

IONA COLLEGE
Scientific and Technological Literacy
Fall 2006

STL 100 Scientific and Technological Literacy: Matter, Energy, Life and Systems

Instructor: Louis S. Campisi, Ph.D
Office: C105D
Office Hours: M, W, 1:00pm, Th 10:00am
(or other times by appointment)
Telephone: 914-633-2290
FAX Number: 914-633-2240
E-mail: Lcampisi@iona.edu
Class Meeting: M C010 (lab) 9:00 – 10:52 am
W, Th C110(lecture) 9:00am

Course Description

A course designed to develop the foundation for the literacy necessary to deal with technology-related problems in modern society. Basic scientific concepts underlying matter, energy, life and systems are introduced, and students engage in development of reasoning and problem solving skills characteristic of scientists. The course is an introduction with applications to ecology, human biology and health, energy transformations and systems. Note: the course satisfies the prerequisites requirements for STL 105, 115, 125, 135, 145, 155, and 165. Class meetings include lecture and laboratory. Lab fee required. 3 credits.

Course Objectives

As part of the core curriculum at Iona, each student takes a two-course sequence in STL. These courses are interdisciplinary, being staffed by faculty from Physics, Chemistry, and Biology. They focus on societal dimensions of science and technology by treating contemporary problems as course topics. The first course provides a broad view of the fundamental concept of energy and the role it plays in living and non-living systems. It deals with the principles as well as practical development of problem solving, critical thinking, and measurement skills. The second course concentrates on a particular theme, adding detail and depth to the study of an area of particular interest to the student.

By successful completion of in the Scientific and Technological Literacy component of the core curriculum, students will:

1. Demonstrate an understanding of the nature of scientific knowledge and inquiry.
2. Apply scientific concepts, principles, laws and theories to generate multiple solutions to contemporary issues.
3. Apply scientific and engineering principles to solve problems, make decisions furthering their understanding of nature and technology.
4. Demonstrate an awareness of the interrelationship of science, technology and society.
5. Demonstrate the confidence to confront scientific and technological issues in areas such as human health, energy and the environment.
6. Provide students with a scientific understanding of the world we live in so that they might come to know more .

Required Texts

Campisi, Rosenberg, Stanionis. (2004). **Integrated Science: The Energy Code** Dubuque, Iowa, Kenndall_Hunt Publishers.

Stanionis/Iona College Faculty. **Laboratory Manual for the Sciences**, 2nd ed. (1998). New York, NY, John Wiley and Sons, Inc.

Required Materials

You should have a scientific calculator (approximately \$10).

Grading Criteria

--	--

2 Hourly Exams	30%
Lab Work and Reports, Lecture Reports	40%
Final Exam	30 %

Student Responsibilities:

To become eligible to earn a passing grade in this course, a student must first complete the course, which means: attend virtually all lectures, complete all laboratory activities, complete all assigned readings on time, submit all the required written assignments and reports, and take both the mid-course test and the final examination. Allowance will be made for a minimal number of absences (however, see College bulletin, page 30, for attendance policy), but the professor must be informed in each case and, when possible, in advance.

There may be explained absences; there are no excused absences.

Laboratory

Laboratory reports are due at the next lab session. **No late** laboratory reports, OR project reports will be accepted unless accompanied by a medical note from a physician. Failure to hand in a lab report will result in a grade of zero for that lab. Attendance for laboratory sessions is mandatory and there are NO make-up lab sessions. Missing more than 25% of the scheduled lab sessions will result in an automatic FA for the course.

All lab reports and other written assignments are to be done using a computer work processing program.

Policy on Attendance

As outlined in the College Bulletin, unless the reasons for the absence or the quality of the student's work justifies an exemption from the rule, a student who has been absent from 20% or more of the scheduled lecture sessions will be dismissed from the class and assigned the failing grade of "FA"

STL LECTURE SERIES. Two public STL lectures take place each semester. Students in this course are required to attend and may earn extra credit by presenting a written critical analysis on some aspect of the lectures and reporting on it.

Hats, beepers, cell phones should be off in class and lab. Students should use restroom facilities before and after class and not during class. Students must be in class and lab on time. Attendance will be taken.

Policy on Plagiarism and Academic Dishonesty

Cheating on an examination other than the Final Examination will result in the loss of credit for that examination. Cheating on the Final Examination will result in failure of the course. Plagiarism of a homework assignment, lab assignment or computer project or the permission of such plagiarism will result in the loss of credit for that assignment.

Course Outline

Wk	Lecture Topic	Lecture Ref	Lab
1	Introduction to Scientific and Technological Literacy	Ch 1	1. Orientation
2	Pattern Recognition	Ch 2	2. Floating versus Sinking
3	PROBLEM SOLVING: Blocks and Strategies	Ch 3	3. Measuring Cell Size
4	Models and Matter	Ch 4	4. The Small and the Large
5	Models and the Atom	Ch 5	5. Feedback and Control Models
6	Systems	Ch 6	6. Collecting Solar Energy
8.	Information and Coding	Ch 7	7. Energy Conversions
9.	Information and Coding in Living Systems	Ch 8	8. Problem Solving: Measuring Temperature with only Limited Means
10.	Energy	Ch 9	9. Patterns of Problem Solving
11	A Primer: Energy Sources, Their Nature, and Use	Ch 10	10. Solar Constant and the Earth's Carrying Capacity
12	Energy Resources and Their Environmental Effects: The Carbon Cycle and More	Ch 11	11. Measuring Metabolic Rate by Indirect Means
13	Metabolism and Nutrition Operating Systems	Ch 12	12. Electromagnetic Spectra
14	Population and Growth	Ch 13	13. Medical Screening Tests
15	Medical Screening Tests	Ch 14	14. Schneider Cardio-Vascular Test
15	Technology and Risk	Ch 15	15. Project Reports