LIFE 102: Attributes of Living Systems
Fall 2018

Section 002 Mon/Wed/Fri, 9:00-9:50 a.m. Room A101, Clark Building

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Office Hours: **Tues**: 9:30 - 10:30am; **Wed**: 1:00 – 2:00pm; **Thu**: 1:00 – 2:00pm
Office Hours are held in Yates 212*
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This syllabus is subject to change by departmental or instructor notification

I. 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 three 50 minute lectures per week (MWF, 9:00-9:50 a.m., Clark A101) and one 3-hour laboratory session per week in the Yates building. 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; during Labor Day week there is **no lab**.

II. 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

III. TEXTBOOK, LAB MANUAL, AND WEBSITE

A. LIFE 102 TEXTBOOK: *Biology*, (11th ed.) by Raven *et al.*
To reduce your course material cost, this course is participating in the ***Inclusive Access Program*** *using* ***Connect for Raven's 11th Edition****, which will include online homework and access to the full text. Note: All enrolled students are automatically included in this program.* ***Please read the applicable information (Section XIII) at the end of the syllabus carefully.***

B. Lab Manual: *Life 102-Attributes of Living Systems-Lab Manual* (8th ed.) by Weedman

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 web site for students (such as this syllabus, online homework, the full textbook, lecture notes, exam grades, and class announcements). **Please check this website regularly.**

D. OPTIONAL: iClicker remote for extra credit (see end of syllabus for more information)

IV. EXAMS AND GRADING

Grades are based only on the warm-up exam, the regular exams, the comprehensive final exam, online Connect homework, the lab grade, and optional iClicker extra credit points (****Note**: There are no other opportunities for extra credit**).

There will be 6 exams: 1 warm-up exam (*20 multiple choice questions in 25 minutes*), 4 regular exams (*40 multiple choice questions in 50 minutes*) and 1 comprehensive final exam (*80 multiple choice questions in 2 hours*). All 6 exams will cover any information discussed in lecture as well as relevant information given in the textbook. **All exams** are administered **in this lecture hall** either during **scheduled class time** or **according to the final exam schedule (please see schedule for final exam date and time)**. Exams are machine-graded, so you must bring and use a **#2 pencil** or a **ballpoint pen** to complete each exam, and you must also bring your **CSU student identification number** (not your Social Security number) to identify the test as yours.

Your lowest **regular exam grade** will be dropped automatically when your final grade for the course is calculated. The warm-up exam grade and the comprehensive final exam grade are **never dropped**.

There will be no early exams or make-up exams. If you miss a regular exam for any reason, that will automatically be the regular 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 regular 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 assigment may cover any information discussed in lecture as well as relevant information given in the textbook. **Each homework assignment is worth 15 points, and is due at 11:59pm on the given due date (*see schedule for due dates*).** Your lowest 2 homework assignment grades will be dropped automatically when your final grade for the course is calculated.

V. 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 warm-up exam grade, your regular exam grades, your Connect homework grades, and your comprehensive final exam grade. The warm-up exam grade will constitute **5%** of your final grade. After the 4 regular exams, your lowest regular exam grade will be dropped and the remaining 3 regular exam grades will be averaged. This regular exam average will constitute **40%** of your final grade. After all Connect homework assignments are complete, your lowest 2 homework grades will be dropped and the remaining 13 homework grades will be averaged. This Connect homework average will constitute **10%** of your final grade. The comprehensive final exam grade will constitute **20%** of your final grade.

Warm-up Exam:	**5%**
Regular Exam Average:	**40%**
Connect Homework:	**10%**
Comprehensive Final Exam:	**20%**
Laboratory Grade:	**25%**
FINAL GRADE:	**100%**

GRADING SCALE

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

VI. POLICIES

a. 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.**

b. 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 using cellular phones AT ANY TIME, 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.

VII. LIFE 102 TUTORING

Free tutoring is also available for this course through the **Arts & Sciences Tutoring Program.** The program is located in the Great Hall in The Institute for Learning and Teaching (TILT), and runs 5:00 p.m. to 10:00 p.m. Sunday-Thursday evenings during the academic year. No appointment is necessary and all students are welcome. For more information and tutoring schedules, please visit:

http://tilt.colostate.edu/learning/tutoring/index.cfm

VIII. 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 2018-2019, which can be found at www.catalog.colostate.edu.

IX. 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. **Reading the textbook chapters** before each associated lecture is required and will be extremely beneficial in understanding the lecture content. 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. **DO NOT WAIT UNTIL THE LAST EVENING BEFORE THE EXAMS TO BEGIN STUDYING**…!! Plan to spend 2-3 hours of home study for every hour in the classroom.

X. COURSE OUTLINE

There will be 5 sections, each followed by an exam:

Section 1: Components of the Cell (Ch. 2-4)
Section 2: Cellular Metabolism (Ch. 5-8)
Section 3: Cellular Reproduction & Classical Genetics (Ch. 10-13)
Section 4: Molecular Genetics (Ch. 14, 15, 27, 17)
Section 5: Genomes, Population Genetics, & Evolution (Ch. 20-22, 24)

XI. 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	Aug 20		Course Introduction	**None**
	Aug 22		The Nature of Molecules	2
	Aug 24	**Homework #1 (Ch2)**	The Properties of Water	2
2	Aug 27		Chemical Building Blocks of Life (Carbon)	3
	Aug 29		Chemical Building Blocks of Life	3
	Aug 31	**Homework #2 (Ch3)**	Chemical Building Blocks of Life	3
3	Sept 3	**No Class!!**	**LABOR DAY**	**None**
	Sept 5	**WARM-UP EXAM**	**WARM-UP EXAM** Cell Structure	4
	Sept 7		Cell Structure	4
4	Sept 10	**Homework #3 (Ch4)**	Cell Structure	4
	Sept 12		**Exam Review**	**None**
	Sept 14	**EXAM ONE: Section 1**	**EXAM ONE: Section 1**	**None**
5	Sept 17		Membranes	5
	Sept 19	**Homework #4 (Ch5)**	Membranes	5
	Sept 21		Energy and Metabolism	6
6	Sept 24	**Homework #5 (Ch6)**	Energy and Metabolism	6
	Sept 26		How Cells Harvest Energy	7
	Sept 28	**Homework #6 (Ch7)**	How Cells Harvest Energy	7
7	Oct 1		Photosynthesis	8
	Oct 3	**Homework #7 (Ch8)**	Photosynthesis	8
	Oct 5		**Exam Review**	**None**
8	Oct 8	**EXAM TWO: Section 2**	**EXAM TWO: Section 2**	**None**
	Oct 10		How Cells Divide	10
	Oct 12	**Homework #8 (Ch11)**	Sexual Reproduction and Meiosis	11
9	Oct 15		Patterns of Inheritance	12
	Oct 17	**Homework #9 (Ch12)**	Patterns of Inheritance	12
	Oct 19		Chromosomes, Mapping, and the Meiosis-Inheritance Connection	13
10	Oct 22	**Homework #10 (Ch13)**	Chromosomes, Mapping, and the Meiosis-Inheritance Connection	13

	Oct 24		**Exam Review**	**None**
	Oct 26	**EXAM THREE: Section 3**	**EXAM THREE: Section 3**	**None**
11	Oct 29		DNA: The Genetic Material	14
	Oct 31	**Homework #11 (Ch14)**	Genes and How They Work	15
	Nov 2		Genes and How They Work	15
12	Nov 5	**Homework #12 (Ch15)**	Genes and How They Work	15
	Nov 7		Viruses	27
	Nov 9		Biotechnology	17
13	Nov 12	**Homework #13 (Ch17)**	Biotechnology	17
	Nov 14		**Exam Review**	**None**
	Nov 16	**EXAM FOUR: Section 4**	**EXAM FOUR: Section 4**	**None**
14	Nov 19-23	**No Class!!**	**FALL BREAK**	**None**
15	Nov 26		Genome Evolution	24
	Nov 28	**Homework #14 (Ch21)**	Evidence for Evolution	21
	Nov 30		Genes Within Populations	20
16	Dec 3		Genes Within Populations	20
	Dec 5	**Homework #15 (Ch20)**	The Origin of Species	22
	Dec 7		**Exam Review**	**None**
17	**Dec 13** **4:10 pm – 6:10 pm**	**FINAL EXAM** ***(Clark A101)***	**FINAL EXAM:** **Sections 1 – 4 (half of the questions) +** **Section 5 (half of the questions)**	**None**

XII. iCLICKERS AND EXTRA CREDIT

iClicker is a response system that allows you to respond to questions I pose during class. iClicker use in LIFE 102 is **completely optional**. However, there will be extra credit assigned for participating and for answering questions correctly using your iClicker.

Each question is worth a total of 2 points (1 point for any response, and an additional 1 point for the correct response). The maximum amount of extra credit will be equal to **2.0% of the overall semester grade**. Please note that **you will not receive credit for iClicker participation if your iClicker is not registered**. In order to receive this extra credit, you will need to register your iClicker remote on our Canvas page within the first week of class. To do this, go to **http://info.canvas.colostate.edu/login.aspx**. Login with your eID and password, and then enter our LIFE 102 course page. Click on the "iClicker" tab on the far left of your screen. On the iClicker page, enter your iClicker Remote ID and click the "Register" button. **The remote ID is the number found on the back of your iClicker remote**. This must be done every semester. As a result, even if you've used an iClicker at CSU previously, your iClicker must be registered again for this semester. iClicker will be used nearly every day in class, and **you are responsible** for bringing your remote daily and making sure it is successfully registered.

Answers to common student questions can be found at the "Student FAQ" link provided below.

http://ttc.colostate.edu/iclicker-student-faq/

XIII. 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 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.

XIV. CONNECT AND HOW IT'LL BE USED IN THE COURSE

For this course, you will be required to purchase McGraw-Hill Education Connect® access for *Biology*, (11^{th} ed.) by Raven *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 10% 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: 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

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).