

# ISCI 2001: Life & Earth Science for Early Childhood Education

## May-Term 2017 Course Syllabus, Valdosta State University

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**Office Hours:** Immediately after Class or By Appointment. Please feel free to call the office or use email to schedule a convenient appointment.

**Course Objectives:** This science content course provides an integrated overview of Life & Earth Science content in preparation for teaching science at the elementary school grades. Topics covered in the Georgia Standards of Excellence which are based on the national Next Generation 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.

**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. By teaching for constructivist learning, emphasis will be placed on the acquisition of conceptual understanding of scientific information rather than mere memorization. A variety of alternative assessment strategies will be used in conjunction with traditional testing. This nontraditional approach to college science helps prospective elementary school teachers make connections between methods of teaching and learning science.

**Course Description:** This course will follow the 3D, 5E, Inquiry-Oriented format for science instruction that is the latest national initiative for the reform of Science Education. The Next Generation Science Standards introduced the idea of three-dimensional (3D) learning to highlight the Practices of Scientists and Engineers, Cross-Cutting Concepts and Disciplinary Core Ideas. The activities employed in both scientific investigations and engineering design will be showcased. Cross-cutting concepts of: Patterns & Cycles; Cause & Effect; Scale, Proportion, & Quantity; Systems & Models; Energy & Matter; Structure & Function; Stability & Change will be emphasized. Life science; earth & space science; and engineering, technology & applications of those sciences are the disciplines.

**Class Sessions:** The Mayterm runs from Thursday, May 11<sup>th</sup> through Thursday, June 2<sup>nd</sup> except for the Memorial Day Holiday. Since each class is the equivalent of two regular class meetings students do not have the option of missing class for any reason other than illness. Any absence will automatically impact the final grade and must also be made up with an extensive research paper. Do not make doctor's appointments or plan to arrive late or leave class early because any missed time will require make-up papers. Anyone who misses three classes which are 20% of the instructional time will automatically fail the course. Meetings will be from 8:00 - 12:00 in room 1043 of the Bailey Science Center. We cannot eat in the lab, but we will try to have discussions either outside or in the Atrium so you can have refreshments.

**Text:** Integrated Science 6<sup>th</sup> Edition by Tillery et al. McGraw Hill in the *Connect* Platform with eBook & eLearning

**Purchase Directly from Publisher to save money:** <https://connect.mheducation.com/class/l-jones-mayterm>

Log on to the site above and hit register now. You may sign up for a free 2-week trial until your financial aid money is available or you can purchase a code at the bookstore. If you would like a hard copy, you can purchase a loose-leaf version with a credit card for \$25-40.00 when you register

**McGraw Hill Customer Support:** Call (800) 331-5094 if you have any problems with the program.

### Required Technology Platforms:

**LMS- Blazeview:** Learning Management System - Your VSU Account: This will be used for all class communication, writing assignments, and access to various resources. (<http://www.valdosta.edu/academics/elearning/blazeview-d2l.php>)

**CMS-McGraw Hill Connect:** Course Management System - This is a complete electronic version of the book and a versatile software product for the graded, adaptive pre-reading *LearnSmart*, practice assignments and pre-tests.

**Electronic Devices:** Laptop computers, iPads, and Cell Phones will be useful for class activities. However, you are not to get up to take a call or to text during class. If I see any of this, points will be deducted from your participation grade.

**Instructional Design:** There will be online assignments in a *Connect* program associated with the eBook to introduce you to some of the lecture information before almost every class. These will be listed on the syllabus and the assignment page in *Connect*. You must keep track of the deadlines because these will not be reopened for any reason. This is so that we can use class for elaboration of important concepts, explanation of anything that was unclear, and learning activities that are more effective than sitting and taking notes. You will also be assigned online interactive homework called a Practice assignment for the first unit to prepare you for the exam. These will give you 3 graded opportunities to apply the information and identify any areas that you need to study more extensively. Before the first exam, you will also have access to a Practice Test which contains a large pool of multiple choice question from which you will have 3 graded chances to try 50 questions as preparation. On the Practice and Pretests, only your highest grade will count.

**Academic Honesty:** Members of the class are expected to maintain high standards of integrity. This course will use the VSU Handbook Code of Ethics as a basic standard of behavior, and everyone in the class is required to read the Biology Department Plagiarism Policy posted at: <http://www.valdosta.edu/colleges/arts-sciences/biology/documents/resources/PlagiarismPolicy.pdf> Evidence of dishonest conduct or cheating will result in no credit for the assignment and depending on the case, a grade of "F" for the course. Do not expect lenience for claims that on the grounds of not knowing better. You will be reported to the Dean of Students and letter of concern documenting the problem to the College of Education. Be aware that employers such as school systems do call that office at VSU to check on whether you have a record of infractions.

**Access Statement:** Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access Office is in Farbar Hall. The phone numbers are 229-245-2498 (V), 229-375-5871 (VP) and 229-219-1348 (TTY). For more information, please visit VSU's Access Office or email: [access@valdosta.edu](mailto:access@valdosta.edu).

**Title IX Statement:** Valdosta State University (VSU) is committed to creating a diverse and inclusive work and learning environment free from discrimination and harassment. VSU is dedicated to creating an environment where all campus community members feel valued, respected, and included. Valdosta State University prohibits discrimination based on race, color, ethnicity, national origin, sex (including pregnancy status, sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, national origin, disability, genetic information, or veteran status, in the University's programs and activities as required by applicable laws and regulations such as Title IX. The individual designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University's Title IX Coordinator: Maggie Vivrette, Director of the Office of Social Equity, [titleix@valdosta.edu](mailto:titleix@valdosta.edu), 1208 N. Patterson St., Valdosta State University, Valdosta, Georgia 31608, 333-5463.

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

# ISCI 2001 – Guidelines for Content & Evaluation

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

- I. Practice applying information showing 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 select sections of the GSE Science, K-5 Georgia Standards of Excellence & NGSS
- IV. Compare & contrast how the abiotic factors influence the biotic features of representative global 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. LearnSmart – Dedicated practice of eBook material employing an adaptive learning program
- II. Course Portfolio - Synthesis of the content covered in class with connection to the standards & 3D, 5E pedagogy
- III. Class Discussion & Oral Presentations – Verbal contributions and impromptu/prepared reports
- IV. Midterm Examination – Formative evaluation covering course content
- 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

### Course Assessment:

<b>Written Work &amp; Presentations</b>		
Course Portfolio		30%
Formative Evaluation	10%	
Summative Evaluation	20%	
LearnSmart Work in Connect		10%
Any Blazeview Grades		10%
Class Participation & Oral Reports		10%
Attendance*		10%
<b>Exams</b>		
Midterm Test	10%	
Final Exam – Comprehensive	20%	

**Learning Management System:** You will be using your account in VSU Blazeview to submit some of the assignments for the course. Late work will not be accepted for any reason, so be in the habit of getting the papers in early in case something happens. All class communication will take place here and you should check for clarification of assignments and important messages often.  
(<http://www.valdosta.edu/academics/elearning/blazeview-d2l.php>)

**Email:** We are going to use the **Blazeview email** for class. There is a certain standard of etiquette in higher education that is very different from the way you interact with your friends while texting. My VSU email is for emergencies.

My title is **Dr. Jones** and start any email with that included in a greeting

The first thing you should do is tell me **which of my classes you are in**

The next sentence should contain the **reason for your message**

After you explain yourself using **good grammar & spelling** – This is not a “text message”

**Proofread** – I do not expect garble from people who are looking for a college diploma

Close the message properly showing you know the **proper decorum to use with your professor**

Finally, if you are not polite, **do not expect a response from me** – I will be busy filing it in my “Rude Email” file, and I may enter it in the faculty contest for the “Rudest Email of the Year”

# Class Protocols

## Class Sessions:

Most students come to class to learn and I will not tolerate behavior that disrupts the learning environment. Come to class prepared to concentrate & pay attention. Since some people may not know what is expected in a college classroom, the following rules should make this clear. If I have to stop class and speak to you about a disruption more than once, I will ask to see you after class, and if it happens again you will be dismissed from the classroom and sent to the Dean of Students Office.

## Class Rules:

1. Attend to your personal needs before class and do not get up and walk out of class unless it is urgent.
2. Class will start promptly at the designated time, please have your notebooks open and be ready to pay attention.
3. Once class begins, refrain from side conversations. If you are asking about a word in lecture, make it short & quiet.
4. If a classmate is being rude or distracting you, let them know or say "Shhhhhhhh" loud enough for me to hear.
5. The VSU rules are no eating or drinking in classrooms. Nothing is allowed in the Lab, but Water Bottles are fine in lecture.
6. You are welcome to have your laptops, pads, & phones in class to record lectures, look up terms, and photograph slides. However, this is not an invitation to skype, take calls, or read & send texts. If anyone is bothering you with such behavior, report them to me after class or by email. There will be grade penalties for this type of disruption.
7. Class will end at the designated time, unless you see "THE END" on a slide before, so do not rustle your packs before this.

**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 (Lab & Lecture are separate class). Three late arrivals to class will be counted as an unexcused absence. If you walk into Lab or Lecture class late, it is your obligation to see me and be sure I change the A to T in my gradebook or on the roster. There will be no recourse days later or at the end of the semester because I caught cheaters saying, "here are my notes for that day" and other students later reported that they were lying and had written notes from someone's recording of the lecture. If you are absent, you are still responsible for getting lecture notes from at least 2 other students to be sure you get it all. Any class absences still require assignment submissions by the deadlines. Lab & Lecture are counted as separate class sessions. Anyone who misses more than 20% of the class sessions will receive a failing grade for the course.

\* Here is how attendance will be calculated:

No Absences or Class Time Missed	125%
1 Absence & All Made-Up or Some Class Time missed	100%
2 Absences	75%
3 Absences	50%
4 Absences	25%
More than 4	0%
Tardy & Other Missed Time	(will be calculated into this grade)

**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 from lecture. 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 based on inappropriate conduct such as rudeness, lack of collegiality, or other negative behavior. You will be moved to another seat in either lab or lecture if I consider your behavior a problem. 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. We all must use grammatically correct English in the context of this class because schools will ask me if you speak well and I want to be able to verify that. If you know you need to work on this, make the effort. I expect you to correct yourself if mistakes are noticed by me or your classmates.

**Oral Reports:** During normal lab activities there will be regular opportunities to present your findings to your classmates. You will be expected to practice good speaking skills: Start & end with planned declarative sentences, speak up & speak clearly, and direct your comments to your classmates. There will be several assigned reports which you will be expected to present without any notes, so be sure you know the material.

**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, you are required to complete LearnSmart assignments related to the eBook on McGraw Hill's Connect system that will introduce you to the material that is being covered. Any other assignments will be described in class and submitted on Blazeview. If you miss those deadline, there will be NO exceptions. These will be graded on a 10 point scale as follows: (10=Excellent, 8-9=Good, 7=Adequate, 6=Minimal, <6 Poor).

**Examinations:** There will be regular quizzes (expect one daily), a midterm and a comprehensive final examination. These multiple-choice tests will consist of conceptual questions that probe understanding of the course material. 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 LearnSmart is the best preparation for these exams. Many students say that they do not need to cram for the tests because they are confident that they have learned the material by constructing their portfolios.

**GSE Concept Maps-** This culminating assignment will review the relationship between the course content and the K-5 GPS using the file (Total GPS) posted in the course content section of Blazeview. The map must show understanding of the conceptual relationships between the Characteristics of Science and the Life & Earth Science Content areas for each of the six grade levels along with recognition of how various lessons throughout the semester addressed specific standards.

## Selected Georgia Standards of Excellence for K-5 - Obtain, evaluate, and communicate...

### I. Earth Science

- SKE1. observations about time patterns (day to night and night to day) and objects (sun, moon, stars) in the day and night sky.
- SKE2. information to describe the physical attributes of earth materials (soil, rocks, water, and air).
- S1E1. weather data to identify weather patterns.
- S2E1. information about stars having different sizes and brightness.
- S2E2. information to develop an understanding of the patterns of the sun and the moon and the sun's effect on Earth.
- S2E3. information about how weather, plants, animals, and humans cause changes to the environment.
- S3E1. about the physical attributes of rocks and soils.
- S3E2. information on how fossils provide evidence of past organisms.
- S4E1. information to compare & contrast the physical attributes of stars and planets.
- S4E2. information to model the effects of the position and motion of the Earth and the moon in relation to the sun as observed from the Earth.
- S5E1. information to identify surface features on the Earth caused by constructive and/or destructive processes.

### II. Life Science

- SKL1. information about how organisms (alive and not alive) and non-living objects are grouped.
- SKL2. information to compare the similarities and differences in groups of organisms.
- S1L1. information about the basic needs of plants and animals.
- S2L1. information about the life cycles of different living organisms.
- S3L1. information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.
- S3L2. information about the effects of pollution (air, land, and water) and humans on the environment.
- S4L1. information about the roles of organisms and the flow of energy within an ecosystem.
- S5L1. information to group organisms using scientific classification procedures.
- S5L2. information showing that some characteristics of organisms are inherited and other characteristics are acquired.
- S5L3. information to compare and contrast the parts of plant and animal cells.
- S5L4. information about how microorganisms benefit or harm larger organisms.

## ISCI 2001 Course Portfolio:

The portfolio is a type of *Performance-Based Assessment* which should clearly display the “construction of knowledge” and process of building an understanding of the course material. This portfolio can be considered *Alternative Assessment* evaluating different indications of learning than traditional tests. Portfolios are a more *Authentic Assessment* because they require the exhibition of achievement in a more creative and individualistic manner. This portfolio is also an important way to organize the course material and keep it for reference in the future. There will be dividers separating each of the 15 class sessions so that the material on a topic is together so that it will be easier to study for conceptual understanding.

For a minimum grade of 70% - Design original, visual displays of photographs that illustrate each major concept and make these the dividers for each section. Complete a report of the *5 Stage (5E or whatever is designated in class & on BV) Learning Cycle of Activity* for every class session and field activity. Place your lab, lecture, and any other notes immediately behind of this 5E Summary for the particular lesson. Lab Notes Should End with a Genuine Question that came from the experience- These should appear in bold and be very obvious. For most classes, there will be several activities and possibly 2-3 short lectures related to the topic for the class session. These should be consolidated into a single 5E Summary for that topic that includes:

*Engagement/Explorations:* Elaborate a synthesis of the purposes of all activities. Consider why these were chosen to generate interest in the topic by inquiry. Do NOT restate **what** was done. Emphasize **why** it was done.

*Explanations:* Use the Lecture Notes, WWWeb, & Ebook to Complete a Summary depicting the Central Concepts Covered in Class (Any class absence must be made up with copied class notes & the Make-Up paper)

*Extensions/Evaluations:* Work beyond the class meeting to consolidate understanding and answer the lab question.

## 5E - Daily Write-ups

	Poor/Insufficient - 1	Good/Adequate - 3	Excellent/Outstanding - 5
Engagements/Explorations	Essentially Restates What Happened	Synthesis of Results	Thoughtful Analysis & Inference
Explanations (Including LS)	Too Few Vocabulary Terms Defined No Reference to Class Notes	References to Reading Book Websites Used & Discussed	Recognition of Concepts Explicit Comments about Learning
Extension/Evaluation	Sloppy - Little Effort	Activity Follow Directions Shows Effort to Learn	Mention of GSE Connections

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

- Assemble a Vocabulary List - Before Each Test - paraphrased definition in your own words
- Include Reading Notes - Refer to text information & LS questions with focus on learning outcomes for the course
- Collect Web Sites - Find & Print relevant sites that highlight aspects relating to class topics and make margin notes

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

- Show a solid effort to document understanding with portfolio entries of exceptional quality and clarity
- Use photographs and/or web images to augment written descriptions and visually display concepts
- Summarize the scientific significance of the course theme in a full page, single-spaced, typewritten essay
- Relate the Georgia Standards of Excellence and what you learned about science pedagogy to your experiences

**Presentation, Creativity, & Illustrations:** This is not a traditional lab notebook and should be much more than a sterile display of coursework. As preparation for teaching science to young students, think about colorful ways to show understanding and appreciation of the information. Use Google or other engines to download images for visual displays. Any sloppiness at all will impact your grade because it indicates a lack of professionalism.

# Tentative Class Schedule of 5E Activities

## I. The Natural World – (Wed May 11)

Blue Planet Video  
Levels of Organization Card Activity  
Discussion of the Universe  
Patterns in Nature Activity  
Alphabetic Application of Levels Concept

## II. The Nature of Science – (Thurs May 12)

Fish in Tubs Observation  
Design of Test to Investigate Hypothesis  
Scientific Processes Activity  
Mini Lab Report  
Quiz on Distinction between Nature & Science (Mon)

## III. Matter – (Mon May 15)

Big Bang Video  
Rock & Mineral Identification with Dichotomous Key  
Carbon Cycle Construction  
Draw Nitrogen or Phosphorous Cycle  
Quiz in Matter (Tues)

## IV. Energy – (Tues May 16)

Razzle Dazzle Energy Displays  
Group Exploration of 1 Form  
Energy Discussion/Lecture  
Demonstrations at Stations  
Picture of Energy Transformations in Daily Life

## V. Lithosphere – (Wed May 17)

Building Landforms  
Soil Separation  
Discussion of Tectonics  
Worm Farm Introduction  
Tectonic Plate Drawing

## VI. Hydrosphere – (Thurs May 18)

Making Clouds  
Water Phases Puzzle  
Discussion of Significance of Water  
Construction of Fractions of Global Water  
Water Cycle Poster

## VII. Review for Midterm - (Fri May 19)

## VIII. Atmosphere – (Mon May 22)

**Midterm Exam**  
Sling Psychrometer  
Discussion of Composition  
Cloud Identification  
Designing a Cloud Activity

## IX. Biosphere – (Tues May 23)

Abiotic & Biotic Factors on Walk in Woods  
Animal Show in 1020 Lab  
Search for Microbes in Pond Water  
Holistic & Reductionist Science  
Personal Definition of Abiotic & Biotic

## X. Evolution – (Wed May 24)

Expression of Personal Opinions  
Artificial Selection of Dogs  
Discussion of the Social Controversy  
Observation of Evolution in Window Displays  
Types of Evolution  
Evidence for Evolution  
Personal Reflection

## XI. Cells-Humans – (Thurs May 25)

Cell Metaphor  
Discussion of Cells & Microscopes  
Taxonomy & Human Classification

## XII. Grand Bay – (Fri May 26)

Visit with Free Choice Learning

## XIII. Interdependence – (Tues May 30)

Good Buddies Symbiosis  
PCD on Global Stamps  
Critter Body Art  
Field Sketching Lesson  
Construction of Food Web

## XIV. Universe – (Wed May 31)

Parallax  
Lunar Cycle  
Earth in Space Discussion

## XV. Human Evolution & Diversity – (Thurs June 1)

Mosaic of Quotations  
Inheritance of Skin Color  
Characteristics of Indigenous People  
Nature v Nurture

## XVI. Comprehensive Final Exam – (Fri June 2)