South Portland, Maine 04106

BIOLOGICAL SCIENCE DEPARTMENT

Title: **Biology with Lab for Non-Majors** Course #/ section: **BIOL 100 21**

Credit Hours: **4** Lecture /Lab contact hours: **45 lecture/ 30 lab**

Instructor: **Christopher Hoffmann, MS, MA** E-mail: **choffmann@smccme.edu**

Office: Harborview 301 Contact Information: by email or phone (**741-5774)**

Course Syllabus, Spring 2022

Course Description

BIOL 100 is a four-credit hour, one-semester survey course, designed to give students who are non-science majors a solid foundation in the basic principles and unifying concepts of biology. Students develop an understanding of science, the nature of scientific inquiry, and how evolution explains the unity and diversity of all life on Earth. The course focuses on common features that all organisms (living things) share, as well as their unique characteristics. The "basics" of living things are explored: biochemistry, structure, classification, ecological role, genetics, and evolution.

Course Objectives

After successfully completing this course, students should be able to:

1. **apply** the scientific method of inquiry.
2. **communicate** the relevance of science in society.
3. **describe** how evolution works as a theory to explain the unity and diversity of life.
4. **perform** hands-on and interactive lab experiments and activities using selected biology lab equipment and proper safety practices.
5. **demonstrate** a basic understanding of the following topics: characteristics and basic classifications of life, biochemistry, metabolism, cells, genetics, and ecology.

Learning Outcomes

This course is intended to meet all the competencies of the SMCC Science Outcome and to introduce competencies of the Critical Thinking Outcome (more information at 'Learning Outcomes – General Education' in the College catalog).

SMCC students recognize the methodology and content of science and its relevance. SMCC students:

1. apply scientific methodology to the study of the natural world.
2. participate in hands-on and interactive lab activities.
3. demonstrate the ability to make scientifically-informed decisions.

Topical Outline of Instruction

Characteristics and basic classifications of life: Domains of life, kingdoms of Eukarya, organizational levels of life, virus, definition/explanation of "science," science's impact on society, Darwin's ideas and evolutionary theory
Biochemistry: Atomic structure, periodic table, compounds, water and pH, DNA structure, macromolecules (biomolecules)
Metabolism: Active transport, energy transference, cellular respiration, DNA replication, cell cycle, meiosis, protein synthesis, photosynthesis, evolutionary theory
Cells: Cell theory, cell structure and function, cell types, cell cycle, meiosis, biotechnology, virus, evolutionary theory
Genetics: DNA structure, chromosome structure, chromosome abnormalities, Mendel's work, trait inheritance (dominant and recessive traits), evolutionary theory
Ecology: Populations, communities, ecosystems, biomes, evolutionary theory

Course requirements:

(Spring 2022): The lecture and lab components of this section of this hybrid course are being delivered both online and synchronously via Zoom and Brightspace (BS), and are also being delivered on campus at scheduled times. (Tuesday on-campus, Thursday online)

Assignments and Participation:

All assigned material such as reading or news updates should be completed by the assigned date on BS to make your class participation more fruitful. Material and activities covered during class and laboratory are the responsibility of the student; this includes arrangements for make-up work when possible (typically, discussion board posts and responses explained below). Required work and assessment includes reading, quizzes, responses, news updates, various in-class and lab activities, lab responses, exams, and a project. Your constructive participation in both class and lab is welcome and expected throughout the semester. Specifically in the Zoom format, your attendance with **video on** is considered the basic and expected form of participation, since there will be visual acknowledgement that you are "present." Please contact me if there are issues with this form of participation.

Communication:

Students are required to use Brightspace to check for assignments and announcements. If you miss a class, please do not email me and ask what the assignment is - it will be on BS. Students are likewise expected to use their school email account for communication with me and classmates, especially regarding absences or tardiness (i.e., send me a note if you know you will be late or absent). Expect more prompt responses to your emails from me during the weekdays, and less so on weekends.

Phone calls or Zoom chats during office hours (Fridays, and Tuesdays and Thursdays from 3 to 4) or before and after class are always encouraged to discuss anything relevant to the course. Don't be afraid to ask questions about anything, in class or via email. I am happy to answer questions about course policies, procedures, and setup, but please be sure you've first read through the syllabus, schedule and Brightspace assignments. Please also don't hesitate to discuss anything you believe is affecting your performance in class.

Attendance and Conduct:

As the course is hybrid — online and on-campus — students are expected to attend scheduled meetings. Attendance in a minimum of 80% of the total class time is required to avoid significant problems in the class. Since this class meets twice per week, 4 or more absences may result in failure and 3 absences in a row with no communication may result in Administrative Failure (AF). Attendance will be recorded as it is directly related to participation, both of which you receive credit for (see grading below).

An absence means missed discussions or lab experience which are difficult to replicate outside of the classroom. However, unforeseen situations and illnesses do occur, so remember the importance of respectful communication with your instructor about issues that affect your attendance. Emails or phone calls informing the instructor of your absence are a courtesy that will help you and the instructor plan the most effective way for you to keep up with the coursework.

Classmates will be courteous and respectful to all members of the class. During our online meetings as a class, please follow online/ Zoom etiquette. (Here is an example from the University of Scranton). During our on-campus class or lab meetings, classmates will also follow any Covid-related protocols. Please also minimize or refrain from the use of colognes, perfumes or *Cannabis* out of respect for allergies and sensitivities.

Snow day/cancellation policy (Spring 2022)

When the college campuses are closed (for weather conditions, power outages, or any other reason), all classes (face-to-face and synchronous online, aka zoom) are canceled.

While the syllabus represents current plans, there may be changes during the semester in response to the on-going Covid-19 pandemic. Depending on the progression of the virus, it is possible that the College may have to suspend face-to-face instruction for part of the semester. If we must stop face to face instruction anytime during the semester, your instructor will contact you via your SMCC email or the Brightspace course homepage to discuss next steps for the course.

Text, Tools and/or Supplies

- Lecture Text: *Biology 2e*, an OpenStax resource. Note that there are two versions of the text: a PDF file, and the online version, both found here (https://openstax.org/details/books/biology-2e)
- Lab Text: No purchase required; on Brightspace. This semester's labs will be a combination of on-campus labs, some online lab activities from HHMI Biointeractive, and at-home research assignments for a final lab project
- bound laboratory (composition) notebook

Student evaluation and grading (grade determination):

Assignment	Due Date	Percentage Points
Level 1 (remember/ understand)*: * reading responses/ quizzes /first week assignments (5%) * research logs (10%) * attendance (5%)	throughout semester	20
Level 2 (apply/ analyze)*: * participation in class sessions (5%) * news updates (5%) * lab notebook and lab responses (20%)	weekly	30
Level 3 (evaluate/ create)*: * two exams (20%) * in-class research presentations ("checklists") (10%) * lab project / study area report (20%)	see schedule below and on Brightspace	50
	Total	100

* based on Bloom's Revised Taxonomy https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy

Level 1 (remember/ understand) learning of basic knowledge and comprehension will be assessed with miscellaneous small assignments (such as reading responses, possible quizzes, surveys, small research assignments, etc.), a research log, and simple attendance.

* The **research log** is much like an annotated bibliography, and includes mostly the research you conduct for the class presentation and your study area report, but also research for one or two other smaller assignments during the semester. Reviewed at midterm and at the end of the semester.
* **Attendance** will be taken each class and is graded as a percentage of the total; this will be reviewed and reported at midterm and then again at the end of the semester, or sooner at the student's request.

Level 2 (apply/ analyze) learning, where level 1 knowledge is applied and may be used analytically, is assessed with participation, news updates, and lab notebook and assignments.

* **Participation** is linked closely with attendance. In the event of an absence, the student will make up the participation by reviewing the recorded class session, posting a response to the news updates for the day, and to specific discussion board topic/ questions for that week. (See also comments above in Course Requirements.)
* Each student will share several **research news updates** during the semester. These are assigned alphabetically from the class roster, and the assigned days are posted on the Brightspace calendar. Students will be reminded of the upcoming Update in the previous class. More information on News Updates is on Brightspace.
* The **lab notebook** serves as a record mainly of your field observations, questions and sketches, a record of responses to various lab assignments in some cases, and is a critical component of your study area project. All work that you complete in the lab notebook will be scanned (Adobe Scan is strongly recommended for this) and submitted on BS at assigned times (or simply submitted as a digital copy if typed). Complete, mostly legible written responses that show review and self-corrections, detailed and labeled sketches and/or photos, and outside sources listed are considered "A". Some lab assignments will involve **responses** submitted as separate assignments.

Level 3 (evaluate / create) The opportunity to synthesize and evaluate your basic and applied knowledge is level 3 learning and is assessed with two essay exams, in-class research presentations (the "checklist project") and a major lab project and report.

* **Exams** are essay responses that cover material from the text and relevant supplemental materials which includes news updates and other content presented and posted by your classmates.
* The in-class **checklist project** involves research, collaboration with one or two classmates and a presentation. An individual, not group, grade is assigned and is based on your individual research log and your contribution to the presentation, partly as described in a self evaluation.
* The **lab project/ study area report** is a major study of self-selected study area which integrates field observations with ecological and diversity concepts.
* The **final grade** is formally calculated using the above percent distribution. Grades will be posted on Brightspace.

SMCC policies and services:

End-of-Course Evaluation

Students complete evaluations for each course attended at SMCC. Evaluations are submitted online and can be accessed through the student portal. Students can access the course evaluations beginning one week before the end of classes. The deadline for submission of

evaluations occurs Monday at 5 PM following the last day of the class. You will receive an email to your student email account when course evaluations are available.

ADA (Americans with Disabilities Act):

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call 207-741-5798. If you have a disabling condition and wish to request accommodations in order to have reasonable access to the programs and services offered by SMCC, you must register with the Disability Services Coordinator, Sandra Lynham, who can be reached at 741-5923. Further information about services for students with disabilities and the accommodation process is available upon request at this number. Course policies about online testing are modified to suit each individual's accommodations.

The Learning Commons and academic support:

The library, tutoring and writing centers, and reference/research assistance (typically located on the second floor of South Portland's Campus Center and in the Midcoast's LL Bean Learning Commons and Health Science Center) will be fully available online during the Spring 2022 semester. Here you can find free academic support through individually scheduled and drop in, online tutoring. You can also find information literacy/research librarians, and professional academic strategy/planning mentoring online. While the physical space of the Learning Commons will be available at this time, we can also work with you to set up zoom classrooms for small group study. Services are offered by appointment or as drop-in assistance.
To access services:

- Log in to MySMCC, and visit My Learning in My Maine Guide or
- Select the "tutoring needed or need help?" button if it appears inside your Brightspace course.

Whether On Site or Online, students have consistently reported that the Learning Commons is a friendly, risk-free, and helpful place to seek academic support. It has also been shown that those who make use of the Learning Commons do better in a course than those who do not. We strongly encourage you to take advantage of this valuable and enjoyable resource.

SMCC Pay-for-Print Policy

Each semester students receive a $20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, Tutoring Services, Campus Center Lounge and technology labs). Be sure to log OUT of the system when you've

finished your printing, to prevent unauthorized access to your account. Students can check the number of pages they have printed by using the Printing Balance tool available on SMCC computers (located in the lower right corner of the screen, near the clock). Departments with work study students who need to print documents for the department should contact the Help Desk at 741-5696 to have a special account set up. To find ways to reduce your printing charges, please go to the IT Help tab on My SMCC. If you have questions about the pay-for-printing policy or your printing charges, please contact the Help Desk at 741-5696 or send an e-mail to helpdesk@smccme.edu.

Refunds

Print jobs are eligible for a refund in the event of mechanical or electronic error on the part of the printer, print server, or software used to submit the job. Jobs are not eligible for a refund in cases where the job was not set up correctly, was submitted multiple times, or the student is not satisfied with the result. To request a refund, please bring the offending print to the IT Department in the basement of the Ross Technology Center. Refunds will be granted in the form of a credit to the student's account.

Add-Drop Policy

Students who drop a course during the one-week "add/drop" period in the fall and spring semesters and the first three days of summer sessions receive a 100% refund of the tuition and associated fees for that course. Please note any course that meets for less than the traditional semester length, i.e., 15 weeks, has a pro-rated add/drop period. There is no refund for non-attendance.

Withdrawal Policy

A student may withdraw from a course only during the semester in which s/he is registered for that course. The withdrawal period is the second through twelfth week of the Fall and Spring semesters and the second through ninth week of twelve-week Summer courses. This period is pro-rated for shorter-length courses, usually 75 percent of course meeting times; please check with the Registration Office. To withdraw from a course, a student must complete and submit the appropriate course withdrawal form, available at the Registration Office. This process must be completed either in person or by using SMCC e-mail accounts.

Plagiarism Statement

If an instructor suspects that a student has knowingly committed a violation defined in the Maine Community College System Policy on Student Grade Appeals and Academic Misconduct, the instructor has the authority to review the alleged misconduct and determine the grade that the

student should receive for the assignment and the course. The instructor may assign a failing grade for the assignment or course and may require the student to complete additional work for the course. The instructor may consult with the department chair and/or the College's chief academic officer prior to making such decisions. If a student seeks to challenge an instructor's determination, the student should submit a grade appeal. Grade appeal forms are available in the Advising Office on the South Portland Campus or in the administrative offices in the Learning Commons on the Midcoast Campus. An instructor may also refer the matter to the College's disciplinary officer for review under the procedures of the MCCS Student Code of Conduct.

Grading scale:

100-93 = A
92-90 = A-
89-87 = B+
86-83 = B
82-80 = B-
79-77 = C+
76-73 = C
72-70 = C-
69-67 = D+
66-63 = D
Below 63 = F

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Course Topics, Assignments, and Lab Sequence

Spring 2022 *(schedule, particularly labs, may be revised and updated on Brightspace during the semester)*

Week	Topic	Reading * / Assignment	Lab
1	Fundamentals of Science & Basic Biological Concepts: Science survey, introductions; Brightspace and SimUText orienta0on	Complete science survey; research intro. topic	Lab and notebook protocol; observation and illustration; intro to lab project; study site possibilities; EA lab Pt 2
2	Fundamentals of Science & Basic Biological Concepts cont'd	Chapter 1; Complete science survey;	**C**ampus - Environmental Awareness lab Pt 1
3	Chemical Foundations & Biochemistry	Chapters 2 & 3	**H**ome - Recon of study site
4	Cells – Structure & Function	Chapter 4	C - insect diversity/ microscopy H - biology of skin color (Biointeractive)
5	Cells – Structure & Function **EXAM #1**	Chapter 4 cont'd	
6	Cell Metabolism intro	Chapter 6; checklist projects begin	C - plant ID and taxonomy
7	Cellular Respiration, Photosynthesis	Chapter 7, 8	H - watershed and mapping
8	Cell Reproduction; Meiosis and Sexual Reproduction	Chapter 10, 11	C - bird ID and ecology H - forest forensics
9	Genetics Part 1 - (Mendel, inheritance)	Chapters 12, 13	
10	Genetics Part 2 (DNA - replication, transcription, translation); **EXAM #2**	Chapters 14, 15	C - observation and hypothesis
11	Evolutionary Processes	Chapters 18, 19	H - lizard evolution (Biointeractive)
12	Biological Diversity	Chapters 21 - 29 (sections TBD)	C - protist diversity/ microscopy
13	Ecology Part 1 - population, community	Chapter 44, 45	H - species presence
14	Ecology Part 2 - ecosystems, conservation	Chapter 46, 47	C and H - report preparation and writing
15			
16	**Research log, Lab Report due**	present project highlights	