I. Course Description:

Teaching Science in EC-6
Examination of the science curriculum for grades EC-6 with emphasis on current practices, trends and research on effective practices for teaching science. Includes investigation of activities and materials appropriate for achieving science objectives. Prerequisites: Admission to Educator Preparation; enrolled in ELE 450.

Course Rationale: Through the past decade, elementary science education has taken on a "new" direction. Two factors which have given direction to the new elementary education curriculum are: (1) studies of the intellectual development of the young child, and (2) a shift from the lecture-demonstration teaching method to a discovery inquiry learning method. Science is a methodology (process) as well as a body of knowledge (content). Process and content are closely interrelated and both are essential in the science curriculum. It also encompasses a set of personal characteristics (attitudes), which reflects certain behavioral traits of a scientist/problem solver. Coverage of a fixed body of information is not to be regarded as an end in itself, but rather we should focus upon helping children develop an understanding of significant conceptual relationships. Students of science must develop proficiency in collecting, analyzing, synthesizing, and evaluating data, and in making application of this data to new problems. They must also be able to use basic scientific terminology and express simple basic number relationships in mathematical terms. Special consideration should be given to the ways in which scientific theories and laws are discovered, refined and tested. An understanding that theories and laws are regarded as tentative and open to revision should be developed. These ideas furnish this course with its objectives.

Mission: Through active participation in classroom projects/activities and outside field investigations the mission of this class, and the College Of Education, is to prepare competent, successful, caring and enthusiastic professionals dedicated to responsible service, leadership and continued professional and intellectual development.
II. **Intended Learning Outcomes /Goals/Objectives:**

Teaching Elementary is a hands-on /minds-on learning opportunity for teacher candidates at SFASU. It is our intent in the College of Education to prepare professional educators who positively impact learning for all students and graduate productive citizens and successful leaders. This science methods course supports the **Mission of the College of Education** by providing teacher candidates an opportunity to work with EC-6 public school students as we prepare them to become competent, successful, caring and enthusiastic professionals. One of the goals of the College of Education is to provide a variety of teaching venues incorporating the latest technologies to a range of diverse student interests, backgrounds, and aspirations. Another goal is to collaborate with external partners to enhance student’s knowledge, skills, and dispositions, and to influence the ongoing exchange of ideas for mutual benefit. This is accomplished in their field investigations at the SFA Arboretum and the Texas Freshwater Fisheries Center. The ACEI standards require that teacher candidates have opportunities to work with student and parents, and this also takes place in their field investigations. Public and private school students and their parents participate in these field investigations led by our teacher candidates. Teacher candidates learn to assess, plan, and implement instruction at appropriate levels. They also learn to use on-going assessment to reflect on student learning and teaching strategies to plan for future instruction. The teacher candidates at SFASU become reflective professionals who have experience planning appropriate instruction for diverse student learners. Teacher candidates participate in action research in this course to advance knowledge and to confirm best practices in elementary science teaching. Teacher candidates receive professional development credit and certification from national education organizations as a part of this course. They engage in outreach services, enhance student learning, and promote the reputation of the university through their field experiences.

Please follow this link to visit the SFASU College of Education Conceptual Framework: [http://www.sfasu.edu/education/about/accreditations/ncate/conceptual/](http://www.sfasu.edu/education/about/accreditations/ncate/conceptual/)

**EC6 Undergraduate Program Learning Outcomes and Student Learning Outcomes:**

**PLO 1** Candidates know, understand, and use the major concepts, principles, theories, and research related to development of children and young adolescents to construct learning opportunities that support individual students’ development, acquisition of knowledge, and motivation (ACEI 1).

- **SLO 1.1** Candidates will know and understand the history and nature of science (EC6 Texas Science ST VI).
  - SLO 1.1.1 Assessment – Position Statements (NSTA); Science Resource Packet. Nature of Science – (6.2k, 6.3k, 6.10k, 6.3s).
• SLO 1.2 – Candidates will understand how students learn in science and how science interacts with and influences personal and societal decisions (EC6 Texas Science ST IV, VII).
  ▪ SLO 1.2.1 Assessment – BBBB/Wetland Adventure Teaching Stations; Raising and researching Butterflies. Personal and societal decisions – (7.1k, 7.3k, 7.4k, 7.7k, 7.1s, 7.4s, 7.6s). PPR – 4.15s (Technology 1.3s, 3.6s, 7.11s: ISTE 1a, 3d)

• PLO 2 Candidates know, understand, and demonstrate a high level of competence in their content in the areas of English language arts, mathematics, science, and social studies (ACEI 2). SLO 2.4.1 Assessment – Student Impact using technology and Self-Reflection of BBBB/Wetland Adventure Paper.
  o SLO 2.2.2 Assessment – Lesson Sample/Lesson Plan Rubric Assignment (implementing unpacking TEKS, lesson and language objective taught in ECH 331 and RDG 320). PPR – (1.21k).
  o SLO 2.2.3 Assessment – Raising Butterflies Journaling & Research Assignment
  o SLO 2.2.4 Assessment – Learning Tree Certification

  o SLO 2.1 – Candidates will understand use of tools, materials, equipment, and technologies and manage classroom, field, and laboratory activities to ensure the safety of all students and ethical care and treatment of organisms and specimens (EC6 Texas Science ST I, II).
  ▪ SLO 2.1.1 Assessment – Guidelines for Classroom Safety and Science Safety Standards (NSTA); Safety and School Science Instruction, Responsible Use of Animals (Position Statements, NSTA); Texas Science Safety Standards K-12 (Dana Center/TEA; Live Plants and Animals in the room; Science Resource Packet; BBBB/Wetland Adventure Field Investigation Teaching Situations (same as SLO 1.2.1). Safety - (1.2k, 1.4k, 1.7k, 1.8k, 1.1s, 1.3s). Tools, materials, equipment & technology – (2.5k, 2.6k, 2.2s, 2.3s, 2.9s). PPR – (1.28k, 1.18s) (2.10k, 2.17k). Technology 4.11s; ISTE 2d, 3d, 5d
  o SLO 2.2 – Candidates will know and understand theoretical and practical knowledge of science teaching including the process of scientific inquiry and its role in instruction (EC6 Texas Science ST IV, III)
  ▪ SLO 2.2.1 Assessment – Modified Science Process Skills Assignment; Science Resource Packet; Position Statements (NSTA); TEKS defined; Wetland Adventure/BBBB Field Investigations. Theoretical and Practical knowledge – (4.3k, 4.4k, 4.5k, 4.7k, 4.8k, 4.9k, 4.10k, 4.12k, 4.14k, 4.1s, 4.4s, 4.5s, 4.6s, 4.8s, 4.10s, 4.12s, 4.13s, 4.14s, 4.15s, 4.16s). Process of Science Inquiry – (3.4k, 3.5k, 3.4s, 3.6s, 3.7s, 3.8s). SLO 2.2.2 Assessment – Raising Butterfly Activity (SCIENCE 1.5k, 9.1k, 9.2k, 9.3k, 9.4k, 9.5k, 9.6k, 9.7k, 9.10k, 9.11k, 9.1s, 9.2s,
9.3s, 9.4s, 9.5s, 9.7s, 9.8s, 9.9s, 9.10s, 9.16s, 9.17s, 9.18s, 9.19s, 9.21s; **Technology 1.3s, 3.6s, 4.11s, 7.11s; ISTE 1a, 2d, 3d, 5d**

- SLO 2.3 – Candidates will know and understand the TEKS in physical science, life science, earth, and space science and will use unifying concepts and processes that are common the science content appropriate (EC6 Texas Science ST VIII, IX, X, XI). Life Science – (9.1k, 9.2k, 9.4k, 9.5k, 9.6k, 9.7k, 9.11k, 9.1s, 9.2s, 9.3s, 9.7s, 9.8s, 9.9s, 9.16s, 9.17s, 9.21s)
  - Assessment 2.3.1 – Science Diagnostic Assessment Quiz
- SLO 2.4 – Candidates will know and use varied and appropriate assessment practices (formative/summative) to monitor science learning (EC6 Texas Science ST V). Science Resource Packet (Process Skills); Wetland Adventure/BBBB Field Investigations. Appropriate assessment – (5.1k, 5.3k, 5.4k, 5.5k, 5.7k, 5.8k, 5.10k, 5.11k, 5.1s, 5.2s, 5.3s, 5.5s, 5.8).

SLO 2.5 – Candidates will demonstrate the ability to use appropriate technology for EC6 science instruction. (Science ST II)

SLO 2.5.2 Assessment – **The Role of Technology in Science**, Education Discussion (SCIENCE 2.6k; PPR 1.28, 2.10k, Technology 4.1s; ISTE 1b, 5c, 5d)

B. **Required Text and Materials:**
1. Project Learning Tree Curriculum Book
2. Resource Packet with Articles/ Activities
3. K-6 Science TEKS
4. BBBB T-Shirt

III. **Course Assignments, Activities, Instructional Strategies**

1. Develop a science portfolio composed of: science resource packet, class notes, and handouts.
2. Science lesson plan for activity taught in the science lab and classroom (using standard lesson cycle format) either 5 E or Direct Instruction, with objectives correlated to grade level Texas Essential Knowledge and Skills (TEKS).
   a) Science Lesson/Reflection taught at Bugs, Bees, Butterflies and Blossoms
   b) Science Self-Assessment
3. Five Quizzes
4. Summary/Reflection from Science and Children (NSTA Publication)
5. Butterfly Journal
6. Construction of Butterfly Habitat.
7. Bugs, Bees, Butterflies and Blossoms Special Event
8. Technology Assignment
9. Attendance and Attitude
10. Course Evaluation
11. Science Diagnostic assessment
13. Mid-Term Exam
14. Final Exam

IV. Evaluation and Assessments

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Term Exam</td>
<td>100</td>
</tr>
<tr>
<td>Five Quizzes</td>
<td>50</td>
</tr>
<tr>
<td>Science Diagnostic Assessment</td>
<td>40</td>
</tr>
<tr>
<td>Butterfly Journal</td>
<td>50</td>
</tr>
<tr>
<td>Butterfly Habitat</td>
<td>25</td>
</tr>
<tr>
<td>Technology assignment</td>
<td>10</td>
</tr>
<tr>
<td>Bugs, Bees, Butterflies and Blossom Special Event</td>
<td>100</td>
</tr>
<tr>
<td>Science and Children Summary/Reflection with reference documented</td>
<td>15</td>
</tr>
<tr>
<td>Attendance, Attitude and Class Participation</td>
<td>5</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>End of semester course evaluation</td>
<td>5</td>
</tr>
</tbody>
</table>

A = 450-500
B = 400-449
C = 350-399
F = Below 350

ELE 301 CALENDAR
ASSIGNMENT DUE DATES
Spring 2018

Week of

<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-22-18</td>
<td>Science Self-Assessment/Bio-Sketch</td>
</tr>
<tr>
<td>01-22-18</td>
<td>Science Diagnostic Assessment</td>
</tr>
<tr>
<td>02-05-18</td>
<td>Pick up Painted Lady larvae</td>
</tr>
<tr>
<td>02-19-18</td>
<td>Technology Assignment</td>
</tr>
<tr>
<td>02-26-18</td>
<td>Butterfly Habitat due</td>
</tr>
<tr>
<td>03-19-18</td>
<td>Butterfly Journal due</td>
</tr>
<tr>
<td>04-09-18</td>
<td>Science &amp; Children Assignment due</td>
</tr>
<tr>
<td>04-16-18</td>
<td>BBBB lesson plan due/materials</td>
</tr>
</tbody>
</table>
HABITAT CONSTRUCTION
(25 points)

1. VISIBILITY  5
2. ACCESSIBILITY  5
3. DURABILITY  5
4. CREATIVITY  5
5. SAFETY  5

JOURNAL REQUIREMENT
(50 points)
BUTTERFLY JOURNAL:

<table>
<thead>
<tr>
<th>Daily entries (detailed observation)</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photos, drawings or both of each stage</td>
<td>10</td>
</tr>
<tr>
<td>Creative and neatness in presentation</td>
<td>10</td>
</tr>
<tr>
<td>Graphic organizer (# of days in each stage)</td>
<td>10</td>
</tr>
<tr>
<td>Additional resources ie. Periodicals/internet sites &amp; info etc. (at least 3) to be place after last journal entry</td>
<td>10</td>
</tr>
</tbody>
</table>

V. Tentative Course Calendar:

Tentative Schedule
ELE 301 Spring 2018

Week Of:

<p>| 01-15-18 | Course Overview; Tentative Schedule and due Dates; Student Bio-Sketch; Science Self-Assessment; Science Safety; PLT Textbook; Science Resource Packet; |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-22-18</td>
<td>Diagnostic Science Assessment; Skeptical Inquirer activities.</td>
</tr>
<tr>
<td>01-29-18</td>
<td>Rope Challenge activity; Why Teach Science? What Is Science? 12 Commandments for Teaching Science; “Study says science should be kid’s stuff”; Air Pressure activities</td>
</tr>
<tr>
<td>02-05-18</td>
<td>Science Process Skill activities on Observation/Inference</td>
</tr>
<tr>
<td>02-12-18</td>
<td>Science Process Skill activities on Communication/Classification</td>
</tr>
<tr>
<td>02-19-18</td>
<td>Science Process Skill activities on Prediction; Assign BBBB lesson plan activity and partner</td>
</tr>
<tr>
<td>02-26-18</td>
<td>Mid-Term Exam</td>
</tr>
<tr>
<td>03-05-18</td>
<td>PLT Training Introduction and activities</td>
</tr>
<tr>
<td>03-12/16-18</td>
<td>SPRING BREAK</td>
</tr>
<tr>
<td>03-19-18</td>
<td>PLT Training/Activities</td>
</tr>
<tr>
<td>03-26-18</td>
<td>BBBB Activity</td>
</tr>
<tr>
<td>03-29/30-18</td>
<td>Easter Holiday</td>
</tr>
<tr>
<td>04-02-18</td>
<td>BBBB Activity</td>
</tr>
<tr>
<td>04-09-18</td>
<td>BBBB Activity; Work on assigned BBBB Lesson Materials with partner</td>
</tr>
<tr>
<td>04-16-18</td>
<td>BBBB Dry Run</td>
</tr>
<tr>
<td>04-24/27-18</td>
<td>BBBB Special Event at the SFA MAST Arboretum</td>
</tr>
<tr>
<td>04-30-18</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>

**VI. Readings:**

Science and Children (NSTA Publication); Project Learning Tree Curriculum Guide; and Science Resource Packet.

**VII. Course Evaluations:**

Near the conclusion of each semester, students in the College of Education electronically evaluate courses taken within the COE. Evaluation data is used for a variety of important purposes including: 1. Course and program improvement, planning, and accreditation; 2. Instruction evaluation purposes; and 3. Making decisions on faculty tenure, promotion, pay, and retention. As you evaluate this course, please be thoughtful, thorough, and accurate in completing the evaluation. Please know that the COE faculty is committed to excellence in teaching and continued improvement. Therefore, your response is critical!

**VIII. Student Ethics and Other Policy Information:**
COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT OF 1990

Stephen F. Austin State University does not discriminate on the basis of disability in admission to, access to, or operations of its programs, services, or activities. Stephen F. Austin State University does not discriminate on the basis of disability in its hiring or employment practices.

Students with Disabilities: To obtain disability related accommodations alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, Room 325, 468-3004/ 468-1004 (TDD) as soon as possible. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided.

Attendance Policy:
More than two unexcused absences in class will result in lowering of students grade by one letter. Additional absences will result in further reduction of grade or failure in that class. The student will be responsible for all work missed during absences. Any excused Absence must have written Doctors signature for day missed

ASSIGNMENT POLICY:
All students are expected to complete assignments on the due date shown on the Calendar of Assignments. In order to receive an 'A' in the course, ALL assignments must be completed. Failure to complete any assignment will result in an automatic reduction of the course grade earned by one letter grade, regardless of the total number of points earned. Written work in which the use of the English language is not at an acceptable level for a university senior will be returned to the intern marked "Unacceptable" and a zero assigned.

MAKE-UP WORK POLICY:
The decision whether to accept make-up work is at the discretion of the instructor. No make-up work will be accepted Dead Week or Finals Week.

LATE WORK POLICY:
No late work will be accepted.

Academic Integrity

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university polity on penalties for cheating and plagiarism.

Definition of Academic Dishonesty

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a
better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one’s own work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades Semester Grades Policy (A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Acceptable Student Behavior

Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

To complete Certification/Licensing Requirements in Texas related to public education, you will be required to:

1. Undergo criminal background checks for field or clinical experiences on public school campuses; the public school campuses are responsible for the criminal background check; YOU are responsible for completing the information form requesting the criminal background check. If you have a history of criminal activity, you may not be allowed to complete field or clinical experiences on public school campuses. At that point, you may want to reconsider your major while at SFASU.
2. Provide one of the following primary ID documents: passport, drivers license, state or providence ID cards, a national ID card, or military ID card to take the TExES exams (additional information available at
YOU must provide legal documentation to be allowed to take these mandated examinations that are related to certification/licensing requirements in Texas. If you do not have legal documentation, you may want to reconsider your major while at SFASU.

3. Successfully complete state mandated a fingerprint background check. If you have a history of criminal activity, you may want to reconsider your major while at SFASU.

LiveText is the data management system used by the Perkins College of Education for program improvement and accreditation. All students are required to purchase a LiveText account, either through the University Bookstore or at www.livetext.com. This is a one-time purchase, and the account will be used throughout your program. Required program assignments must be submitted through LiveText. Successful completion of the course and program are dependent on submission of all required LiveText assignments.

**ISTE Technology Standards**

1. Facilitate and Inspire Student Learning and Creativity
2. Design and Develop Digital-Age Learning Experiences and Assessments
3. Model Digital-Age Work and Learning
4. Promote and Model Digital Citizenship and Responsibility
5. Engage in Professional Growth and Leadership

I have read the ELE 301 syllabus and I understand I am expected to fulfill all of the requirements of the course.

_____________________________________ __________________________
Name (Signature) and Date

last updated January 11, 2018