BIOLOGICAL SCIENCES 102

ELEMENTS OF BIOLOGY (Fall, 2022)

Lecture syllabus and Lab schedule

LECTURE: Tuesday, Thursday 09:30 -10:20 in Lapham N103

INSTRUCTOR: Dr. Selvakumar Ramakrishnan
Office: Lapham N517
e-mail: selvam@uwm.edu
Office Hours: T R 12:00-1:00 PM or by appointment

Required Text:
Title: **Biology Now with Physiology, Third Edition. (Paperback)**
Authors: Anne Houtman, Megan Scudellari Cindy Malone Anu Singh-Cundy (2020)
Publisher: W. W. Norton & Company
ISBN: ISBN: 978-0-393-53371-2
Or click on the textbook website: https://digital.wwnorton.com/bionowp3 to purchase an eBook.

Lab Manual: All required exercises for lab will be posted in Canvas.
Please print and bring a copy of lab exercises from the BIOSCI-102 Canvas site before coming to each lab. They will be posted in the lecture Canvas site.
(No need to printout the special report for first lab).
A separate lab syllabus will also be posted in the lab Canvas site.

COURSE DESCRIPTION:

Bio 102 is an introduction to the living world and the science of Biology. This 1-semester course includes introductory biochemistry, cell biology, genetics, microbiology, plant and animal and human biology, as well as ecology, population biology and evolution. This is a course that is intended for non-majors and does not carry credit toward a bioscience major. Modern biology has revolutionized the way we view life and, in this course, will explore some of the key discoveries that have been made in this field and its implications for us today. We will use the current covid pandemic to emphasize the importance of using science to study how nature works and find solutions when such crises arise using scientific method. By understanding how we use science to study the natural world we expect students will be able to actively participate in ongoing debates on how these discoveries impact our lives.

You must enroll in and attend one of the lab sections for this course. Check your class schedule for the correct meeting time. A schedule of lab exercises will be distributed in lab. Read the day's lab exercise before attending the lab session.

Learning objectives: Upon completion of this course students should be able to:

1) Describe and apply biological information and concepts to societal and ethical questions related to biology.

2) Apply the scientific method to questions and critically evaluate information presented to them.

3) Synthesize, integrate, and effectively communicate such scientific information to others.

4) Demonstrate an understanding of basic biology, as well as in molecular and cell biology, genetics, neuroscience, evolution, and ecology and how discoveries in these fields have both led to a greater understanding and appreciation for life as well as explain the importance of such studies and findings for agriculture, medicine, environment, and our general wellbeing.

GRADING:

Lecture exams are based on 3 equally weighted, non-cumulative exams covering lecture material, which will all be multiple choice and are worth 45% of your grade.
There will also be quizzes in Canvas which may be in class or assigned as homework and is worth 15%. **The lecture component is worth 60% of the total grade**.

Lab scores (40%) is based on attendance, written lab reports, lab manual question sheets and quizzes. See "Laboratory Schedule" and your TA's lab syllabus for further grading details.

Course grades will be assigned following the scale below:

A 93-100%	A- 90-92%		
B+ 87-89%	B 83-86%	B- 80-82%	
C+ 77-79%	C 73-76%	C- 70-72%	
D+ 67-69%	D 63-66%	D- 60-62%	F 0 - 59%

Special Accommodations:
If you need special accommodations in order to meet any of the course requirements, please contact the course instructor as soon as possible.

MISSED EXAMS AND LABS:
Make-up exams will only be given for **legitimate** reasons (illness, emergency, religious holiday), and must be documented. Except for extreme emergencies, notification of absence from an exam must be given *prior to* the exam date to avoid a grade of 0%. Make-up exams may not be the same as the ones taken by the rest of the class; they may be essay exams, oral exams, or a combination of the two.
MISSED LABS CANNOT BE MADE UP.

BIOSCI – 102 (Elements of Biology) Fall 2022
Lecture Topics, Readings and Exams Schedule

Date	Topic	READINGS
(Assigned readings from textbook will be supplemented with additional notes as well)		
6-Sept	Introduction: The Science of Nature	Chapter 1
8-Sept	The scientific method	Chapter 1,2
13-Sept	Why study Chemistry in a biology course?	Chapter 3
15-Sept	Molecules that give rise to life	Chapter 3
20-Sept	The Cell is the fundamental unit of life	Chapter 4
22-Sept	From unicellular to multi cellar life & three domains of life	Chapter 15, 16
27-Sept	What are viruses and why covid-19 is not the flu	Class notes
29-Sept	What leads to pandemics and what is herd immunity?	Class notes
4-Oct	All living systems need energy – ATP synthesis	Chapter 5
6-Oct	Exam I (Posted in Canvas at 09:30 AM and available until midnight, Sunday Oct 9)	
11-Oct	Cellular Respiration and Photosynthesis	
13-Oct	Photosynthesis and the Carbon cycle	Chapter 5
18-Oct	What did Mendel Discover?	Chapter 7
20-Oct	Mendelian Genetics continued	Chapter 7
25-Oct	Genes dictate Phenotype	Chapter 10
27-Oct	Designing vaccines against SARS-CoV2	Class notes
01-Nov	Why are SARS-CoV2 vaccines safe?	Class notes
03-Nov	Exam II (Posted in Canvas at 09:30 AM and available until midnight, Sunday Nov 6)	
08-Nov	Mutations and diseases	Chapter 8
10-Nov	Replication Mutations and CRISPR	Chapter 9
15-Nov	Cell Cycle Estrogen and Breast Cancer	Chapter 6
17-Nov	Brain and the nervous system	Chapter 24
22-Nov	Nutrition, Digestion and Circulation	Chapter 23, 24
24- Nov	No class – Thanksgiving holiday - Enjoy	
29- Nov	Dinosaurs, birds, and whales	Chapter 11,12, 14
01-Dec	Reproduction and Meiosis	Chapter 6, 22
06-Dec	Population Growth	Chapter 19
08-Dec	Keystone species - Community Ecology	Chapter 20
13-Dec	Nutrients, Energy, Productivity, and climate change Are humans responsible for the current accelerated climate change?	Chapter 18, 21

The final exam is not cumulative and is also multiple choice.

Exam III – Posted in Canvas on Saturday, Dec 17 at 10:00 AM and will be available until 11:00 AM, Dec 22)

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Lab Schedule

See Lab Canvas site for more details and Lab syllabus

Week	Lab title	Assignments
Week 1 (Sept 5th)	**No Lab first week of class**	
Week 2 (Sept 12th)	Lab orientation, cell structure, and macromolecules	**In class:** Special Report
Week 3 (Sept 19th)	The five kingdoms	**In class:** Quiz 1
Week 4 (Sept 26th)	Fermentation	**In class:** Quiz 2 **Due next lab:** Fermentation worksheet
Week 5 (Oct 3rd)	DNA Lab and Mitosis	**In class:** Quiz 3, DNA Lab observational report **Due:** Fermentation worksheet
Week 6 (Oct 10th)	Molecular responses	**In class:** Quiz 4
Week 7 (Oct 17th)	Molecular responses and chromatography	**In class:** Quiz 5 **Due next lab:** Molecular responses worksheet
Week 8 (Oct 24th)	**LAB EXAM #1**	**Due:** Molecular responses worksheet
Week 9 (Oct 31st)	Digestive enzymes	**Due next lab:** Digestive enzymes worksheet
Week 10 (Nov 7th)	Transport systems	**In class:** Quiz 6, Transport systems observational report **Due:** Digestive enzymes worksheet
Week 11(Nov 14th)	Reproduction, Blood type and Development	**In class:** Quiz 7
Week 12 (Nov 21st)	**No lab – Thanksgiving - Enjoy**	**Turkey, stuffing, and such**
Week 13 (Nov 28th)	Population growth	**In class:** Quiz 8 **Due:** Meiosis and Development observational report
Week 14 (Dec 6th)	**LAB EXAM #2**	**Due:** Population observational report

Lab Assignments	Points
Special report (1 x10)	10
Quizzes (7x 10)	70
Worksheets (3 x 10)	30
Observational Reports (4 x 15)	60
Exam (2 x 35)	70
Attendance	10
Total Points =	250

Please see next page for University and Departmental Policies.

UNIVERSITY AND DEPARTMENTAL POLICIES:

1. *Students with disabilities.* The Accessibility Resource Center at the University of Wisconsin Milwaukee is dedicated to providing equal access to students with disabilities in all academic, social, cultural and recreational programs. Please notify the Professor, and see this link: http://uwm.edu/arc/

2. *Religious observances.* Students who will miss class due to religious observances should make arrangements with the Professors or Lab TAs to make up missed work. https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-2.%20Accommodation%20of%20Religious%20Beliefs.pdf

3. *Students called to active military duty.* If you are called to active military duty, please contact the Professors to make arrangements for accommodations for absences.

Students: https://uwm.edu/onestop/students-called-to-active-duty/
Employees: https://www.wisconsin.edu/ohrwd/download/policies/ops/bn9.pdf

4. *Incompletes***.** A notation of "incomplete" may be given in lieu of a final grade to a student who has carried a subject successfully until the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student's control, has been unable to take or complete the final examination or to complete some limited amount of term work.
https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-13.%20Incomplete%20Grades.pdf

5. *Discriminatory conduct.* Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff. https://apps.uwm.edu/secu-policies/storage/other/SAAP%205-1.%20Discriminatory%20Conduct%20Policy.pdf

6. *Title IX/Sexual Violence.* Title IX is a federal law that prohibits sex discrimination in education program or activities, and UWM policy prohibits such conduct (see Discriminatory Conduct, above). This includes sexual violence, which may include sexual harassment, sexual assault, relationship violence, and/or stalking in all educational programs and education-related areas. UWM strongly encourages its students to report any instance of sex discrimination to UWM's Title IX Coordinator (titleix@uwm.edu). Whether or not a student wishes to report an incident of sexual violence, the Title IX Coordinator can connect students to resources at UWM and/or in the community including, but not limited to, victim advocacy, medical and counseling services, and/or law enforcement. For more information, please visit: https://uwm.edu/sexual-assault/.

7. *Academic misconduct.* Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions, including failing a course or even suspension or dismissal from the University.
https://uwm.edu/deanofstudents/academic-misconduct-2/

8. C*omplaint procedures.* Students may direct complaints to the head of the academic unit or department in which the complaint occurs. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy. https://apps.uwm.edu/secu-policies/storage/other/SAAP%205-1.%20Discriminatory%20Conduct%20Policy.pdf

9. *Grade appeal procedures*. A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College/School. https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-10.%20Grade%20Appeals%20by%20Students.pdf

10. *LGBT+ resources.* Faculty and staff can find resources to support inclusivity of students who identify as LGBT+ in the learning environment. http://uwm.edu/lgbtrc/

11. *Smoke and Tobacco-Free campus*. UWM prohibits smoking and the use of tobacco on all campus property. https://apps.uwm.edu/secu-policies/storage/other/SAAP%2010-8.%20Smoke%20and%20Tobacco-Free%20Campus%20Policy.pdf

12. *Navigate Student Success Platform and Mobile App*
Students are encouraged to use a tool called Navigate. This tool can help you learn about academic resources, set up study groups in your courses, make appointments with your academic advisor, get reminders on important dates, and much more. In addition, Navigate allows instructors to send Progress Reports to students throughout the term, allowing for updates on your academic progress in a course in addition to your grade. You can log into the platform here: https://uwmilwaukee.campus.eab.com/ or by finding the Navigate link under the Current Students tab on the UWM home page. More information on how you can use Navigate and the app, including tutorials, can be found on UWM's Navigate website.

Panther Community Health and Safety Standards: UWM has implemented health and safety protocols, taking into account recommendations by local, state, and national public health authorities, in response to the COVID-19 pandemic. As a member of our campus community, you are expected to abide by the Panther Interim COVID-Related Health & Safety Policy, which was developed in accordance with public health guidelines. These standards apply to anyone who is physically present on campus, UWM grounds, or participating in a UWM-sponsored activity:

- UWM recommends that all individuals visiting UWM facilities wear face coverings while indoors.
- UWM recommends getting vaccinated for COVID-19 and getting the most recent booster shot available to you.
- UWM requires that you check daily for COVID-19 symptoms and not come to campus if you are feeling sick. If you are feeling sick, get tested for COVID-19 and quarantine until symptoms subside. Use the CDC Quarantine and Isolation Calculator to determine next steps.
- If you test positive for COVID-19, UWM requires that you self-report at the Dean of Students Reporting Form. Use the CDC Quarantine and Isolation Calculator to determine next steps.

Additional details about student and employee expectations can be found on the UWM COVID-19 webpage.