

# LIFE 102: Attributes of Living Systems

## Summer 2023

Section 001      Mon/Tues/Wed/Thu, 9:00-10:15 a.m.      Yates 208

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**Offices:**      Biology 232

**Office Hours:** After Class: 10:15am

**\*\*Office Hours are held in Yates 208\*\***

**Lab Coordinator:**      Ren García-Hellmuth, [lauren.hellmuth@colostate.edu](mailto:lauren.hellmuth@colostate.edu)

### COURSE DESCRIPTION AND ORGANIZATION

LIFE102 is an introductory biology course that is intended to provide a basis for more-advanced courses in life sciences. The objective of this course is to give an overview of the many features that are common to living organisms. The topics to be covered are listed in the course outline. Some topics (such as chemistry, cell biology, genetics, and evolution) will be emphasized more than others. As a result, the specific lecture dates and the time spent on each topic are approximate and are subject to change.

The course meets for four 75-minute lectures per week (MTWR, 9:00-10:15 a.m., Yates 208) and two laboratory sessions per week. You should be signed up for a lab. If labs are full, keep trying to register on RamWeb: some spots will open up in the first weeks of the semester as others drop. No overrides are given if the labs are full (due to fire regulations). **Lab starts on the first week of classes (Tuesday, 6/13).**

### LEARNING OUTCOME GOALS FOR LIFE 102

Upon successful completion of LIFE 102, students will be able to demonstrate an understanding and knowledge of:

- the scientific method and science as a way of knowing, and the proper use of the scientific method, including observation, experimentation, and hypothesis testing;
- basic laboratory skills and practices, and the formal reporting of scientific results;
- fundamental cell biology and physiology;
- fundamental molecular biology and biochemistry, including genetics, cellular metabolism, respiration, and photosynthesis;
- fundamental population genetics and mechanisms of evolutionary change, including natural selection and speciation.

### TEXTBOOK, LAB MANUAL, AND WEBSITE

A. LIFE 102 TEXTBOOK: *Understanding Biology*, (3<sup>rd</sup> ed.) by Mason *et al.*

*To reduce your course material cost, this course is participating in the **Inclusive Access Program** using **Connect for Mason's 3<sup>rd</sup> Edition**, which will include online homework and access to the full text. All enrolled students are automatically included in this program. **Please read the applicable information at the end of the syllabus carefully.***

B. Lab Manual: All content will be delivered via your Canvas Lab Section website.

- C. Course Website: Access the website at <http://info.canvas.colostate.edu/login.aspx>. You will need an **eID** (electronic ID at CSU, consisting of a username and a password) to access the website. If you are registered, the course will appear in your “Courses” listing (located at the upper-left side of the page). You will have access to any materials that are posted on the website for students (such as this syllabus, online homework, the full textbook, lecture notes, exam grades, and class announcements). **Please check this website regularly.**

## EXAMS AND GRADING

Grades are based only on the regular exams, online Connect homework, and the laboratory grade. **There are no opportunities for extra credit**

There will be 4 regular exams. All 4 exams will cover any information discussed in lecture as well as relevant information given in the textbook. Your lowest **written exam grade** will be dropped automatically when your final grade for the course is calculated.

**There will be no early exams or make-up exams.** If you miss a written exam for any reason, that will automatically be the written exam dropped. Any other exam(s) missed will be recorded as a zero (0) and count in the final average. The best approach is to take every written exam. Students who miss an exam due to participating in a University-sanctioned event need to see the lecture instructor **well before the exam** to make other arrangements.

There will be a total of **15 online Connect homework assignments** that will be administered **via our Canvas page.** Each homework assignment may cover any information discussed in lecture as well as relevant information given in the textbook. **Each homework assignment is worth 10 points, and is due at 11:59pm on the given due date (see schedule for due dates).** Your lowest 3 homework grades will be dropped automatically when your final grade for the course is calculated.

## CALCULATION OF FINAL GRADE

The lecture portion of the class will comprise **75%** of your final grade. The lab portion of the class will be the remaining **25%** of your final grade.

The **75%** of your final grade that comes from the lecture portion of class will consist of your written exam grades and your Connect homework grades. After the 4 written exams, your lowest written exam grade will be dropped and the remaining 3 written exam grades will be averaged. This written exam average will constitute **60%** of your final grade. After all Connect homework assignments are complete, your lowest 3 homework grades will be dropped and the remaining 12 homework grades will be averaged. This Connect homework average will constitute **15%** of your final grade. The lab portion of the class will be the remaining **25%** of your final grade.

Written Exam Average:	<b>60%</b>	<b><i>Drop lowest score</i></b>
Laboratory Grade:	<b>25%</b>	<b><i>May not be dropped</i></b>
Connect Homework:	<b>15%</b>	<b><i>Drop lowest 3 scores</i></b>
<b>FINAL GRADE:</b>	<b>100%</b>	

## **GRADING SCALE**

<b>Grade</b>	<b>Score</b>
<b>A+</b>	100% to 96.67%
<b>A</b>	< 96.67% to 93.33%
<b>A-</b>	< 93.33% to 90%
<b>B+</b>	< 90% to 86.67%
<b>B</b>	< 86.67% to 83.33%
<b>B-</b>	< 83.33% to 80%
<b>C+</b>	< 80% to 76.67%
<b>C</b>	< 76.67% to 70%
<b>D</b>	< 70% to 60%
<b>F</b>	< 60% to 0%

## **POLICIES**

- Attendance** - **Student attendance and participation in this course are essential to learning the material.** Students are expected to attend each class and laboratory session, be on time, and stay for the entire session. **Failure to attend will negatively affect your grade.**
- Classroom conduct** – Students are expected to assist in maintaining a classroom environment that is conducive to learning and is respectful to the instructor and the other students. Within the classroom, students are prohibited from making offensive remarks or engaging in any form of disruptive activity. Inappropriate behavior in the classroom may result in a request to leave the class at the instructor's discretion.

## **ACADEMIC INTEGRITY**

Academic misconduct (*such as plagiarism, cheating or fabrication of information*) is a violation of the regulations of the University and will be reported to the Office of Conflict Resolution and Student Conduct Services. Student responsibility for academic integrity is discussed in the CSU General Catalog for 2022-2023, which can be found at [www.catalog.colostate.edu](http://www.catalog.colostate.edu).

## **TIPS ON HOW TO DO WELL IN LIFE 102**

This course is **fast-paced** and covers a **large amount of material**. The exams **will be challenging**, and the majority of the lecture portion of your final grade will come from these exam grades. As a result, in order to do well in this course you should **attend every lecture** and **take a lot of notes**. As the exams will cover primarily lecture material, high-quality notes will be critical for your success in this course. The lecture slides will be provided on the course Canvas website, and it is suggested that you **print them out** and bring them to class for note-taking purposes. The textbook has amazingly-helpful internet-based study methods; they will without a doubt be helpful and lead to a higher final grade. In order to fully-digest the content covered in this course, you must set yourself up for success by **not falling behind**; it may not be possible for you to catch up.

## TENTATIVE SCHEDULE OF TOPICS AND REQUIRED READING

(The instructor has the right to modify the schedule or any part of the syllabus at any time.)

Week	Dates	Evaluation	Lecture Topics	Chapter
1	June 12		Course Introduction	None
	June 13		The Nature of Molecules The Properties of Water	2 2
	June 14	<b>Homework #1 (Ch2)</b>	The Properties of Water Chemical Building Blocks of Life (Carbon)	2 3
	June 15		Chemical Building Blocks of Life	3
2	June 19	<b>No Class!!</b>	<b>No Class!!</b>	<b>None</b>
	June 20	<b>Homework #2 (Ch3)</b>	Chemical Building Blocks of Life Cell Structure	3 4
	June 21		Cell Structure	4
	June 22	<b>Homework #3 (Ch4)</b>	Cell Structure	4
3	June 26	<b>EXAM ONE: Section 1</b>	<b>EXAM ONE: Section 1</b>	<b>None</b>
	June 27	<b>Homework #4 (Ch5)</b>	Membranes	5
	June 28		Membranes Energy and Metabolism	5 6
	June 29	<b>Homework #5 (Ch6)</b>	Energy and Metabolism How Cells Harvest Energy	6 7
4	<b>**July 3**</b>	<b>No Class!</b>	How Cells Harvest Energy ( <b><i>Video on Canvas</i></b> )	7
	July 4	<b>No Class!!</b>	<b>No Class!!</b>	<b>None</b>
	July 5	<b>Homework #6 (Ch7)</b>	Photosynthesis	8
	July 6	<b>Homework #7 (Ch8)</b>	Photosynthesis How Cells Divide	8 10
5	July 10	<b>EXAM TWO: Section 2</b>	<b>EXAM TWO: Section 2</b>	<b>None</b>
	July 11	<b>Homework #8 (Ch11)</b>	Sexual Reproduction and Meiosis	11
	July 12		Patterns of Inheritance	12
	July 13	<b>Homework #9 (Ch12)</b>	Patterns of Inheritance Chromosomes & the Meiosis-Inheritance Connection	12 13
6	July 17		Chromosomes & the Meiosis-Inheritance Connection DNA: The Genetic Material	13 14
	July 18	<b>Homework #10 (Ch14)</b>	DNA: The Genetic Material Genes and How They Work	14 15

	July 19		Genes and How They Work	15
	July 20	<b>Homework #11 (Ch15)</b>	Genes and How They Work	15
7	July 24	<b>EXAM THREE: Section 3</b>	<b>EXAM THREE: Section 3</b>	<b>None</b>
	July 25	<b>Homework #12 (Ch27)</b>	Viruses	27
			Biotechnology	17
	July 26		Biotechnology	17
	July 27	<b>Homework #13 (Ch17)</b>	Genome Evolution	24
			Evidence for Evolution	21
8	July 31	<b>Homework #14 (Ch21)</b>	Evidence for Evolution	21
			Genes Within Populations	20
	Aug 1		Genes Within Populations	20
	Aug 2	<b>Homework #15 (Ch20)</b>	The Origin of Species	22
	Aug 3	<b>EXAM FOUR: Section 4</b>	<b>EXAM FOUR: Section 4</b>	<b>None</b>

## CONNECT AND ITS USE IN LIFE 102

For this course, you will be required to purchase McGraw-Hill Education Connect® access for *Understanding Biology*, (3<sup>rd</sup> ed.) by Mason *et al.* You may choose not to buy a print text since Connect contains the full reading experience. Please be aware if you purchase a used textbook you will still need to purchase Connect access to complete required assignments that make up **15% of your total course grade**.

Connect is an easy-to-use homework and learning management solution that embeds learning science and award-winning adaptive tools to help you get the best results in this course. It is designed to create a personalized pathway for your success, making every minute you study more effective. Using adaptive technology, Connect pinpoints exactly what you know and don't know yet, and seamlessly offers up learning resources in real time to help you focus your study time. Connect contains the interactive eBook and study tools, giving you anytime access to course resources and assignments.

### **How to get Registered on Connect:**

To begin, you need to **purchase Connect access**.

### **Purchase from Connect integrated in Canvas:**

Purchase online directly from our Canvas course homepage by **clicking on the first assignment**. Purchasing Connect online is the best value for your required course materials – typically half the price of the printed textbook bundle. A low-cost print-upgrade option is also available via Connect if you find yourself wanting a print companion at some point during the semester. This will be a full color binder-ready version of the text shipped at no charge.

## **Expectations and Policies Related to Course Assignments:**

All course assignments will be scheduled, completed and recorded in Connect. **All students are required to complete every assignment by the due date listed.**

## **Getting Technical Support:**

If having trouble registering or accessing Connect, please contact McGraw-Hill's Customer Support for the fastest help. Live chat, email, and phone support are available almost every hour of the day.

**Website:** <http://www.mhhe.com/support>

**Phone:** (800) 331-5094

**Hours (EST)** Sunday: 12 PM - 12 AM      Monday - Thursday: 24 hours

Friday: 12 AM - 9 PM      Saturday: 10 AM - 8 PM

Ensure your computer meets system requirements by going to this link:

<http://connect.mheducation.com/connect/troubleshoot.do>

## **INCLUSIVE ACCESS PROGRAM, ACCESS INSTRUCTIONS FOR STUDENTS:**

- You will be granted access to McGraw Hill's Connect on the first day when you access CONNECT via your instructors CANVAS shell.
- If you (the student) choose to opt out of the program provided by the CSU Bookstore, you must purchase the access code on your own. The price through Inclusive Access is the best price available so you will likely pay a higher price for purchasing access elsewhere.
- If you choose not to opt you will have access to the materials for the duration of the semester.

## **PRICING and BILLING INFO**

- After the add Add/Drop date the charge for the materials at the Inclusive Access price will be billed to your CSU student account, (unless you have chosen to opt out of the program.
- The price through Inclusive Access is the best price available.

### **Opting Out of Inclusive Access**

- If you choose an alternate method of access to the online content and homework platform, you must opt out of the Inclusive Access program prior to the Add/Drop date to avoid billing.
- Once opted out, you must purchase the access code on your own to the homework platform and e-text.
- If you opt out by accident, you can email [kurt.kaiser@colostate.edu](mailto:kurt.kaiser@colostate.edu) to have access re-instated and billed. Include your name, department, course, section and student number in your request.

### **Dropping the course**

- If you drop the course *prior to* the Add/Drop deadline, you will automatically be opted out and will not be billed.
- If you drop the course *after* the billing deadline, you will have **5 days** to notify the Inclusive Access team to request a refund.

The Colorado Commission on Higher Education has approved **LIFE 102** for inclusion in the Guaranteed Transfer (GT) Pathways program in the **GT-SC1** category. For transferring students, successful completion with a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to <http://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html>.

The content criteria and student learning outcomes (SLOs) listed below are required for GT-Pathways courses in the Natural and Physical Sciences content area, in the GTSC-1 (Lecture course with required laboratory) category. The peculiar numbering of the SLOs is due to the fact that they are excerpted from a comprehensive list of SLOs across all GT-Pathways courses. The SLOs are listed within categories that the GT-Pathways program calls “competencies” and are displayed in italics below.

**GT Pathways Natural & Physical Sciences - Course with Required Laboratory (GT-SC1)**  
**Content Criteria:**

1. The lecture content of a GT Pathways science course (**GT-SC1**):
  - a. Develop foundational knowledge in specific field(s) of science.
  - b. Develop an understanding of the nature and process of science.
  - c. Demonstrate the ability to use scientific methodologies.
  - d. Examine quantitative approaches to study natural phenomena.
2. The laboratory (either a combined lecture and laboratory, or a separate laboratory tied to a science lecture course) content of a GT Pathways science course (**GT-SC1**):
  - a. Perform hands-on activities with demonstration and simulation components playing a secondary role.
  - b. Engage in inquiry-based activities.
  - c. Demonstrate the ability to use the scientific method.
  - d. Obtain and interpret data, and communicate the results of inquiry.
  - e. Demonstrate proper technique and safe practices.

**GT Pathways Natural & Physical Sciences - Course with Required Laboratory (GT-SC1)**  
**Competencies:**

***Inquiry & Analysis***

4. Select or Develop a Design Process
  - a. Select or develop elements of the methodology or theoretical framework to solve problems in a given discipline.
5. Analyze and Interpret Evidence
  - a. Examine evidence to identify patterns, differences, similarities, limitations, and/or implications related to the focus.
  - b. Utilize multiple representations to interpret the data.
6. Draw Conclusions
  - a. State a conclusion based on findings.

***Quantitative Literacy***

1. Interpret Information
  - a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2. Represent Information
  - a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).