

Garrett College
Environmental Technology - NRWT Program
Chemistry and Quantitative Methods -- ENT 201

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2}, \quad \chi^2 = \sum_{i=1}^n \frac{(O_i - E_i)^2}{E_i}, \quad H' = - \sum_{i=1}^S p_i \ln p_i$$

Instructor

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NRWT Homepage: <http://www.garrettcollege.edu/educationalopportunities/creditoptions/academic-departments/nrwt>

Office Hours: Tu/Th 10:30-11:30, Fridays by Appointment

Course Text

No formal text is used in this course. Course materials will be distributed throughout the semester.

Course Description

This course is designed to help students master the basic principles of chemistry and the essential calculations necessary for successful completion of the Natural Resources and Wildlife Technology Program.

Course Assessment Techniques

Course Learning Goal	Outcome Measures and/or Classroom Assessment Techniques	When Assessment Occurs
1. The student will demonstrate competency in the basic principles of chemistry.	Exam I	Middle of semester
2. The student will demonstrate competency in basic statistics and statistical software as they apply to natural resources.	Exam II	End of semester
3. The student will demonstrate competency in presenting, in oral form, statistical natural resources data.	Oral Presentation (rubric-scored)	End of semester
4. The student will demonstrate competency in presenting, in written form, statistical natural resources data.	Research Paper (rubric-scored)	End of semester

Attendance Policy

The student can significantly increase the probability of doing well in this class by attending lectures and other activities. More than three absences during the semester will result in a FA grade and failure of the course.

There will be no makeup quizzes or exams for unexcused absences. Excused absences are as follows: 1) serious illness verified by a valid physician's excuse on office or hospital letterhead, 2) a death in the immediate family. The instructor reserves the right to determine whether a missed quiz or exam can be taken at a later date. Any assignment due date or quiz/exam missed because of an excused absence must be made up by the first class period following the return of the student.

Classroom Etiquette

The goal of any college classroom activity is to provide the greatest educational benefit to all students. In order to achieve this goal, it is necessary to maintain a pleasant, stimulating, and respectful atmosphere in the classroom. Respect must be shown to others. The instructor has the authority to dismiss a student from class for behavior deemed inappropriate, especially if said behavior is disruptive to the teaching and learning process.

Academic Dishonesty Policy

All students at GC are expected to adhere to a code of academic honesty and integrity. Violations of the "Code of Academic Honesty" include all forms of cheating, e.g., giving and/or receiving answers improperly, plagiarism, misuse of college documents and/or instruments, etc. Students found to be in violation of the "Code of Academic Honesty" will receive an F for the course in which the violation occurred. The student will also be withdrawn from all other courses. Withdrawal will be followed by academic suspension for a minimum of one semester. Additional penalties may be incurred as each violation, on an individual basis, is investigated and reviewed.

Grade Assessment

Pop Quizzes (minimum of 4)	100
Research Paper	100
15 minute Oral Presentation of Research Paper	100
Exam I	100
Exam II	100
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Total Points	500

* Note: All assignments must be completed to pass this course.

Grade Standard Equivalents

A	(93 - 100% 4.0)	C	(73 - 76% 2.0)
A-	(90 - 92% 3.7)	C-	(70 - 72% 1.7)
B+	(87 - 89% 3.3)	D+	(67 - 69% 1.3)
B	(83 - 86% 3.0)	D	(63 - 66% 1.0)
B-	(80 - 82% 2.7)	D-	(60 - 62% 0.7)
C+	(77 - 79% 2.3)	F	(0 - 59% 0.0)

Assignment Descriptions

Research Paper - Each student will choose a topic of interest and develop a research project that will include both field work (if integral to project) and a literature review. Literature reviews can include sources such as periodicals, newspapers, books, internet, scientific journals, etc. If pertinent, students may include interviews with local environmental professionals and other concerned individuals, or they may obtain data from an approved source. You should have at least 10 sources of information (at least five must be science based, i.e., science journals/magazines/books) and citations must be included in the paper. No more than five citations from the internet may be used (sites must be science-based, e.g., .edu, .gov, .org are acceptable if unbiased and science-based, e.g. biogeography.org, absolutely no Wikipedia). Topics must be approved beforehand by the instructor and should be selected early in the semester. The research paper will consist of at least five sections (introduction, materials/methods, results, discussion, conclusion) separated by titled subheadings. It must contain at least six pages of text, utilize an easy to read font no larger than 12 point, and be double spaced. It should include, at a bare minimum, one statistical test, one graph, and one table inserted into the text. In addition, it should also include a reference/citation page. This paper can be based on data gathered and/or work done in other concurrent or past classes, e.g., Soil Science, Forest Measurements, Fisheries, Wildlife Techniques, Ecology, Dendrology, etc.

15 minute oral presentation - Each student will prepare an oral report based on their research paper. At a minimum, presentations should include the following sections: 1) introduction, 2) materials and methods, 3) results, 4) discussion, and 5) conclusion. The introduction should lay the foundation for the topic to be presented, including historical background. The materials and methods section should describe how the data were gathered and the tools used. The results section should delineate the output data in a coherent form. The discussion section should focus on the most meaningful elements of the results. The conclusion should tie everything together and address possible future trends or goals. Each student should adhere strictly to the 15 minute time limit and expect a two minute question/answer session to follow the presentation (total of 17 minutes). Visual aids (slides, transparencies, handouts, PowerPoint, etc.) are required.

Example of Critique of ENT 201 Oral Presentation

Presenter's Name: Jane Brobdingnagianowski

Date: 12/2/08

Title: Plethodontid Salamander Distributions of the Allegheny Plateau

Style	Voice	Visual Aids	Subject Knowledge	Time Mgmt.
/5	/5	/20	/60	/10
<input type="checkbox"/> body language <input type="checkbox"/> facial expression <input type="checkbox"/> animation <input type="checkbox"/> eye contact <input type="checkbox"/> relaxed factor	<input type="checkbox"/> tone <input type="checkbox"/> volume <input type="checkbox"/> inflection <input type="checkbox"/> enunciation <input type="checkbox"/> pace	<input type="checkbox"/> easy to read <input type="checkbox"/> professional <input type="checkbox"/> images quality <input type="checkbox"/> technical prowess <input type="checkbox"/> organization	<input type="checkbox"/> background info <input type="checkbox"/> expert factor <input type="checkbox"/> sure of oneself <input type="checkbox"/> organization <input type="checkbox"/> stats <input type="checkbox"/> question/answer	START: _____ FINISH: _____ TOTAL: _____

Score for Oral Presentation: /100 % = _____

* Examples/Suggestions for Research Paper Topics:

Water quality factors (temp, pH, nitrates, phosphates, etc.) and aquatic species abundance/diversity

CO₂, other greenhouse gases, and global warming

Elevation gradients and species diversity

Productivity gradients and species diversity

Disturbance gradients and species diversity

Management practices and wildlife populations
Soil types and plant species abundance/diversity
Aspect and community structure
Slope and community structure
North Branch of the Potomac Wetlands Project
North Branch of the Casselman Project
DNR Bear GIS data
DNR Forest Mgmt GIS Project Data
The Glades Project (see Kevin)
NSWO Data (see Kevin)
Swallow Falls data (BIO 150, see Kevin)
Meadow Mountain Ecological Mapping Project

* Make sure that whatever subject you choose has sufficient quantitative data available.

* It is a very good idea to seek help from the "writing lab" in GC's English department before you submit your final draft! Utilizing the lab can significantly improve your grammar, syntax, organization, and grade!

* Remember, do not plagiarize as it will result in automatic failure! A Note of Caution: Educational software has been developed for college professors that search the Internet looking for correlations between research papers and websites! We use this to verify the source of plagiarized information from the web.

Always give credit where credit is due!

PLAGIARISM

"To borrow another writer's **language or ideas** without proper acknowledgment is a form of dishonesty known as plagiarism" (Hacker 353).

Writers are obliged to acknowledge all material that is **quoted, paraphrased, or summarized from any work. This includes information downloaded from the Internet.** If a writer fails to cite a source, **whether deliberately or accidentally,** he/she is guilty of plagiarism. Research papers are a collaboration between the student and his/her sources. To be fair and ethical, students must acknowledge the origin of these sources, whether from print or electronic media. **Failure to do so is a serious academic offense (plagiarism)** (Hodges & Whitten 413).

Plagiarism is a form of academic dishonesty. Students who plagiarize, whether in written work or in computer assignments, are subject to the following disciplinary actions as stated in the Code of Student Conduct published in Garrett's catalog:

"All forms of academic dishonesty are causes for dismissal from the institution. The penalty is course failure and College expulsion. The individual may request readmittance to the institution. However, readmittance is not automatic, nor is it guaranteed" (41).

Plagiarism may take three different forms:

- 1) failing to cite quotes and borrowed ideas,
 - 2) failing to enclose borrowed language in quotation marks,
 - 3) failing to put summaries and paraphrases in your own words
- (Hacker 354).

Students often believe that as long as they do not quote directly from their source, they have not plagiarized. On the contrary, unless the paraphrase or summary is truly the student's work, distinct from the author's language, the summary is plagiarized.

To avoid plagiarizing an author's language, students should resist the temptation to look at the source while summarizing or paraphrasing. For instance, they should close the book, write from memory, then open the book to check for accuracy (Hacker 356).

EXAMPLES

The following paraphrases are plagiarized - even though the source is cited - because the language is too close to that of the original source.

Original Version

If the existence of a signing ape was unsettling for linguists, it was also startling news for animal behaviorists.

-Davis, Eloquent Animals, p. 26

Unacceptable Borrowing of Phrases

The existence of a signing ape unsettled linguists and startled animal behaviorists. (Davis 26).

Unacceptable Borrowing of Structure

If the presence of a sign-language-using chimp was disturbing for scientists studying language, it was also surprising to scientists studying animal behavior (Davis 26).

Acceptable Paraphrases

When they learned of an ape's ability to use sign language, both linguists and animal behaviorists were taken by surprise (Davis 26).

According to Flora Davis, linguists and animal behaviorists were unprepared for the news that a chimp could communicate with its trainers through sign language (26).

(Hacker 356)

When in doubt, a student should consult his/her English text or research manual or the writing lab.

WORKS CITED

Hacker, Diana. Rules for Writers. Boston: Bedford, 1996.

Hodges, John C. and Mary E. Whitten. Harbrace College Handbook. New York: Harcourt, 1989.

Course Schedule (subject to change)

9-4	Introduction / Orientation
9-11	Basic Chemistry + Units of Measurement and Conversions
9-18	Basic Chemistry + Units of Measurement and Conversions
9-25	Basic Chemistry + Units of Measurement and Conversions
10-2	Basic Chemistry + Units of Measurement and Conversions

- 10-9 *** Exam I** (exam will be followed by lecture/lab)
- 10-16 Introduction to Statistics, Experimental Design and Analysis
- 10-23 Introduction to Statistics, Experimental Design and Analysis
- 10-30 Computer Applications and Data Presentation
- 11-6 Computer Applications and Data Presentation
- 11-13 Guided Research Project
- 11-20 Guided Research Project
- 11-27 Thanksgiving Holiday Begins!**
- 12-4 Presentation of Research Project, turn in Research Paper
- 12/9-12/12 *** Exam II** (TBA)

Genius is 1% inspiration and 99% perspiration. (T. A. Edison)

If I have seen further than others, it is because I stand on the shoulders of giants. (Sir Isaac Newton)

Science knows no country, because knowledge belongs to humanity, and is the torch which illuminates the world. Science is the highest personification of the nation because that nation will remain the first which carries the furthest the works of thought and intelligence. (Louis Pasteur)

It is the teacher's role to provoke students to teach themselves. (Lawrence Skylstad)

The harder I work, the luckier I get! Ignorance is voluntary bad luck! (Lawrence Skylstad)

Some Common Statistical Formulae

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2},$$

$$\chi^2 = \sum_{i=1}^n \frac{(O_i - E_i)^2}{E_i}$$

$$H' = - \sum_{i=1}^S p_i \ln p_i$$