

MOUNT SAINT MARY COLLEGE
NEWBURGH, NEW YORK 12550

Biology 408
Ecology

Dr. Sarro
Spring 2006

I-COURSE PURPOSE

This course is designed to introduce the students to a basic understanding of ecological principles and basic techniques in analyzing and presenting ecological data.

II-OUTCOMES

By the end of the course, students will have an understanding of:

- the nature and scope of ecology
- the factors that influence life on land and water
- the characteristics of the major terrestrial biomes and aquatic environments
- the factors that effect temperature, water, energy, nutrients, and social interactions, between individuals of the same species, and how these factors impacts the lives of individuals
- population genetics and natural selection
- the distribution and abundance of populations
- population dynamics with respect to patterns of survival, age distribution, rates of population change, and dispersal
- the factors that influence population growth
- life histories with respect to offspring number versus size, adult survival and reproduction allocation, and classification based upon r and K selection
- the basic concepts impacting interactions such as competition, exploitation, and mutualism
- communities and ecosystems from the points of view of: species abundance and diversity, species interactions and community structure, primary production and energy flow, nutrient cycling and retention, and succession and stability

II-INSTRUCTIONAL METHODS

The course is made up of three (3) 55-minute lectures per week, one three (3) three hour laboratory session per week.

In accordance with the charter granted to Mount Saint Mary College by the NYS Board of Regents all students are expected to spend two (2) hours outside of the classroom for each hour within the classroom. It is recommended that some of this time be spent in the laboratory during the extra study hours.

III-ATTENDANCE

Unless prior arrangements are made, students are expected to attend all lecture and laboratory sessions. A student is permitted to miss \leq three (3) classes without penalty, however for each cut after those three the student will be penalized by having their final grade lowered, which may result in their receiving a failing grade for the course. An excuse of illness, for missing an exam, will only be honored upon the presentation of a doctor's note written upon office stationery.

IV-EVALUATION

The following is a breakdown for the computation of the student's final average:

50% - 4 LECTURE EXAMS
10% - WEEKLY QUIZZES
20% - 2 LAB EXAMS
20% - COMPUTER LABS
100% - FINAL AVERAGE

Your final grade will be based upon the following system:

90 - 100 = A	87 - 89 = A(-)	85 - 86 = B(+)
80 - 84 = B	77 - 79 = B(-)	75 - 76 = C+
70 - 74 = C	67 - 69 = C(-)	65 - 66 = D(+)
60 - 64 = D	Below 60 = F	

EXAMS – Four exams will be scheduled during the weeks designated on the course schedule. Each exam will consist of a short objective section, several terms for discussion and several short essay questions. In the latter two cases you will have choices to select from.

QUIZZES – Quizzes will be given during the first ten (10) minutes of each Friday lecture unless otherwise stated. They will consist of ten (10) questions. These questions will cover material discussed during the previous week's lecture. The grades on these quizzes will be used in the determination of your final grade.

LAB EXAMS – Laboratory exams will require the student to use the computer to perform exercises similar to those done in labs prior to the exam.

COMPUTER LABS – On the Monday following the completion of a given lab assignment the student is to hand in the appropriate assignment utilizing the original EcoBeaker lab packet when appropriate. For each day a report is late 5 points will be deducted from the grade.

V – WAYS OF CONTACTING THE INSTRUCTOR

PHONE: 569-3132

EMAIL: sarro@msmc.edu

VI – OFFICE HOURS

The instructor will be available in Room 208 of Aquinas Hall for extra help, discussion or advice during the hours listed below.

Mon.	7:00 – 8:00 a.m. 9:00 - 10:00 a.m. 2:30 - 3:00 p.m.
Tues.	By Appointment Only
Wed.	7:00 – 8:00 a.m. 9:00 - 10:00 a.m. 2:30 - 3:00 p.m.
Thurs.	By Appointment Only
Fri.	9:30 - 10:00 a.m.

VII -REQUIRED TEXTBOOKS AND MATERIALS

- A. Molles, Ecology: Concepts and Applications, WCB/McGraw-Hill
- B. "EcoBeaker Packet for Sarro at Mt St Mary".

LAB SCHEDULE

DATE	TOPIC
1/24	<p>Investigating Evidence Sections from Our Textbook</p> <ol style="list-style-type: none">a. Sample Mean (pg. 21)b. Produce a Climate Diagram using temperature and precipitation datac. Sample Median (pg. 60)d. Laboratory Experiments (pg. 96) *read on your owne. Sample Size (pg. 129) *read on your ownf. Variation in Data (pg. 162)g. Scatter Plots and the Relationship Between Variables (pg. 186) *read on your ownh. Regression Analysis (pg. 213)
1/31	<p>Investigating Evidence Sections from Our Textbook</p> <ol style="list-style-type: none">a. Clumped, Regular, and Random Distributions (pg. 237)b. Hypothesis Testing (pg. 267) *read on your ownc. Frequency of Alternative Phenotypes in a Population [Chi Square] (pg. 287)d. A Statistical Test for Distribution Pattern (pg. 310)e. Design of Field Studies (pg. 341) *read on your ownf. Standard Error of the Mean (pgs. 356 – 357)
2/7	<p>Investigating Evidence Sections from Our Textbook</p> <ol style="list-style-type: none">a. Confidence Intervals (pg. 387)b. Estimating the Number of Species in Communities (pg. 403) *read on your ownc. Using Confidence Intervals to Compare Populations (pg. 430)d. Comparing Two Populations with the t-Test (pgs. 452-453)e. Assumptions for Statistical Tests (pg. 471) *read on your ownf. Variation Around the Mean (pg. 504)g. Comparison of Two Samples Using the Rank Sum Test (pg. 521)
2/14	EcoBeaker – Mother Nature’s Supermarket
2/21	EcoBeaker – Islands and Natural Selection

2/28	EcoBeaker – Sickle-cell
3/7	Lab Exam #1
3/21	EcoBeaker – An Owl's Life
3/28	EcoBeaker – Oil Spills
4/4	EcoBeaker – Niches & Competitive Exclusion
	EcoBeaker – Varieties of Competition – Do on your own at home
4/11	EcoBeaker – Intermediate Disturbance Hypothesis
4/18	EcoBeaker – Aquatic Trophic Cascades
4/25	EcoBeaker – Keystone Predator
5/2	Lab Exam #2