

COURSE SYLLABUS

COURSE TITLE:	Biological Science I	PREFIX & NUMBER:	BIO 101
	(Summer) 4.5		(Summer) 4.5
LECTURE HOURS:	(Fall & Spring) 3.0	LAB HOURS:	(Fall & Spring) 3.0
	(Summer) 9.0		
CONTACT HOURS:	(Fall & Spring) 6.0	CREDIT HOURS:	4.0

CATALOG DESCRIPTION:

This course is the first of a sequence introducing biology. Topics include the scientific method, basic biochemistry, cell structure and function, cell physiology, cell reproduction and development, Mendelian genetics, population genetics, natural selection, evolution and ecology.

Prerequisite: High school biology or high school chemistry or BIO 100 or successful completion of a college-level lab-based science course.

TEXTBOOKS AND OTHER REQUIRED MATERIALS:

Lecture:

Mader, Sylvia. (2007). Biology (9th ed.). McGraw-Hill. (ISBN 007-320928-7)

Laboratory:

Mader, Sylvia. (2007). Biology Laboratory Manual (9th ed.). McGraw-Hill. (ISBN 0-07298955-6)

Students are required to purchase safety glasses to provide protection during laboratory exercises.

OPTIONAL MATERIALS:

Cronkite, D. (1999). A problem based guide to basic genetics. Saunders.

Sackheim, G. (1999). An introduction to chemistry for biology students (6th ed.).

Benjamin/Cummings.

Hand calculator

Lab coat or cover shirt

CORE COMPETENCIES:

All courses approved for the general education core curriculum develop students' critical thinking and/or communication skills. This course develops critical thinking skills through instruction that emphasizes the understanding of Biological Sciences concepts from several sub-disciplines. This understanding will be demonstrated by assessments on the common final exam. The student will demonstrate the following critical thinking objectives.

- Following standard Scientific Method, students will interpret laboratory observations and data, and determine relevance of their findings to expected values.
- Students will recognize key biological assumptions and make inferences justified by data and observations.

This course develops communication skills through instruction that emphasizes a presentation of Biological Science ideas in discipline specific (cell biology, genetics, molecular biology, ecology, evolution), appropriate and clear language. The student will demonstrate the following communication objectives:

- Interpret Biological Science examples from the sub-disciplines listed above using clear, appropriate, well-reasoned, and precise Biological Science sub-discipline terminology in keeping with established professional usage, and identify relevant competing biological points of view, with sensitivity to important biological implications and consequences.

A quiz will be given at any time during, at the beginning, or at the end of each laboratory period. Since laboratory quiz grades will amount to approximately 17% of the overall course grade, attendance and participation in lab is essential for successful completion of the Biology 101 course.

The Laboratory Practical Examination schedule is on pages 4 and 5. The examination may consist of identification items, short-answer questions, multiple-choice items or any combination of these question types. There will be no make-up for a missed laboratory exam.

Proper care of equipment is essential in the Department of Biological Sciences. The equipment may be expensive or difficult to replace. Students who fail to take care of equipment may be subject to disciplinary action and/or be barred from participation in the laboratory.

For your safety, if you have a medical condition that results in seizures, blackouts, etc. (e.g., from epilepsy, diabetes), please inform your instructor before the first laboratory session. This information will be kept confidential. If you wish to seek accommodations due to a disability, please contact Services for Students with Disabilities, Building 410, Room 210.

LECTURE PREPARATION:

Specific key concepts are provided at the beginning of each chapter. These concepts serve as an instructional guide to the material in the chapter. Tentative lecture and lab schedules will be provided as a supplement to this syllabus. Assigned readings should be completed **PRIOR** to attending lecture or lab. The student is expected to come to both lecture and lab prepared (having read the assigned material) to discuss lecture material and also prepared to perform lab work.

ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS:

The College will make reasonable accommodations for persons with documented disabilities. Students should notify the Counselor for Students with Disabilities (located in Counseling and Career Development, Building 410, Room 210) and their instructors of any special needs. Instructors should be notified on the first day of classes.

ELECTRONIC COMMUNICATION DEVICES IN CLASSROOMS:

To minimize classroom disruptions and protect the integrity of test-taking situations, activated electronic communication devices such as pagers and telephones are generally not permitted in classrooms at Trident Technical College. The only exception to this policy will be for on-call emergency personnel (police, fire, EMS), who will be required to notify their classroom instructor of their need for such devices at the beginning of the term and provide documentation verifying their occupation. However, on-call emergency personnel may not leave a testing situation, communicate by electronic means and return to complete an examination. In these cases, instructors should make arrangements for re-testing.

FOR STUDENTS ENROLLED IN ONLINE OR OTHER DISTANCE-LEARNING SECTIONS:

To confirm that you are actively involved in this course you need to contact the instructor at least once per week. Forms of contact can include (but are not limited to) posting/receiving emails, participating in online class discussions or chat rooms, and completing and submitting course assignments. Please see the instructor's addendum for any additional instructions.

ATTENDANCE POLICY:

Before attending classes, you must meet all prerequisites and officially register for all courses. Prompt and regular attendance is your responsibility. You are responsible for all material covered and all assignments made in class. Any time you are absent from a class, laboratory or other scheduled events, it is your responsibility to make satisfactory arrangements for any make-up work permitted by the instructor.

An absence is defined as nonattendance for any reason, including illness, emergency or official leave. If you arrive late to class, you may not be allowed into the classroom and may be considered absent for that period. If you leave before the instructor dismisses class, you may also be considered absent. All class sessions are important. Any time you miss a class you increase your risk of making a failing grade. For example, some departments or individual instructors will count your class participation as a substantial percentage of your grade. Of course, if you are not in class, you will not get the necessary points for your class participation.

If you quit coming or participating in the course and do not officially withdraw by the withdrawal date for each semester, you will receive a grade of F or U. Your instructor cannot assign a grade of W. If you receive financial aid or veterans' aid, your aid may be revised as a result of any changes in your course schedule.

FACULTY AVAILABILITY:

Your instructor is available to you outside of class for academic assistance. Full-time faculty maintain and post regularly scheduled office hours. Part-time faculty are accessible in a variety of ways, which may include conferences before and after class or by appointment, telephone conferences, and E-mail. The phone number for contacting your instructor is provided on your syllabus addendum or cover sheet.

Lecture and Lab Schedule – 14 Week Session

Week	Lecture Chapter, Sylvia Mader, Biology	Lab Exercise, Sylvia Mader, Laboratory Manual, Biology
1	Introduction to the Course 1 – A View of Life	Lab Safety Scientific Method & Metric Measurement
2	2 – Basic Chemistry 3 – The Chemistry of Organic Molecules	Microscopy
3	3 – The Chemistry of Organic Molecules 4 – Cell Structure and Function	Chemical Composition of Cells
4	4- Cell Structure and Function EXAM 1	Cell Structure and Function Prokaryotic Versus Eukaryotic Cells Animal Cell and Plant Cell Function
5	5 – Membrane Structure and Function 6 – Metabolism: Energy and Enzymes	Diffusion Osmosis pH
6	8 – Cellular Respiration	Enzymes
7	7 - Photosynthesis	Lab Practical EXAM 1
8	EXAM 2 13 DNA Structure and Function	Cell Respiration and Fermentation
9	9 – Cellular Reproduction and the Cell Cycle 10 – Meiosis and Sexual Reproduction	DNA
10	11 – Mendelian Patterns of Inheritance 12 – Chromosomal Patterns of Inheritance	Mitosis Meiosis Cell Cycle Gametogenesis in Animals
11	EXAM 3 14 – Gene Activity: How Genes Work 16 – Biotechnology and Genomics	Genetics (Genetics problem set as Instructor's option)
12	17 – Darwin and Evolution 18 – Process of Evolution	Evolution Instructor's Option: Natural Selection Survivorship 'Pond' exercise
13	46 – Ecology of Populations 47 – Community Ecology	Symbiosis Soil Analysis
14	EXAM 4 48 – Ecosystems and Human Interference	Lab Practical 2

Lecture and Lab Schedule – 9 Week Session

Week	Lecture Chapter, Sylvia Mader, Biology	Lab Exercise, Sylvia Mader, Laboratory Manual, Biology
1	Introduction to the Course 1 – A View of Life 2 – Basic Chemistry	Lab Safety Scientific Method & Metric Measurement Microscopy
2	3 – The Chemistry of Organic Molecules 4- Cell Structure and Function	Chemical Composition of Cells
3	EXAM 1 5 – Membrane Structure and Function 6 – Metabolism: Energy and Enzymes	Cell Structure and Function Prokaryotic Versus Eukaryotic Cells Animal Cell and Plant Cell Function
4	8 – Cellular Respiration 7 - Photosynthesis	Diffusion Osmosis pH Enzymes
5	EXAM 2 13 DNA Structure and Function 9 – Cellular Reproduction and the Cell Cycle	Lab Practical 1 Cell Respiration and Fermentation DNA
6	10 – Meiosis and Sexual Reproduction 11 – Mendelian Patterns of Inheritance 12 – Chromosomal Patterns of Inheritance	Mitosis Meiosis Cell Cycle Gametogenesis in Animals
7	EXAM 3 14 – Gene Activity: How Genes Work 16 – Biotechnology and Genomics	Genetics (Genetics problem set as Instructor's option)
8	17 – Darwin and Evolution 18 – Process of Evolution 46 – Ecology of Populations	Evolution Instructor's Option: Natural Selection Survivorship 'Pond' exercise
9	47 – Community Ecology EXAM 4 48 – Ecosystems and Human Interference	Symbiosis Soil Analysis Lab Practical 2