LIFE 102 - 005
ATTRIBUTES OF LIVING SYSTEMS
FALL 2023

Time: MWF 2:00-2:50 PM
Location: Johnson Hall 222
Credits: 4
Instructor: Kimberly Jeckel M.S., Ph.D. (she/her/hers)
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Office: E205 Anatomy/Zoology
Office Hours: Wednesdays 3:00-5:00 PM, and by appointment

Welcome to Life 102:
I am excited to be teaching Life 102 this semester and I am looking forward to meeting all of you and helping you understand the wonderful world of biology! We will be learning about many different aspects of biology including atoms, cells, macromolecules, cellular respiration, photosynthesis, DNA replication, transcription, translation, genetics, and evolution. Biology is necessary for life, important for understanding the world we live in and essential in explaining the mechanisms of living systems. I hope that you enjoy this course, learn more about biology and have fun while doing so!

Following completion of Life 102, students will be able to:
- Describe the contributions of physics and chemistry in the biological processes of life
- Explain the function, mechanism, and importance of DNA and how it regulates gene expression
- Compare mitosis and meiosis and describe how they function in eukaryotes and prokaryotes
- Define cellular structure and organization and explain the function of cellular organelles
- Evaluate the process of energy generation and flow through cellular respiration and photosynthesis
- Explain the theory of evolution and describe the connections between genetics and evolution

Textbooks and Course Materials:
- **Canvas:** The majority of course materials will be delivered via Canvas. You will need your eID to login in: https://canvas.colostate.edu/. If you are registered for LIFE102, this course will be in your listing. If you are new to CANVAS, please take the time to review the CANVAS tutorials so you can get the most out of this resource! The syllabus, announcements, lecture slides, grades, Connect assignments, Quizzes, and additional resources, will be posted on CANVAS.
- **iClicker Cloud:** Students need to register for iClicker (instructions in Canvas).
- **Connect:** All-Inclusive Access by McGraw-Hill. This software includes:
    - The e-textbook "Understanding Biology" (4th Edition; Mason, Duncan, Losos; e-book)
    - LearnSmart Adaptive Learning Platform. This includes interactive materials to help explore content and refine your understanding.
    - Note, you will not be charged for Connect until the Add/Drop deadline date.

Participation: In-class, face-to-face participation will center around active learning opportunities, review questions, and clarifying muddiest points. As it is important to attend class, we strongly encourage you to attend class and participate in the provided class activities. Students who regularly attend class receive higher scores on exams and are able to master the course material.

Connect Assignments:
McGraw Hill Connect assignments will provide additional information for the material discussed in class and to check your knowledge of the concepts. Therefore, the reading and the correlated Connect assignments are designed to supplement the lectures, and in-class activities. These are REQUIRED and are part of your grade. As these are designed to help you prepare for the class activities and exams there will be no late assignments accepted. All of the Connect assignments will be open from the beginning of the semester, and are due on Sundays of their respective weeks, so you may complete these, along with the reading, early if you choose. Please note that there will be two Connect assignments due Week 8, and Week 9, so please plan accordingly. There are 15 Connect assignments, worth 10 points each, and the *two lowest scores* will be dropped (so 130 points will count towards your grade). The first Connect assignment is due on **Sunday, August 27th**.

Canvas Quizzes:
There will be weekly Canvas quizzes administered online. The quizzes are designed to prepare you for the upcoming lecture concepts (and to review past lecture concepts). These questions will help you determine your knowledge of the topics discussed in the lectures and readings, and the goal is to identify any concepts that are confusing or unclear. These quizzes focus on important concepts, therefore, please ensure you seek help with these topics if needed (from the instructor and/or the learning assistants). The quizzes are due on Sundays at 11:59 PM. As students may take the quizzes as often as needed to receive the full points, there will be no late quizzes accepted unless there is an emergency (and the instructor has been contacted prior to the due date). There will be 14 quizzes, worth 10 points each, and the *two lowest scores* will be dropped (so 120 points will count towards your grade). The first Canvas Quiz is due on **Sunday, August 27th**.

Active Learning:
Class activities are an important part of this course, not only to allow you the opportunity to work in a small group format, but also to provide alternate methods for learning/understanding the material. Active learning activities will occur during every class session throughout the semester. These activities will provide additional opportunities to work on the course concepts/material and receive help from the learning assistants and the instructor. We encourage questions and student interaction/discussion during these activities and our goal is to help you master all concepts we discuss in this course. The activities will be provided during class (either as handouts or presented on the PowerPoint slides). In-class questions, activities, and answers will NOT be posted on Canvas, however, if students wish to go over any in-class activities, questions, answers, etc., they are encouraged to meet with the instructor and/or the learning assistants (during office hours, group learning sessions or by appointment). Additionally, please register for iClicker Cloud (information on Canvas) as there will be activities in class that will utilize iClickers.

Learning Assistants:
This course is supported by a team of Learning Assistants (LAs). LAs are undergraduate students who have successfully completed the course in a previous semester and became peer educators to help other students master the course content. Every week, LAs meet with the instructor/instructional team to prepare activities and discuss strategies for supporting student learning. LAs also receive training in teaching and learning techniques to apply in their work with students. LAs will assist with learning activities during lecture and will facilitate a variety of additional learning experiences outside of class. You can connect with LAs through: Group Learning Sessions (drop-in support in TILT's Great Hall held in the evenings each week, 5-9 PM Mon-Thur), Exam Review Sessions (which occur leading up to each exam), and individual and small group tutoring (for students who are interested in additional practice with the course concepts). Find out more about working with our LAs at: https://www.csulearningassistantprogram.org/. The Learning Assistant (LA) model is an evidence-informed, internationally recognized model of peer education proven to positively impact student success. Engaging with LAs can make the learning process more manageable and productive for students, especially in high-enrollment courses (such as Life 102). Data from the CSU Learning Assistant Program indicates that students can more effectively master the course content (earning higher grades) by engaging consistently with LAs outside of class.

Exams:
Exams will be administered in-person during class. There are four exams, with 40 questions, worth two points each (80 points total), and the *lowest score* will be dropped. The final exam, administered during finals week, will be cumulative (40 questions, worth two points each, 80 points total), and *cannot* be dropped. Therefore, it is important to learn/master all of the material we discuss in the course. It is advisable to take all exams, even if you have not studied appropriately, as the lowest exam is dropped, and this allows you the opportunity to identify areas that might be unclear or require extra help (as the final is cumulative). The learning assistants will provide review sessions before each exam. The information in this course provides a foundation for future science courses, therefore, the exam questions will require you to evaluate and synthesize the concepts discussed in lecture, rather than simply memorize facts. This is a skill that we will work on during the semester thus, attending class is essential for success in Life 102. Athletes who will miss exam days due to a CSU-sanctioned event can arrange to take the exam early, by contacting Dr. Jeckel prior to the exam. There are NO make-up exams, unless an emergency situation occurs, and this must be arranged *prior* to the exam (not the day of the exam or after the exam), with Dr. Jeckel and with student case management.

Important Notes:

- Please register for McGraw Hill Connect and iClicker Cloud.
- Please note that all lectures will be in-person, there are no recorded lectures.
- All exams will be during class sessions, in-person.
- Students with accommodations will need to arrange their exams at the student disability center.

Grading:
Lecture Grade
4 Section Exams: **240 points** (4 section exams, worth 80 points each, *lowest score dropped*)
Final Exam: **80 points** (cumulative; cannot be dropped)
Connect Homework: **130 points** (15 assignments; 10 points each; *two lowest scores dropped*)
Quizzes: **120 points** (14 quizzes; 10 points each; *two lowest scores dropped*)
Total Points = 570 points

Final Grade
The lecture portion of the class will comprise 75% of your final grade. The Life 102 Lab will comprise the other 25% of your grade. The Life 102 grades will be calculated as follows:

(Lecture Grade x 0.75) + (Lab Grade x 0.25).

The grade ranges below are ensured however, grades may be curved at the end of the semester.

A = 90 - 100 %
B = 80 - 89 %
C = 70 - 79 %
D = 60 - 69 %
F < 60 %

Please note that this course meets face-to-face therefore, no lectures will be recorded.
The PowerPoint slides will be posted by Fridays for the following week.

*This is a content intensive course, as the intent is to provide a broad overview of important core biological concepts. However, all students can be successful in Life 102 if they are willing to devote the needed time and effort to the course. If a student requires any additional help please do not hesitate to ask, we are happy to assist in your Life 102 journey!

Date		Lecture/Reading	Homework/Quizzes
Week 1:			
Mon	Aug 21	Introduction: Organization & Syllabus	
Wed	Aug 23	Lecture 1: Atoms & Molecules	
Fri	Aug 25	Lecture 2: Bonds & Water	
Smart Book: Chapter 2			**8-27-23**
Quiz #1			**8-27-23**
Reading: Chapter 2			
Week 2:			
Mon	Aug 28	Lecture 3: Water Properties & pH	
Wed	Aug 30	Lecture 4: Carbon Molecules	
Fri	Sep 1	Lecture 5: Macromolecules	
Smart Book: Chapter 3			**9-3-23**
Quiz #2			**9-3-23**
Reading: Chapter 3			
Week 3:			
Mon	**Sep 4**	**No Class - Holiday**	
Wed	Sep 6	Lecture 6: Proteins, Sugars, Fats	
Fri	Sep 8	Lecture 7: Cell Structure	
Smart Book: Chapter 4			**9-10-23**
Quiz #3			**9-10-23**
Reading: Chapter 4 (4.1-4.6)			
Week 4:			
Mon	Sep 11	Lecture 8: Organelles	
Wed	Sep 13	Lecture 9: Organelle Function	
Fri	**Sep 15**	**Exam 1 (Lectures 1-9)**	
Smart Book: Chapter 5			**9-17-23**
Quiz #4			**9-17-23**
Reading: Chapter 5			
Week 5:			
Mon	Sep 18	Lecture 10: Cell Transport	
Wed	Sep 20	Lecture 11: Energy & Metabolism	
Fri	Sep 22	Lecture 12: ATP & Enzyme Function	
Smart Book: Chapter 6			**9-24-23**
Quiz #5			**9-24-23**
Reading: Chapter 6			
Week 6:			
Mon	Sep 25	Lecture 13: Cellular Energy	
Wed	Sep 27	Lecture 14: Harvesting Energy	
Fri	Sep 29	Lecture 15: Cellular Respiration	
Smart Book: Chapter 7			**10-1-23**
Quiz #6			**10-1-23**
Reading: Chapter 7 (7.1-7.7)			

Week 7:

Mon	Oct 2	Lecture 16: Plants & Photosynthesis	
Wed	Oct 4	Lecture 17: Photosynthesis Reactions	
Fri	Oct 6	Lecture 18: Cellular Respiration & Photosynthesis	
Smart Book: Chapter 8			**10-8-23**
Quiz #7			**10-8-23**
Reading: Chapter 8 (8.1-8.6)			

Week 8:

Mon	**Oct 9**	**Exam 2 (Lectures 10-18)**	
Wed	Oct 11	Lecture 19: Cell Cycle & Cell Division	
Fri	Oct 13	Lecture 20: Meiosis	
Smart Book: Chapter 10			**10-15-23**
Smart Book: Chapter 11			**10-15-23**
Quiz #8			**10-15-23**
Reading: Chapter 10 (10.1-10.5; 10.7)			
Reading: Chapter 11			

Week 9:

Mon	Oct 16	Lecture 21: Heredity	
Wed	Oct 18	Lecture 22: Inheritance	
Fri	Oct 20	Lecture 23: Chromosomes	
Smart Book: Chapter 12			**10-22-23**
Smart Book: Chapter 14			**10-22-23**
Quiz #9			**10-22-23**
Reading: Chapter 12			
Reading: Chapter 14			

Week 10:

Mon	Oct 23	Lecture 24: Chromosomal Inheritance	
Wed	Oct 25	Lecture 25: DNA	
Fri	**Oct 27**	**LA Review Session Exam #3**	
Smart Book: Chapter 15			**10-29-23**
Quiz #10			**10-29-23**
Reading: Chapter 15			

Week 11:

Mon	Oct 30	Lecture 26: Genes	
Wed	**Nov 1**	**Exam 3 (Lectures 19-26)**	
Fri	Nov 3	Lecture 27: Transcription	
Smart Book: Chapter 16			**11-5-23**
Quiz #11			**11-5-23**
Reading: Chapter 16			

Week 12:

Mon	Nov 6	Lecture 28: Translation	
Wed	Nov 8	Lecture 29: Gene Expression	
Fri	Nov 10	Lecture 30: Genetic Regulation	
Smart Book: Chapter 20			**11-12-23**
Quiz #12			**11-12-23**
Reading: Chapter 20 (20.1-20.7)			

Week 13:

Mon	Nov 13	Lecture 31: Genetics	
Wed	Nov 15	Lecture 32: Stem Cells & Cancer	
Fri	Nov 17	Lecture 33: Evolution	
Smart Book: Chapter 21			**11-26-23**
Quiz #13			**11-26-23**
Reading: Chapter 21 (21.1-21.6)			

Week 14:

Mon Nov 20-Fri Nov 24 Fall Break - No Classes

Week 15:

Mon	Nov 27	Lecture 34: Origin of Species	
Wed	Nov 29	Lecture 35: Natural Selection	
Fri	**Dec 1**	**Exam 4 (Lecture 27-35)**	
Quiz #14			**12-3-23**
Reading: Chapter 23 (23.6-23.8)			
Reading: Chapter 17			

Week 16:

Mon	Dec 4	Lecture 36: Viruses
Wed	Dec 6	Lecture 37: Medicine & Biotechnology
Fri	Dec 8	Lecture 38: Biology & Life

Finals Week:

Thur	**Dec 14th**	**FINAL EXAM (Cumulative) - 11:50 AM-1:50 PM**

CSU Final Exam Schedule: https://registrar.colostate.edu/final-exams/