

**Biology 1 – Principles of Biology #51192**  
**Course Description and Tentative Schedule Spring 2016**

**Instructor:** Joseph Yen Lin, M.S.  
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3407  
Office hours in LFS #6  
Friday: Virtual office hours at 1:30-2:30  
Mon/Wed- 1:30-2:30  
Tues/Thursday 3:00-4:00  
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Lecture: M, W 3:30-4:45 pm LFS Room C  
Lab: M, W 4:45-5:45 pm LFS Room

## **I. COURSE OVERVIEW**

**A. Course Structure:** 4 units, 3 weekly lecture hours, 2 weekly laboratory hours

**B. Prerequisite:** Math 103

**Basic Skills Advisories:** Eligibility for ENGL 125 & 126

**Subject Advisories:** One year courses in high school chemistry and high school biology are recommended, but not required.

**C. Summary:** Primarily for students majoring in health related and biological professions. Biol 1 will focus on providing a basic understanding and working knowledge of cellular and chemical basis of life, organ systems, genetics, evolution, current hypotheses regarding the origin of life, ecology, environmental concerns, and the impact of human activity on the biosphere. It is especially useful for those students planning a career as a nurse, physician's assistant, nurse practitioner, laboratory technician, radiologist, nuclear medicine technologist, inhalation therapist, medical office assistant, medical record keeper, dental hygienist, physical therapist, surgical assistant, diagnostic medical sonographer, mortician, cytotechnologist, EEG technologist, paramedic, and also students in premedical, pre-dental, physical education, sports medicine, nutrition, and pre-chiropractic programs. This course demands an excellent grasp of the English language, the discipline to commit many facts to memory, and a great deal of study time.

**D. Objectives:** To understand the fundamentals of biological and chemical similarities and differences of living systems as they relate to heredity, evolutionary history and ecology. When completed, the student will have awareness and an appreciation of some choices the field of Biology has to offer, as well as a solid background to pursue the career of their choice. This course fulfills the prerequisite for Biology 20 (and is a recommended prerequisite for Biology 4 and Biology 6).

## **II. COURSE OBJECTIVES**

In the process of completing this course, students will:

- A. Identify life from an evolutionary approach, from basic organic molecules to whole organ systems.
- B. Evaluate the biological sciences through references to historical discoveries and contributions which have led to the current use of scientific methods.
- C. Use scientific methods in performing experiments and collecting data.
- D. Apply the classical principles of Mendelian genetics to understand DNA as hereditary material and the application to evolutionary thought.

- E. Understand chemical and energy relationships of the levels of biological organization.
- F. Compare and contrast functional systems of living organisms.
- G. Identify environmental and ecological issues.
- H. Evaluate scientific literature and current biological advances.
- I. Describe the basic histology and gross anatomy of tissue, organs, and organ systems.
- J. Describe briefly the diversity of invertebrates and vertebrates.
- K. Demonstrate a basic knowledge of the standard laboratory tools and methodology used in biological research.

### III. MATERIALS

- A. Text: Mader, S., BIOLOGY REEDLEY COLLEGE CUSTOM, 12th edition, McGraw-Hill.
- B. Laboratory Manual: Mader, BIOLOGY CUSTOM LAB MANUAL REEDLEY COLLEGE, 12th edition, McGraw-Hill. (Required)
- C. Quiz Strips (x10)
- D. Scantron form 886 (x4)
- F. Computer with internet access and active E-mail address

#### **Course Link for Mader Biology:**

<http://connect.mheducation.com/class/j-lin-copy-of-sp-2016---biol-1->

**Materials on Canvas:** Several **critical** items are available on Canvas for this course, posted in PDF or Word formats. Within “Syllabus” you will find this syllabus and schedule. Within “Course Documents” you will find my **lecture in PDF format**.

**Canvas Link:** <https://sccd.instructure.com>

### IV. POLICIES: PROFESSIONAL BEHAVIOR IS EXPECTED AT ALL TIMES:

Please respect other students, other teachers, and me. No food, cellular phones, pagers, or profanity at any time! I am aware that emergencies arise, but place your electronics on silent or “manner” mode.

Disruptive behavior that interferes with the teaching and learning processes will be cause for appropriate penalties as described in university procedures. **CHEATING IS NOT TOLERATED** and will be reported according to college procedures. It will result in one of three options to be decided at my discretion: a zero for that exam OR an F in the course OR expulsion from the college. The last date to withdraw from the class without a serious and compelling reason is the 9<sup>th</sup> week of school.

### V. ATTENDANCE:

Attendance is mandatory for both lecture and laboratory. In addition, attendance will be taken during the course every day. Keep in mind 3 tardies will result in an absence. There will be “NO” excused absences for any reason unless you have consulted with me beforehand (extenuating circumstances). In result, 3 absences will correlate to a reduction of one full letter grade and 6 or more absences will result in you being dropped from the course. You are responsible to see the instructor after class to confirm your attendance, if you are late to class.

**VI. TEST AND EVALUATIONS:**

A. Grading

<u>Description</u>	<u>Points Possible</u>
10 Lab Exercises (10 pts. each)	100
10 Connect Online Quizzes (10 pts. each)	200
Connect Homework (Learn Smart Reading)	150
Lecture Summaries	50
Writing #1	100
Writing #2	100
3 Lecture Exams (100 pts. each)	300
<u>Lecture Final (partially comprehensive)</u>	<u>200</u>

Approximate Total Points = 1200

B. All lecture exams and the final will be given during class time. *Lecture Exams* will include multiple choice questions and usually 2-3 short essay questions. Many times these essays will be the main objectives of each chapter. The final lecture exam will be comprehensive.

Course grading scale

100 - 90%; A      89.99 - 80%; B      79.99 - 70%; C      69.99-60 %; D      59.99< %; F

C. *Lab Exercises* will consist of lab questions taken directly from the lab book or handouts. They will be collected one week after the laboratory was completed. These are to have the answers to laboratory questions as well as any problems to work or tables to fill in. Forgotten lab notebooks mean no score – As you are responsible for your work.

F. *Quizzes* will consist of questions concerning the previous labs/lectures and/or the current day's lab/lecture. Sometimes it will be group activities during the lab! Quizzes will be online through Connect and cannot be made up.

G. Make-up lecture exams will be at the discretion of the instructor. You have approximately one week to make-up any missed lecture exam. After two weeks any missed exam will not be made up.

H. See research report information on Canvas.

**VII. OTHER INFORMATION:**

**Drops:** You have until the 9th week of school to drop. If you elect to do so, be sure to drop yourself. Do not assume you have been automatically dropped. This is very important, as after the 9th week a grade must be give, by state law, whether you attend class or not.

## VIII. HELP:

- A. If you should experience difficulty understanding the material presented in the course, it is **your responsibility** to see me at the earliest possible time.
- B. This course requires that you become familiar with and understand a great deal of information about biological processes. In any college course, you are expected to spend 2-3 hours per class hour outside the lecture and lab studying: that translates to 6-9 hours per week for this course, excluding test study time. Some of the work, especially for the labs, should be completed prior to the class.
- C. Listen in lecture and take good notes using my outlines from Canvas (you may use a tape recorder during lecture if you wish). Organize your notes and redo them if necessary after lecture. Review your notes frequently, not just before a test.
- D. Do your reading assignments prior to the lecture on that particular topic. Read your labs **prior to the lab** period and partially complete the lab report to verify your answers during the lab.
- E. Keep a vocabulary list of all terms mentioned in lecture, in bold print in the text, or listed at the end of each chapter. Know the meaning of each of these terms and the correct spelling.
- F. Spend some time studying each day. You are learning a new language; immerse yourself in it! Review notes for 15-30 minutes at one time. The best way to absorb book chapters is to read for one to two hours at a time. Don't try to complete your study hours all in one sitting or on the same day, as your efficiency will drop dramatically. Review an additional 3-5 hours a day prior to examinations.
- G. Use all materials available (text, lab notebook, internet sites, etc.); if one study method does not work try another! Use as many ways to access your memory as possible (auditory, visual, kinetic, etc.).
- H. Stay healthy and get adequate sleep!

## IX. ACADEMIC DISHONESTY:

Academic dishonesty is unacceptable and will not be tolerated by Reedley College. Cheating, plagiarism and collusion in dishonest activities erode the college's educational and social role in the community.

Cheating is the act of deception by which a student misleadingly demonstrates that he/she has mastered information on an academic exercise. Examples include but are not limited to:

1. Copying or allowing another to copy a test, paper, project, or performance.
2. Using unauthorized materials during a test, for example, notes, formula lists, or "cheat sheets."
3. Taking a test for someone else or permitting someone to take a test for you.

Plagiarism is the act of representing the work of another as one's own without giving credit. Plagiarism includes but is not limited to:

1. Incorporating the ideas or words of another's work without giving appropriate credit.
2. Representing another's artistic or scholarly works, such as musical compositions, computer programs, photographs, etc., as one's own.

Disciplinary Procedures are outlined in your Reedley College student catalog and are summarized as follows when a faculty member discovers a violation:

1. Conference with student to address allegations
2. Notification of division dean, report for permanent record of student.
3. May give student "F" for assignment or course.
4. If more than one infraction has occurred, the student may go on probation, be suspended, or expelled. An appeal may be made within 15 days of notification.

**X. ACADEMIC ACCOMODATIONS:**

If you have a verified need for an academic accommodation or material in alternate media (i.e. Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible. Quizzes will open on Wednesday and due Thursday at midnight.

**Biology 1**  
**Fall 2015 LECTURE SCHEDULE (tentative)**  
**#56054**

<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Chapter</b>
1	Jan 11	Introduction, What is Life?, Scientific Method	1
	Jan 13	Chemistry	2,3
2	Jan 18	MLK Jr. Holiday	
	Jan 20	Cell Structure ( <b>Quiz #1</b> )/Membranes	4,5
3	Jan 25	Metabolism	6
	Jan 27	Photosynthesis ( <b>Quiz #2</b> ) ( <b>TOPIC#1 and REFERENCES for PAPER</b> )	7
4	Feb 1	Photosynthesis cont.	8
	Feb 3	Cellular Respiration Mitosis ( <b>Quiz #3</b> )	9
5	Feb 8	Meiosis	10
	Feb 10	<b>LECTURE EXAM #1 (ch.1-9)</b>	
6	Feb 15	Mendelian Genetics	11
	Feb 17	Human Genetics	11
7	Feb 22	Molecular Biology of Genes	12
	Feb 24	Darwin & Evolution <b>Writing #1 Due (Quiz #4)</b>	15
8	Feb 29	How Populations Evolve	16
	Mar 2	Speciation & Macroevolution Systematics( <b>Quiz #5</b> )	17 19
9	Mar 7	Viruses, Bacteria	20
	Mar 9	Protists (last day to drop) ( <b>Quiz #6</b> )	21
10	Mar 14	Fungi	23
	Mar 16	<b>LECTURE EXAM #2(ch.10-12,15-17,20,21)</b>	
11	Mar 28	( <b>Spring Break March 21-25</b> ) Plants	23,24,27
	Mar 30	Plants ( <b>TOPIC#2 and REFERENCES for PAPER</b> ) ( <b>Quiz #7</b> )	23,24,27

12	Apr 4	Invertebrates	28
	Apr 6	Deuterostomes/ Protostomes( <b>Quiz #8</b> )	29
13	Apr 11	Animal Organization & Homeostasis, Integument	31
	Apr 13	Circulation ( <b>Quiz#9</b> )	34
14	Apr 18	Endocrine System	36
	Apr 20	<b>Lecture Exam #3 (ch.23,24,27-29,31,32,34)</b>	
15	Apr 25	Nervous System	37
	Apr 27	Nervous System ( <b>Quiz #10</b> )	37
16	May 2	Sense Organs	39
	May 4	Support systems & Locomotion <b>Writing #2 Due</b>	
17	May 9	Lymphatic & Immune System	33
	May 11	Ecosystems / Population Ecology	44,45
18	May 16	<b>FINAL LECTURE EXAM (Cumulative)</b>	

## Tentative Lab Schedule

Wk	Dates	Lab (Manual Chapter) Sylvia 12 <sup>th</sup> Edition.
1	Jan 11/13	No lab. <b>Please bring your lab manual to every lab below.</b>
2	Jan 18/20	<p><b>Lab 1: Metric measurement &amp; Microscopy</b></p> <p><b>Activity on PG.10</b> Request: Rulers, Long Bones</p> <p><b>Activity on PG. 17</b> Request: Microscopes (in room), Slides, Cover-Slip, Onions (any plant leaves), toothpicks, sterile swabs, iodine solution or methylene blue, <i>Euglena</i> (any unicellular organisms) or Pond Water, Protoslo solution</p>
3	Jan 25/27	<p><b>Lab 2: Chemical Compositions of Cells</b></p> <p><b>Activity on PG. 31-37 &amp; 39</b> Request: Biuret reagent, Copper Sulfate, Albumin, Water, Pepsin, Starch, Test Tubes, Wax pencils, Iodine solution, Onion Juice, Potato Juice, Glucose solution, Cutting board, Knife, Water bath, Benedicts solution, Brown paper or Loose leaf paper, Vegetable oil, Bile salts, Milk, and any that you can get your hands on: <u>cheese, tofu, rice, corn, cream cheese, eggs, beans, nuts</u></p>
4	Feb 1/3	<p><b>Lab 3: Cell Structure and Function</b></p> <p><b>Activity on PG. 42, 44, 45, 47, 48, 51, 52, 53</b> Request: Prepared slide of prokaryotic, human kidney slides, animal cell model, plant cell model, <i>Elodea</i> leaf in fresh water, Petri dish with 1.5% gelatin, potassium permanganate, rulers, Dialysis tubing, Scissors, Glucose solution, Starch solutions, Droppers, Clamps, Beakers, 0.9% NaCl solution (500~1000ml), 10% NaCl solution (500~1000ml), Sheep's blood, Potato strips</p>
5	Feb 8/10	<p><b>Lab 4: How Enzymes Function</b></p> <p><b>Activity on PG. 59, 62</b> Request: Calatase, Test tubes, Hydrogen peroxide, Sucrose solution, Distilled water, Water bath, stirring rod, Ice bucket, HCl dropper bottle, NaOH dropper bottle</p>
6	Feb 15/17	<p><b>Lab 5: Photosynthesis</b></p> <p><b>Activity on PG. 66-69</b> Request: Chromatography apparatus (test tube with a hooked cork), Chromatography paper, Scissors, Capillary tube, Chromatography solution, Plant pigment or (ground plant leaves), Test tubes, <i>Elodea</i> leafs (generous amount), 3% Sodium Bicarbonate, Distilled water, Lamps</p>



7	Feb 22/24	<p><b>Lab 6: Cellular Respiration</b></p> <p><b>Activity on PG. 78-80</b>  Request: Smaller test tube, Distilled water, Larger test tube that can contain the smaller test tube, Yeast suspension, Glucose suspension, Fructose suspension, Sucrose suspension, Water bath, Test tube racks that can hold the larger test tubes (Note: Each group will need 4 Large test tubes and 4 smaller test tubes)</p>
8	Feb 29/ Mar 2	<p><b>Lab 7: Mitosis &amp; Meiosis</b></p> <p><b>Activity on PG. 87 and PG. 96</b>  Request: Mitosis models, Mitosis slides, Onion root tip slides, Pop beads for making chromosomes (Blue and Red), Magnetic centromeres, Lily plant slides (if we have them)</p>

9	Mar 7/9	<p><b>Lab 7: Mendelian Genetics</b></p> <p><b>Activity on PG 105-114</b></p> <p>Request: Agar plant with Tobacco seedlings growing (4-5 prepared plates for students to count if possible), Ear of corn with purple and yellow kernels, Frozen <i>Drosophila</i> (a few in a vial would be great), Stereomicroscope (I'll pull them out)</p>
10	Mar 14/16	<p><b>Lab 8: Human Genetics</b></p> <p><b>Activity on PG 120-131</b></p> <p>Request: Nothing (Worksheet in manual and video supplement)</p>
11	Mar 28/30	<p><b>Lab 9: DNA Technology</b></p> <p><b>Activity on PG 142.</b></p> <p>Request: Piece of tomato, onion, or apple, Mortar &amp; pestle, Test tube (x8-10), Ice bath, 0.9% NaCl, Dish wash detergent (Ajax, Blue Dawn etc.), Ice cold ethanol, Pipet, Phenol Red dropper, Precast gel (we may need to order or we can make), Electrophoresis, Black and Red cables, Power supply, Micropipette, Micropipette tips, DNA ladder (any sizer we have should be good)</p>
12	Apr 4/6	<p><b>Lab 10: Evidence of Evolution</b></p> <p><b>Activity on PG 150.</b></p> <p>Request: Fossil models, Invertebrate fossils, Vertebrate fossils, Plant fossils, Vertebrate Embryo models, Human Skeleton (in room already), Chimpanzee, and Human Skulls</p>
13	Apr 11/13	<p><b>Lab 11: Bacteria &amp; Fungi</b></p> <p><b>Activity on PG. 175-180 &amp; 193-195</b></p> <p>Request: x1-2 inoculating loop, Bunsen burner, Striker, <i>E. coli</i> in test tube, Slides, 1 set of dyes (Crystal violet, Gram Iodine, Alcohol, and Safranin – I will handle the staining) <b>Do we have a container for washing dyes in LFC-C</b>, Agar plates (any) inoculated with any bacteria you can get, Pond water, Pipets, Culture of <i>Saccharomyces</i>, <i>Aspergillus</i> culture, Methylene blue</p>
14	Apr 18/20	<p><b>Lab 12 Seeded Plants and Plants</b></p> <p><b>Activity on PG. 224, 229, 235, 242</b></p> <p>Request: Root, stem, and leaf model, Prepared slide of Eudicot stem, root, leaves etc., Pine Cones, Flower model, Pollen grain slide, and any cool plants you have around ~ Venus fly trap etc.</p>
15	Apr 25/27	<p><b>Lab 13 Invertebrates</b></p> <p><b>Activity on Chapter 23-24</b></p> <p><b>Request: Preserved sponge, hydra, flatworms, <i>Planarian</i>,</b></p>

		tapeworms, fluke, <i>Ascaris</i> , Living <i>Rotifers</i> (we may need to order a small cup?), depression slides, Preserved mollusks, clams, squid, earthworm, arthropods, echinoderms etc.
16	May 2/4	<p><b>Lab 14</b> Vertebrates</p> <p><b>Activity on PG 352-362</b>  <b>Request: All epithelial tissue slides, cartilage slides, bone slides, human torso model, kidney models, muscle arm model, muscle leg model, Heart model, Blood typing kit, Biohazard bin</b></p>
17	May 9/10	<p><b>Lab 15</b> Vertebrates</p> <p><b>Activity on PG 352-362</b>  <b>Request: All epithelial tissue slides, cartilage slides, bone slides, human torso model, kidney models, muscle arm model, muscle leg model, Heart model, Dissection tools,</b>  <b>With addition of 1 Fetal Pig to dissect and show the class.</b></p>