jgray5@utnet.utoledo.edu	Instructor's Website:	Use Blackboard for this class

COURSE/CATALOG DESCRIPTION

Lectures on the principles of modern microbiology and virology, including metabolism, growth, cellular morphology, genetics, and host parasite relationships. Bacterial and viral diseases will be illustrated.

COURSE OVERVIEW

In BIOL 4030 you will learn about some of the most amazing organisms on this planet. The first organisms that are thought to have arisen were microbial in nature and something like modern prokaryotes. The fundamental aspects of metabolism have been most studied in bacteria as exemplified by *E. coli*, which continues to be the most understood organism in existence. Most of our advances in understanding genetics and the molecular nature of the gene were made by studying bacteria, yeast and viruses. Historically microbes have had a profound impact on human civilization from permitting food preservation to causing massive plagues and loss of life. The current state of our knowledge is very rich although many exciting details remain to be discovered. With the right frame of mind you should enjoy learning about the amazing "Unseen World" around us.

You will be introduced to much new information and although there may seem to be many details, time limitations will actually allow us to only briefly examine the topics that we will explore. The information that you will receive will serve as an important foundation for your future studies in biology and also will aid greatly in your understanding of modern life and medicine where many new challenges and fresh dilemmas are presented. In order to appreciate and avail of these opportunities, and to tackle thorny bioethical dilemmas it will be important not only to learn the factual information presented but also to understand the underlying concepts and some of the (current) limitations of our knowledge and abilities. A key aspect of this course is problem solving based on the use of end of chapter questions and the MasteringMicrobiology resources provided with the text.

COURSE OBJECTIVES

Upon completion of this course, the student will be able to:

- 1) Understand and communicate the fundamental techniques of observing and describing microbes, fundamental concepts of microbial metabolism, growth and genetics.
- 2) Be familiar with and describe the distinguishing features of major groups of microbes - prokaryotes, eukaryotes and viruses. You should acquire a broad knowledge with some specific examples of each of the major groups of microbes that exist and which are continuously being discovered
- 3) Have a modern understanding of the principles of how host organisms interact with microbial flora, the basis of disease and epidemiology, microbial defense mechanisms in mammals, and some of the well known microbial diseases of humans.
- 4) Understand and describe ancient to modern applications of microbiology - from making bread to recombinant DNA bacteria, industrial microbiology and aspects of environmental microbiology.
- 5) Be able to solve analytical and clinical problems related to each of the above topics in Microbiology.

TEACHING STRATEGIES

Lecture 1 is introductory and you should take the time to read the syllabus entirely. For the rest of the course, I use the "**flipped classroom model**" so lectures will not be presented live but will be recorded ahead of time and posted online several days before the assigned in class session. You should access the lecture via the web using any internet device you choose or at a University computer lab (use earphones). You can listen at any time to the lecture, start and stop as you wish and replay sections. This should enable students to focus on the sections that they find most difficult.

Class participation (Problem Solving Sessions) is required. *Instead of live lecturing, the class time will be used for problem solving and attendance is required for at least 50% of these sessions (attendance taken using clickers/responseware).* Microbiology is not only about knowledge of how living things work but how to apply that knowledge to solving problems. The new online-lecture and in class problem solving sessions are designed to maximize assistance for students who are not strong in the subject.

FORMAT OF IN-CLASS PROBLEM SOLVING SESSIONS

For each chapter I will post the set of questions at the end of the chapter that will be covered at the next problem solving session (hence the requirement for the solutions manual).

You should work through these problems on your own or in a study group. If you have no problem then you may not want to come to the session – although it could be worthwhile if you learn quicker or easier ways of tackling a problem. We will also go over old exam multiple choice questions that will be posted online (you should bring a clicker to provide your answer but grades are not assigned to these old questions). If you are having trouble with the assigned problems, and the solutions manual is not sufficient help, then you should come to the problem solving session and ask questions. ***Problem solving sessions will not be recorded.***

Ground Rules of Problem Solving Session

- 1: We will cover those posted questions first and handle any other questions if time permits (it is not an office hour). We will not cover questions assigned to a previous session unless I say that we will.
- 2: You must be willing to participate in answering the questions for example by sharing how far you were able to get before stopping (you can expect to be called upon), or coming to the whiteboard to share your answer. In other words we will be using a "team" approach to the problem solving.
- 3: You must have a clicker to participate in answering the multiple choice questions and for attendance taking. This will permit me to identify which wrong answers students are choosing and address issues arising therefrom. No grades are awarded for this activity. Register your clicker on Blackboard (see below)
- 4: Only one person speaks at a time, raise your hand and I will point to whom should speak. I will attempt to vary the choice of student participants.
- 5: ***Attendance is required at 50% of the problem solving sessions - attendance will be taken using clickers at two random times during the class. Your presence at both times is required for your attendance to be counted.***
An F grade will be awarded if you do NOT meet the 50% attendance requirement !!

ASKING QUESTIONS IN CLASS:

Most students are reluctant to ask questions in class and the reasons vary from fear of sounding ignorant to not wanting to appear overenthusiastic in front of others. However the dangers in not asking questions are many.

It is very likely that if you don't understand a particular point then there are many others that do not also - by asking the question you assist the teacher in identifying areas that need to be reinforced, reemphasized or in some cases dropped out of the material. If the teacher has to wait until the first exam to find out that he is teaching over the students' heads then it is you the student that is already suffering by having received a tough exam.

Your questions also assist the teacher to determine if the material is being presented too fast or in an unclear fashion - on a rare occasion (hopefully never) you may be able to spot an error in the information being presented and thus you provide a great service in preventing the propagation of inaccurate knowledge.

Finally by not asking questions you will miss the dynamic process of vocal and mental interaction that is an essential part of the scientific process. In the workplace you will learn much of your new knowledge from colleagues by word of mouth and you need to be able to query and verify that new knowledge by asking questions. At scientific meetings there is a danger that people will simply accept information without a rigorous questioning of the methods by which that information was obtained. Communication is an essential skill in science today and the successful scientist uses that skill to attract interest and funding to his/her area of investigation.

So, I urge you to not be hesitant in asking questions in BIOL 4030. If however you are still reluctant to ask questions then be sure to visit me during office hour.

STUDYING AT HOME AND AS A SMALL GROUP:

Many studies have shown that long-term memory requires re-exposure to the facts at hand so it is best to review the handouts and your notes regularly and to read the relevant parts of the text book every day. Cramming may allow you to succeed in the short term but will not provide you with the strong foundation of thoroughly assimilated information that will be required for a successful career.

In today's world there is a constant need to keep up to date with new developments and many people end up changing career directions in mid-flight in response to shifting job markets - in this climate there will not be time to re-learn material - it is important to focus now on building a strong foundation of knowledge which will allow you to adapt quickly in the future.

If you study the book and find that it is easy to absorb then try the questions in the book as a test - sometimes this is hard to do but it is the true measure of how well you understand the material. Also I will try and provide references to daily news happenings that relate to the material we cover.

WORKWEEK

In this course, the week begins at 12:01 AM Monday morning at which time all materials for the week will be posted for the coming week if not earlier. The week ends at 11:59 pm the following Sunday night. Assigned work for any week is to be completed by dates in the syllabus. Students should begin each week on Monday by checking the schedule and then viewing the content for the week in the folder of materials on Blackboard for that week.

PREREQUISITES

Prerequisite: BIOL 3030; CHEM 2420, Corequisite for: BIOL 4040

TECHNICAL SKILLS (Computer Skills)

To succeed in this course, it will be important for learners to possess the following technical skills:

1. Rename, delete, organize, and save files.
2. Create, edit, and format word processing and presentation documents (Microsoft Word and Microsoft Powerpoint).
3. Copy, paste, and use a URL or web address.
4. Send and receive email with attachments.
5. Locate and access information using a web search engine.

RECOMMENDED TEXTS AND MATERIALS

Required: Microbiology: An Introduction, Books a la Carte Plus MasteringMicrobiology with eText -- Access Card Package, 12/E

Gerard J. Tortora, Berdell R. Funke, Christine L. Case,

ISBN-10: 0133983722

ISBN-13: 9780133983722

Publisher: Pearson

Books a la Carte are unbound, three-hole-punch versions of the textbook. This lower cost option is easy to transport and comes with same access code or media that would be packaged with the bound book.

TECHNOLOGY REQUIREMENTS

1. **Students must purchase a Turning Point® License which will be used in the pre-lab lecture (See section on clickers later in syllabus).**
2. For computer based learning you need to purchase your own flash drive to backup your work. Loss of work is not an acceptable excuse for late assignments.

Browser Check Page

Students need to have access to a properly functioning computer throughout the semester. The Browser Check Page will enable you to perform a systems check on your browser, and to ensure that your browser settings are compatible with Blackboard, the course management system that hosts this course:

<http://www.utdl.edu/utlv/Bb9BrowserCheck/innovation/blackboard/browsercheck.html>

Software

Student computers need to be capable of running the latest versions of plug-ins, recent software and have the necessary tools to be kept free of viruses and spyware. The computer needs to run the following software, available in the Online Learning Download Center at <http://www.utoledo.edu/dl/main/downloads.html>:

- Word Processing Software
- Adobe Acrobat Reader
- Apple QuickTime Player
- Java Plugin Console
- Adobe Flash Player
- Adobe Shockwave Player
- Mozilla Firefox Browser - **Recommended**

Internet Service

High-speed Internet access is recommended as dial-up may be slow and limited in downloading information and completing online tests. This course does contain streaming audio and video content.

Use of Public Computers

If using a public library or other public access computer, please check to ensure that you will have access for the length of time required to complete tasks and tests. A list and schedule for on-campus computer labs is available at http://www.utoledo.edu/it/CS/Lab_hours.html.

UT Virtual Labs

Traditionally, on-campus labs have offered students the use of computer hardware and software they might not otherwise have access to. With UT's Virtual Lab, students can now access virtual machines loaded with all of the software they need to be successful using nothing more than a broadband Internet connection and a web browser. The virtual lab is open 24/7 and 365 days a year at <http://www.utoledo.edu/it/VLab/Index.html>.

COURSE POLICIES

Academic dishonesty will not be tolerated. Please read The University's Policy Statement on Academic Dishonesty available at <http://www.utoledo.edu/dl/students/dishonesty.html>.

Don't even think about it! Very few students feel the need to cheat. You can get a very respectable grade of which you can be proud if you use the considerable talents and intellect that have propelled you this far in your studies. Students caught cheating however will be recorded a zero for assignment. All available information on the cheating incident will be forwarded to the Dean of Student Affairs for investigation and appropriate action.

With the advent of the internet some students have copied the work of others directly into their writing assignments. The copying of entire articles and paragraphs or even entire sentences is considered plagiarism and will be treated the same as cheating. The work of others must be paraphrased using your own words/sentences even if you maintain that "it is written better than I could" or "I could not think of another way of saying that" – the usual exception being a direct quote of a speech or announcement. Even when work is paraphrased you must also cite a source/reference of where you found the information so that the reader can locate it for his/herself. Web sources must also be cited by providing a complete web address of the reference material in the bibliography section of your report. ***Writing assignments will be checked using SafeAssign to detect Plagiarism.***

Attendance and Participation:

Since this course is based almost entirely on demonstrating comprehension of the materials presented, students are required to attend every class. Unexcused absences will not be tolerated, and excused absences should be rare. ***In the event of an unanticipated absence due to illness or emergency, evidence of the necessity of the absence must be provided in the form of a doctor's letter or equivalent i.e. a contactable supervisory adult that will substantiate the necessity of your absence.*** While attending class is important, participating in class discussions is also critical for a good grade in this class. Students must demonstrate that they have read the assignments and that they have done the extra background analyses needed to comprehend the material. The only way to do this is to get involved in the discussions. **Everyone will talk every class period, so come prepared.**

GRADING POLICIES

Student work will be assessed as follows. Specific guidelines, grading criteria, and a timeframe for grades and feedback will be provided as each assignment is announced. The in class written exams will be mainly short answer with some true or false, multiple choice, fill in the blanks, and diagram type questions

Activity	% of Final Grade	Due Date(s)
In Class Exam 1 on Chapters 1,3,4,5,6,7 and HHMI lecture and "How Life Began" article	15%	W 2/8
In Class Exam 2 on Chapters 8,9,10,11,12,13	20%	W 3/5
In Class Exam 3 on Chapters 14,15,16,17,18,19 and Typhoid Mary video	25%	W 4/5
In Class Final Exam on Chapters 20,21,22,24,27,28 (20% overall grade) 2 videos (21 st Century Outbreak and Killer Flu) and rest on parts 1 to 3 (10% overall grade)	30%	W 5/3
MasteringMicrobiology® Online Homeworks	10%	Various Deadlines (just before in-class problem solving session for that chapter)
Total	100%	

Students are expected to complete and submit all assignments and tests by the due date listed in the Course Schedule. Late assignments and make-up tests will not be permitted unless arrangements are discussed and approved well before the required due date. Ask questions as soon as possible by email or by phone if you do not understand an assignment.

The overall grading scale for this course is as in the table below. This scale is based on the assumption that knowledge of 50% of the material is needed to pass this course.

Grade	Final %	Standard
A	90-100	Achievement of outstanding quality
A-	86-89	Achievement of slightly less than outstanding quality
B+	84-85	Achievement of slightly more than high quality
B	77-83	Achievement of high quality
B-	75-76	Achievement of slightly less than high quality
C+	73-74	Work of slightly more than acceptable quality
C	62-72	Work of acceptable quality
C-	60-61	Work of slightly less than acceptable quality
D+	58-59	Work slightly above the quality expected
D	52-57	Work below the quality expected
D-	50-51	Work slightly below the quality expected
F	0-49.5	Work below quality and quantity expected

AMERICANS WITH DISABILITIES ACT

The Americans with Disabilities Act (ADA) requires that reasonable accommodations be provided for students with physical, sensory, cognitive, systemic, learning, and psychiatric disabilities. In accordance with the ADA and university policy, if you have a documented disability and require accommodations to obtain equal access in this course; please contact the instructor at the beginning of the semester to discuss any necessary accommodations. Please contact the Office of Academic Access for verification of eligibility at 419-530-4981 (voice) or 419-530-2612 (TDD).

COMMUNICATION GUIDELINES

Email:

Students are expected to check their UT email account and Blackboard frequently for important course information. This class is being taught for you, so if you are having trouble understanding any aspect of it, please let me know. I am here to help, and will do my best to respond to email within 24 to 48 hours.

Discussion:

In this interactive classroom course, participation is vital to your success, and your active engagement during class discussion is crucial to learning.

Netiquette:

It is important to be courteous and civil when communicating with others. If you are sharing a Google drive account with others in your group – be sure to use clear and courteous communications at all times in preparing your group work. To ensure your success when communicating online, take time to familiarize yourself with the "dos" and "don'ts" of Internet etiquette: <http://www.albion.com/netiquette>

TECHNICAL SUPPORT

If you encounter technical difficulties with Blackboard, please contact the UT Online Help Desk at (419) 530-8835 or utdl@utoledo.edu. The Help Desk offers extended hours in the evenings and on weekends to assist students with technical problems. When calling after hours, leave a detailed message, including your Rocket Number and phone number, and an Online Learning staff member will respond on the next business day. The UT Online Help Desk website is available at: <http://www.utoledo.edu/dl/helpdesk/index.html>

Technical questions related to on-campus Internet access, virtual labs, hardware, software, personal website hosting, and UTAD account management can be directed to UT's IT Help Desk at (419) 530-2400 or ithelpdesk@utoledo.edu. The IT Help Desk website is available at <http://www.utoledo.edu/it/CS/HelpDesk.html>.

LEARNER SUPPORT

The primary support that you will receive in this course is through your instructor class time and during office hours. The University of Toledo also offers a wide range of academic and student support services that can help you succeed:

The Writing Center

The Writing Center in the Carlson Library can also be of invaluable assistance - many students make dramatic improvements in their writing skills after some timely and professional critical evaluation. The Writing Center is located in the lower level of Carlson Library (0130) across from the Learning Enhancement Center. Phone 530-4939. Spring 2016 Hours: Monday to Thursday 9am to 9 pm; Friday 9am to 5 pm. Note that the Writing Center is not just for those who have poor writing skills - some of the students that obtained the highest grades in this course have utilized this resource.

eTutoring Services

The Ohio eTutoring Collaborative, in partnership with The University of Toledo, now provides online tutoring support for all UT students. eTutoring Services are offered in a wide array of subjects, including Writing, Math, Calculus, Statistics, Accounting, Biology, Chemistry, and Anatomy and Physiology.

Learn more at: <https://www.etutoring.org/login.cfm?institutionid=232&returnPage>

eLibrary Services Portal

The eLibrary is a customized gateway to UT Libraries for online students. It was designed to help you locate the best online library resources without leaving Blackboard.

Learn more at: <http://www.utoledo.edu/dl/students/elibrary.html>

Office of Academic Access

The Office of Academic Access provides accommodations and support services to students with disabilities.

Learn more at: <http://www.utoledo.edu/utlc/academicaccess/index.html>

Counseling Center

The Counseling Center is the university's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The Counseling Center staff provide counseling (individual and group), mental health and wellness programming, and crisis intervention services to help students cope with the demands of college and to facilitate the development of life adjustment strategies.

Learn more at: <http://www.utoledo.edu/studentaffairs/counseling/>

Services for Online Students

Knowing what to do, when to do it, and who to contact can often be overwhelming for students on campus - even

more so for distance learners. Visit the link below to learn more about the wide range of services for online students.

Learn more at: http://www.utoledo.edu/dl/students/student_serv.html

RESPONSE CARDS or RESPONSEWARE (Clickers)

Each student is required to have a Turning Point License/Account which will be used for live in-classroom assessment. Note this account can now be set up with a range of mobile devices (see below) – it is no longer necessary to buy a response card (clicker) – but you still need to purchase a Turning point license!

Turning Technologies is the company UT uses for “clickers”. “Clickers” are personal response devices used to send answers to questions during lecture. The “clickers” in use at UT have been small rectangular devices similar to a remote control. UT students have purchased thousands of units over the past decade. The “clickers” reward students for going to class, paying attention, and participating. The student responses allow professors to gauge student understanding in real time.

Turning Technologies newest solution introduces a new way of gathering responses. ResponseWare is a BYOD (Bring Your Own Device) program. A student can use any web enabled device (laptop, tablet, smart phone) to either log onto the internet (laptop) or use a free app (tablet or smart phone) to send responses during class. Note that a data plan or phone service is NOT required. Windows, Mac, Android, and iOS platforms are supported.

BOTH the traditional clicker and ResponseWare REQUIRE a license to use and upload data. For both, a student creates an account at <https://account.turningtechnologies.com/account/> using their official UT student email address. In creating the account, the students is asked for a license code.

The student may either buy the code directly from **TurningTechnologies** or purchase a code from the Barnes and Noble Bookstore. Licenses are NOT available from Amazon or other sources. ResponseWare is a free app but requires the license code to interface. The clicker’s data will be sent to the professor but the program prevents its upload without a license.

Both the traditional clicker and ResponseWare will be in use starting Fall 2016. In Molecular Genetics I will allow both types in the same class at the same time.

Students may purchase options from two sources:

- Turning Technologies online store. The license code is immediately activated. Shipping and sales tax are not included in the price. Shipping should take 2-3 days to Toledo.
- Purchase from Barnes and Noble on campus. Barnes and Noble Bookstore is a business. They add charges to cover their business expenses. Prices given below do not include sales tax.

There are four options available:

	Turning Technologies (with rebate)	Barnes and Noble (with rebate)	Recommended for
Four year license plus clicker	\$54.99 -\$20.99 rebate = \$34.99*	\$78.55 -\$20.99 rebate = \$57.56*	All new students. Many professors will use clickers in class and may or may not activate ResponseWare. This is your best option to cover all bases.
Four year license only	\$37.00 -\$37.00 rebate = FREE	\$52.85 -\$37.00 rebate = \$15.85	All returning students who already have a clicker. You MUST have a license for your data to be used.
One year license plus clicker	\$34.00 NO REBATE	\$48.55 NO REBATE	Not recommended. A license will still be required for use in 2017/2018 and on.
One year license only	\$20.99 -\$20.99 rebate = FREE	\$30.00 -\$20.99 rebate = \$9.01	Not recommended. A license will still be required for use in 2017/2018 and on. No rebates after August 2017.

*In 2015/2016, a new clicker cost \$42.65 at the Barnes and Noble Bookstore.

Rebate

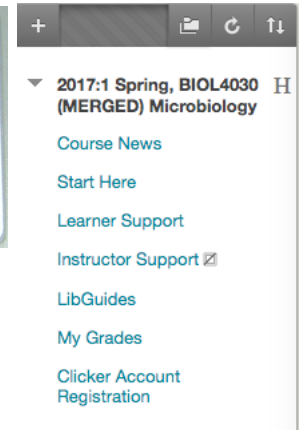
Turning Technologies is providing a rebate to soften our transition to their new system. This rebate is only available until August 2017. Purchases made either online or through Barnes and Noble use the same system. Turning Technologies is using another company to handle rebates. A students provides a copy of their receipt and the rebate coupon by mail to the rebate company. Rebates are received by mail 6-8 weeks later. Rebate forms are available online (<https://rebates.turningtechnologies.com/>) and from Barnes and Noble at purchase.

Used clickers Barnes and Noble will not be buying or selling used clickers. Students can use either the LCD or non-LCD clicker. Students can share clickers (but not in the same section of a course). Every student must have their own license.

Using Your Clicker (Response Card) in class

Your Response Card or mobile device is a radio Frequency (RF) transmitter. It sends a signal to the instructor's receiver. The signal contains your answer and the transmitter's ID code. This ID code must be matched to your name for you to receive credit. **Clicker Buttons:** The Response card can be used for either letter or number answers. Press the button that corresponds to your answer. The "GO" button is used for channel setting. The "?" button sends a signal to your instructor that you have a question. Alternative buttons are used on your mobile device.

Registering your Responseware-Getting a License : Your name must be associated with the Clicker ID code for you to get a grade. If you use another student's Response Card, you will not get credit. When you purchase a Responseware License you register or activate it on the Turning Point Website. You should also Register your clicker account on Blackboard so that the instructor knows what device you are using.



1. Log into BIOL 3010 on Blackboard
2. Select **Clicker Account Registration** from windowpane on the left of screen
3. Enter this required information when prompted
4. If anything is incorrect or needs updated, please e-mail me ASAP.
jgray5@utnet.utoledo.edu

IMPORTANT Register your Clicker by Friday Jan 20th at midnight

After that I will need to make a participant list for use in class and you need to be on there.

Channel Setting: If using a Clicker it must be set to the same channel as your instructor's receiver (41)

1. When your instructor has set up the program, press the "go" button .
2. The light should alternate red and green.
3. Type in the 2 digit channel code for the class. (Channel 1= 01 or channel 41=41)
4. The light should change to a solid green.
5. After the second digit is entered, press and release the "go" button again.
6. Press and release the 1/A button.

Sending a Response : When polling is open on a question, send your answer by pressing the correct response once. The button will stay green for a few seconds to indicate your response has been received. If the light only lights briefly with a red/green light, polling is not open or you are not on the correct channel.

Online MasteringMicrobiology Homework Assignments" (This will be worth 10% of your overall grade)

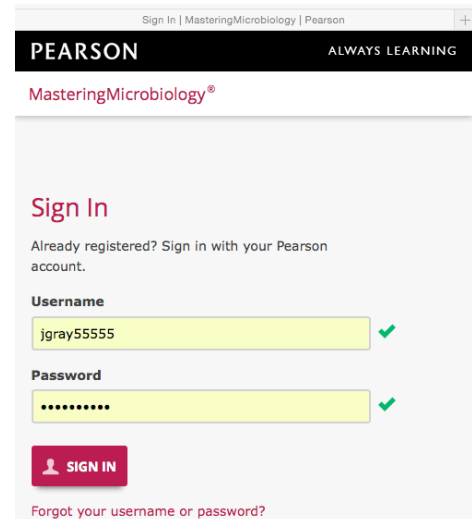
LOGIN info:

(<https://www.masteringmicrobiology.com/site/login.html>)

Course ID Number:

BIOL4030MICROBIOLOGYSRING2016

In keeping with the theme of problem solving in this class, there will be homework assignments that will be performed using the online "Mastering Genetics" that accompanies the textbook. You will need access to this website and assignments will be performed and submitted there. It is your responsibility to ensure that your homework has been recorded correctly at the end of each session. If there is any issue you should contact the Pearson help line immediately.



There will be one assignment per chapter in the book and we aim to cover about 18 chapters so each homework will be worth about 0.5% of the overall grade. The main aim here is to ensure that you regularly practice problems as well as remember the basic information and principles. **Homework assignments will be available up until the in class session for that chapter. No extensions are permitted.** You may work together in small groups to perform the homework as I have no control over supervising that. If you do work together then make sure that you all understand the answer(s) that are submitted – otherwise you are only fooling yourself. The assignments will be posted to the beginning of each course section and will be due by the in class sessions. Late submissions will not get a grade.

Class Schedule. Spring 2017 (Print this page)

Week	Date	Lect.	Topics to Study and Recommended Timeline	Book Chapter/Section*	In Class Problem Solving (must attend 12 sessions)
	Mon 1/9		Introduction to Class	Listen to recorded intro	None
1	Wed 1/11	1	Online HHMI Lecture Changing Planet: Past, Present, Future. Lecture 1:- The Deep History of a Living Planet media.hhmi.org/hl/12Lect1.html Andrew H. Knoll of Harvard University uses the fossil-record geochemistry to explain the history of life on Earth, as well as discuss his exploration of the geology and possibility of life on Mars.	View Online	None
	Fri 1/13	2	Self Study Required Reading: The Secret of how Life Began on Earth	Article on Blackboard	None
	Mon 1/16		No Class - Martin Luther King Observance		None
2	Wed 1/18	1	The Microbial World and You	Chap 1 p 1-21	None
	Fri 1/20	2	Observing Microorganisms by Microscopy	Chap 3 p 51-69	None
3	Mon 1/23	3	Functional Anatomy of Eukaryotic and Prokaryotic Cells	Chap 4 p 72-105	Chap 1
	Wed 1/25	4	Microbial Metabolism	Chap 5 p 107-146	Chap 3
	Fri 1/27	5	Microbial Growth	Chap 6 p 149-173	Chap 4
4	Mon 1/30	6	Control of Microbial Growth	Chap 7 p 176-197	Chap 5
	Wed 2/1	7			Chap 6
	Fri 2/3	8			Chap 7
5	Mon 2/6	9			None
	Wed 2/8		Exam I on first 10 Lectures up to and including 2/3 (15%)	Chapters 1-7 plus week 1	Exam 1 in Class
	Fri 2/10	10	Microbial Genetics	Chap 8 p 201-235	None
6	Mon 2/13	11	Biotechnology and Recombinant DNA technology	Chap 9 p 238-262	None
	Wed 2/15	12	Classification of Microorganisms	Chap 10 p 264-286	Chap 8
	Fri 2/17	13	Bacteria and Archaea	Chap 11 p 290-316	Chap 9
7	Mon 2/20	14	Fungi and algae	Chap 12 p 319-355	None
	Wed 2/22	15	Protozoa and Multicellular parasites	Chap 13 p 358-387	Chap 10
	Fri 2/24	16			Chap 11
8	Mon 2/27	17	Principles of Disease and Epidemiology/	Chap 14 p 389-414	None
	Wed 3/1	18	Typhoid Mary https://www.youtube.com/watch?v=8JPCZO7z2w	Youtube online	Chap 12
	Fri 3/3	19	Microbial Mechanisms of Pathogenicity	Chap 15 p 417-437	Chap 13
9	3/6 to 3/10	Spring Break (No Classes)			
10	Mon 3/13	20	Innate Immunity: Nonspecific defenses of the host	Chap 16 p 439-465	None
	Wed 3/5		Exam II on second 10 lectures including from 2/10 to 2/24 (20%)	Chapters 8-13	Exam 2 in Class
	Fri 3/17	21	Adaptive Immunity: Specific Defenses of the Host	Chap 17p 468-490	Chap 14
11	Mon 3/20	22	Practical Applications of Immunology	Chap 18 p 492-513	None
	Wed 3/22	23	Disorders associated with the Immune System	Chap 19 p 515-546	Chap 15
	Fri 3/24	24			Chap 16
12	Mon 3/27	25	Antimicrobial Drugs	Chap 20 p 548-577	None
	Wed 3/29	26	Microbial Diseases of the Skin and Eyes	Chap 21 p 579-604	Chap 17/18
	Fri 3/31	27			Chap 18/19
13	Mon 4/3	28	Microbial Diseases of the Nervous System	Chap 22 p 607-635	None
	Wed 4/5		Exam III on third 10 lectures including from 3/5 to 4/5 (25%)	Chapters 14-19 plus video	Exam 3 in Class
	Fri 4/7	29	Microbial Diseases of the Respiratory System	Chap 24 p 675-704	Chap 20
14	Mon 4/10	30	21st Century Outbreak: The New Killers (see Blackboard for weblink)	Online video	None
	Wed 4/12	31	Environmental Microbiology	Chap 27	Chap 21
	Fri 4/14	32			Chap 22
15	Mon 4/17	33	Killer Flu - Secrets of The Dead, https://www.youtube.com/watch?v=nT9ctpQNXRE	Youtube online	None
	Wed 4/19	34	Applied and Industrial Microbiology	Chap 28	Chap 24
	Fri 4/21	35			Chap 27
16	Mon 4/24	36			None
	Wed 4/26	37			Chap 28
	Fri 4/28	38			Help Session
17	Finals Week	Finals Week Final Exam Wed 5/3 12.30 to 2.30pm			
		Final is 60 % on last 10 lectures (4/7 to 4/30) and 40% on first 30 lectures (exam is 30% of overall grade).		Chapters 20,21,22,24,27,28 plus 2 videos 1st 3 parts of course	