

ISCI 2001: Life & Earth Science for Early Childhood Education

Spring 2011 Course Syllabus, Valdosta State University

Instructor: Janet D. Forrest Kent
Phone: 249-2644 (no voicemail) **FAX:** 245-6585
Office Hours: Monday & Wednesday 2:30-3:20 pm

Office: 1104 Biology/Chemistry Building
Email: jdforrest@valdosta.edu

Textbook: *Integrated Science Fifth Edition – (2011) Tillery et al. McGraw Hill*

This book is an important source of information that supplements class sessions. Reading ahead to gain familiarity with the scientific language of a subject before the class sessions is wise.

Course Objectives: This science content course provides an integrated overview of Life & Earth Science content in preparation for teaching science at the elementary school grade levels. Topics covered in the K-5 Georgia Performance Science Standards will be addressed in lessons that allow Early Childhood Education majors to learn science in the non-traditional ways they will eventually be expected to teach in their own classrooms. VSU General Education Outcomes may be found in detail on VSU's website. The General Outcomes covered in this class are: 3, 4, 5, 7.

Course Description: ISCI 2001 is a 3 hour credited course. The first will be an Inquiry-Oriented, 50 minute lab that initiates the lesson with an *Exploration* activity. The second session will be a 50 minute lecture devoted to the elaboration of the core concepts through a detailed *Explanation* of the topic. Students will complete the lessons with designated *Extension* activities for some class topics. By teaching for constructivist learning, emphasis will be placed on the acquisition of conceptual understanding of scientific information. A variety of alternative assessment strategies, including a major course portfolio, will be used in conjunction with traditional testing.

Instructional Philosophy: *ISCI 2001* will bridge the gulf between scientific and educational disciplinary training by allowing future teachers to learn new scientific information through a variety of instructional innovations. The course employs methods that enact the rhetoric of science education reform. This nontraditional approach to college science helps prospective elementary school teachers make connections between methods of teaching and learning science.

Academic Honesty: Members of the class are expected to maintain high standards of integrity. The VSU Biology Department Statement on Plagiarism clarifies common types of academic misconduct. Dishonesty will not be tolerated; evidence of cheating will result in no credit for the assignment or depending on the case, a grade of "F" for the course and student will be turned into the Dean of Academic Affairs.

Special Services: Students requiring classroom accommodations or modifications because of a documented disability should discuss this need at the beginning of the semester. Students not registered with the Special Services Program should contact the Special Services Office, Nevins Hall 1115, 245-2498.

Family Educational Rights & Privacy Act: Grades cannot be posted by Name, Social Security Number, or other Personal Identifiers. Grades and student work will not be given over the telephone, by email or to another student.

ISCI 2001 – Guidelines for Content & Evaluation

Selected Georgia Performance Standards for K-5

I. Life Science

- SKL1. Students will sort living organisms and non-living materials into groups by observable physical attributes.
- S1L1. Students will investigate the characteristics and basic needs of plants and animals.
- S2L1. Students will investigate the life cycles of different living organisms.
- S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.
- S3L2. Students will recognize the effects of pollution and humans on the environment.
- S4L1. Students will describe the roles of organisms and the flow of energy within an ecosystem.
- S4L2. Students will identify factors that affect the survival or extinction of organisms.
- S5L1. Students will classify organisms into groups
- S5L4. Students will relate how microorganisms benefit or harm larger organisms.

II. Earth Science

- SKE1. Students will describe time patterns and objects in the day and night sky.
- S1E1. Students will observe, measure, and communicate weather data to see patterns in weather and climate.
- S2E2. Students will investigate the position of sun and moon to show patterns throughout the year.
- S2E3. Students will observe and record changes in their surroundings and infer the causes of the changes.
- S3E1. Students will investigate the physical attributes of rocks and soils.
- S3E2. Students will investigate fossils as evidence of organisms that lived long ago.
- S4E1. Students will compare and contrast the physical attributes of stars, star patterns, and planets.
- S4E3. Students will differentiate between the states of water and how they relate to the water cycle and weather.
- S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes.

Learning Outcomes - Students in ISCI 2001 will be expected to:

- I. Assemble & Display** a collection of information displaying recognition of the basic aspects of Life & Earth Science
- II. Characterize** the biotic and abiotic features of the earth, as well as the place of our planet within the solar system
- III. Document** recognition of the organization and content of the K-5 Georgia Performance Science Standards
- IV. Compare and contrast** how the abiotic factors influence the biotic features of representative Georgia ecosystems
- V. Indicate** the possession of conceptual understanding of GPS K-5 content knowledge for Life & Earth Science

Proof of mastery for each will be demonstrated by the knowledge & skill shown in:

- I. Course Portfolio** – An extensive individualized document built throughout the semester
- II. Midterm Examinations** – Formative evaluations covering each of the three units of instruction
- III. Lesson Extensions** – Summations of each lesson in a format showing the connection to K-5 GPS
- IV. Ecosystem Oral Presentation** – PowerPoint shows focused on the Natural History of Georgia
- V. Final Examination** – A summative, comprehensive evaluation of course content

The following facets of understanding will be built into the course assessments:

- Explanation** – Description of subject matter and pedagogical practices
- Interpretation** – Demonstration of astute reasoning and ability to make meaningful connections between concepts
- Application** – Explanation of the links between subject matter and science instruction
- Perspective** – Identification of the scientific concepts involved in understanding the Life & Earth Sciences
- Empathy** – Participation in a community service activity for underserved children
- Self-Knowledge** – Illustration of personal reflection on the process of learning and teaching science

Evidence of Achievement & Knowledge Construction

Attendance: Since more than half of this course involves active experiences, it's extremely difficult to "make-up" missed material. Therefore, attendance is mandatory and will be taken each class period. Three late arrivals to class will be counted as an unexcused absence. Students are allowed one absence from lab and lecture. YOU are responsible for getting material missed. Anyone who misses more than 20% of the class sessions can receive a failing grade for the course.

Class Participation: The learning environment has a very significant impact on the satisfaction and success of all students. Therefore, certain standards of decorum will be expected and maintained so that everyone can all enjoy being in the lab and learning as much as possible. All students start out with 100% as their participation grade. This can be elevated to as high as 125% for consistent positive contributions that enhance the experiences of other students. This grade will be reduced at the discretion of the instructor on the basis of inappropriate conduct such as rudeness, lack of collegiality, or other negative behavior. As future teachers, students are expected to exhibit a professional standard of decorum to be maintained in this classroom. Intemperate language, excessive slang, and poor grammar are not acceptable.

Short Assignments: It is too easy to attend class on a regular basis, but put little thought into the course material until there is pressure to study for an exam. Therefore, short assignments will give the course expectations and mandate regular attention to the material that is being covered. These assignments will be described in class and are your responsibility to complete. Not following directions and not putting effort into short assignments will result in a low assignment grade. These assignments are worth 5% of your grade. Your short assignment grade will be based on following directions, amount of effort put into the assignments and a demonstration of understanding the material. You will receive more information about the internet program that will be used. Assignments are due at the beginning of lab. Any assignment turned in after your lab section will be counted as late. ALSO assignments must have your Name, Date and Lab Section on it.

Examinations: There will be two exams and a comprehensive final examination. The most important reason for these tests is preparation for the GACE exam. These multiple choice tests will consist of conceptual questions that probe understanding of the course material. Do not expect to depend on rote learning or memorization. This course will be taught in a way that requires students to demonstrate individual construction of knowledge and the questions on these assessments are written to judge the ability to apply the course information. Hard work on the Daily 3E Write-Ups is the best preparation. Many students say that they do not need to study for the tests because they are confident that they have learned the material by doing the Portfolio. Building up thought displays of the scientific information and demonstration consideration of the connections is preparation for the challenges posed by conceptual questions. Success starts in class. Think about lessons, ask questions about what is happening, and keep good records.

Required Reading in *Integrated Science by Tillery et al*: This book does not cover all the material you will cover in ISCI 2001, but was selected because it is a valuable resource for this class and later for teaching elementary school science. Concentrate on doing selective reading. This means there is no need to spend time on information that goes into detail over subjects that is not covered in class. Notes to document reading efforts can be in the form of an outline with key terms or a narrative summary and should be placed right after your lecture notes for the lesson in the Portfolio. For material covered that is not in the book you will have to use other sources. Other science books or credible internet sites are allowed. When doing your reading notes include the chapter and page number on your notes. If using another source include the book name, chapter and page numbers and if using the internet include the web address.

GPS: Obtain a complete set of K-5 science standards and address them in detailed reflections in the Portfolio. *Do not put a printout of the GPS in the portfolio.* Correlate the standards with the lesson. Pay attention to the Major Concepts/Skills to Maintain. Note the progressive changes in complexity for higher grade levels. Anytime a class lesson correlates to a specific standard, explain this connection in detail. *Do not just name the standard (S1E3), write it out (S1E3: Students will be able to...)! The Georgia Performance Standards may be found at GeorgiaStandards.org.*

WWWWeb: The web is a great resource for supplementing the information presented in class sessions. Use the Web to obtain images to compose visual displays that demonstrate understanding of the topics. **Do not copy and paste from a site and print it out in the portfolio!**

Course Assessment:

Written Work & Presentations

Initial Portfolio Submissions- Formative Evaluation	10%
Final Portfolio Grade (Revisions, Unit Summaries, & Final Product)	15%
Human Body Project	10%
GA Ecosystem Report	10%
Short Assignments	5%
Class Participation & Attendance	5%

Exams

Midterms – (10% each)	20%
Final Exam – Comprehensive	20%

ISCI 2001 Course Portfolio

Course Portfolio:

The course portfolio is a significant aspect of the grading in this course. The portfolio should clearly display the “construction of knowledge” and process of building an understanding of the course material. This portfolio is an Alternative Assessment evaluation different indication of learning than traditional tests. This portfolio is also an important way to organize the course material and keep it for reference in the future. The organization by themes is a way all of the material on a topic will be collected together so that it will be easier to study for conceptual understanding. There should be a distinct section with divider tabs labeled for each theme (Earth Science, Life Science). **Any Portfolio that does not reflect a substantial effort to display a comprehensive understanding of the lessons will not be accepted for grading and given a grade of 0/100 points.**

For a minimum grade of 70% - Portfolio must be in correct order. The first item in the portfolio will be a signed copy of the VSU Biology Department Policy on Plagiarism. Correct front cover, Plagiarism form, tabbed dividers, Georgia Performance Standards, Lab notes and Lecture notes. Any portfolio missing any of the material listed will not receive a grade above a 69.

For a minimum grade of 80% - Acquire the *Language of Science*:

Reading Notes – Summarizing text information relating to each topic covered in class. Notes must include page number from book or source if not from Integrated Science book. (Order for each day: GPS, Lab Notes, Lecture Notes, Reading Notes)

For a minimum grade of 90% - Demonstrate a *Conceptual Understanding* of the Course Material:

Conceptual Summary - Summarize the *scientific significance* of the course theme in a full page, single-spaced, typewritten essay. You will have one conceptual summary for Earth Science and one for Life Science. Think of the SCIENCE CONTENT. In this summary you will show how it is all connected. Do not critique the labs. Focus on the material learned.

Students must put thought into summary. Any summary that does not display constructive thought will not receive credit.

Use a 1 inch notebook with a creative cover including name and course information.

There should be no blank pages or sub-dividers other than the 2 chapter designations (Earth Science & Life Science)

DO NOT use sheet protectors in portfolios.

Your syllabus should not be included in your portfolio nor a printed off copy of the Georgia Performance Standards. Standards must be included in your individual lessons. **Standards must also be typed, not hand written.**

Grade Sequence for the Chapters

C= Lab/Lecture Notes, GPS for each Lesson

B= Reading Notes (for all relevant chapters)

A= Conceptual Summary

****Any Portfolio that does not reflect a substantial effort to display a comprehensive understanding of the lessons will not be accepted for grading and given a grade of 0/100 points. A portfolio may contain all required parts but if a portfolio does not show a clear understanding of the material it will receive a grade of below 69.**

The first item in your portfolio will be the VSU Biology Department form on Plagiarism. Sign and place in the front of your portfolio. You will find the form attached to your syllabus. Do not fill the portfolio with tabs. Only 2 tabbed dividers are needed, Earth Science and Life Science. The front of your portfolio must include the class name, section and your name (Exploring Our Ecosphere, ISCI 2001A, B, C, D or E and Your Name). The portfolio must be a one inch 3-ring binder. You will not need any larger than one inch.

Your portfolio is worth at total of 25% of your final grade. It will be graded at the time of your Earth Science Exam for 10% of your grade. At the end of the semester the entire portfolio will be graded for 15% of your grade. The portfolio is your collection of your notes, Georgia Performance Standards for Science and your work.

Every day is a lesson. Students will be responsible for any work that is missed.

Human Body Project

Students may work together and discuss creative ways to build a presentation, but everyone should **produce their own project** and construct a unique report. These must be constructed in PowerPoint. Each system is limited to a 1 page display. There should also be a creative cover page and the final 1-page display of the integration of the systems for a total of 14 pages. Think of a creative name for the system and use that as the title on each page. Find a detailed picture of the entire body system print this with a short paragraph (2-3 sentences in a text box) that outlines the purpose/function of the system. Name and describe a health concern associated with each system in a small text box. Cover 12 Body Systems: Circulatory, Digestive, Endocrine, Excretory, Immune, Integument, Muscular, Nervous, Reproductive, Respiratory, Sensory, Skeletal)

For each system:

- Print an Image** of the Entire System & **List/show pictures** of the important organs or significant components
- Print a picture of a distinct tissue/cell type** and use arrows to point to structures associated with the specialization

Construct a Diagram of Integration for the 12 systems and a write up an outline or short narrative to explain your diagram

- A picture with labeled arrows showing connections for related functions
- A key with brief descriptions of the interrelationships

Ecosystem Report

Research Project: Each person in the class will select a different **Georgia Ecosystem** to serve as the focus of an investigation. The research on these topics will be conducted throughout the second half of the semester and presented as part of a group PowerPoint Presentation during last week of class. The assignment is to learn about and share information on the specifics of these areas including the abiotic conditions (weather & climate, part of Georgia, etc), special characteristics and adaptations of the living organisms, a food web, other biotic factors, etc.

There will be several grades that will be averaged as the final evaluation of this project. During the oral group presentations to the class, each person will receive an individual grade for preparation and effort. The group grade will be based on the creative integration of the individual reports. Presentations should be interesting and *20 minutes in length*. There must be 3 introductory and 3 concluding slides that compare and contrast the ecosystems covered by the group. There is not a limit to the number of slides in the body of the presentation. Each group must fill the 20 minutes. A full color printout of the group report in the 6 slides per page format is due to professor at the time of presentation.

Ecosystem Topic Choices

- | | |
|--|--|
| <p>Mesic</p> <ul style="list-style-type: none"> Coastal Plains Coniferous Longleaf Pine Savannas Piedmont Province Ridge & Valley Maritime Forests Appalachian Highlands <p>Hydric</p> <ul style="list-style-type: none"> Swamps Marshes (Fresh Water) Bogs (Mtn.) & Fens Salt Marshes Carolina Bays Floodplains | <p>Aquatic</p> <ul style="list-style-type: none"> Lakes Blackwater Strms & Rivers Mountain Springs & Strms Large Alluvial Rivers Sag & Gum Ponds Estuaries <p>Coastal</p> <ul style="list-style-type: none"> Barrier Islands Tidal Creeks & Rivers Intertidal Beach Zones Dune Areas Sponge & Coral Reefs Open Ocean & Deep Sea (Atlantic) |
|--|--|

PowerPoint Grading Rubric for Ecosystem Project

	75%	90%	100%	125%
Slides	Slide Errors Too Much Text Blurry Images	Decent Images Intro & Concl	Striking Visual Displays	Enhancement of Topic
Indiv	Obviously Minimal Effort Mistakes on Info	Coverage of Connection Abiotic & Biotic Factors	Accurate & Detailed Description No Mistakes	Exceptionally Creative & Enthusiastic
Group	Lack of Coordination Late Submission Uncooperative	Cohesive & Coherent Activity/Demo	Strong Intro & Concl Evidence of Cooperation	Lively, Entertaining & Educational

Tentative Plan for Instruction & Course Schedule

Changes to Schedule will be Announced in Class

Date	Class Topic	Class Activity	Assignment Due
Jan. 11	ISCI 2001 Intro		
13	The Ecosphere	Water Cycle	
18	Earth	Latitude & Longitude	Water Cycle
20	Surface Features	Landforms	
25	Minerals	Dichotomous Key	
27	Rocks	Types of Rocks	
Feb. 1	Soils	Separations	Rock Cycle
3	Weather & Climate	Instrument Measurements	
8	Clouds	Making Clouds	
10	Solar System	Moon Phases	
15	Planets	Virtual Tour	Moon Phases
17	Exam 1	Exam Review	Portfolio
22	<i>No Lab</i>	Lecture-Discuss Human Body Project	
24	Cells	Animal Cell Metaphor	
Mar 1	Life	Adaptations	
3	Fossils	Making Fossils	Human Classification
	<i>Last Day to Withdraw from Classes</i>		
8	Biodiverstiy	Classification of Organisms	Human Body Project
10	Prokaryotes	Bacterial Plates	
14	<i>Spring Break</i>		
16	<i>Spring Break</i>		
22	Protists	Pond Water	
24	Fungi	Fungus Among Us	
29	Plants	Name that Tree	
31	Animals	Food Web	Photosynthetic Organisms
April 5	Heredity	Genes & Alleles	Food Web
7	Habitat/Ecosystems	Critter Art	
12	Ecosystems	Field Trip	
14	Exam 2	Exam Review	Portfolio
19	Conservation	Reduce, Reuse & Recycle	Powerpoint Slides for Eco.
21	Wildlife Habitats	Where's the Wildlife?	
26	Presentations		Mesic & Hydric
28	Presentations		Coastal & Aquatic
May 5	Comprehensive Final Exam 5:00 pm – 7:00 pm		

VSU Biology Department Policy on Plagiarism

Plagiarism is a broad term used to describe many forms of cheating that involve taking credit for someone else's work. The most blatant type of plagiarism is copying from another source without giving credit to the author. Anytime the original ideas of someone else are used, appropriate citations must reference the source. The failure to acknowledge the use of someone else's ideas, even when they are paraphrased, (whether intentional or not), constitutes plagiarism. Using a paper written by someone else is obviously plagiarism. In addition, the improper citation of references can fall under this spectrum of offences. Plagiarism is equivalent to looking at someone's test and copying down their answers. It is the theft of intellectual property. The simplest way to avoid plagiarism is to give credit where credit is due! This document has been developed by the biology department faculty to explain plagiarism by clarifying appropriate academic behavior, identifying common mistakes or violations, and warning students of the serious consequences for academic misconduct relating to the misrepresentation of original work.

Recognition of and respect for the ownership of property is one of the distinguishing features of civilization. Ideas come from individuals and are effectively owned by their originators; thus they are intellectual property. In the academic sphere, the ideas of others are often encountered, most often in published form. As with tangible property, intellectual property is subject to ownership and protection. Moreover, publication establishes ownership of intellectual property. It is essential to respect the ideas and writing of others by **scrupulously** citing the sources of any and all ideas that are taken from other people's work.

Writing assignments are a very important way for students to demonstrate the ability to assimilate information and express personal knowledge in a coherent manner. The writing process is an active learning experience involving the demonstration of academic skills such as analysis, inference, and appropriate presentation. Assessment of student writing allows faculty members to evaluate not only an individual's understanding of course material, but also the mastery of processes that are considered an important part of biological education. Therefore, it is extremely important that any written work submitted represents a student's personal synthesis displayed in sentences completely constructed by the student.

The Writing Tutorial Services website at Indiana University (<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>) gives the following guidelines for avoiding plagiarism. You must give credit whenever you use:

- another person's idea, opinion, or theory;
- any facts, statistics, graphs, drawings—any pieces of information—that are not common knowledge;*
- quotations of another person's actual spoken or written words; or
- paraphrase of another person's spoken or written words.

*In the sciences there is one important clarification to these rules. Any information, even if it is a theory or original idea, that has become widely circulated enough to be found in textbooks is defined as common knowledge. For example, Charles Darwin and Alfred Wallace do not need to be cited every time "natural selection" is mentioned.

There are a variety of ways to obtain assistance on writing assignments. Your professor can clarify expectations in class, help individually in an office conversation, or elaborate instructions by email. The new VSU Student Success Center will provide personal tutoring. There are a plethora of websites devoted to providing writing tutorials. By default, the biology department expects students to use the style recommended by the Council of Science Editors (CSE, formerly and still known as CBE), and succinct directions on how to use this format for citations and references is available on various websites such as: <http://library.osu.edu/sites/guides/cbegd.php>. Specific examples of citation styles may be given to you by your professor that will supersede the CSE/CBE Style.

Quotations

Sometimes students get a little carried away with the use of quotations. Copying large volumes of material, placing it in quotes and citing the author is not plagiarism, but neither is it evidence of your ability to write a paper. So, you may receive a failing grade for excessive quotations because you failed to actually *write* the paper (see paragraph 3 above). There is a huge difference between transcribing a paper (quoting) and writing a paper (using your own words). You should use quotations judiciously when writing science papers. This style may differ from what instructors in other disciplines are telling you to do, so remember that science papers rarely use quotes of any kind. Generally, no more than five-ten words should be used in a single quote, and not more than one or two quotes per ten-page paper. If you do more than this then you must discuss it with your professor before you turn in your paper for grading.

Punishment for Plagiarism

Plagiarism will not be tolerated in the biology department. Any student caught plagiarizing will receive a failing grade on the assignment and depending on the situation may automatically fail the course. Ask before making mistakes and do not assume that we are too lazy to check or too stupid to catch cheaters. Ignorance is no excuse and do not expect sympathy for academic misconduct.

Lab Reports

Students will frequently work in groups during the laboratories. However, lab reports are **never** group projects unless specific instructions to the contrary have been given by the instructor **in writing**. When lab groups work together on projects, each person is expected to do their own analysis of the results. Never use another person's graphs, tables, or words in a report that is supposed to have been written independently. In other words, each student must prepare their own tables and graphs in addition to written descriptions within the report. If lab reports are plagiarized in whole or in part then **all reports in question will be penalized**, not just the reports that were plagiarized. Therefore, **never** give your reports to a classmate to copy.

Long-Term Consequences for Cheating

If a professor takes punitive action on a student's plagiarism incident then, depending on the situation, the incident may be reported to the Dean of Students where it will be entered into the student's disciplinary record. If you send an application to a professional program such as Medical School or Law School, those schools will contact Academic Affairs at VSU and ask them for your Disciplinary Record. **The cheating incident will then be reported to the schools to which you have applied**. So, you can see that there can be terrible long-term consequences for plagiarism.

I have read and understood this policy.

Student Signature

Printed Name

Date