BIO 111-601: GENERAL COLLEGE BIOLOGY I
Spring 2019 Syllabus

By remaining in this course, you agree to the policies and procedures outlined in this syllabus.

CONTACT INFORMATION

Instructor: Tom Zapico
Email: tzapico@ucourses.com

SECTION INFORMATION (BIO 111-601)

Lecture = Saturday 9:00am-12:30pm in room #2565
Lab = Saturday 1:00pm-3:40 in room #2567
Course webpage = Use *THE ROCK* or go directly to D2L (https://rrcc.desire2learn.com/)

REQUIRED TEXTBOOK/COURSE MATERIALS

Required Lab Manual: BIO 111 General College Biology I Laboratory Manual custom edition for RRCC 2017 (in the bookstore-ISBN: 9781323913901). **This is required.**

Textbook: Campbell Biology by Urry et al. 11th edition ©2017. There are a few options to choose from – the RRCC custom split version (Vol. 1, ISBN: 9781323674949) or full text version (recommended if you plan to take BIO 112 also). The custom Vol. 1 special edition for RRCC is recommended if you only plan to take only BIO 111. There are also several other options available for the textbook (i.e., used, digital, renting, etc.). Some type of textbook is required.

Other Materials: Notebook and paper, calculator, pens, no. 2 pencil, colored pencils, access to a computer with reliable internet, flash drive, recording device

Optional: Mastering biology online access kit. An access code comes with new textbooks or can be purchased separately online at the Mastering Biology website (www.masteringbiology.com). This may be helpful to some students as there are quizzes, activities, study aide, tutorials and visual animations.

COURSE DESCRIPTION:

Examines the fundamental molecular, cellular and genetic principles characterizing plants and animals. Includes cell structure and function, and the metabolic processes of respiration, and photosynthesis, as well as cell reproduction and basic concepts of heredity. The course includes laboratory experience. This is a guaranteed transfer (GT) pathways course in the GT-SC1 category. See below for more information on GT-SC1 courses.
Credit hours = 5

Topic 1: Scientific Method, Introducing Energy and Information (Chapters 1, 8 & 54)
Topic 2: Basic Chemistry (Chapters 2 & 3)
Topic 3: Organic Molecules (Chapters 4, 5 & 8)
Topic 4: The Cell, part I (Chapter 6)
Topic 5: The Cell, part II (Chapters 7 & 12)
Topic 6: Introducing Biological Energetics (Chapters 8, 9&10) *
Topic 7: Introducing DNA (Chapters 5, 16 & 17)
Topic 8: Introducing Genetics (Chapters 13-15)
Topic 9: Introducing Genetic Control/Biotechnology (Chapters 17&18)

COURSE PREREQUISITE

C or higher or equivalent placement scores in CCR092/094 and MAT050.

GRADING

Letter grades will be assigned according to the total percentage of points earned in the course (see scale below). **Please note that no late work will be accepted.** You can calculate your current letter grade at any time by dividing the number of points you have earned by the total number of points possible to date. Points will be associated with elements of both lecture and laboratory as outlined below. **Please remember that your grade is determined by your demonstration of mastery of the material and not by your perceived effort in the course**. Letter grades are defined as follows:

A = 89.5-100% – distinguished achievement for superior work and understanding
B = 79.5-89.4% – better than acceptable achievement, high level of understanding
C = 69.5-79.4% – acceptable achievement for advancement in the same or related studies
D = 59.5-69.4% – less than acceptable achievement for advancement in related studies
F = <59.4% – failure to achieve or master the learning objectives of the course, unworthy of credit, does not apply toward certificates or degrees.

METHODS OF EVALUATION / ASSESSMENT

Lecture: 3 100pt exams, 1 150pt comprehensive exam = 450 points
Lab: 2 30pt exams; 30pt Enzyme Paper; 202pts total for weekly labs = 292 points
TOTAL possible = 737 points

Lecture Exams:

There will be a total of four lecture exams – three 100pt exams and one 150pt final exam. The exams will be comprised of objective (e.g. multiple choice, matching, fill-in-the-blank, drawing and labeling diagrams) and subjective (e.g. short answer, essay) questions. You will have an opportunity to review your graded exams in class or lab but you cannot keep them. ***There will be no make-up exams*.** If you miss any of the first three exams, you will receive a zero unless your absence was due to a documented emergency in which case I will average your grade accordingly – this will be done at my discretion. You cannot miss more than one. Please note that routine illnesses, plane reservations, vacations, parties, weddings, and powder days are NOT considered emergencies. You may take an exam prior to the scheduled date when I am scheduled to be on campus. The fourth exam cannot be missed. Talk to me ASAP if you have any questions or concerns.

Lab Assignments:

To get the most out of your laboratory experience, you should do the following for each of the exercises in the schedule:

1. Completely read the assigned lab.
2. Answer all pre-lab questions in your lab manual for the assigned lab.
3. Come to lab prepared to perform the procedure.
4. Lab assignments will be due one week after their completion at the beginning of lecture.

Lab Exams (30 pts each):

There will be two laboratory exams. Lab exams must be taken on the scheduled dates and ***cannot be made-up***. Questions will test your knowledge of the content and skills learned during each lab including lab manual concepts and use of lab equipment.

Enzyme Paper (30 pts):
Detailed instructions will be provided.

COURSE POLICIES

Attendance:
Attendance is crucial to your success in this course. Attendance at the laboratory section in which you are enrolled is mandatory. In the event of a campus closure, it is your responsibility to check the course webpage for any announcements and/or assignments. Unless campus is closed, your attendance is expected.

Classroom civility:
Students are not allowed to disturb the learning environment of other students. Actions such as repeatedly arriving late, excessive talking/noise while the instructor or TA is talking, or obvious indifference or disrespect are not allowed. Please show up to both lecture and lab on time. Repeated tardiness will result in loss of points. Silence all cell phones during lecture and lab and keep them out of sight (except to record lecture). Texting during lecture will result in point deductions.

Extra Credit:
Extra credit will be in the form of bonus questions on the lecture exams.

Academic Dishonesty:
There is a zero tolerance policy for any form of academic dishonesty in this course. Plagiarism, cheating, or helping someone else violate reasonable standards of academic behavior will not be tolerated. Disciplinary action will be taken against any student found guilty of academic dishonesty such as cheating or plagiarism. Although you will often be working with others in lab, all written work you prepare MUST be your own. Those committing academic dishonesty will be subject to disciplinary action up to and including failing the assignment, failing the course, and/or expulsion from the course or college.
A special word regarding plagiarism: this is an extremely serious offense and will result in a zero for work submitted that contains any type of plagiarism, at minimum. To be certain you understand the meaning of plagiarism and are equipped to avoid this in your lab work and other assignments, please review the information provided at this website (https://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth). In addition to traditional rules of plagiarism, scientific writing includes a few special ones. When submitting results, unoriginal pictures, charts, diagrams, etc. are considered as plagiarism, regardless of citation. Results must always be original, even if the quality is not as good as what can be found in an "identical" image from the internet, for example. Please also note that with rare exception, scientific writing does NOT use quotes. Therefore, everything you write must be in your own words. If you need help rewording anything, please come see me.

Problems: It may be the case that some individuals will experience personal setbacks during the semester. Please email me (using your D2L account) as soon as possible to let me know so we can work something out. Email is how I communicate with students to keep them apprised as to special assignments and instructions along with notifications regarding any changes in scheduling and so on. Once I send a notification via email to the class, the students become responsible for any special instructions or schedule changes stated in the message. Email should be used by students to me to communicate special circumstances regarding personal matters that interfere with the course as scheduled as well as any inquiries regarding grades. I cannot answer questions about biology (the subject matter) via email. I will be happy to answer any and all *specific* questions regarding the course material during lab.

If an assignment is due on a day that you cannot make it to campus for whatever reason, such as illness or inclement weather, attach the assignment to an email (sometimes tom.zapico@rrcc.edu works better than D2L with larger documents) as it will be due nonetheless. The assignment should reach my email before the beginning of lecture. In case of class cancellation or campus closure, the assignment will be due at the next class meeting.

Some assignments need to be typed to be accepted and graded. Pay attention as to which ones require typing so as not to be tagged with a zero. Most assignments need to be stapled (anything with multiple pages). This is the student's responsibility (not the instructor's). Such assignments that are dog-eared, paper-clipped (and the like), or simply not stapled will not be graded and will be scored as a zero.

IMPORTANT DATES

STUDENTS: PLEASE VERIFY THE SPECIFIC DROP AND WITHDRAW DATES FOR THIS COURSE IN YOUR "Detailed Student Schedule (with Drop-Withdrawal Dates)" LINK IN THE ROCK, UNDER THE STUDENT TAB
(https://erpdnssb.cccs.edu/PRODRRCC/wt_student_sched.P_DisplayStudentSched)

Drop/Census Date (last day to drop with a refund) February 6, 2019
This is the last day you can remove yourself from this class without having to pay for the class and without the class showing on your permanent student record. If you are considering dropping the class, please talk to your instructor first. If you are on financial aid, you should also consult a financial aid advisor before dropping a class. All students are encouraged to see an academic advisor about how dropping may affect their goals.

Withdraw date (last day to withdraw with a "W") April 23, 2019
This is the last day you can remove yourself from this class and receive a "W" for the class instead of a grade. You are responsible for payment. If you are considering withdrawing from the class, please talk to your instructor first. If you are on financial aid, you should consult a financial aid advisor before withdrawing from a class. All students are encouraged to see an academic advisor about how withdrawing may affect their goals.

TENTATIVE COURSE SCHEDULE

Detailed lecture and lab schedules are provided at the end of this syllabus. Because these schedules are subject to change, be sure you check D2L often and attend class.

RRCC SYLLABUS INSERT – REQUIRED AND ADDITIONAL INFORMATION

All students are required to be familiar with the information contained in the RRCC Syllabus Insert document. In addition to your instructor reviewing the required content in class, the RRCC SYLLABUS INSERT can be found as an announcement on all D2L landing pages (where you have access to all of your courses) and in the "Student Resources" pull-down menu.

GT PATHWAYS STATEMENT, CONTENT CRITERIA, COMPETENCIES, AND STUDENT LEARNING OUTCOMES

Guaranteed Transfer (GT) Pathways Course Statement:
The Colorado Commission on Higher Education has approved BIO 111 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 CDHE GT Pathways Information.

CONTENT CRITERIA FOR GT-SC1 COURSES

(1) The lecture content of a GT Pathways science course - Students should be able to:

- Develop foundational knowledge in specific field(s) of science.
- Develop an understanding of the nature and process of science.
- Demonstrate the ability to use scientific methodologies.
- 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 - Students should be able to:

- Perform hands-on activities with demonstration and simulation components playing a secondary role.
- Engage in inquiry-based activities.
- Demonstrate the ability to use the scientific method.
- Obtain and interpret data, and communicate the results of inquiry.
- Demonstrate proper technique and safe practices.

COMPETENCIES AND STUDENT LEARNING OUTCOMES FOR GT-SC1 COURSES

(1) GT PATHWAYS COMPETENCY: Inquiry and Analysis

Inquiry is a systematic process of exploring issues/objects/works through the collection and analysis of evidence that results in informed conclusions/judgments. Analysis is the process of breaking complex topics or issues into parts to gain a better understanding of them.

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

(2) GT PATHWAYS COMPETENCY: Quantitative Literacy

Competency in quantitative literacy represents a student's ability to use quantifiable information and mathematical analysis to make connections and draw conclusions. Students with strong quantitative literacy skills understand and can create sophisticated arguments supported by quantitative evidence and can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc.)

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

REQUIRED COURSE LEARNING OUTCOMES

1. Define and utilize terminology, specific facts, experimental methodologies, and general concepts related to basic chemistry, cell structure and function, cell reproduction, bio-energetics and genetics.
2. Apply the concepts learned to interpret and analyze new situations.

3. Perform proper procedures and techniques in the laboratory and utilize equipment safely.
4. Describe the impact of biological research and technology on society.
5. Employ scientific methodologies to develop predictions, interpret experimental data, and form conclusions.
6. Communicate scientific information clearly and logically.
7. Represent and interpret biological graphs, tables and other quantitative information.

TOPICAL OUTLINE

Please note the topics below will be integrated throughout the course and not covered exactly in this order. See your lecture and lab schedules for more information.

I. Introduction
    a. Nature of the scientific process
    b. Unifying principles of life
II. Fundamentals of chemistry
    a. Atoms, molecules and bonding
    b. Biologically important molecules
    c. Water and pH
III. Cell structure and function
    a. Prokaryotic and eukaryotic
    b. Microscopy
    c. Organelles and cell structure
    d. Membrane structure and function
    e. Transport mechanisms
IV. Cell reproduction
    a. DNA replication
    b. Mitosis
    c. Meiosis
V. Bio-energetics
    a. Laws of thermodynamics
    b. Aerobic respiration and fermentation
    c. Photosynthesis
VI. Genetics
    a. Mendelian and non-mendelian genetics
    b. Gene expression
    c. Biotechnology

LECTURE SCHEDULE

(subject to change – check D2L often and attend class)

Date	**Lecture**	**Topic and Text Chapters**
Jan 26	Intro to course Scientific Method	Topic 1 Chapters 1, 8, & 52 Topic 1
Feb 2	Chemistry Chemistry	Topic 1 Topic 2 Chapters 2 & 3
Feb 9	Macromolecules Enzymes	Topic 3 Chapters 4, 5, & 8 Topic 3
Feb 16	Macromolecules Enzymes	Topic 3 Chapters 4, 5, & 8 Topic 3
Feb 23	Cell **EXAM 1**	Topic 4 Chapter 6 **Topics 1, 2, &3**
Mar 2	Cell Cell	Topic 4 Topic 4
Mar 9	Cell Membrane Cell Membrane	Topic 5 Chapter 7 Topic 5
Mar 16	Cell Membrane Mitosis	Topic 5 Topic 5 Chapter 7
Mar 23	Respiration **EXAM 2**	Topic 6 Chapters 8 & 9 **Topic 4 & 5**
Mar 30	Spring Break	Spring Break
Apr 6	Respiration Respiration	Topic 6 Topic 6
Apr 13	Photosynthesis Photosynthesis	Topic 6 Chapter 10 Topic 6 Chapters 5, 16 & 17
Apr 20	DNA **EXAM 3**	Topic 7 Chapters 5, 16 & 17 **Topic 6**
Apr 27	DNA DNA	Topic 7 Topic 7
May 4	Mendel Biotech	Topic 8 Chapters 13-15 Chapters 16 & 17
May 11	**EXAM 4**	**Comprehensive**

LAB SCHEDULE

(subject to change – check D2L often and attend class)

Week#	Date	Laboratory #
1	Sat 1/26	**Introduction and lab safety + Lecture** 1 Scientific Investigation
2	Sat 2/2	2-Introduction to Biology 2-Introduction to Biology
3	Sat 2/9	6-Models and Chemical Tests 6-Models and Chemical Tests
4	Sat 2/16	4-Enzyme Activity 4-Enzyme Activity
5	Sat 2/23	3-Microscopes and Cells 3-Microscopes and Cells
6	Sat 3/2	7-Membrane Transport 7-Membrane Transport
7	Sat 3/9	**LAB EXAM#1** **Labs 1-4, 6**
8	Sat 3/16	5-Mitosis Lecture
9	Sat 3/23	8-Cell Respiration & Photosynthesis 8-Cell Respiration & Photosynthesis
10	Sat 3/30	**Spring Break** **Spring Break**
11	Sat 4/6	Lecture Lecture
12	Sat 4/13	11-DNA 11-DNA
13	Sat 4/20	10-Life Zones Lecture
14	Sat 4/27	Lecture Lecture
15	Sat 5/4	Lecture **Review**
16	Sat 5/11	LAB EXAM#2 **Labs 5, 7, 8, 10, & 11**