

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Undergraduate Programs</b>	UUPC Approval <u>3-1-21</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Teaching and Learning College Education	
<b>Current Course Prefix and Number</b> SCE 4113	<b>Current Course Title</b> Science Content and Standards for K-6 Teachers	
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Checklist</a>. Please consult and list departments that may be affected by the changes; attach documentation.</i>		
<b>Change title to:</b>  <b>Change prefix</b> From: _____ To: _____ <b>Change course number</b> From: _____ To: _____ <b>Change credits*</b> From: 2 To: 3 <b>Change grading</b> From: _____ To: _____ <b>Change WAC/Gordon Rule status**</b> Add <input type="checkbox"/> Remove <input type="checkbox"/> <b>Change General Education Requirements***</b> Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*Review <a href="#">Provost Memorandum</a></small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See <a href="#">WAC Guidelines</a>.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See <a href="#">GE Guidelines</a>.</small>	<b>Change description to:</b>  <b>Change prerequisites/minimum grades to:</b>  <b>Change corequisites to:</b>  <b>Change registration controls to:</b>  Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
<b>Effective Term/Year for Changes:</b> Summer 2021	<b>Terminate course? Effective Term/Year for Termination:</b>	
<b>Faculty Contact/Email/Phone</b> P. Peluso/ppeluso@fau.edu/7-3570		
<b>Approved by</b> Department Chair <u>Paul R. Peluso</u> College Curriculum Chair _____ College Dean _____ UUPC Chair <u>Jerry Haky</u> Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____	<b>Date</b> <u>1/22/21</u> <u>2/5/21</u> <u>2/9/2021</u> <u>3-2-21</u> <u>3-2-21</u> _____ _____	

Email this form and syllabus to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.



## **Department of Teaching & Learning**

**Course Title:** Science Content and Standards for K-6 Teachers

**Course Number:** SCE 4113

**Credit Hours:** 3 semester hours

**Contact Hours:** Class meets for a total of 3 contact hours

**Prerequisites:** 7 semester hours of college-level science, including 3 credits in physical science, 3 credits in biological science, and at least one science laboratory (grade “C” or higher earned)

### **Course Logistics:**

- **Terms:** Summer 2021
- **Classroom-based course**
- **Class location and time:** Davie, Boca, Jupiter/ TBD

**Instructor:** To be determined

**Office Address/Office Hours:** To be determined

**Phone Number/Email:** To be determined

**TA contact information:** Not applicable

### **Catalog Description:**

In-depth review of content required to effectively teach science K-6. Emphasizes relevant Florida science standards and competencies.

### **Course Connection to the College of Education (COE) Conceptual Framework:**

As reflective decision-makers students will make informed decisions, exhibit ethical behavior, and provide evidence of being capable professionals who have mastered the science content knowledge necessary to document emerging scientific development, develop lessons plans that demonstrate respect for the developmental characteristics of young people and needs of ESOL students, follow the standards for scientific practice, and demonstrate the capability to teach and respect all young people.

**Required Text:**

Trefil, J. & Hazen, R. (2012). *The sciences: An integrated approach (8<sup>th</sup> ed.)*. John Wiley & Sons, Inc. Note: Students may also use 6<sup>th</sup> or 7<sup>th</sup> editions.

**Recommended Text/Readings:**

National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Free PDF or print (\$40) available from:  
<http://www.nap.edu/catalog/13165/a-framework-for-k-12-science-education-practices-crosscutting-concepts>

Discovery Education Science Techbook - Elementary & Middle School at:  
<http://www.discoveryeducation.com/what-we-offer/techbook-digital-textbooks/scie...>

**Special Course Requirements:** No additional cost to students.

- *Livetext* not required.
- Familiarity with and access to FAU's Canvas course management system.

**Supplementary/Recommended Reading:**

Next Generation Sunshine State Standards: <http://www.cpalms.org/Public/>

Next Generation Science Standards: [www.nextgenscience.org/](http://www.nextgenscience.org/)

Florida Teacher Certification Exams: <http://www.fl.nesinc.com/testPage.asp?test=060>

**Standards and Guidelines Used for Developing Course Objectives:**

Florida Teacher Certification Examinations (FTCE) Elementary Education K-6 Science Subtest at: <http://www.fl.nesinc.com/testPage.asp?test=060>

Next Generation Sunshine State Standards (NGSSS) for Science K-6 (when relevant) at: <http://www.cpalms.org/Public> (Collaborate Plan Align Learn Motivate Share)

Next Generation Science Standards (NGSS) at: <http://www.nextgenscience.org/>

Disciplinary Core Ideas K-6 (7-8 when relevant)

Crosscutting Concepts (K-6, K-12 when relevant)

Practices (K-6, K-12 when relevant)

National Science Teachers Association (NSTA) at: <http://www.nsta.org>

**Course Objectives/Student Learning Outcomes:**

1. Demonstrate understanding and application of scientific investigation, defining a problem, observing the natural world through investigation, and proving that scientific investigation should be replicable.

Florida Science Standards K-6 (CPALMS):

- SC.K.N. - 1.1, 1.3, 1.4, 1.5
- SC.1.L. - 14.1
- SC.2.N. - 1.1, 1.2, 1.3, 1.4, 1.5, 1.6
- SC.3.N. - 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 3.1, 3.2, 3.3
- SC.4.N. - 1.1, 1.2 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 3.1
- SC.4.E. - 6.5

- SC.5.N. - 1.1, 1.2, 1.5, 1.6, 2.2
2. Demonstrate content knowledge and application pertaining to the composition of galaxies and planets, and the ways energy causes motion and creates change.  
Florida Science Standards K-6 (CPALMS):
    - SC.E. - 5.1, 5.2
    - SC.4.P. - 12.2
    - SC.5.P. - 10.2
  3. Demonstrate understanding and application of the principles pertaining to electrical conductors and non-conductors.  
Florida Science Standards K-6 (CPALMS):
    - SC.4.P. - 11.2
    - SC.5.P. - 11.2
  4. Demonstrate understanding and application of the characteristics of the solar system (changes of moon and earth rotations, movements of the sun, moon, and stars . . .).  
Florida Science Standards K-6 (CPALMS):
    - SC.K.E. - 5.2, 5.3, 5.4, 5.5, 5.6
    - SC.1.E. - 5.4
    - SC.3.E. - 5.1, 5.2, 5.3, 5.4
    - SC.4.E.- 5.1, 5.2, 5.3, 5.4, 5.5
    - SC.5.E. - 5.3
  5. Demonstrate content knowledge and application to phase changes in the water cycle (create a model). Determine weather, based on temperature, barometric pressure, humidity, air and wind speed, various forms of precipitation, and environment.  
Florida Science Standards K-6 (CPALMS):
    - SC.1.E. - 6.2
    - SC.2.E. - 7.1, 7.3, 7.4, 7.5
    - SC.3.E. P - 9.1
    - SC.4.E. - 6.4
    - SC.4.P. - 8.2,
    - SC.5.E. - 7.1, 7.3,7.4, 7.5
  6. Demonstrate understanding and application of family preparedness for natural disasters. Recognize that humans need resources found on earth, that may renewable or nonrenewable (research Florida resources).  
Florida Science Standards K-6 (CPAMS):
    - SC.4.E.- 6.3, 6.6
    - SC.5.E. - 7.6
  7. Demonstrate content knowledge and application to properties of solids, liquids, and gases (examples: mass, weight, volume, color, texture, and temperature).  
Florida Science Standards K-6 (CPALMS):
    - SC.2.P. - 8.1, 8.2, 8.3, 8.4, 8.5, 8.6
    - SC.3.P. - 8.1, 8.2
    - SC.4.P. - 8. 1, 8.3, 11.1

- SC.5.P. - 8.1
- 8.** Demonstrate understanding and application of the processes that occurs when mixtures of solids separate (based on observable properties) and when materials either dissolve or do not dissolve in water.  
Florida Science Standards K-6 (CPALMS):
- SC.4.P. - 8.4
  - SC.5.P. - 8.2, 8.3
- 9.** Demonstrate content knowledge and application of atomic theory and matter.  
Florida Science Standards K-6 (CPALMS):
- SC.5.P. - 8.4
- 10.** Demonstrate content knowledge and application of the effect of temperature on physical and chemical properties of earth (identify the three categories of rocks that make up earth).  
Florida Science Standards K-6 (CPALMS):
- SC.1.E. - 6.1
  - SC.2.E. - 6.1, 6.2, 6.3
  - SC.4.E. - 6.1, 6.2
  - SC.5.P - 9.1
- 11.** Demonstrate content knowledge and application pertaining to the ways basic forms of energy (light, heat, sound, electrical, chemical, and mechanical) cause motion or create change.  
Florida Science Standards K-6 (CPALMS):
- SC.K.P. - 10.1
  - SC.2.E.- 7.2
  - SC.3.E. - 6.1
  - SC.3.P. - 10.1, 10.2, 10.3, 10.4
  - SC.4.P. - 10.2, 12.1
  - SC.5.P. - 10.1
- 12.** Demonstrate understanding and application of the principles related to attraction and repulsion between electrically charged and non-charged objects.  
Florida Science Standards K-6 (CPALMS):
- SC.4.P. - 10.3
  - SC.5.P. - 10.3
- 13.** Demonstrate understanding and application of the transformation of electrical energy into heat, light, sound, and energy of motion.  
Florida Science Standards K-6 (CPALMS):
- SC.2.P. - 10.1
  - SC.3.P. - 11.1
  - SC.5.P. - 10.4
- 14.** Demonstrate content knowledge and application of the principles of electrical/closed circuitry.  
Florida Science Standards K-6 (CPALMS):
- SC.5.P. - 10.1
- 15.** Demonstrate ability to recognize that some things in the world around us happen quickly and others happen slowly (quickly-volcanic eruptions, flooding, and hurricanes; slowly-draught).  
Florida Science Standards K-6 (CPALMS):
- SC.K.P. - 12.1

- SC.E. - 6.3

**16. Demonstrate understanding and application of the principle: The greater the force, the greater the change in motion of an object; consider mass, force (push/pull, gravity . . .) and magnets.**

Florida Science Standards K-6 (CPALMS):

- SC.K.E. - 5.1
- SC.K.P. - 13.1
- SC.1.P. - 12.1, 13.1
- SC.2.P. - 13.1, 13.2, 13.3, 13.4
- SC.3.E. - 5.4
- SC.4. P. - 10.1, 10.4
- SC.5.P. - 13.1, 13.2, 13.3, 13.4

**17. Demonstrate content knowledge and ability to identify organs and functions of the human body, and be able to compare and contrast organs and functions of plants and animals.**

Florida Science Standards K-6 (CPALMS):

- SC.1.L. - 14.2, 17.1
- SC.3.L. - 14.1, 14.2, 15.2, 17.2
- SC.4.L. - 16.1, 16.2, 16.4, 17.1, 17.3, 17.4
- SC.5.L. - 14.1, 14.2

**18. Demonstrate content knowledge and understanding of the effect of environment on animals and plants (reproduction, propagation, and relocation).**

Florida Science Standards K-6 (CPALMS):

- SC.3.L. - 17.1
- SC.5.L. - 15.1

**19. Demonstrate content knowledge and ability to differentiate living and nonliving things pertaining to adaptations, life cycle variations, animal behaviors, and physical characteristics.**

Florida Science Standards K-6 (CPALMS):

- SC.K.L. - 14.2, 14.3
- SC.1.L. - 14.3, 16.1
- SC.2.L. - 16.1, 17.1, 17.2
- SC.3.L. - 15.1
- SC.4.L. - 16.3, 17.2
- SC.5.L. - 17.1

**20. Demonstrate content knowledge and understanding pertaining to the way body parts work together in a healthy body.**

Florida Science Standards K-6 (CPALMS):

- HE.5.C. - 1.5
- SC.K.L. - 14.1
- SC.K.N. - 1.2
- SC.2.L. - 14.1

**21. Demonstrate content knowledge and application by comparing materials and objects according to properties, such as size, shape, color, texture, and hardness.**

Florida Science Standards K-6 (CPALMS):

- SC.K.P.- 8.1, 9.1
- SC.2.P. - 9.1
- SC.3.P. - 8.3
- SC.4.P. - 9.1

**22. Demonstrate content knowledge and application by investigating, observing, and explaining why heat is produced when one object rubs against another.**

Florida Science Standards K-6 (CPALMS):

- SC.3.P. - 11.2

**Next Generation Sunshine State Standards for Science (NGSSS)**

<b>Big Idea</b>	<b>K</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1: The Practice of Science	X	X	X	X	X	X	X
2: The Characteristics of Scientific Knowledge					X	X	X
3: The Role of Theories, Laws, Hypotheses, and Models				X	X		X
4: Science and Society							
5: Earth in Space and Time	X	X		X	X	X	
6: Earth Structures		X	X	X	X		X
7: Earth Systems and Patterns			X			X	X
8: Properties of Matter	X	X	X	X	X	X	
9: Changes in Matter	X		X	X	X	X	
10: Forms of Energy	X		X	X	X	X	
11: Energy Transfer and Transformations				X	X	X	X
12: Motion of Objects	X	X			X		X
13: Forces and Changes in Motion	X	X	X			X	X
14: Organization and Development of Living Organisms	X	X	X	X		X	X
15: Diversity and Evolution of Living Organisms				X		X	X
16: Heredity and Reproduction		X	X		X		
17: Interdependence		X	X	X	X	X	
18: Matter and Energy Transformations							

**Note:** For details on individual benchmarks, including access points to help unpack standards, see CPALMS.org. These standards, including both big ideas and benchmarks, may change in 2018.

## Next Generation Science Standards (NGSS)

### Disciplinary Core Ideas:

- **Earth Space Science Progression** K-2 → 3-5 → 6-8
- **Life Sciences Progression** K-2 → 3-5 → 6-8
- **Physical Sciences Progression** K-2 → 3-5 → 6-8

### Crosscutting Concepts:

1. *Patterns.* Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
2. *Cause and effect: Mechanism and explanation.* Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts..
3. *Scale, proportion, and quantity.* In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.
4. *Systems and system models.* Defining the system under study — specifying its boundaries and making explicit a model of that system — provides tools for understanding and testing ideas that are applicable throughout science and engineering.
5. *Energy and matter: Flows, cycles, and conservation.* Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.
6. *Structure and function.* The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.
7. *Stability and change.* For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study.

Students will be familiar with the progressions for each crosscutting concept, from K-2, 3-5, and 6-8. They will be aware of implications in 9-12. See NGSS Appendix G for details and progressions.

### Practices:

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Students will be familiar with the progressions for each practice, from K-2, 3-5, and 6-8. They will be aware of implications in 9-12. See NGSS Appendix F for details and progressions. Practices are



skills that can only be mastered by application and repetition in varying contexts. These are not pedagogies; students need to be engaged in them themselves.

### Sequencing

Instructors may sequence the above items at their discretion, based on their own interests, expertise, and teaching practice. However they are addressed, each topic must be covered by the end of the course; elementary science literacy is interdisciplinary. Also note that nature of science and the scientific practices should be infused throughout.

#### *Suggested sequence, based on the NGSSS and district sequencing:*

1. The practice of science; the characteristics of scientific knowledge; roles, laws and theories; science and society (practices and characteristics infused throughout).
2. Properties of matter and changes in matter.
3. Forms of energy, energy transfer and transformations; matter and energy transformations.
4. Forces and changes in motion; motion of objects.
5. Earth in space and time; earth structures; earth systems and patterns.
6. Organization and evolution of living organisms.
7. Diversity and evolution of living organisms and interdependence; heredity and reproduction.

#### **Content Topical Outline: Access to required online readings to be discussed in class.**

Weeks	Topics
<b>#1</b>	Review content course syllabus and expectations <ul style="list-style-type: none"> <li>• Complete content pre-test examination</li> </ul>
<b>#2</b>	Nature of Science: <b>FTCE: 2.1, 2.2, 2.3, 2.4</b> <ul style="list-style-type: none"> <li>• Dynamic nature of science models, laws, mechanisms, theories to explain natural phenomena.</li> <li>• Science and engineering practices thru integrated process skills (observing, modeling ...).</li> <li>• Characteristics of experiments (variables...) versus other types of investigation (surveys...).</li> <li>• Attitudes and dispositions underlying scientific thinking (curiosity, skepticism ...).</li> </ul>
<b>#3</b>	Nature of Science: <b>FTCE: 2.5, 2.6, 2.7, 2.8</b> <ul style="list-style-type: none"> <li>• Appropriate tools, including digital tech and units of measurement for science tasks.</li> <li>• Pictorial representations (charts, tables, graphs) to predict, explain, and support conclusions.</li> <li>• Science as an interdisciplinary process and interconnection to the STEM disciplines.</li> <li>• Interactions of science and technology with society (cultural, ethical, economic, pol., global).</li> </ul>
<b>#4</b>	Physical Science: <b>FTCE: 3.1, 3.2, 3.3</b> <ul style="list-style-type: none"> <li>• Differences among physical properties of matter (mass, vol., texture, hardness, freezing pt.).</li> <li>• Differences between physical and chemical changes (tearing, burning, rusting).</li> <li>• Comparison of properties of matter during phase changes thru the addition and/or removal of energy (boiling condensation, evaporation).</li> </ul>

#5	Physical Science: <b>FTCE: 3.4, 3.5, 3.6</b> <ul style="list-style-type: none"> <li>• Differences between properties of homogeneous (solutions ...) and heterogeneous mixtures.</li> <li>• Relationships among atoms, elements, molecules, and compounds.</li> <li>• Comparison of potential and kinetic energy.</li> </ul>
#6	Physical Science: <b>FTCE: 3.7, 3.8, 3.9, 3.10</b> <ul style="list-style-type: none"> <li>• Differences among forms of energy, transformations of energy, and their real-world applications (chemical, electrical, heat, light, sound).</li> <li>• Differences among temp., heat, and forms of heat transfer (conduction, convection, radiation).</li> <li>• Functionality of an electrical circuit based on its conductors, insulators, and components.</li> <li>• Characteristics of contact forces (push, pull, friction ...), at-a-distance forces (magnet, gravitational, electrostatic ...), and their effects on matter (motion, speed ...).</li> </ul>
#7	Earth & Space: <b>FTCE: 4.1, 4.2</b> <ul style="list-style-type: none"> <li>• Characteristics of geologic formations (volcanoes, canyons, mountains) and the mechanisms by which they are changed (physical and chemical, weathering, erosion, deposition).</li> <li>• Differences among major groups and properties of rocks and minerals and the processes of their formation.</li> </ul>
#8	<b><i>Midterm Examination</i></b>
#9	Earth & Space: <b>FTCE: 4.3, 4.4</b> <ul style="list-style-type: none"> <li>• Characteristics of soil, its components and profile, and the process of soil formation.</li> <li>• Processes by which energy from the Sun is transferred (radiation, conduction, convection) through earth's systems (biosphere, hydrosphere, geosphere, atmosphere, cyrosphere).</li> </ul>
#10	Earth & Space: <b>FTCE: 4.5, 4.6</b> <ul style="list-style-type: none"> <li>• Causes and effects of atmospheric processes and conditions (water cycle, weather, climate).</li> <li>• Conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.</li> </ul>
#11	Earth & Space: <b>FTCE: 4.7, 4.8, 4.9</b> <ul style="list-style-type: none"> <li>• How the Sun-Earth-Moon system explains repeated patterns (day/night, tides, seasons...).</li> <li>• Differences in composition and various relationships among objects of our Solar System.</li> <li>• Major events in the history of space exploration and their effects on society.</li> </ul>
#12	Life Science: <b>FTCE: 5.1, 5.2, 5.3</b> <ul style="list-style-type: none"> <li>• Comparison of the characteristics of living and nonliving things.</li> <li>• Cell theory as it relates to the structural and functional hierarchy of all living things.</li> <li>• Comparison of the structures and functions of plant and animal cells.</li> </ul>
#13	Life Science: <b>FTCE: 5.4, 5.5, 5.6</b> <b><i>Research Project Due</i></b> <ul style="list-style-type: none"> <li>• Classification of living things into major groups (Linnaean System ...) and comparison according to characteristics (physical features, behaviors, development).</li> <li>• Comparison and contrast of the structures, functions, and interactions of human and other animal organs systems (respiration, reproduction, digestion).</li> <li>• Differences among infectious agents (viruses, bacteria, fungi, parasites), their transmission, and their effects on the human body.</li> </ul>

<b>#14</b>	<p>Life Science: <b>FTCE: 5.7, 5.8, 5.9</b></p> <ul style="list-style-type: none"> <li>• The process of heredity and natural selection and the scientific theory of evolution.</li> <li>• Interdependence of living things with each other and with their environments (food web, ecosystems, pollution).</li> <li>• Plant structures and processes of photosynthesis, transpiration, reproduction (sexual/asexual).</li> </ul>
<b>#15</b>	<p>Life Science: <b>FTCE: 5.10, 5.11</b> Nature of Science Review</p> <ul style="list-style-type: none"> <li>• Prediction of responses of plants to various stimuli (heat, light, gravity ...).</li> <li>• Comparison of life cycles and predictable ways plants and animals change as they grow, develop, and age.</li> <li>• Complete Content Post Test Examination</li> </ul>
<b>#16</b>	<b><i>Final Examination, Science/Lab Notebooks Due</i></b>

### Teaching Methodologies:

Activities, inquiries, labs, lectures, discussions, resource curations, and demonstrations. Other techniques, including theme-based, problem-based, and socio-scientific issue-based pedagogies may be incorporated at the discretion of the instructor.

### Course Evaluation Method (minimum grade of “C” required to pass course):

- Mid-term exam (20%) - Focus on conceptual understanding of content benchmarks.
- Participation/Activities (15%) - Focus on scientific skills/practices.
- Research project (15%) - Focus on metacognition, including the acquisition of reliable scientific knowledge and the ability to discern junk science, pseudoscience, and science tainted by bias.
- Science Notebook/Lab Journal (15%) - Documents new learning and scientific practices, including labs and data analysis.
- Final Exam (35%)

### Course Grading Scale:

<i>Letter</i>	<i>Percent</i>	<i>Grade Points</i>	<i>Letter</i>	<i>Percent</i>	<i>Grade Points</i>
A	95-100	= 4.0	C	75-78	= 2.0
A-	92-94	= 3.67	C-	72-74	= 1.67
B+	89-91	= 3.33	D+	68-71	= 1.33
B	85-88	= 3.00	D	65-67	= 1.00
B-	82-84	= 2.67	D-	62-64	= 0.67
C+	79-81	= 2.33	F	Below 62	= 0.00

### Policy on Makeup Tests, Late Work, and Incompletes:

Students are expected to attend all of the scheduled University classes and to satisfy all academic objectives as outlined by the instructor. It is the student’s responsibility to make up all work missed during excused absences. In addition, it is the student’s responsibility to give the instructor notice prior to any anticipated absence and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each

student who is absent for a University-approved reason the opportunity to make up work that is missed without any reduction in the student's final course grade as a direct result an excused absence. Please see **Classroom Etiquette Policy** below for information pertaining to excused absences. The grade of Incomplete ("I") is reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances.

**Classroom Etiquette Policy: (late arrivals, unexcused absences, electronic devices)**

Final grades may be affected by late arrivals and unexcused absences. Unavoidable absences include: family emergencies, illness, military obligations, and court imposed legal obligations. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastic teams, musical and theatrical performances, and debate activities. These absences must be accompanied by documentation. The instructor reserves the right to approve or disapprove any absence. Reasonable accommodation must also be made for students participating in a religious observance. University policy on electronic devices states: *In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions.*

**Dropping the Course:** If you must drop this course, please complete all necessary forms. Otherwise, the instructor is required to enter a grade of "F" for the course.

**Attendance**

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The instructor determines the effect of absences upon grades, and the University reserves the right to deal at any time with individual cases of nonattendance. Attendance includes active involvement in all class sessions, class discussions, and class activities, as well as professional conduct in class.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-sponsored activities (such as athletic or scholastic team, musical and theatrical performances, and debate activities). It is the student's responsibility to give the instructor notice prior to any anticipated absence, and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

**Religious Accommodation**

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs with regard to admissions, registration, class attendance and the scheduling of examinations and work assignments. Students who wish to be excused from course work, class activities or examinations must notify the instructor in advance of their intention to participate in religious observation and request an excused absence. The instructor will provide a reasonable opportunity to make up such excused absences. Any student who feels aggrieved regarding religious accommodations may present a grievance to the director of Equal Opportunity Programs. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

**Disability Policy Statement:**

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/).

## **Counseling and Psychological Services (CAPS) Center**

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

## **Code of Academic Integrity policy statement:**

*Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see the University Code of Academic Integrity at: [http://fau.eduregulations/chapter4/4.001\\_Code\\_of\\_Academic\\_Integrity.pdf](http://fau.eduregulations/chapter4/4.001_Code_of_Academic_Integrity.pdf).*

## **Use of Student Work:**

All Teacher Education programs undergo periodic reviews by accreditation agencies and the state education department. For these purposes samples of students' work are made available to those professionals conducting the review. Student anonymity is assured under these circumstances. If you do not wish to have your work made available for these purposes, please let the professor know before the start of the second class. Your cooperation is appreciated

**Please Note: Due to the possibility of the implementation of new, required state standards, the Competency Assessments and rubrics within this course may change during the semester. If changes are made, you will receive advance notification.**

## **Bibliography**

### **Books**

- AAAS. (2013). *Science for all Americans* at: <http://www.aaas.org/report/science-all-americans>.  
Dawkins, R. (2012). *The magic of reality: How we know what's really true*. Free Press.  
Hazen, R. & Trefil, J. (2009). *Science Matters: Achieving scientific literacy*. Anchor.  
Nye, B. (2015). *Unstoppable: Harnessing science to change the world*. NY: St. Martin's Press.

### **Journals & Magazines**

Discover	<a href="http://discovermagazine.com/">http://discovermagazine.com/</a>
Eureka! Global Science News	<a href="http://www.eureka!org/">http://www.eureka!org/</a>
National Geographic	<a href="http://www.nationalgeographic.com/">http://www.nationalgeographic.com/</a>
Science Daily research news	<a href="http://www.sciencedaily.com/">http://www.sciencedaily.com/</a>
Science News <i>Society for Science &amp; the Public</i>	<a href="https://www.sciencenews.org/">https://www.sciencenews.org/</a>
Scientific American	<a href="http://www.scientificamerican.com/">http://www.scientificamerican.com/</a>
Technology Review <i>MIT</i>	<a href="http://www.technologyreview.com/">http://www.technologyreview.com/</a>

## **Reports & Standards**

National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*.

National Science Teachers Association Learning Center (\$99 for one year)

<http://learningcenter.nstaorg/default.aspx>

Next Generation Science Standards

<http://www.nextgenscience.org/>

Next Generation Sunshine State Standards

[www.cpalms.org](http://www.cpalms.org)

## **Professional Organizations**

National Science Teachers Association

<http://www.nsta.org/>

Florida Association of Science Teachers

<http://www.fastscience.org/>

## **Internet**

PBS Learning Media

<http://www.pbslearningmedia.org/>

Kahoot! *free game-based learning*

<https://getkahoot.com/>

Socrative *IT Assessment*

<http://www.socrative.com/>

Code.org *lessons on coding*

<https://code.org/educate/k5>

BrainPOP

<https://www.brainpop.com/>