

# EDISON STATE COLLEGE

Division of Arts and Sciences

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## COMMON COURSE SYLLABUS

PROFESSOR:

OFFICE LOCATION:

E-MAIL:

PHONE NUMBER:

OFFICE HOURS:

SEMESTER:

### I. COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDIT HOURS:

#### **SCE 3320C – TEACHING BIOLOGY AND LIFE SCIENCE IN THE MIDDLE SCHOOL W/ PRACTICUM – BS – 4 CREDITS W/ PRACTICUM**

This course covers techniques and materials of instruction for teaching science in the middle grades (5-9). In this course students learn principles of effective curriculum design and assessment and apply these principles by designing and developing interactive biological and life science curriculum projects and assessments for middle school students. This course addresses specific Sunshine State Standards subject matter competencies and pedagogy pertinent to the discipline and required for certification. This course requires thirty-five hours of practicum in a 5-9 classroom setting.

### II. PREREQUISITES FOR THE COURSE:

Admission into the Bachelor of Science in Education program or special permission from the Associate Dean of the School of Education.

### III. GENERAL COURSE INFORMATION: Topic Outline.

- Major concepts as identified by Big Ideas in the Grade 6-8 Sunshine State Standards for Science:
  - The Practice of Science
  - The Characteristics of Scientific Knowledge
  - Energy Transfer & Transformations
  - Diversity & Evolution of Living Organisms
  - Organization & Development of Living Organisms
  - Forms of Energy
  - Heredity & Reproduction
  - Interdependence
  - Science & Society
  - Properties of Matter
  - Changes in Matter
  - Matter and Energy Transformations
- Current issues and trends in science education and research that impacts the middle school science curriculum (e.g. TIMSS report; NAEP results; Science FCAT; ethical science research; content area literacy, effective learning environments, technology and electronic resources, etc.)
- Effective, research-based assessment procedures and their application in teaching middle school science
- Problem-solving and critical thinking processes; communication and instructional strategies; technology concept

**IV. LEARNING OUTCOMES AND ASSESSMENT:****GENERAL EDUCATION COMPETENCIES:**

General education courses must meet at least four out of the five following outcomes. All other courses will meet one or more of these outcomes.

*Communication (COM):* To communicate effectively using Standard English (written or oral).

*Critical Thinking (CT):* To demonstrate skills necessary for analysis, synthesis, and evaluation.

*Technology/Information Management (TIM):* To demonstrate the skills and use the technology necessary to collect, verify, document, and organize information from a variety of sources.

*Global Socio-cultural Responsibility (GSR):* To identify, describe, and apply responsibilities, core civic beliefs, and values present in a diverse society.

*Scientific and Quantitative Reasoning (QR):* To identify and apply mathematical and scientific principles and methods.

**ADDITIONAL COURSE COMPETENCIES:**

At the conclusion of this course, students will be able to demonstrate the following additional competencies:

<b>LEARNING OUTCOMES</b>	<b>ASSESSMENTS</b>	<b>GENERAL EDUCATION COMPETENCIES</b>
The teacher candidate will be able to evaluate current issues and trends in science education, including research that impacts the middle grades science curriculum, and create appropriate learning opportunities for students in a program of ongoing professional development.	Science Unit with Lesson Plans  Portfolio Resources  Classroom Teaching  Action Research Plan	QR
The teacher candidate will be able to construct a middle grades science curriculum that accommodates appropriate bodies of knowledge identified in the Grade 5-9 Sunshine State Standards for Life Science, Physical Science and the Nature of Science.	Science Unit with Lesson Plans  Classroom Teaching	COM
The teacher candidate will be able to create and implement effective, research-based assessment procedures for teaching middle grades science.	Science Unit with Lesson Plans  Classroom Teaching	COM
The teacher candidate will be able to integrate the following learning opportunities in the middle grades science curriculum: problem-	Science Unit with Lesson Plans	

solving and critical thinking processes; communication and instructional strategies; and technology concepts and their application.	Classroom Teaching	COM
	Portfolio Resources	
	Action Research Plan	QR

**SPECIFIC COURSE COMPETENCIES:**

**CRITICAL TASK ASSIGNMENTS AND/OR ASSESSMENTS**

At the conclusion of this course, teacher candidates will demonstrate competency in the following Pre-professional Florida Educator Accomplished Practices (FEAPs), Sunshine State Standards, Professional and Subject Area Educator Competencies and Skills, ESOL Performance Standards, ESOL k-12 Competencies, Reading Competencies and elements of the Uniform Core Curriculum.

**FSAC – Florida Subject Area Competencies and Skills**

**FEAP – Florida Educator Accomplished Practices**

**PEC – Professional Education Competencies**

**ESOL P.S. – English Speaker of Other Languages Performance Standards**

**ESOL K-12 – English Speakers of Other Languages K-12 Competencies**

*\* The numbers and letters in the graph below correspond to the standards, indicators and competencies found above.*

COURSE	FSAC	CRITICAL TASKS	FEAP/ PEC	READING	ESOL P.S.	ESOL K-12 COMP	GEN ED COMP
SCE 3320C	<b>Middle Grades General Science 1-9</b>	Science Unit with Lesson Plans	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12		14.3, 16.2, 18.1	3, 4, 6	
		Portfolio of Science Resources	2, 4, 7, 8, 10, 12				
		Classroom Teaching	1, 3, 5, 6, 7, 9, 11				COM
		Action Research	3, 5, 7, 8, 9, 10, 11				QR

**RELATIONSHIP OF COURSE TO PROGRAM GOALS AND NATIONAL SPECIALIZED PROGRAM ASSOCIATION STANDARDS:**

This course is part of the Edison State College, Baccalaureate program in Education, for teacher licensure in the State of Florida in the area of Elementary Education K-6, Secondary Biology or Mathematics. This program Complies with the standards for teacher licensure established by the Florida Department of Education and covers the Preprofessional Florida Educator Accomplished Practices, Sunshine State Standards, Professional Educator Competencies and Skills, ESOL Performance Standards, ESOL K -12 Standards, and Reading Competencies.

National Curriculum Standards will also be introduced and referred to in this course. Standards for Elementary Education are based on the Association of Children’s Education International. Standards for the English Language Arts are based on the National Council of Teachers of English. Principles and

Standards for School Mathematics (Standards 2000 Project) are based on the National Council of Teachers of Mathematics. The Physical Education Content Standards are based on the National Association for Sport and Physical Education. The National Health Education Standards (2007) are based on the American Cancer Society and Project 2061 is based on the American Association for the Advancement of Science. The Standards and Position Statement on Social Studies is based on the National Council for the Social Studies.

## V. DISTRICT-WIDE POLICIES:

### PROGRAMS FOR STUDENTS WITH DISABILITIES

Edison State College, in accordance with the Americans with Disabilities Act and the college's guiding principles, offers students with documented disabilities programs to equalize access to the educational process. Students needing to request an accommodation in this class due to a disability, or who suspect that their academic performance is affected by a disability should contact the Office of Adaptive Services at the nearest campus.

Lee Campus	Taeni Hall S-116A	(239) 489-9427
Charlotte Campus	Student Services SS-101	(941) 637-5626
Collier Campus	Admin. Bldg. A-116	(239) 732-3918
Hendry/Glades Ctr.	LaBelle H.S.	(863) 674-0408

## VI. REQUIREMENTS FOR THE STUDENTS:

### REFLECTIVE JOURNAL & ACTION RESEARCH PLAN

Science teacher candidates will write a brief weekly journal entry based on class activities and discussion, field experiences, and course reading. Entries will be in the style of a reflective journal and be no less than 250 words in length. Entries should be emailed to the instructor no later than the end of each Friday. Candidates will design (and carry out preliminary components of) an Action Research Plan. The plan topic will derive from the interests/concerns developed while writing the reflective journal entries. Candidates will propose a research topic for instructor approval. Final plans will include components that can be reasonably completed by the end of the course, depending on the nature of the research and accommodation in the field experience. **(FEAP 3, 5, 7, 8, 9, 10, 11)**

**Science Unit:** Student candidates will plan and develop a science unit for middle grades students based on the Sunshine State Standards. Candidates will select a topic that can be used in their practicum classrooms and obtain approval from the instructor (Unit Proposal). The unit plan will be developed according to planning strategies described in the text. The unit should identify all lessons needed to teach the complete unit and at least five (5) lessons should be fully developed using one of the Learning Cycle formats (Five Es, Seven Es, or Three Phase). One of the developed lessons will be presented in class and you will teach at least five lessons in your practicum (see below). **(FEAP 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12)**

- **Unit Rationale & Overview:** Provide a rationale for teaching this unit at the identified grade level. Unit rationales should be firmly based in the Sunshine State Standards; however, any other justifications for teaching the Unit topic should be identified. Provide a descriptive overview of the unit, summarizing lesson objectives and assessment. A concept map can be used to show connectivity of unit concepts.
- **Unit and Lesson Objectives:** General unit objectives as well as specific lesson objectives should be identified and matched to specific assessment. Objectives should use action verbs (see lists).
- **Assessment:** Formative assessments should be identified for each phase of each developed lesson. Formative assessments should include (a) observations, interviews, discussions; (b) written assessments; (c) performance assessments; (d) graphics; and (e) self-assessments. Lesson also should include summative assessments when appropriate.

- **Problem-based or Project-based Learning:** At least one developed lesson should include a problem-based learning activity. An alternative to problem-based learning is to develop a project-based learning lesson or unit. A lesson of this type is preferred for class presentation.
- **Differentiated Instruction:** All developed lesson plans should exemplify strategies and techniques for differentiated instruction, such as Gardner’s Multiple Intelligences, Bloom’s Taxonomy, Marzano’s Strategies, and so on. Also, accommodations should be identified and incorporated for English Language Learners and Special Needs students. **(FEAP 1, 2)**
- **Technology:** At least one of the developed lesson plans should incorporate technology-based instruction.

**Classroom Teaching:** Candidates will teach at least five science lessons during the practicum, preferably those developed for the unit. However, candidates should teach their first science lesson as soon as possible, after negotiating an acceptable topic with the practicum teacher. This first lesson does not have to be from the Unit. Also, negotiate early a unit topic before developing the Unit and Lesson Plan. Candidates will submit a written reflection on their science teaching experience, as well as describing observed science lessons. For candidate lessons, describe any difficulties in teaching lessons and how issues were resolved or lesson modified. Also describe how lessons should be improved for future teaching. Describe the results of formative assessments, as well as any summative assessments. For observed lessons, identify differentiated instructional practices used, assessments (formative and summative), classroom management techniques, level of questioning, and cognitive complexity of the activities, technology integration, and attention to the Sunshine State Standards. Explain any differences in observed and candidate teaching outcomes. **(FEAP 1, 3, 5, 6, 7, 9, 11)**

**Portfolio of Science Resources:** Each candidate will create a digital portfolio of science resources with the following components. Some resources can and should be used in the Unit lessons. **(FEAP 2, 4, 7, 8, 10, 12):**

- **Science Starters:** Describe at least 10 starter activities for the opening of class periods that require critical thinking skills. Science Starters should set the tone for the class and should be pertinent to the content being learned each day. Starter activities can be used in lessons developed for the unit.
- **Resource Selection & Evaluation:** Identify and evaluate a variety of at least 20 resources that include: books on science content and teaching; articles from the middle school science practitioner’s journal (NSTA’s *Science Scope*, <http://www.nsta.org/middleschool/>) and other articles on science content and teaching; activities for learning science; technology-based resources such as webquests, simulations, and online data-collection resources; guest speakers; possible field trip locations; and so on. Find and use an appropriate evaluation format and provide an annotated bibliography of resources with evaluation results.
- **Concept Mapping:** Design at least five (5) concept maps using Inspiration (or other appropriate) software. Concept maps can be used to introduce topics, assess learning, or provide instruction and should be used in at least one developed lesson or in the Unit plan.
- **Parent Involvement:** Candidates will describe at least five (5) resources involving parent/family involvement, especially relating to learning science. Consider after school programs and informal science learning opportunities. Integrate these resources in the unit lessons where appropriate.

### **Exams and Quizzes**

Exams and quizzes will focus on course reading assignments and classroom discussions. Quizzes at the beginning of class will determine comprehension of assigned reading material.

**Class Participation/Attendance:** Students are expected to be on time to each class and actively engaged in all class activities.

**VII. ATTENDANCE POLICY:**

After four classroom hour absences, teacher candidates will not be permitted to return to class without written permission from the instructor (attendance form, A-1 will be kept on file). Each absence thereafter may result in a 10% reduction of overall grade. Issues of appeal will be reviewed by the Discipline Chair of Education and may be forwarded on to the Education Review Committee, if necessary.

**VIII. GRADING POLICY:**

90 – 100	=	A
80 – 89	=	B
79 – 70	=	C
60 – 69	=	D
Below 60	=	F

**\* All Critical Tasks must be passed with a 75% or better.**

Work submitted late will be assessed a 10% penalty.

(Note: The “incomplete” grade [“I”] should be given only when unusual circumstances warrant. An “incomplete” is not a substitute for a “D,” “F,” or “W.” Refer to the policy on “incomplete” grades.)

**IX. REQUIRED COURSE MATERIALS:**

**X. RESERVED MATERIALS FOR THE COURSE:**

**XI. CLASS SCHEDULE:**

This section includes assignments for each class meeting or unit, along with scheduled Learning Resource Center (LRC) media and other scheduled support, including scheduled tests.

**XII. ANY OTHER INFORMATION OR CLASS PROCEDURES OR POLICIES:**

**Critical Task Revision Policy:** All Critical Task assignments must be completed with a 75% or better in order to graduate. Any Critical Task receiving a grade less than 75% must be resubmitted to the instructor. The assignment or assessment must be revised and resubmitted within two weeks of the assignment being returned to the teacher candidate. For example, if an assignment is returned by the professor to the teacher candidate on October 15th, the assignment must be resubmitted by October 29th. All Critical Tasks must be successfully completed with 75% or better prior to final internship. Revising a Critical Task may not necessarily result in a change to the course grade.