THE UNIVERSITY OF NEW MEXICO–
VALENCIA
COURSE SYLLABUS
Biol 1140: Biology for Health Science Majors, Lecture
Summer 2025

Instructor: EM DiMenna PhD	**Section: 501**
Phone: N/A – come see me in person or email me anytime!	Email: edimenna@unm.edu
Class meeting day/time: **1140 Tuesday 9:00am -1015am Valencia - 31239 501** Office Hours Tues 1:30-2:45pm either in VAAS 135 or my office in the SRC * Changes will be announced in Canvas and in class.	Class location: **Monday**- VAHS 101 **asynchronous** - Canvas.unm.edu

Course Information

Catalog Description
This introductory biology course for students interested in health science careers focuses on the concepts of chemistry, cell biology, metabolism, genetics, and regulation of gene expression. Not accepted toward the Biology major. Credit for both this course and BIOL 1110 may not be applied toward a degree program. Meets New Mexico General Education Curriculum Area 3: Physical and Natural Sciences. 3 Credit Hour Course.

Required Materials

Webcam: Use your existing webcam or purchase bookstore webcam (ex. Superflix 720P)

Biology 2e by MaryAnn Clark (Author), OpenStax. Free Biology 2e Textbook Available for Download - OpenStax

Learning Objectives with Learning Outcomes

Objective #1: Explain the central ideas of biology
Alignment with Course Learning Outcome(s): 1,2,11
Components:
a) List the characteristics and debate the ideas associated with the definition of life.
b) Discuss why the cell is considered the basic unit of life.
c) Explain the organization of life in both the ecological (hierarchical) and taxonomic sense.
d) Identify the key evidence for the theory of evolution and defend why it is thought of as the central principle of biology.
e) Demonstrate how the concepts of selection and adaptation are used to understand living things and how they change through time.
f) Apply the steps of the scientific method to a given situation and explain the importance of controls and repeatability.
Objective #2: Apply basic chemistry to the biology of cells
Alignment with Course Learning Outcome(s): 3
Components:
a) Illustrate the basic components of atomic structure.
b) Describe how electron forces give rise to covalent, ionic and hydrogen bonds.

c) Explain how the unique properties of water influence the properties of life.
d) Integrate the informational features of the pH scale and the concept of acids and bases.
e) Differentiate between the major groups of macromolecules in relation to their subunits, bonding, and largescale structure.
f) Specify the role of synthesis and decomposition reactions in the cellular utilization of macromolecules.

Objective #3: Examine how the unique features of cellular structure and function are related
Alignment with Course Learning Outcome(s): 4
Components:

a) Using key features of cellular structure and function differentiate between prokaryotic and eukaryotic cells.
b) Compare and contrast the structure and function of organelles found in plant and animal cells.
c) Demonstrate the role of the endomembranous system of the cell in the production, modification and export of cell products.
d) Integrate into the functions of cell movement and anchorage the components of the cytoskeleton.

Objective #4: Explain the basic components of cell metabolism
Alignment with Course Learning Outcome(s): 5
Components:

a) Explain thermodynamics; the various forms of energy and why the conversion of energy is a central concept of biology.
b) Diagram the energy changes that occur during biological events and the relationship of reactant and product energy states.
c) Discuss the role of ATP as a cellular energy intermediate and the role of the ATP/ADP cycle.
d) Describe the structure of enzymes and the impact of environmental factors and inhibitors on enzyme function.
e) Explain the role of enzymes in metabolism and their action in reducing the activation energy required for reactions.
f) Discuss the fluid mosaic structure of cell membranes and the role of membrane components in transport processes.
g) List the components of solutions and express, utilizing tonicity terms, the distinctions between solutions.
h) Differentiate between diffusion, osmosis, facilitated transport and active transport both in terms of cellular energetics and the role of membrane associated proteins.

Objective #5: Outline the various energy-producing pathways in cells
Alignment with Course Learning Outcome(s): 5
Components:

a) Analyze the changes associated with the transfer of electrons during oxidation and reduction events.
b) Explain glycolysis and the Krebs cycle in terms of energy production, formation of NADH, and oxidation of glucose.
c) Summarize the key products of catabolic pathways utilized for cellular energy production.
d) Identify the various forms of phosphorylation and their immediate source of energy for ATP production.
e) Diagram the chemiosmotic event.
f) Differentiate between fermentation and respiration in regards to final electron acceptors and energy production.

Objective #6: Explain the role of DNA in cells
Alignment with Course Learning Outcome(s): 6,7,8,9,10
Components:

a) Identify the components of DNA and RNA and how these components are organized into the macromolecules.
b) Diagram the processes of DNA replication and transcription
c) Diagram the process of translation and the functional role of the ribosome.
d) Demonstrate the various forms of mutations and how they alter the DNA of an organism.
e) Explain the basics of bacterial genetics and gene transfer events.
f) Outline the various forms of viral genomes and their modes of reproduction.

Objective #7: Examine the processes of mitosis, meiosis and cytokinesis

Alignment with Course Learning Outcome(s): 9
Components:

a) Diagram and label the components of a cell in each of the stages of cell division.
b) Explain the cell cycle and how its regulation controls cell division.
c) Inspect the role of cell division control in the disease process of cancer.
d) Discuss the unique aspects of meiosis that result in the production of haploid cells.
e) Compare and contrast the mother cells, stages, events and products of mitosis and meiosis.
f) Describe the information provided by a karyotype analysis of chromosomal number.
g) Explain the process of non-disjunction in terms of its effects on chromosome number and the resulting abnormalities.

Objective #8: Describe patterns of inheritance and human genetic disorders
Alignment with Course Learning Outcome(s): 10
Components:

a) Explain the basic concepts of Mendelian inheritance including dominance, segregation and independent assortment.
b) Conduct monohybrid and dihybrid crosses and using simple probability determine outcomes.
c) Conduct test crosses and crosses that show X-linkage, multiple alleles, and dominant inheritance.
d) Explain the mechanism for inheritance of various human genetic disorders.

Objective #9: Explain the mechanism of gene regulation and genetic engineering
Alignment with Course Learning Outcome(s): 7
Components:

a) Integrate the components of the bacterial operon and the functional role of the individual components.
b) Compare and contrast the repressible and inducible operon systems found in prokaryotic cells.
c) Distinguish between the specific examples of the lac operon and the trp operon.
d) Outline the procedure for various DNA manipulation techniques.

Course website

https://canvas.unm.edu/.

Technology Recommendations and Requirements

To ensure the best possible learning experience, owning, or having reliable access to, a modern personal computer with virus protection is recommended.

Online courses perform optimally on high-speed internet, particularly with cable and DSL connections.

Some courses might require the need for a webcam, microphone, and internal and/or external computer speakers in order to participate in group discussions, create and upload video submissions, listen to live or pre-recorded lectures and videos, etc. Please check with your instructor to ask what

type of technology might be necessary in order to be successful in the course. Technology requirements may vary from class to class.

Visit the Canvas browser and computer requirements page and run their browser checker to make sure you are ready to go!

Other types of Technology Requirements to be a successful online student:

- A working black and white printer for assignments or a digital tablet, software and stylus for editing and saving a modified .pdf
- Ability to scan an upload paper documents as a .pdf (Dropbox and the Apple 'Files' app both have this ability)
- A color camera. Phone cameras and webcams are fine.
- Our class will specifically require the ability to convert and upload a printed or digitally downloaded document into a quality .pdf/photoshop document file. The quality of the document must be equivalent to the quality of the original document for grading purposes.
- You must have the ability to seamlessly run a Zoom based meeting with video and audio for scheduled class meetings.
- YouTube proficiency and ability to skip an ad or two.
- Reliable word processing software such as MS Word. UNM students can download MS Office 365 for free. Details on what it is and who is eligible.
- Please note that Mac Pages and Google doc files are not accepted for submitted assignments. Both programs have Export or Save as options that let you convert your work to .docx.
- Ability to view course materials by using Adobe Acrobat free file reader and MS Word.
- Regular and weekly access to UNM Canvas and your UNM email account.
- Possibly the ability to download and use Kaltura Capture or Adobe Premier Rush, Adobe's video editing tool. UNM students can download Adobe Premier Rush for free through Adobe Creative Cloud. *Note: branch campus students should double-check to make sure your campus is participating.*

Essential Skills

Because this is a General Education Core course, activities will be incorporated into this course to support development of the following three essential skills that are required by NM/HED: *Critical Thinking, Personal & Social Responsibility, Quantitative Reasoning*

Student progress in developing essential skills will be measured in assignments, discussions, and/or exams throughout the course.

What to Expect:

Our class is lecture and exercise based. All lectures are available on YouTube and I will present material as well in person. We will go over case studies and example problems with our discussions, in-person class time and independently online. Your ungraded practice items are available through the posted study guides, our textbook and Pearson Mastering site

**none of the items on the Pearson site are for a grade directly. Your proficiency is assessed on the Canvas site but is partially based on what you learn on the Pearson site*.

This material will prepare you for your graded items: Homework/Quizzes, Discussions and Exams. These items are broken down for points in the table below.

Grades and Grading Policies

Unless Otherwise Noted – ALL ASSIGNMENTS ARE LISTED ON THE SCHEDULE POSTED TO CANVAS SUBJECT TO CHANGE. Usually these are extensions due to server/ hosting issues and work in the students' favor.

Grades are typically comprised of no less than 70%-100% of graded online material. Please make sure your Software and hardware is up to date and functional since extensions will not be granted if you have not maintained these essential tools.

Attendance, Participation

a) **Attendance:** based on assignment completion. Students who fail to login at the beginning of the course may be dropped for non-attendance or non-participation. Students must demonstrate a record of course participation that is based on academically related activities in order to demonstrate "attendance" in the course. The minimum academically related activity for course participation which is

here defined as timely completion of assignments by their due dates or responses requested by the instructor via email or in class.

b) **Participation:** based on assignment completion. Students' academically related activities will be tracked via methods that are described by the instructor in the course syllabus and schedule.

Spelling can affect your grade. If a word sounds about right and has the same number of syllables it will be counted as correct. However, be forewarned there are several words (e.g., perineal & peroneal) that look and sound similar. If you write the wrong word, it is wrong.
You should discuss any planned absences or problems regarding attendance with me. In addition, you should talk with me as soon as possible any time you miss more than one class or if you fail to complete assigned work.

Extra Credit
If extra credit is offered it will not exceed 5% of the total grade. If extra credit is offered it will be to the entire class.

PLAGIARISM --- if you copy an answer (75%+ word for word) from the book, internet, or my PowerPoint slides, you will get a ***ZERO*** on the ENTIRE assignment.

Other Requirements

- Students are responsible for all materials covered in class and in the reading assignments. Some book material that is not covered in class may still appear on examinations.
- Students are expected to do their readings before class.
- Students may be expected to seek out information on web sites or other books to further their understanding of the material covered in class.
- Students themselves are responsible for seeking information on any assignments that may have been given out during their absence.
- This course requires proctored assessments.

Respondus lockdown browser
Assessments (see more below) will be completed in class using the Respondus lockdown browser. You will either need a laptop or an iPad to use this. More information about downloading and using Respondus can be found here: https://canvasinfo.unm.edu/external-apps/respondus-ldb-index.html

Dropping the Class
The Instructor will likely drop students for inactivity of 1 or more weeks or inappropriate/aggressive behavior toward the instructor or other students. However, students wishing to be dropped from the course should be aware that it is their responsibility to remove drop themselves from the course. Elective drops must be performed by the students and before the expiry of the institutional drop dates.

Due Dates
All homework, discussions and exams are due according to the posted schedule. Essentially, listed items are due by 11:59pm of the listed due date and week with the sole exception of the Final Exam which is Due by 11:59pm on the Thursday of finals week

Grading
Total Points refers to the total points capped. Some categories have a higher possible total points but points earned above the Total Points number cap are considered to be dropped items
Extensions can be granted with documentation of an institutionally recognized cause, such as providing a doctor's note after an illness. Documentation is required in order to evidence that the instructor is providing equitable treatment for all students.
If you miss an assignment or quiz, please note that I do drop between %-5% of the class points prior to the calculation of the overall course grade.

Graded Items

Homework/Quizzes: There are practice quiz style homework assignments. They are meant to help students review the material of the class while practicing the style of the upcoming proctored exams. They will require Respondus Lockdown browser and are Closed Book/Notes

Discussions: There are two discussions to the canvas site over the course of the semester. Instructions are posted online.

Quiz, Syllabus: You need to be well acquainted with the syllabus. you will have a single syllabus quiz in the first week of the term to ensure you know the plan.

Exams, Unit – CLOSED NOTES/BOOK AND PROCTORED

- The purpose of these exams is to evaluate where you are in understanding the details of the concepts in 2-4 chapters/units of the material. See grading table for a description of the how many there are, when they are scheduled, and how many are dropped (low scores dropped).
- Exam questions are based on material presented in your Powerpoints, in-class or video lectures, class activities, and textbook. You will be required to synthesize material from more than one source.
- Format: objective, multiple choice, T/F, and matching questions. Each student will receive a randomly generated set of questions from a very large pool of possible questions. No one will get the same exam question set.
- MAKE SURE the computer you use is reliable and the internet connection is reliable. If you fail to take the exam during that open window then you will get a 0 for the exam. There will be no make-ups or extensions.
- All exams are AUTOMATICALLY set to double time. This should automatically provide for students with accommodation letters.
- You will be using Respondus Lockdown Browser and Monitor. Both require a download of software and Monitor requires a webcam. See the Electronics requirements section of the syllabus for further details. Links to these will be located on Brightspace course shell as well
- Instructor will review the videos. All exams are closed books and closed notes.
- If something locks up during a Brightspace exam IMMEDIATELY email me so I can reset the exam for you before the testing window closes. DO NOT wait until the last minute to take the exam.

Final Exam (Multiple Choice, Cumulative, Online with Respondus) – this multiple choice exam is cumulative. Questions will cover major themes from the course. Each student will get a randomized, unique set of exam questions from a larger pool.

Grading Categories	Points per Assignment (Some exceptions/are indicated on assignment)	Total Points*
Final Exam	50	50
Midterm Exams-3	50	150
Quizzes -10	10	100
Discussions – 2	10	20
Total Points		320
Points dropped		20
point total for final grade		300

Academic Honesty

Students should consult the UNM Student Handbook (available on UNM bookstore or from the administration upon request) for a complete explanation on Academic Dishonesty. Students who commit any form of academic dishonesty on an assignment may be assigned a grade as severe as a “0” or “F” for this assignment by the instructor, or will be informed by the instructor that the Dean of Students will be contacted to coordinate a more severe penalty for the offense (e.g. an “F” for the course, or removal from a program - in the case of limited entry programs such as exist in Health Occupations). In the latter case, a centralized record of the student’s academic dishonesty incident will be maintained within the Dean of Students Office so that, if future incidents are reported, patterns of behavior can be identified and sanctioned more severely. Sanctions that may be imposed include disenrollment from the course, suspension from campus, expulsion from the institute, and other administrative actions.

The following are some forms of cheating:

- Copying a fellow student’s work or copying a previous student’s work.

- Notes written on body parts, clothing, cheat sheets, etc... at the time of a test.
- Any form of communication with your neighbor during a test.
- Talking to anyone but the instructor or proctor during a quiz or examination.
- Communicating via cell phones with other people during a test.
- Notes or books open during in-class exams and quizzes.
- Disclosing or soliciting examination questions to those who may have been absent from an exam.
- Plagiarism (copying entirely or whole phrases from books or websites).
- Any two students handing in assignments with word-for-word responses.

You are expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty. Any student who has been judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course. Academic dishonesty includes, but is not limited to, dishonesty on quizzes, tests, or assignments; claiming credit for work not done or done by others (plagiarism); and hindering the academic work of other students. A brief guide to what constitutes plagiarism and how to avoid it can be found here: *https://www.unm.edu/~unmvclib/plagiarism.html* .
You should take care not to leave your computer or thumb drive where others can steal or copy your work or make your files "public." When using a public computer, you should make sure that you erase your work from the computer and remove your thumb drive.

Course Communications
Basically, I'm on email. Lobomail to be exact. I check it all of the time. If you email me on Friday afternoon and I don't get back to you until Monday evening – which may happen since that is my usual longest weekly response gap 72 hours over the weekend and 48 hours over the weekdays. We need to keep all communications to Lobomail and Zoom meetings so I will not be responding on messaging apps, gmail, Hotmail. Texts etc.

Virtual Classroom, Recording Policy, and Student Privacy
In order to provide the best educational experience, this course includes virtual classroom sessions that may be recorded via a web conferencing app. Recordings of sessions may be shared with other students through our learning management system: Canvas, Zoom or YouTube. The fact that you are attending this class may possibly become known to other people.
If you wish to remain anonymous to students outside of your class, you may opt-out of attending the live sessions or remain anonymous during the live session. An explanation of the recording policy and your privacy options are below.

Recordings Policy
- Recordings of virtual classroom session will most often be made this term via the app Zoom.
- Links to the videos are likely to posted online.
- Multiple sections of the same course may be sharing the same videos from online office hours.
- A password may be required to enter a Zoom session.

Student – Privacy and Rights
- For any interactive, web conferencing session that may be recorded, you may choose to not attend the live session and instead watch the recording at a later time, or you may choose to *attend the live session with anonymity*.
- To Protect your Privacy, be anonymous, during a virtual classroom session you may choose to:
    - Not use or display your name
    - Not show video of yourself
    - Not use the audio option for speaking
    - Use the chat box to ask questions without showing your name

Unexpected Class Cancellations

If the class has to be canceled due to my illness or an emergency, I will attempt to notify you by email, text, or phone, but that may not be possible. If I'm not present at the beginning of class, you should wait 15 minutes (in case I am simply late), then go to the Office of Instruction (Bldg 6) to see if they have information (available 8-5 M-F). **If there is no information, you should assume that class has been canceled for the day and that you are free to leave.** Online classes are asynchronous and unlikely to be cancelled. Should that occur, announcements will be posted in canvas.

Campus Closings and LoboAlerts

Class will be canceled if UNM-LA closes (e.g., in case of bad weather). Here are several ways to check for closing:

- Call the University switchboard at 505-662-5919 or 1-800-894-5919 and listen for a recorded announcement.
- You can receive a text message about campus emergencies via LoboAlerts. Confirm that you are signed up to receive notifications on http://loboalerts.unm.edu.

Weather and road conditions vary a lot from place to place in this region, and if you feel that it is unsafe to drive to campus from where you live or work, even if classes have not been canceled, notify me about the reason for your absence, and we'll work it out. Don't jeopardize your safety.

American Disabilities Act

"In accordance with University Policy 2310 and the American Disabilities Act (ADA), reasonable academic accommodations may be made for any qualified student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as the instructor is not legally permitted to inquire. The student is responsible for demonstrating the need for an academic adjustment by providing Student Services with complete and appropriate current documentation that establishes the disability, and the need for and appropriateness of the requested adjustment(s). However, students with disabilities are still required to adhere to all University policies, including policies concerning conduct and performance. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Services at 505-661-4692 for additional information." The UNM Accessibility Resource Center's web site is at this link: http://as2.unm.edu Information about Canvas Accessibility is available here: https://www.instructure.com/canvas/accessibility

Academic Policies

Student handbook: https://pathfinder.unm.edu/

- Computer requirements
- Campus computer account
- Technical support
- Academic support
- UNM Drop policy
- Sexual misconduct policy

Study Time

For every hour "in-class" a student should set aside another 4 hours of study time outside of class. This course has 4 contact hours. This translates to a minimum of 8 hours a week of study time outside of lab/class for a total of 12 hours. Most likely you will really need **17-21 hours a week**.

Online Etiquette

This course will require moderate online interaction. Students are required to treat other individuals with the same level of respect that they would in the live classroom. Do remember that there is a person at the other side of a discussion posting, online office hours, etc. when posting a response, question, or e-mail. In addition, you are responsible to make a sincere effort that all online postings, e-mails, etc. use the level of spelling and grammar and courteous tone that is expected in a professional college setting.

Week	**Topic**	**Material or Chapter**	**Assignments**
Week 1 6/2/25- 6/8/25	Biology – Study of Life Evolution and the Origin of Species, The Chemical Foundation of Life	1, 18.1-18.2, 2	Hmwk 1 -Syllabus – 10pts.
Week 2 6/9/25-6/15/25	The Chemical Foundation of Life, Biological Macromolecules, Cell Structure, Structure and Function of Plasma Membranes	2, 3, 4, 5	Hmwk 2 – Study of Life, Evolution – 10 pts. Hmwk 3 - Hmwk 3: Basics of Chemistry, Water, pH, Reactions – 10pts.
Week 3 6/16/25-6/22/25	Structure and Function of Plasma Membranes, Metabolism, Cellular Respiration	3, 4, 6, 7	Exam 1 - Study of Life, Evolution, Molecules of Cells, Cell Structure and Function - 50pts. Discussion 1 – 10pts
Week 4 6/23/25-6/29/25	Metabolism, Cellular Respiration, DNA Structure and Function, Gene Expression, Genes and Proteins	6, 7, 14, 15, 16	Hmwk 4- Nutrients, Cells- the Fundamental Unit of Life – 10pts.
Week 5 6/30/25-7/6/25	DNA Structure and Function, Gene Expression, Genes and Proteins Cell Reproduction, Cell Division, Meiosis and Sexual Reproduction	14, 15, 16, 10, 11	Hmwk 5- Cells, Energy and Enzymes – 10pts Exam 2 - Membranes, Metabolism – Energy & Enzymes, Cellular Respiration -50pts.
Week 6 7/7/25-7/13/25	Cell Reproduction, Cell Division, Meiosis and Sexual Reproduction, Mendel's Experiments and Heredity, Modern Understandings of Inheritance	10, 11, 12, 13	Hmwk 6 - DNA and Gene Expression Hmwk 7 -Cell Division
Week 7	Mendel's Experiments and Heredity, Modern Understandings of Inheritance, Biotechnology and Genomics	12, 13, 17	Hmwk 8 - Patterns of and Chromosomal Inheritance – 10pts.

Week	**Topic**	**Material or Chapter**	**Assignments**
7/14/25-7/20/25			Exam 3 - DNA, Cell Division, Patterns of and Chromosomal Inheritance -– 50pts. Discussion 2 – 10pts
Week 8 7/21/25-7/27/25	The role of science and critical thinking in society, Catch- up week		Hmwk 9 - Control of Gene Expression and Biotechnology – 10pts. Hmwk 10 – Mini Practice Final Exam – 10pts.
Week 9 7/28/25-7/29/25	**Final Exam, Cumulative**		**Final Exam, Comprehensive Ch. 1-18.2 – 50pts.**
			320 pts total/-20 pts dropped at end for missed assigns.

- This schedule is a guideline and may be subject to change by the instructor.
- Labs and quizzes may be online due to shift from in-class meeting to online weeks. These changes may be short notice, please check the class website and your UNM email for updates the morning of class. than indicated.
- Your grade is based on the PERCENTAGE of 300 total points possible that you have earned over the course