

SCI141: Integrated Earth Science and Biology Biology Section – Spring 2005

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Office Hours:
M 11:00 – 1:30
T and R 11:30 – 1:00

Course Information:

	<u>Day</u>	<u>Times</u>	<u>Location</u>
Lecture:	T & R	10:05 – 11:20	126 Sperry
Labs:	T or R	1:15-3:05 or 3:15-5:05	355 Bowers

Course Website:

<http://web.cortland.edu/frieda/141bio.html>

Purpose of this Course:

This course has been designed specifically for elementary education students. Your future in teaching at the elementary school level will require content knowledge in many different areas. This is a quarter semester course designed to give you some general content and science process background specifically in Biology. Additionally, you will take coursework in Earth Sciences, Chemistry, and Physics. This experience is designed to show you not only some of the principles of each discipline, but also their interrelatedness. This course is not designed for Biology majors, however, as Elementary Education teachers; you will someday be the first line in the education of children. You should approach this course with as much academic rigor as any other course.

Course Description:

This course is worth half of four credits for SCI141. SCI141 fulfills a GE8A course requirement for natural sciences. Because this is a GE8A course there is a core writing requirement. Over the course of the quarter you will be required to write *at least* 2 and ½ pages. Additionally, this course is not the equivalent of a 2 credit hour quarter course. Both quarters (Biology & Earth Science) will make up one grade. This means that it is impossible to take only the Biology or only the Earth Science Portion of the course.

Course Objectives:

This part of the course is designed as a quarter course covering Biology content. There are 3 main objectives within the content of the course:

1. Students will become science literate, meaning that students will be able to understand and apply actual Biological principles to current events, case studies, and a variety of unique situations. Students will also work through understanding and evaluating different levels of reliable source information.
2. Students will relate Biological content into five main topic areas: a. biological organization, b. metabolism, c. homeostasis, d. heredity & reproduction, and e. adaptation.
3. Students will develop problem solving skills by working with the scientific method in a laboratory situation. Students will work on solving real Biology problems in the lab with a focus on developing both scientific process and data analysis skills.

Required Materials:

Textbook: The following textbook is required for all parts of both SCI141 & SCI142.

Tillery, B.W., Enger, E.D., and Ross, F.C. (2004) **Integrated Science. 2nd Edition.** McGraw Hill Education, New York. ISBN: 0-07-292190-0

Later in the session you will also need a pair of gloves and goggles for working in the lab. All of these materials can be found in the SUNY Cortland Bookstore.

Course Schedule			
<i>Day</i>	<i>Date</i>	<i>Topic</i>	<i>Reading</i>
R	20 Jan	1. Introduction to Course & Content	
T	25 Jan	2. Nature of Living Things	Tillery, Ch. 19
R	27 Jan	3. Cellular Processes	Tillery, Ch. 19 pp 408-14 & Handout
T	1 Feb	4. Metabolism → Creating & Releasing Energy	Tillery, pp. 416 & 417 Handout
R	3 Feb	5. Homeostasis → Materials Exchange	Tillery, Ch. 24 pp. 536-47
T	8 Feb	6. Homeostasis → Control & Integration	Tillery, Ch. 24 pp. 547-58
R	10 Feb	7. Heredity → Inheritance	Tillery, Ch. 25 pp. 560-70
T	15 Feb	8. Heredity → Molecules	Tillery, Ch. 25 pp. 570-83
R	17 Feb	9. Heredity: Cloning	
T	22 Feb	10. Reproduction	Tillery, Ch. 23
R	24 Feb	11. Adaptation → Evolution	Tillery, Ch. 20
T	1 Mar	12. Ecology	Tillery Ch. 22
R	3 Mar	13a. Case Study & Exam Review: T Labs only	
T	15 Mar	13b. Case Study & Exam Review: R Labs only	

Lab Schedule		
Week of	Topic	Location
24 Jan	1. Science Literacy	TBA
31 Jan	2. Science Inquiry/Cells	Lab
7 Feb	3. Metabolism/Homeostasis	Lab
14 Feb	4. Genetics	Lab
21 Feb	5. Plants	Lab
28 Feb	6. Animals	Lab
14 Mar	Course Final – During Lab Sessions	

Course & Grading Requirements:

Lecture

- | | |
|----------------------------------|-----------------|
| 1. 6 Weekly Study Guides @ 5 pts | 30 Pts |
| 2. 6 Weekly Quizzes @ 15 Pts | 90 Pts |
| 3. 1 In-class essay @ 15 Pts | 15 Pts |
| 4. Course Final | <u>100 Pts</u> |
| | Total - 235 Pts |

Lab

- | | |
|-----------------------------------|-----------------|
| 1. 5 Pre-labs @ 5 Pts | 25 Pts |
| 2. 6 Lab Handouts @ 5 pts | 30 Pts |
| 3. 1 2-4 Page Lab Report @ 60 pts | <u>60 Pts</u> |
| | Total - 115 Pts |

Lecture 235 Pts + Lab 115 Pts = 350 Total Pts

Your final grade for this course will be combined with your final grade for the Earth Science portion of the course (another 350 points). Your final grade will be based on your overall point total for both courses.

Formula → $\frac{\text{Biology grade (out of 350)} + \text{Earth Science grade (out of 350)}}{700 \text{ Total points for the course}} \times 100 = \text{Your \%}$

A+ = 97% or Better
 A = 93 – 96
 A- = 90 – 92
 B+ = 87 – 89
 B = 83 – 86
 B- = 80 – 82

C+ = 77 – 79
 C = 73 – 76
 C- = 70 – 72
 D = 65 – 69
 E – 65 or Below

General Rules:

1. All classes and labs start on time. If there is a quiz/test/graded assignment that occurs at the beginning of class and you are not present, you will not be allowed to make up the graded work. If you are late, you will not be granted extra time in which to complete the work.
2. Late work will not be accepted unless you have made arrangements with me at least 24 hours prior to the due date. Additionally, you must take the final during your scheduled time (TBA).
3. Only valid excuses cleared by the dean will be accepted.
4. If you show up unprepared for lab (e.g. you need gloves and goggles and you do not have them) you will be asked to leave lab until you have the required materials.

How to Do Well in this Class:

This will be a very challenging course and there is little advice I can offer that will help everyone equally except for the following few bits of advice I can give you about every class you take:

1. Attendance: SUNY Cortland has a well defined attendance policy (see your academic handbook). Attendance at lectures and labs is the best way to improve your chances in this course. A recent study (Grise and Kenney, 2003, Moore, 2003) found that students who attended only 41-60% of their introductory science courses had zero percent chance of scoring an A, an 11 % chance of scoring a B, while most (54%) scored a D or lower. Coming to class is important.
2. Pace yourself. This is a short course, but you will be unable to learn all of the material the night before the final. Keep up as the quarter moves along.
3. I cannot know if you need help unless you tell me that you need help. Come and see me during my office hours, before or after class, or during lab times. Send me an email (frieda@cortland.edu). I will try and help you as much as I can.

References:

Grise, D.J., Kenney, A.M. (2003) *Nonmajors' performance in Biology: effects of student-based initiatives and class size*. **Journal of College Teaching**, 33(2):18-21.

Moore, R. (2003) *Attendance and performance*. **Journal of College Science Teaching**, 32(6): 367 – 371.

Disabilities Statement:

If you are a student with a disability and wish to request accommodations, please contact the Office of Disability Services (located in B-40 Van Hoesen Hall) or call 753-2066 for an appointment. Any information about your disability will remain confidential. Because accommodations may require early planning, requests should be made as soon as possible.