



Miami-Dade College (Wolfson Campus)
School of Natural Sciences

Course BSC1005 General Education Biology
Syllabus
Reference BSC1005
Term 2014-02



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MDC Mission Statement

The mission of Miami Dade College is to provide accessible, affordable, high quality education by keeping the learner's needs at the center of decision-making and working in partnership with its dynamic, multi-cultural community.

Course Description

This course introduces students to the applications in the area of bioscience. The MDC General Education Biology course will introduce the student to the many basic biological concepts that abound in our understanding of life. Focus will be on selected principles that help explain molecular biology, evolution, genetics, diseases and other problems that human face in the environment. This course was designed to stimulate interest and increase comprehension in the diversity of life that exists on our planet and help the students recognize the many factors that provide order and structure in our environment as we understand it. The student will be encouraged to develop skills in inquiry, observation and analysis of biological features that would enable them to intelligently interpret and evaluate life around them and determine the roles they play within. Emphasis will be given to real life examples and situations to better prepare the student in understanding the many wonders of life in the multitude of environments.

Course Competencies: Please go to page 7.

General Education Outcomes: Please go to page 9.

Goals and Objectives:

The course will enable the student to be competent in the following categories:

1. Scientific method and the wonders of the BIOLOGICAL SCIENCES
2. Basic chemistry as it relates to life and the organisms
3. Structure, form, and function of the many organ systems within an organism
4. Genetics, reproduction and evolutionary development of life
5. Diversity, ecology and ecosystem dynamics within and between populations of organisms around our planet.

TEXTBOOK:

ATTENDANCE:

Attendance to each class sessions is essential for your learning. Biochemistry is known for its hard topics that often require integration of topics discussed in previous class sessions. In addition, **attendance will count 20 points of your final grade**. For each unexcused absence, **1 point will be deducted; for each unexcused tardiness, 0.5 point will be deducted**. It is the instructor's decision if the student is allowed to make up missed work. In the event of an absence, the student will be allowed to make up work if the absence results from one of the following:

- Official campus activities (as designated by MDC)
- Family or personal emergencies (as designated by MDC)
- Medical reasons (discussed with the instructor)
- Work-related reasons (discuss with the instructor)

If a student has missed class three times without a valid excuse or emergency, the instructor has the right to fail the student drop the grade or to withdraw the student from the course. If a student is late three times, the instructor has the right to assign a lower letter grade at the end of the semester.

EXAMINATIONS and PROJECTS:

Item	Points
Reading assignments (weekly)	70
Quizzes (every 3-4 weeks)	40
Attendance	20
Midterm exam	100
Final exam	100
Total points	330

Grade	Percentage	Points
A	100 – 90%	297
B	89 – 80%	264
C	79 – 70%	231
D	69 – 60%	198
F	Below 60%	Below 198

iClicker™ questions (bonus points)

Reading assignments (weekly; 5 points each)

The purpose of the Reading Assignments is for the student to complement the knowledge/skills acquired in class with the text (e.g. textbook, online material, etc.). In addition, it will provide to student the opportunity to read with a purpose and critically think while reading. **Online questions will be uploaded weekly to the www.Schoology.com course website.**

Quizzes (every 3-4 weeks; 10 points each):

Quizzes (refer to the schedule on this syllabus) will assess the student's skills and knowledge gained from the previous 3-4 class sessions. It will also serve to keep the student studying during the course, serve as a review for the Midterm and Final Exams, and writing practice for your Writing Assignment.

iClicker Questions (3 – 4 per week; 1.25 bonus points each)

The purpose of iClicker™ question is to assess a student's knowledge *in-class* and to contribute a scenario for Team-Based learning. Questions will be presented while in class and students will answer through smartphone app. More importantly, students will have the opportunity to discuss the questions between peers before answering the question.

The professor reserves the right to deny entry, require withdrawal or fail students who are constantly late or have had three undocumented absences during the semester. If a student is late three times, the instructor has the right to assign a lower letter grade (including F) at the end of the semester.

Service learning bonus

Service Learning is highly encouraged in this course. Students who participate in Service Learning will be granted up to **10 points extra credit** towards their final grade. Service-learning and I requires students to volunteer a minimum of **40 hours** (extra) with a nonprofit organization that works on issues related to the environment or science. The Center for Community Involvement will provide you with a list of agencies and guide you through the service-learning process. Students must also write a 2-3 pages final report and do a presentation reflecting their service experience. Extra points will be based on hours and the final report.

COURSE MATERIALS

Course materials, including syllabus, Flipped classroom lectures, Lab worksheets, and supplemental materials, will be available at the following websites:

www.schoolology.com, access code **23BMB-TP3K6**

EXAM MAKES UP, INCOMPLETE AND WITHDRAWALS:

Make Up exams or Incomplete grades will be given only when extenuating circumstances occur (WAR, family emergencies, automotive accidents, etc.) and as agreed upon between student and teacher. The student **MUST** be in good standing (grade of C or better) and should complete the course in the **TIME** agreed upon. If not, the grade of **FAIL** will be given.

You must Immediately notify the instructor regarding an absence on the day of an exam (that day or the next day, by phone or e-mail) Do not wait a full week until you attend class again before communicating with me, and providing to me an acceptable documents excusing the absence.

WITHDRAWALS and class DROP are the responsibility of the student and should be done within the given time as specified in the MDC academic calendar.

CONDUCT AND DEMEANOR:

Proper scholastic behavior is expected of the student. We are mature individuals and should follow the socially accepted norms of conduct and etiquette, especially within school grounds and during class sessions. Any type of misconduct or unwarranted activities (cheating, plagiarism, drug use, etc.) will be dealt with in the MDC approved manner.

Questions and other issues regarding the class can be discussed either during the given question and answer session per class time or by appointment during my office hours.

The use of electronic devices (cell phones, beepers, game boys, Walkman, DVD players, etc.) is **NOT** tolerated during lecture time. The following regulations concerning cellular phone usage will be **strictly enforced** in all classrooms and laboratories. ***STUDENTS WHO FAIL TO COMPLY WITH THE FOLLOWING RULES MAY BE ASKED TO LEAVE THE CLASS.***

- All cellular phones must be turned off or placed in silent mode **prior to** entering the classroom or laboratory.
- Use of cellular phones during lecture and lab is strictly prohibited. Student will be asked to leave the class if the cell phone rings or is used. In the laboratory, use of the cell phone will be considered a safety violation and the student will be asked to leave the lab immediately.
- All cellular phones must be stored in your purse, book-bag, or pocket during lecture or lab. Hands-free earpieces must also be stored and cannot be worn during lecture or lab.
- In addition to phone conversations, the cellular phone may not be used for text messaging, picture messaging, web browsing, etc. during lectures and labs.

Your professor gives you his/her undivided attention during class. Please have the courtesy to do the same in

return.

METHODS OF INSTRUCTIONS

Lectures that will assist students understand and apply the different topics of Biological processes, and real-life examples and scenarios in which Biology is employed.

Discussions of topics, real-life examples and scenarios in which Biology is employed will allow students to apply different levels of learning (understand, application, synthesis, creativity).

Exercises in-class and on-line, as reading assignments and homework will supplement and assess students' knowledge and learned skills of Biology.

Case Studies will provide real-life and scientific Biology scenarios that will allow students to apply, synthesize and create with your knowledge.

Reading assignments will aid your understanding, application, and synthesis of the topics learned in-class by answering critical thinking questions found at the end of each chapter.

TECHNOLOGICAL METHODS OF INSTRUCTIONS

Flipped classrooms, in which digital formats of lectures and course materials will be made available to the students online prior to meeting in class, will occasionally be used to facilitate the discussion (e.g. problem-based, case studies) in the classroom.

Student Response Systems, also known as “**classroom clickers**,” will be used to further contribute to the engagement and team-based learning in the classroom. From a smartphone app, students will be able to remotely answer questions presented by the professor. **This will be the only instance in which cellphones/smartphones will be allowed in the classrooms.**

TIPS FOR SUCCESS

MAKE A COMMITMENT TO SUCCEED:

Decide to do well in the course. Spend the time. Be responsible for your own learning. Expect to learn more than what is covered in class or textbook.

GET HELP RIGHT AWAY:

Do not wait for someone to ask if you need help. Talk with your professor, lab assistants, and your study group. The professor encourages frequent visits during office hours to clarify material covered in class. If you cannot make it to the professor's office hours, please make an appointment. Your success in this course depends on how well you understand the concepts covered during the semester. Use the Study partner CD- ROM, and the Study Guide that accompanies the textbook, and the computer courtyard. Review your notes after each class.

WORK WITH A STUDY GROUP:

Meet regularly. Be sure everyone contributes and understands.

TIE IDEAS AND CONCEPTS TOGETHER:

Connect the material to what you already know. Look for the big picture, not just isolated details. Be able to apply information in a new situation.

LEARN THE VOCABULARY:

Look up any words you do not know. Make and use flash cards, carry them everywhere. Say the terms out loud. Use the new terms in sentences. Therefore, make every effort to learn the vocabulary and use the dictionary appropriately.

PREPARE FOR LECTURE BEFORE CLASS:

Read the text assignments. Read effectively. Use the study aids in the book. Answer the questions at the end of the chapter. Highlight sparingly. Write down questions to ask during the next lecture period. Make every effort to know the material before class begins.

UTILIZE ADDITIONAL RESOURCES AVAILABLE TO YOU

Additional help in form of sample exams and quizzes lecture notes and other didactic materials are available through the many links that could be accessed through the World Wide Web for this course. Please, feel free to use the available the equipment at the Computer Courtyards (Rooms 2201 and 2301) and the Science Resource/Tutoring Center (room 2221) for this purpose.

PREPARE FOR LABS BEFORE CLASS:

Read and highlight the handouts. Tie it to the lecture material. Write down questions to ask. Make notes of what to look for.

COME TO CLASS:

Attend every class. Remember that attendance is mandatory. Be on time. Bring your textbook and handouts. Be attentive and take notes.

STUDY EVERY DAY:

Follow a study schedule. Find times and places that allow you to concentrate. Review and rewrite your notes after class. Outline the material. Draw concept maps and/or use diagrams.

ORGANIZE THE INFORMATION:

Make outlines to summarize, organize, and relate key ideas. Know where your notes, handouts, etc. are.

You Must Study to Understand...

***You Must Understand,
To Learn***

Don't Always Memorize! Analyze.

*Students are encouraged to approach the instructor regarding
any and all
conditions that may affect their equal opportunity to learn.*

Students: you must bring your own scantron form 882-E and No. 2 Pencils for the tests.

Tentative Schedule of Classes:

<u>Week of:</u>	TOPICS	BOOK CHAPTERS
January 8	Course Intro and Syllabus Discussion	
January 13 January 15	Introduction to Biology Chemistry	1-2
January 20 January 22	Chemistry Biological molecules	2-3
January 27 January 29	Quiz 1 The cell and its components	4
February 3, 5	Energy Enzymes Cell Transport	5
February 10 February 12	Energy, Enzymes, Cell Transport	6
February 17 February 19	Quiz 2 Cellular respiration	7
Feb 24, 26	Cellular Respiration and fermentation	8
March 3, 5	Midterm Exam Photosynthesis	9
March 10, 12	Photosynthesis	10-12
March 17, 19	Quiz 3	10-12
Last day to drop with a grade of W is March 16	Genetics and Inheritance	9

March 24, 26	Genetics and Inheritance Molecular Genetics Biotechnology	9, 10-12
March 31 April 2	Molecular Genetics Biotechnology	10-12
April 7 April 9	Quiz #4 Evolution, origin and progress of life	13-15
April 14, 16	Evolution, origin, and progress of life	13-15
April 21, 23	Kingdoms (invertebrates/vertebrates) and diversity	34, 37 (overview)
April 28	Final Exam	

Be aware those exact lecture topics and tests schedules are subject to change.

Holidays: *September 5, November 11, 24, and 25.*

Course Competencies:

Competency 1: The student will understand the nature of science, the scientific method, and the field of biology.

Upon successful completion of this course, the student will demonstrate knowledge of the nature of science and the scientific process by:

- A. Describing and/or illustrating the scientific method as presented in the literature.
- B. Differentiating between science and biology.
- C. Comparing the characteristics of life common to a simple cell and multicellular organisms.

Competency 2: The student will become familiar with the basic principles of matter and energy, and understand how they relate to living organisms.

Upon successful completion of this course, the student will demonstrate knowledge of the nature of matter and energy and how they relate to living organisms by:

- A. Defining energy and matter, and their laws, and explaining how they are used in biological systems.
- B. Explaining the basic structure of atoms and molecules and recognizing examples of covalent, hydrogen, and ionic bonding.
- C. Explaining the importance of water to life and the concept of acidity as well as its expression as pH.
- D. Identifying the four major groups of organic compounds (carbohydrates, lipids, proteins, and nucleic acids) and understanding their functions in living systems.
- E. Describing the roles of enzymes in the synthesis and decomposition of biological compounds.
- F. Describing the processes of photosynthesis and cellular respiration.

Competency 3: The student will become familiar with cell structure and function and their interrelationships.

Upon successful completion of this course, the student will demonstrate knowledge of the nature of cell structure and function by:

- A. Describing the structure of a typical cell and explaining the function of the sub-cellular organelles.
- B. Differentiating between plant and animal cells with respect to structure and function.
- C. Identifying and explaining methods of cell transport such as diffusion, osmosis, and active transport.

Competency 4: The student will understand the processes of cellular and organismal proliferation.

Upon successful completion of this course, the student will demonstrate knowledge of the cellular and organismal processes of proliferation by:

- A. Explaining the function and significance of cell division and organismic reproduction.
- B. Comparing and contrasting mitosis and meiosis and describing the significant events that occur in each stage of these processes.
- C. Explaining the principles of heredity, as illustrated by the work of Gregor Mendel, and their application to humans.
- D. Describing the structure of DNA and understand how it functions to control a cell's activity and acts as the molecule of heredity.
- E. Explaining the processes of DNA replication, transcription and translation.

Competency 5: The Student will understand and appreciate the nature of evolutionary theory.

Upon successful completion of this course, the student will demonstrate knowledge of the nature of evolutionary theory by:

- A. Explaining the theory of evolution of life on Earth favored by modern scientists.

- B. Describing and explaining Darwin's basic concept of natural selection and how it relates to the theory of evolution.
- C. Listing and explaining the several categories of evidence that support the theory of evolution.
- D. Describing how scientists group living organisms into hierarchical groups based on their shared characteristics, and name and characterize the major systematic taxa.

Competency 6: The student will understand the relationship between organisms and the environment as well as how the environment is affected by population growth and consumption of resources.

Upon successful completion of this course, the student will demonstrate knowledge of interactions between organisms and the environment by:

- A. Identifying and explaining the ways in which the abiotic environment affects living systems.
- B. Describing the factors that control population growth and the mechanisms involved.
- C. Discussing the various relationships existing among individuals and populations in communities.
- D. Explaining the nature of ecosystems with particular reference to their sustainability.
- E. Listing and describe the major biomes of the world.
- F. Discussing the major impact humans have on their environment.

General Education Outcomes in BSC 1005, General Education Biology:

Purpose: Through the academic disciplines and co-curricular activities, General Education provides multiple, varied, and intentional learning experiences to facilitate the acquisition of fundamental knowledge and skills and the development of attitudes that foster effective citizenship and life-long learning. As graduates of Miami Dade College, students will be able to:

- 1. Communicate effectively using listening, speaking, reading, and writing skills.**
In this course, the communication outcome will be reinforced by at least one essay and project assignment related to a current topic article. In addition to content, essays will also be graded for correct use of grammar and spelling. Project presentation will be graded based on content and presentation skills.
- 2. Use quantitative analytical skills to evaluate and process numerical data.**
Numbers are the language that can be integrated in Biology. In this class, you will have to be able to read and identify pertinent numerical scientific data. You will be required to manipulate the data using equations and dimensional analysis. Quantitative analysis is reinforced in this course.
- 3. Solve problems using critical and creative thinking and scientific reasoning.**
In the allied health field, critical thinking is an essential skill. Solving numerical problems is not enough. You must be able to critically look at the problem and determine whether or not the answer makes sense. You must be able to determine a logical sequence of steps to solve problems, both qualitative and numerical. Critical thinking and scientific reasoning are heavily reinforced in this course.
- 4. Formulate strategies to locate, evaluate, and apply information.**
At least one essay assignment related to a current topic project will be completed during the semester. In reviewing the article, you will need to find and reference supplementary information to support your viewpoint.
- 5. Demonstrate knowledge of diverse cultures, including global and historical perspectives.**
This outcome is heavily touched upon in this course, in relation primarily to historical landmarks in biology, evolution and genetics.

6. Create strategies that can be used to fulfill personal, civic, and social responsibilities.

This outcome is reinforced in this course through your project assignment and testing, which requires you to develop and learn strategies in order to become better citizens and environmental conscious.

7. Demonstrate knowledge of ethical thinking and its application to issues in society.

Students will be required to discuss the actions that would lead to different ethical dilemmas, and the resulting consequences. Students will be asked to describe how they would have acted in a similar situation.

8. Use computer and emerging technologies effectively.

The majority of all homework assignments will be completed using CyberED, a computer based course tool. In addition, Course Compass is an online course tool that will be used to get lectures and other pertaining information. All course progress reports will be sent to you via email. Students must therefore be able to use a personal computer, navigate the internet, and retrieve email. In addition, any essay assignments must be completed using a word processing program.

9. Demonstrate an appreciation for aesthetics and creative activities.

This outcome is not reinforced in this course.

10. Describe how natural systems function and recognize the impact of humans on the environment.

The nature of biological molecules and their role in biological systems will be a major topic in this course. Students will be able to name, identify, and list biological, chemical and physical properties of inorganic and organic compounds, as well as biological macromolecules. Students will also be able to identify the role of biological molecules in living systems. The environmental and health impact of certain types of biological molecules and systems will be discussed.

ACKNOWLEDGEMENT

I, _____, student ID _____, understand and acknowledge that:

- (i) I read and understood the Syllabus.
 - (ii) I may obtain assistance from my instructor and from the Science Lab located in Room 2221.
 - (iii) If applicable, I will turn off my cell phone and put it away so that it is not visible to me or to the instructor. If the phone rings, we will be given a pop quiz.
 - (iv) Student will be asked to leave the class if the cell phone rings or is used.
 - (v) I MAY NOT use my cell phone or calculator capabilities in class or in exams.
 - (vi) There are NO MAKE UP tests should I miss an exam.
 - (vii) NO EXTRA CREDIT will be considered.
 - (viii) I may not leave the classroom once the test begins.
 - (ix) Cheating and disruptive behavior may result in serious consequences such as course failure or dismissal from the college.
 - (x) The course schedule may change due to unforeseen circumstances.
 - (xi) The final exam will be given during date and time scheduled by the Registrar's office.
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Student's Name

Dr. Felix E. Rivera-Mariani
Instructor's Name

Student's Signature

Date: _____