FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Undergraduate Programs

UUPC Approval 3-24-25
UFS Approval _____
Banner _____
Catalog _____

Department Curriculum and Instruction

College Education

Program Name

B.A. Elementary Education w/ESOL and Reading Endorsements
B.A.E. Elementary Education w/ESOL and Reading Endorsements

☐ **New Program***

☑ **Change Program***

Effective Date
(TERM & YEAR)
Fall 2025

Please explain the requested change(s) and offer rationale below or on an attachment.

The B.A. and B.A.E. Elementary Education with ESOL and Reading endorsement programs will reduce the number of credits of 123 to a total of 120 credits. The proposed update will require the elimination one course in an effort to reduce overall program credits to align with the Florida Department of Education (FLDOE) 120-credit requirement.
The department would like to delete EDF 3430 from their Elementary Education programs. After much research, committee meetings, and faculty input regarding this change, the department has concluded that the specific FEAPs covered in EDF 3430 (Educational Measurement and Evaluation) will be covered in other courses (specifically, MAE 4350 and SCE 4350--both methods courses).

The department is also taking into consideration the preparedness of the students for the FTCE exams, ensuring that competencies that are currently taught in EDF 3430 will be taught (or already are taught) in other courses. MAE 4310 (Math Content), SCE 4113 (Science Content) and both methods courses (MAE 4350 and SCE 4350), have been identified as appropriate courses to cover these state competencies. EDG 3324 (Elem. Practicum) and EDE 4943 (Elem. Stu. Teach) also cover a number of these competencies, as evidenced by the attached syllabi.

Additional Note: The department has added additional updates to the catalog in regards to summer courses. EDG 3324 and TSL 4081 are no longer offered in summer. EDF 2005 is now offered in summer. Please see the catalog below for the proposed changes.

*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

Faculty Contact/Email/Phone

CharlesDukes/cdukes@fau.edu

Consult and list departments that may be affected by the change(s) and attach documentation

Educational Leadership and Research Methodology

Approved by	***Date***
Department Chair Charles Dukes	02/27/2025
College Curriculum Chair Yash	03/03/2025
College Dean	03/04/2025
UUPC Chair Korey Sorge	3-24-25
Undergraduate Studies Dean Dan Meeroff	3-24-25
UFS President	
Provost	

Email this form and attachments to mjenning@fau.edu seven business days before the UUPC meeting.

ELEMENTARY EDUCATION (K-6) WITH ESOL AND READING ENDORSEMENTS
BACHELOR OF ARTS (B.A.)
BACHELOR OF ARTS IN EDUCATION (B.A.E.)

Admission Requirements

All students seeking admission to the undergraduate program in Elementary Education must first meet the University's general upper-division admission requirements, as well as the lower-division general preparation requirements listed previously in this College of Education section. In addition, each applicant must:

1. Have attained an overall grade point average of 2.5 or higher;
2. Present passing scores on all sections of the General Knowledge Test and disposition screening;
3. Be recommended for admission to the program by the Department of Teaching and Learning and approved by the Office for Academic and Student Services;
4. Be assigned to and programmed by an academic advisor.

Students must be formally admitted into the College of Education prior to enrolling in RED 4308, RED 4552, RED 4750, EDG 3324 and TSL 4081. During the first week of these courses, students must show a photocopy of the official program signed by the student and faculty advisor.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the General Education Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the *Transition Guides* .

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

Course Requirements
All Elementary Education majors entering the program are required to enroll in courses in a prescribed sequence with specific prerequisites. Students should be programmed as soon as possible to receive appropriate advising. Students must be admitted and programmed prior to the second semester of enrollment. Students who complete all program requirements will be eligible for both ESOL and Reading Endorsements upon graduation.

Scope and Sequence of Elementary Education Coursework – ~~63~~ 60
(after lower-division general preparation requirements)

First Semester *(prerequisite courses)*	
Language Arts and Literature: Birth through Grade 8	LAE 4353
Introduction to Theories and Practices of TESOL	TSL 4080
Early Program Courses *(May be taken at any time during junior or senior years.)*	
Art: Elementary School	ARE 4313
~~Educational Measurement and Evaluation~~	~~EDF 3430~~
Applied Learning Theory	EDF 3210
Equity Issues in Multicultural Education	EDF 3203
Inclusive Education for General Educators	EEX 4070*
Educational Technology for 21st Century Teaching	EME 4312
Mathematics Content and Standards for K-6 Teachers	MAE 4310
Science Content and Standards for K-6 Teachers	SCE 4113
Mid-Program Courses *(May not be taken during the first semester of enrollment but must be com*	
prior to student teaching. LAE 4353, TSL 4080, MAE 4310, and SCE 4113 are prerequisites for the c	
Principles and Methods: K-9 School Math	MAE 4350
Reading Development 1: Birth through Grade 3	RED 4308 +
Principles and Methods: K-9 School Science	SCE 4350
K-9 Social Studies	SSE 4150
Semester Prior to Student Teaching	
Reading Development 2: Grades 3 through 8	RED 4750 +
Reading Diagnosis and Remediation: Pre-K through Grade 8	RED 4552 +
TESOL Issues and Practices	TSL 4081*+

Effective Teaching Practices	EDG 3324**+
Classroom Management for Inclusive Elementary Schools	EEX 4616
Final Semester *(All program courses must be completed prior to student teaching.)*	
Supervised Literacy Practicum	RED 4348*
Student Teaching - Elementary	EDE 4943 or
One-Year Student Teaching Option (both semesters)	
Student Teaching (fall semester)	EDE 4945
Student Teaching (spring semester)	EDE 4945

* Denotes field experience credits.
** Denotes 90 field experience hours.
+ Students must be admitted and programmed into the College of Education prior to enrolling in these courses.

Students who complete all program requirements will be eligible for both ESOL and Reading Endorsements upon graduation.

Notes to read CAREFULLY:

1. EDF 2005, Introduction to the Teaching Profession; EDF 2085, Introduction to Diversity for Educators; and EME 2040, Introduction to Technology for Educators; or community or state college equivalents are program requirements.
2. See the General Education lower-division requirements elsewhere in this catalog.
3. Grading policy: Students must pass ALL teacher preparation courses with a grade of "C" or better. A "C-" is not considered a passing grade, and the course must be retaken.
4. An active LiveText account is a requirement for all program coursework.
5. Out-of-state transfer students must take EDG 3324 at FAU.
6. EDG 3324 requires **one additional day per week** in a public school setting during the fall and spring semesters.
7. ~~EDG 3324 (summer 2: Davie campus), TSL 4081 (summer 2) **may** be offered on a **limited basis** in the summer **by permission only.** Students should plan to enroll in these courses during the fall and spring semesters.~~
8. ~~EDF 2005 is not offered in the summer term.~~
9. Students must pass RED 4308 and RED 4750 prior to taking RED 4552. No literacy courses (LAE 4353, RED 4308, RED 4750) may be taken after RED 4552.

10. RED 4750 may be taken concurrently with RED 4308. RED 4750 may not be taken before RED 4308.
11. Students must pass TSL 4080 prior to taking TSL 4081. TSL 4080 may not be taken concurrently in one semester with TSL 4081.
12. EDG 3324 grading policy: If a student earns a "D" or an "F" in the field evaluation component or a "D" or an "F" in the coursework component, then the highest grade the student can receive for the course is a "C-." A "C-" is not considered a passing grade, and the course must be retaken. Students cannot take the EDG 3324 course more than twice.
13. Field experiences in school settings are required in some teacher preparation methods courses.
14. The following must be completed and passed prior to receiving a placement for student teaching: all program courses and other requirements, the professional and subject sections of the FTCE and all appropriate sections of the General Knowledge Test.
15. EDE 4943, Student Teaching, requires that the student is in a public school setting **five full days** a week during the school day in fall or spring semester.
16. State of Florida teacher certification requires all applicants to be fingerprinted and screened by the FBI for felony convictions. School districts also require a fingerprint check and screening for school-based clinical teaching assignments. Students with felony records will NOT be permitted to be placed in internship settings and will NOT be permitted to successfully complete the program of studies for their degree and/or certification. Consequently, students with a record of felony conviction(s) will NOT be eligible for admission to a teacher preparation program at Florida Atlantic University.
17. For assistance contact the Office for Academic and Student Services:

    Boca campus, 561-297-3570
    Davie campus, 954-236-1028
    Jupiter campus, 561-799-8135

Bachelor's Degree in Elementary Education with Reading and ESOL Endorsement

Department of Curriculum and Instruction
College of Education
Florida Atlantic University

The Department of Curriculum and Instruction offers a Bachelor's Degree in Elementary Education with Reading and ESOL endorsements for grades K-6. Courses leading to an elementary education degree are offered hybrid (online and face to face).

PROGRAM OF STUDIES

Program Prerequisite courses (lower division requirements)

EDF 2005	**(3 credits) Intro to Teaching Profession (*Requires 15-hour field component*)**
EDF 2085	(3 credits) Intro to Diversity for Educators (*Requires 15-hour field component*)
EME 2040	(3 credits) Intro to Technology for Educators

First Semester

EDF 3210	(3 credits) Applied Learning Theory
LAE 4353	(3 credits) Language Arts and Literature: Birth – Grade 8
TSL 4080	(3 credits) Intro to Theories and Practices of TESOL
EDF 3203	(3 credits) Equity Issues in Multicultural Education

All-Program Courses (may be taken at any time during junior or senior years)

~~EDF 3430~~	~~(3 credits) Educational Measurement and Evaluation~~
EME 4312	(3 credits) Ed. Teach. for the 21st Century Teacher
ARE 4313	(3 credits) Art: Elementary School
MAE 4310	(3 credits) Mathematics Content and Standards for K-6 Teachers
SCE 4113	(3 credits) Science Content and Standards for K-6 Teachers
EEX 4070*	(3 credits) Inclusive Education for General Educators

Mid-Program Courses (These courses may not be taken during the first semester enrollment and must be completed by the final semester prior to student teaching. LAE 4353 and TSL 4080 are prerequisites for the courses below).

RED 4308 (P)	(3 credits) Reading Development I: Birth – Grade 3
RED 4750 (P)	(3 credits) Reading Development II: Grades 3 – 8
MAE 4350	(3 credits) Principles & Methods: K-9 School Math
SCE 4350	(3 credits) Principles & Methods: K-9 School Science
SSE 4150	(3 credits) K-9 Social Studies
RED 4552 (P)	(3 credits) Reading Diagnosis & Remediation: Pre-K -- Grade 8
TSL 4081*(P)	**(3 credits) TESOL Issues & Practices**

Must be taken semester Prior to Student Teaching

EDG 3324 (P)**	**(3 credits) Effective Teaching Practices**
EEX 4616* (P)	**(3 credits) Classroom Management for Inclusive Elem Schools**

Final Semester (All program courses must be completed prior to student teaching)

EDE 4943	**(3-9 credits) Student Teaching-Elementary--Fall or Spring Semester**
RED 4348	**(3 credits) Supervised Literacy Practicum**

Courses in BOLD are not offered in the summer.

* Denotes Field Experience Hours

** Denotes 90 Field Experience Hours

(P) Students must be admitted and programmed into the College of Education prior to enrolling in these courses.

ADMISSION REQUIREMENTS

All students seeking admission to the undergraduate program in Elementary Education must first meet the University general upper-division admission requirements as well as the lower-division general preparation requirements (see catalog). In addition, each applicant must:

1. Have attained an overall grade point average of 2.5 or higher;
2. Have passed ALL sections of the General Knowledge Exam;
3. Be assigned to and programmed by an academic advisor; and
4. Be recommended for admission to the program by the Department of Curriculum and Instruction and be approved by the Office for Academic Student Services.

Students must be formally admitted into the College of Education prior to enrolling in RED 4308, RED 4750, EDG 3324, RED 4552, EEX 4616, and TSL 4081. During the first week of these courses, students must show a photocopy of the official program signed by the student and the faculty advisor.

Course Number/Subject	Notes to Read Carefully
1. Live Text	An active Live Text account is requirement for all program coursework
2. EDF 2005, EDG 2085, EME 2040	Or community college equivalents are program prerequisite requirements
3. See Undergraduate Catalog	For General Education Lower Division Preparation requirements
4. Grading Policy	Students must pass ALL Teacher Education courses with a **"C" or better**. A **"C-"** is not considered a passing grade, and the course must be retaken
5. Out-of-State Transfer Students	Must take **EDG 3324** at FAU
6. EDG 3324	Requires an additional day per week in a public school setting during the fall and spring semesters
7. EDG 3324 and TSL 4081 **EDG 3324 and EEX 4616**	Are not offered in the summer term Are by Permission only (Students should plan to enroll in these courses during the fall and spring semesters)
8. EDF 2005	Is not offered in the Summer Term
9. RED 4308	Students must pass **RED 4308** prior to taking **RED 4750**. **RED 4308** may not be taken concurrently in one semester with **LAE 4353**. **RED 4750** may be taken prior or concurrently with **RED 4552**. No literacy course (**LAE 4353**, **RED 4308**, **RED 4750**) may be taken after **RED 4552**.
10. TSL 4080	Students must pass **TSL 4080** prior to taking **TSL 4081**. **TSL 4080** may not be taken concurrently in one semester with **TSL 4081**.
11. Field Experience in School Settings	Are required in some Elementary Education methods courses
12. Student Teaching	All program courses must be completed prior to being placed for student teaching. Both Professional and Subject sections of the FTCE must be passed prior to being placed for student teaching. All appropriate sections of the General Knowledge Examination must be passed prior to student teaching. Is not offered in the summer term.
13. EDE 4943 (Student Teaching)	Requires that the student is in a public school setting five full days a week during the school day in fall or spring semester. Not offered in the summer.
14. State of Florida Teacher Certification	Students will be guided during student teaching towards applying and finalizing their state teaching certificate.
15. Contact the Office for School Engagement (OSE) for badge and field placement questions: https://www.fau.edu/education/students/school-engagement/	Requires all applicants to be fingerprinted and screened by the FBI for felony convictions. School districts also require a fingerprint check and screening for school-based clinical teaching assignments. Students with felony records will NOT be permitted to be placed in internship settings and will NOT be permitted to successfully complete the program of studies for their degree and/or certification. Consequently, students with a record of felony convictions(s) will NOT be eligible for admission to a teacher preparation program at Florida Atlantic University.
16. Contact the Office of Academic and Student Services (OASS) for advising questions: https://www.fau.edu/education/students/oass/	**Boca Raton Campus (561) 297-3570 / Broward Campus (954) 236-1028 / John D. MacArthur Campus (561) 799-8135**

From: Robert Shockley <SHOCKLEY@fau.edu>
Date: Tuesday, February 11, 2025 at 5:36 PM
To: Charles Dukes <cdukes@fau.edu>
Cc: Cristobal Salinas <salinasc@fau.edu>, Maria Vasquez <mvasque3@fau.edu>
Subject: Fw: EDF 3430

Charles,

This is to inform you that the ELRM department faculty are aware of the Curriculum and Instruction proposal to drop the EDF 3430 course as a requirement of the Elementary Education program. While it is not our intent to actively oppose this proposal given the mandate of the BOG to reduce credit hours in the program, we do have serious concerns about the ramifications of this proposal. Our department response was shared with you Oct. 4th. The response is as follows:

From: Robert Shockley
Sent: Friday, October 4, 2024 11:44 AM
To: Charles Dukes <cdukes@fau.edu>
Cc: Maria Vasquez <mvasque3@fau.edu>; Cristobal Salinas <salinasc@fau.edu>
Subject: EDF 3430

Charles,

This is to acknowledge our receipt of your email notifying us of the Department of Curriculum and Instruction's intent to drop EDF 3430, Educational Measurement and Evaluation, as a required

course in your elementary teacher education program. I have shared your communication with EDLRM faculty. We understand the mandate that the faculty must reduce credit hours in this program. However, we are concerned about the unanticipated consequences of this decision.

As you know, our teacher education candidates are required to pass all areas of the FTCE exam as delineated in the Florida Department of Education program approval standards. The Florida competencies and skills that are tested in this exam are required by the Florida Department of Education to be taught and assessed in the teacher education program. Currently, approximately 20% of the Professional portion of the FTCE examination is covered in EDF 3430. Also, two Competency Assessments (CA) are embedded in this course and student performance data stored in Livetext. Simply stated, where will these competencies and skills be taught and assessed in the revised program? With such a significant portion of the content of this exam included in the EDF 3430 course, what are the plans of your department to mitigate the potential negative impact of this decision?

We recognize that the Florida Department of Education does not require specific courses. However, they do require that the Florida competencies and skills be taught and assessed in program delivery. Additionally, the FTCE serves as a high stakes' indicator of student performance and program quality. With the current # 1 ranking of FAU's teacher education program, care must be taken to minimize the negative impact of this decision. Bob

Robert Shockley, Chair

Educational Leadership and Research Methodology

ED 47 Room 260A

777 Glades Rd.

Boca Raton, FL 33431

(561)297-3551

FAU
FLORIDA ATLANTIC UNIVERSITY
College of Education

From: Robert Shockley
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Robert Shockley, Chair

Educational Leadership and Research Methodology

ED 47 Room 260A

777 Glades Rd.

Comprehensive response to consultation noted above:

The tables below indicate EDF 3430 FEAPs and course objectives. The right column of both tables indicate which courses will cover specific FEAPs/objectives by removing EDF 3430 from the Elementary Education programs.

Table 1

Course FEAPs (EDF 3430)	Course(s) where FEAP will be covered
FL-FAU-FEAP-2013.A.1.a Designs and aligns formative and summative assessments that match learning objectives and lead to mastery;	SCE 4350 MAE 4350
FL-FAU-FEAP-2013.A.4.a Analyzes and applies data from multiple assessments and measures to diagnose students' learning needs, informs instruction based on those needs, and drives the learning process;	EDG 3324 EDE 4943
FL-FAU-FEAP-2013.A.4.b Aligns instruction with state-adopted standards at the appropriate level of rigor;	EDG 3324 EDE 4943
FL-FAU-FEAP-2013.A.4.d Modifies assessments and testing conditions to accommodate learning styles and varying levels of knowledge;	SCE 4350 MAE 4350
FL-FAU-FEAP-2013.B.1.b Examines and uses data-informed research to improve instruction and student achievement;	SCE 4350 MAE 4350

Table 2

Course Objectives (EDF 3430)	Course(s) where objective will be covered
Define and explain the relationships between and among the concepts of assessment, testing, measurement, evaluation, and instruction.	MAE 4350
Explain the principles that guide educators in selecting, developing, and using educationally meaningful assessments.	MAE 4350

Describe and explain how educators use assessment results to make a wide range of educational decisions.	MAE 4350
Explain criterion-referenced framework and norm-referenced assessment framework (e.g. FSA based on Florida Standards) and how they complement one another in educational decision making.	MAE 4350
Describe how learning targets help to direct the instructional process and assessment development process.	EDG 3324 EDE 4943
Distinguish between content and performance standards, general and specific learning targets, and developmental and mastery learning targets.	SCE 4350
Write specific learning targets for specific subject areas that meet the three basic criteria for writing educational objectives	SCE 4350 MAE 4350
Explain how taxonomies of thinking skills, lower and higher order, are useful for developing learning targets and performance tasks.	SCE 4350 MAE 4350
Explain the concept of validity and how it applies to all educational assessment results.	MAE 4350
Explain the concept of reliability and how it relates to inconsistency in students' assessment results.	MAE 4350
Describe the six areas of professional assessment responsibility for teachers including effective communication of assessment results and instructional planning.	EDG 3324
Craft a formative and summative assessment plan for a marking period and for one instructional unit.	EDG 3324 EDE 4943
Explain how to integrate assessment and instruction through an assessment plan.	SCE 4350 MAE 4350
Demonstrate an understanding of accommodation and modification for students	EDG 3324

with disabilities during assessments.	
Write high-quality objective test items, essay questions and performance tasks that are free from flaws and that assess a variety of thinking skills including critical thinking.	SCE 4350 MAE 4350
Distinguish performance tasks from other assessment formats and identify alternative assessments.	SCE 4350 MAE 4350
Describe the stages and steps necessary to craft high-quality performance tasks.	MAE 4350
Describe how to prepare students for upcoming assessments and how to evaluate and grade students' progress.	MAE 4350
Name and describe the major categories of standardized achievement tests.	MAE 4350
Explain the advantages of each type of standardized achievement test.	MAE 4350

FLORIDA ATLANTIC UNIVERSITY

EDE 4943-XXX XXXXX

Student Teaching-Elementary

3 - 9 Credit(s)

Semester 20XX - 1 Full Term

Instructor Information

Email:
Office:
Office Hours:
Phone:

Course Description

Student Teaching-Elementary
Prerequisite: Permission of instructor
Course provides a one-semester clinical experience in an approved school setting. Emphasis is on the Florida Educator Accomplished Practices and a state-approved assessment system. Five day/full day clinical experience required. Grading: S/U
Variable title

Prerequisites: Acceptance into the College of Education, official acceptance (program sheet with signatures) into a department's program of study within the College of Education, completion of all required course work (except student teaching/internship and reading practicum (ELEM Majors)) and passing scores on the appropriate sections of the Florida Teacher Certification Exams (FTCE) – Professional Education (PEd), the Subject Area Exam (SAE) required for the student's degree, and the General Knowledge Exam (GK).

The Office for School Engagement assigns the student specialized and professional field experiences. Supervision is provided by qualified personnel on both the local and university levels.

The grades of
“S” and “U” are used to indicate satisfactory or unsatisfactory performance in student teaching/internship.

Co-Requisites: Elementary Education Majors must take RED 4348 - Supervised Reading Practicum with EDE 4943.

Instructional Method

In-Person
Traditional concept of in person. Mandatory attendance is at the discretion of the

instructor.

Required Texts/Materials

Live Text is Required to Submit Student Teaching Assessments

Recommended Readings and Materials

Marzano Focused Teacher Model

Florida Educator Accomplished Practices

Florida State Standards for K-12 Classrooms

Course Objectives/Student Learning Outcomes

Student Teachers will demonstrate proficiency in applying skills and behaviors in effective teaching, management, and collaboration. Teacher Candidates must demonstrate the Florida Educator Accomplished Practices through observations, coursework and interactions with stakeholders.

By the end of the course, teacher candidates shall successfully demonstrate the competencies as outlined in the Florida Educator Accomplished Practices.

The FEAP are based upon and further describe the following four (4) essential principles:

1. The effective educator creates a culture of high expectations for all students by promoting the importance of education and each student's capacity for academic achievement.
2. The effective educator demonstrates deep and comprehensive knowledge of the subject taught.
3. The effective educator exemplifies the standards of the profession.
4. The effective educator acknowledges that all persons are equal before the law and have inalienable rights, and provides instruction that is consistent with the principles of individual freedom as outlined in section 1003.42(3), F.S.

Elements of the Florida Educator Accomplished Practices (connected with the Professional Education Competencies):

1. Instructional Design and Lesson Planning **(PE 1.1, PE 1.2, PE 1.3, PE 1.4 PE 1.5, PE 1.6, PE 1.7, PE 1.8, PE 1.9, PE 1.10)**

2. The Learning Environment **(PE 2.1, PE 2.2, PE 2.3, PE 2.4, PE 2.5, PE 2.6, PE 2.7, PE 2.8)**

3. Instructional Delivery and Facilitation **(PE 3.1, PE 3.2, PE 3.3, PE 3.4, PE 3.5, PE 3.6, PE 3.7, PE 3.8, PE 3.9, PE 3.10)**

4. Assessment Continuous Improvement, Responsibility, and Ethics **(PE 4., PE 4.2, PE 4.3, PE 4.4, PE 4.5, PE 4.6)**

5. Continuous Improvement, Responsibility, and Ethics **(PE 5.1, PE 5.2, PE 5.3, PE 5.4, PE 5.5, PE 5.6, PE 5.7)**

6. Professional Responsibility and Ethical Conduct **(PE 6.1, PE 6.2, PE 6.3, PE 6.4, PE 6.6)**

Additional Competencies addressed:

Knowledge of research-based practices for appropriate for teaching English Language Learners (ELLs) **(PE 7.1, PE 7.2, PE 7.3, PE 7.4, PE 7.5)**

Knowledge of effective literacy strategies that can be applied across the curriculum to impact student learning **(PE 8.1, PE 8.2, PE 8.3, PE 8.4, PE 8.5, PE 8.6)**

Elementary Education Competencies (included in Appendix A) are also aligned to the course objectives.

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

• Establish and implement academic standards.

• Establish and enforce reasonable behavior standards in each class.

• Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

Disability Policy

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/.

Academic Service Learning (AS-L) Designated Course

This course is designated as an "academic service-learning" course. The assistance you provide to the agency/organization during your academic service-learning (AS-L) experience is a service to the community and will allow you to apply knowledge from the course to local, national, and/or global social issues. Throughout this course you will be participating in AS-L activities while demonstrating civic engagement at campus, local, national, and/or global community levels. You will also reflect on your AS-L experience and the impact on the community as well as your professional development. Academic service-learning notation of hours will post to your transcript with submission of hours to your faculty instructor. An Academic Service-Learning

This course contains multiple assignments designed to help students conduct research and inquiry at an intensive level. If this class is selected to participate in the university-wide assessment program, students will be asked to complete a consent form and submit electronically some of their research assignments for review. Visit the Office of Undergraduate Research and Inquiry (OURI) for additional opportunities and information at www.fau.edu/ouri.

Projects are expected to achieve all six of the following Student Learning Outcomes (SLOs):

SLO 1: Knowledge. Students are expected to demonstrate content knowledge, and

knowledge of core principles and skills.

SLO 2: Formulate Questions. Students are required to formulate research questions, scholarly or creative problems in a manner appropriate to the planning discipline.

SLO 3: Plan of Action. Students are expected to develop and implement a plan of action to address research and inquiry questions or scholarly problems.

SLO 4: Critical Thinking. Students are expected to apply critical thinking skills to evaluate information, their own work, and the work of others.

SLO 5: Ethical Conduct. Students are expected to identify significant ethical issues in research and inquiry and/or address them in practice.

SLO 6: Communication. Students will convey all aspects of their research and inquiry (processes and/or products) in appropriate formats, venues, and delivery modes

Student Survey is required to be taken at the end of your AS-L project. Please visit the Weppner Center for LEAD & Service-Learning website, www.fau.edu/leadandserve, for the survey link and more information on FAU's Academic Service-Learning program.

Minimum project hours: 10

Assumption of Risk Statement for Student

I understand that there are certain physical risks inherent in every form of service-learning. I understand the risks associated with this Academic Service-Learning assignment. I nonetheless
agree to assume those risks so as to gain the benefits from participation in this valuable learning experience. I hereby release the State of Florida, the Board of Trustees, Florida Atlantic University and its agents and employees from any and all liability associated with my participation in this assignment at Florida Atlantic University.

If you are selected to participate in the university-wide Academic Service-Learning program, you will be required to document a minimum of 10 hours of student service to the community agency.

Course Evaluation Method

Assignments are measured by demonstrating the Florida Educator Accomplished Practices (FEAPs) indicators through observations, work submissions, and interactions with stakeholders.

Elements of the Florida Educator Accomplished Practices:

1. Instructional Design and Lesson Planning

2. The Learning Environment

3. Instructional Delivery and Facilitation

4. Assessment Continuous Improvement, Responsibility, and Ethics

5. Continuous Improvement, Responsibility, and Ethics

6. Professional Responsibility and Ethical Conduct

Requirements

Attendance at Student Teaching Orientation

Attendance and Punctuality Every Day (Max. 3 days absence with appropriate documentation) Attendance at all Professional Development Seminars.

Access to an Active LiveText Account.

Access to an iObservation Account

Assessments/Evaluations:

Observation of Teaching (formal and informal) - including lesson planning, instruction, coaching and feedback

Assessment Unit Cycle - including written lesson plans, observation, data analysis and

reflection. Recorded lessons and post-conferences

Mid-Term/Final Assessments

Teacher Candidates Are Also Evaluated Through daily Interactions with students, colleagues, administrators, etc.

OBSERVATIONS:

Four (4) by university supervisor

Four (4) by clinical educator

All observations are announced in advance

A minimum of (8) observations (no double-dipping)

MID-TERM / FINAL:

Mid-Term: A rating of "Not Using" or "Beginning" on any one indicator results in the development of a Remediation Plan

Final: Ratings of at least "Developing" or "Applying" on all indicators

Code of Academic Integrity

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 University Regulation 4.001.

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non attendance. 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-approved activities. Examples of University-approved
reasons for absences include participating on an 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 absences 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.

Students are expected to attend the student teaching orientation and all seminars.

Absences exceeding three (3) days from the placement site must be made up in a manner approved in advance by the university supervisor, clinical educator, and the Director of School Engagement. This will result in an extension of the student teaching experience beyond the designated time frame.

Religious Accommodation Policy Statement

In accordance with the 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 regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%

Letter Grade	Letter Grade
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%

D+	67 - 69%
D	63 - 66%
D-	60 - 62%
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

• There was a computational or recording error in the grading.

• The grading process used non-academic criteria.

• There was a gross violation of the instructor's own grading system.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

Students are expected to attend the student teaching orientation and all seminars.

Absences exceeding three (3) days from the placement site must be made up in a manner approved in advance by the university supervisor, clinical educator, and the Director of School Engagement. This will result in an extension of the student teaching experience beyond the designated time frame.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and
incorporated within a class lecture), labs, clinical presentations such as patient history, academic

exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. **[Policy 12.16 Artificial Intelligence]**

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the **Florida Atlantic Code of Academic Integrity, Regulation 4.001.**

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit **https://fau.edu/ai/citation**

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 therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Student Support Services and Online Resources

- Center for Learning and Student Success (CLASS)
- Counseling and Psychological Services (CAPS)
- FAU Libraries
- Math Learning Center
- Office of Information Technology Helpdesk
- Center for Global Engagement
- Office of Undergraduate Research and Inquiry (OURI)
- Science Learning Center
- Speaking Center
- Student Accessibility Services
- Student Athlete Success Center (SASC)
- Testing and Certification
- Test Preparation
- University Academic Advising Services
- University Center for Excellence in Writing (UCEW)
- Writing Across the Curriculum (WAC)

Appendix A

Connection to Competencies and Skills Required for Teacher Certification in Florida (26th Edition) FTCE Competencies

Subject Area/Section: Professional Education (83)

Major Competency: **(1) Knowledge of instructional design and planning (page 9 of 234)**

Sub-competencies:

1.1 Choose appropriate methods, strategies, and evaluation instruments (e.g., formative assessment, summative assessment) for assessing and monitoring student performance levels, needs, and learning. **(PE 1.1)**
1. 2 Select a variety of instructional practices, materials, and technologies that foster critical, creative, and reflective thinking aligned with state-adopted standards at the appropriate level of rigor. **(PE 1.2)**
1.3 Determine and apply learning experiences and activities that require students to demonstrate a variety of applicable skills and competencies. **(PE 1.3)**
1.4 Identify instructional resources based on measurable objectives, individual student learning needs, and performance levels. **(PE 1.4)**
1.5 Apply learning theories to instructional design and planning. **(PE 1.5)**
1.6 Determine long-term instructional goals and short-term objectives appropriate to student learning needs and performance levels aligned with state-adopted standards at the appropriate level of rigor. **(PE 1.6)**
1.7 Select and use culturally (i.e., regional, socio-economic, home language) responsive instructional materials and practices in planning. **(PE 1.7)**
1.8 Select lessons and concepts that are sequenced to activate prior knowledge and ensure coherence among the lessons. **(PE 1.8)**
1.9 Identify patterns of physical, social, and academic development to differentiate instructional design for student mastery. **(PE 1.9)**
1.10 Determine and apply appropriate intervention strategies based on individual student needs and data**. (PE 1.10)**

Major Competency: **(2) Knowledge of appropriate student-centered learning environments**

2.1 Select and use appropriate techniques for organizing, allocating, and managing the resources of time, space, and attention in a variety of learning environments (e.g., face-to face, virtual). **(PE 2.1)**
2.2 Apply appropriate strategies and procedures to manage individual student behaviors and group dynamics. **(PE 2.2)**
2.3 Use effective techniques for communicating high expectations to all students. **(PE 2.3)**
2.4 Evaluate and adapt the learning environment to accommodate the needs and backgrounds (i.e., cultural, home language, family) of all students. **(PE 2.4)**
2.5 Apply relevant techniques for modeling appropriate oral and written communication skills.**(PE 2.5)**
2.6 Determine skills and practices that encourage innovation and foster a safe climate of openness, inquiry, equity, and support for all students. **(PE 2.6)**
2.7 Apply information and communication technologies to maintain a student-centered learning environment. **(PE 2.7)**
2.8 Identify assistive technologies that enable all students to effectively communicate and achieve their educational goals. **(PE 2.8)**

Major Competency: **(3) Knowledge of instructional delivery and facilitation through a comprehensive understanding of subject matter**

3.1 Use motivational strategies to engage and challenge all students. **(PE 3.1)**
3.2 Apply appropriate instructional practices for developing content area literacy. **(PE 3.2)**
3.3 Analyze gaps in students' subject matter knowledge in order to improve instructional delivery. **(PE 3.3)**
3.4 Assess and adapt instruction to address preconceptions and misconceptions of subject matter. **(PE 3.4)**
3.5 Relate subject matter to life experiences and across disciplines. **(PE 3.5)**
3.6 Apply techniques for developing higher-order critical thinking skills. **(PE 3.6)**
3.7 Select varied strategies, resources, and appropriate technology for relevant and comprehensible instruction. **(PE 3.7)**
3.8 Identify differentiated instructional practices based on assessment of learning needs, individual differences, and continuous student feedback. **(PE 3.8)**
3.9 Determine and apply techniques to provide feedback in order to promote student Achievement. **(PE 3.9)**
3.10 Apply appropriate subject area activities to accommodate learning needs, developmental levels, and experiential backgrounds of all students. **(PE 3.10)**

Major Competency: **(4) Knowledge of various types of assessment strategies for determining impact on student learning**

4.1 Analyze assessment data from multiple sources to guide instructional decisions. **(PE 4.1)**
4.2 Select formative and summative assessments that match learning objectives leading to student mastery. **(PE 4.2)**
4.3 Use a variety of assessment tools to monitor student progress, achievement, and learning gains. **(PE 4.3)**
4.4 Determine appropriate assessments and testing conditions to accommodate learning styles and varying knowledge levels of students. **(PE 4.4)**
4.5 Identify ways to share the importance and outcomes of student assessment data with students and stakeholders. **(PE 4.5)**
4.6 Use technology to organize and integrate assessment data. **(PE 4.6)**

Major Competency: **(5) Knowledge of relevant continuous professional improvement**

5.1 Determine relevant and measurable professional development goals to strengthen the effectiveness of instruction based on educator and students' needs. **(PE 5.1)**
5.2 Analyze and apply data-informed research to improve instruction and student achievement. **(PE 5.2)**

5.3 Use a variety of data, independently and in collaboration with colleagues, to evaluate learning outcomes, adjust planning, and continuously improve and reflect upon the effectiveness of lessons and practices.**(PE 5.3)**
5.4 Identify ways to collaborate with home, school, and other stakeholders to foster communication and obtain resources in order to support diverse student learning and continuous improvement. **(PE 5.4)**
5.5 Select and determine appropriate professional growth opportunities and reflective practices to improve teacher performance and impact student learning. **(PE 5.5)**
5.6 Analyze the implementation of professional development experiences and application to the teaching and learning process. **(PE 5.6)**
5.7 Choose appropriate professional growth opportunities in technology for the design and delivery of instruction to impact student learning. **(PE 5.7)**

Major Competency: **(6) Knowledge of the Code of Ethics and Principles of Professional Conduct of the Education Profession in Florida**

6.1 Apply the Code of Ethics and Principles of Professional Conduct to professional and personal situations. **(PE 6.1)**
6.2 Identify statutory grounds and procedures for disciplinary action, the penalties that can be imposed by the Educational Practices Commission against a certificate holder, and the appeals process available to the individual. **(PE 6.2)**
6.3 Apply knowledge of rights, legal responsibilities, and procedures for reporting incidences of abuse, neglect, or other signs of distress. **(PE 6.3)**
6.4 Identify and apply policies and procedures for the safe, appropriate, and ethical use of technologies. **(PE 6.4)**
6.5 Determine and apply the appropriate use and maintenance of students' information and records. **(PE 6.6)**

Major Competency: **(7) Knowledge of research-based practices appropriate for teaching English Language Learners (ELLs)**

7.1 Relate the nature and role of culture, cultural groups, and individual cultural identities into learning experiences for all students. **(PE 7.1)**
7.2 Analyze student developmental characteristics in relation to first and second language literacy acquisition stages to design instruction for students. **(PE 7.2)**
7.3 Interpret the Consent Decree to integrate teaching approaches, methods, strategies, and communication with stakeholders in order to improve learning for ELLs. **(PE 7.3)**
7.4 Evaluate and differentiate standards-based curriculum, materials, resources, and technology for ELLs based on multicultural, multi-level learning environments. **(PE 7.4)**
7.5 Analyze assessment issues as they affect ELLs and determine appropriate accommodations according to ELLs' varying English proficiency levels and academic levels. **(PE 7.4)**

Major Competency: **(8) Knowledge of effective literacy strategies that can be applied across the curriculum to impact student learning**

8.1 Apply effective instructional practices to develop text reading skills in the appropriate content area. **(PE 8.1)**
8.2 Select instructional practices for developing and using content area vocabulary. **(PE 8.2)**
8.3 Determine instructional practices to facilitate students' reading comprehension through content areas. **(PE 8.3)**
8.4 Apply appropriate literacy strategies for developing higher-order critical thinking skills. **(PE 8.4)**
8.5 Select appropriate resources for the subject matter and students' literacy levels. **(PE 8.5)**
8.6 Differentiate instructional practices based on literacy data for all students. **(PE 8.6)**

Subject Area/Section: Elementary Education (60)

Language Arts and Reading

Major Competency: **(1) Knowledge of the reading process**

1.1 Identify and apply evidence-based practices to develop emergent literacy (e.g., oral language development, phonological awareness, alphabet knowledge, phonics) and early literacy (e.g., phonemic awareness, phonics, fluency, vocabulary, comprehension).
1.2 Identify appropriate stages of word recognition that lead to effective decoding (e.g., pre alphabetic, partial-alphabetic, full-alphabetic, consolidated alphabetic, automatic stages).
1.3 Select and apply evidence-based practices for the development of decoding skills (e.g.,blending and segmenting phonemes, continuous blending of graphemes and phonemes, syllabication, morphology).
1.4 Distinguish among the components of reading fluency (e.g., accuracy, automaticity, rate, prosody).
1.5 Select and apply evidence-based practices for developing reading fluency (e.g., practice with high-frequency words, grade-level texts, and grade-level sight words).
1.6 Identify and apply evidence-based practices for increasing vocabulary acquisition, reinforcing learned vocabulary, and integrating vocabulary across the content areas (e.g., word analysis, author's word choice, context clues, multiple exposures).
1.7 Identify and apply evidence-based practices for facilitating students' comprehension of informational and literary texts (e.g., summarizing, self-monitoring, questioning, using graphic and semantic organizers, modeling think-alouds, recognizing text structure).
1.8 Select and apply essential comprehension skills (e.g., recognizing central ideas and supporting details and facts, making inferences, drawing conclusions).

1.9 Analyze information presented in a variety of formats for different purposes (e.g., charts, tables, graphs, pictures, print and nonprint media).

Major Competency: **(2) Knowledge of texts and text analysis**

2.1 Differentiate among characteristics and elements of a variety of texts (e.g., realistic fiction, fantasy, poetry, informational texts).
2.2 Identify and analyze the use of literary devices (e.g., simile, metaphor, personification, onomatopoeia, hyperbole) and rhetorical appeals in literary and informational texts.
2.3 Evaluate and select a variety of texts based on purpose, relevance, and appropriateness
2.4 Identify and apply evidence-based practices for facilitating students' analysis of, reflection on, and response to texts (e.g., think-pair-share, evidence-based discussion).
2.5 Analyze informational and argumentative texts for the central ideas and authors' claims (e.g., by using purpose, evidence, and reasoning).
2.6 Select and apply strategies for developing students' critical-reading skills (e.g., understand text features and text structures, explain author's purpose or claims, identify supporting evidence, interpret figurative language, compare and contrast across texts).

Major Competency: **(3) Knowledge of the writing process**

3.1 Identify and evaluate the developmental stages of writing (e.g., drawing, dictating, writing).
3.2 Differentiate the stages of the writing process (i.e., prewriting, planning, drafting, revising, editing, and publishing).
3.3 Distinguish among the modes of writing (e.g., narrative, expository, argumentative) and select the appropriate mode of writing for a variety of occasions, purposes, and audiences.
3.4 Identify and apply instructional methods for teaching writing conventions (e.g., spelling, punctuation, capitalization, grammar, word usage).
3.5 Determine and apply evidence-based practices for teaching expository, narrative, and argumentative writing, including how to use precise language, figurative language, transitional words and phrases, dialogue, and sentence variety.

Major Competency: **(4) Knowledge of literacy instruction and assessments**

4.1 Analyze and distinguish among the purposes and characteristics of different types of assessments (e.g., norm referenced, criterion referenced, diagnostic, curriculum based).
4.2 Select and apply oral and written methods for assessing student progress (e.g., informal reading inventories, fluency checks, rubrics, retellings, portfolios).
4.3 Analyze assessment data (e.g., screening, progress monitoring, diagnostic) to guide instructional decisions and differentiate instruction.
4.4 Analyze and interpret students' formal and informal assessment results to inform students and stakeholders.

4.5 Select appropriate classroom organizational formats (e.g., literature circles, small groups, conferences, workshops, reading centers, multiage groups) for specific instructional objectives.
4.6 Identify and apply evidence-based practices for the diagnosis, prevention, and intervention of common literacy difficulties.

Major Competency: **(5) Knowledge of communication and media literacy**

5.1 Identify a variety of listening and speaking strategies (e.g., questioning, paraphrasing, vocal qualities, nonverbal cues).
5.2 Identify and apply instructional methods for developing students' abilities to use collaborative techniques and active-listening and speaking skills (e.g., discussing claims and justifying reasoning, building on ideas, propelling the conversation, using appropriate voice and tone).
5.3 Determine and apply instructional methods for teaching students how to conduct research by using a variety of reliable and valid sources (e.g., Internet, printed materials, artifacts, visual media, primary sources).
5.4 Determine and apply ethical processes (e.g., citation, paraphrasing) for collecting and presenting authentic information and avoiding plagiarism.
5.5 Select and apply strategies for guiding students in selecting multimedia elements to emphasize and enhance oral and written tasks.

Social Science

Major Competency: **(1) Knowledge of effective instructional practice and assessment of the social sciences**

1.1 Select appropriate resources for instructional delivery of social science concepts, including complex informational text.
1.2 Identify appropriate resources for planning for instruction of social science concepts.
1.3 Choose appropriate methods for assessing social science concepts.
1.4 Determine appropriate learning environments for social science lessons.

Major Competency: **(2) Knowledge of time, continuity, and change (i.e., history)**

2.1 Identify and analyze historical events that are related by cause and effect.
2.2 Analyze the sequential nature of historical events using timelines.
2.3 Analyze examples of primary and secondary source documents for historical perspective.
2.4 Analyze the impacts of the cultural contributions and technological developments of Africa; the Americas; Asia, including the Middle East; and Europe.

2.5 Identify the significant historical leaders and events that have influenced Eastern and Western civilizations.
2.6 Determine the causes and consequences of exploration, settlement, and growth on various cultures.
2.7 Interpret the ways that individuals and events have influenced economic, social, and political institutions in the world, nation, or state.
2.8 Analyze immigration and settlement patterns that have shaped the history of the United States.
2.9 Identify how various cultures contributed to the unique social, cultural, economic, and political features of Florida.
2.10 Identify the significant contributions of the early and classical civilizations.

Major Competency: **(3) Knowledge of people, places, and environment (i.e., geography)**

3.1 Identify and apply the six essential elements of geography (i.e., the world in spatial terms, places and regions, physical systems, human systems, environment and society, uses of geography), including the specific terms for each element.
3.2 Analyze and interpret maps and other graphic representations of physical and human systems.
3.3 Identify and evaluate tools and technologies (e.g., maps, globe, GPS, satellite imagery) used to acquire, process, and report information from a spatial perspective.
3.4 Interpret statistics that show how places differ in their human and physical characteristics.
3.5 Analyze ways in which people adapt to an environment through the production and use of clothing, food, and shelter.
3.6 Determine the ways tools and technological advances affect the environment.
3.7 Identify and analyze physical, cultural, economic, and political reasons for the movement of people in the world, nation, or state.
3.8 Evaluate the impact of transportation and communication networks on the economic development in different regions.
3.9 Compare and contrast major regions of the world, nation, or state.

Major Competency: **(4) Knowledge of government and the citizen (i.e., government and civics)**

4.1 Distinguish between the structure, functions, and purposes of federal, state, and local government.
4.2 Compare and contrast the rights and responsibilities of a citizen in the world, nation, state, and community.
4.3 Identify and interpret major concepts of the U.S. Constitution and other historical documents.
4.4 Compare and contrast the ways the legislative, executive, and judicial branches share powers and responsibility.
4.5 Analyze the U.S. electoral system and the election process.

4.6 Identify and analyze the relationships between social, economic, and political rights and the historical documents that secure these rights in the United States.
4.7 Identify and analyze the processes of the U.S. legal system

Major Competency: **(5) Knowledge of production, distribution, and consumption (i.e., economics)**

5.1 Determine ways that scarcity affects the choices made by governments and individuals.
5.2 Compare and contrast the characteristics and importance of currency.
5.3 Identify and analyze the role of markets from production through distribution to consumption.
5.4 Identify and analyze factors to consider when making consumer decisions.
5.5 Analyze the economic interdependence between nations (e.g., trade, finance, movement of labor).
5.6 Identify human, natural, and capital resources and evaluate how these resources are used in the production of goods and services.

Science

Major Competency: **(1) Knowledge of effective science instruction**

1.1 Analyze and apply developmentally appropriate researched-based strategies for teaching science practices.
1.2 Select and apply safe and effective instructional strategies to utilize manipulatives, models, scientific equipment, real-world examples, and print and digital representations to support and enhance science instruction.
1.3 Identify and analyze strategies for formal and informal learning experiences to provide a science curriculum that promotes students' innate curiosity and active inquiry (e.g., hand son experiences, active engagement in the natural world, student interaction).
1.4 Select and analyze collaborative strategies to help students explain concepts, to introduce and clarify formal science terms, and to identify misconceptions.
1.5 Identify and apply appropriate reading strategies, mathematical practices, and science content materials to enhance science instruction for learners at all levels.
1.6 Apply differentiated strategies in science instruction and assessments based on student needs.
1.7 Identify and apply ways to organize and manage a classroom for safe, effective science teaching that reflect state safety procedures and restrictions (e.g., procedures, equipment, disposal of chemicals, classroom layout, use of living organisms).
1.8 Select and apply appropriate technology, science tools and measurement units for students' use in data collection and the pursuit of science.
1.9 Select and analyze developmentally appropriate diagnostic, formative and summative assessments to evaluate prior knowledge, guide instruction, and evaluate student achievement.

1.10 Choose scientifically and professionally responsible content and activities that are socially and culturally sensitive.

Major Competency: **(2) Knowledge of the nature of science**

2.1 Analyze the dynamic nature of science models, laws, mechanisms, and theories that explain natural phenomena (e.g., durability, tentativeness, replication, reliance on evidence).
2.2 Identify and apply science and engineering practices through integrated process skills (e.g., observing, classifying, predicting, hypothesizing, designing and carrying out investigations, developing and using models, constructing and communicating explanations).
2.3 Differentiate between the characteristics of experiments (e.g., multiple trials, control groups, variables) and other types of scientific investigations (e.g., observations, surveys).
2.4 Identify and analyze attitudes and dispositions underlying scientific thinking (e.g., curiosity, openness to new ideas, appropriate skepticism, cooperation).
2.5 Identify and select appropriate tools, including digital technologies, and units of measurement for various science tasks.
2.6 Evaluate and interpret pictorial representations, charts, tables, and graphs of authentic data from scientific investigations to make predictions, construct explanations, and support conclusions.
2.7 Identify and analyze ways in which science is an interdisciplinary process and interconnected to STEM disciplines (i.e., science, technology, engineering, mathematics).
2.8 Analyze the interactions of science and technology with society including cultural, ethical, economic, political, and global factors.

Major Competency: **(3) Knowledge of physical sciences**

3.1 Identify and differentiate among the physical properties of matter (e.g., mass, volume, texture, hardness, freezing point).
3.2 Identify and differentiate between physical and chemical changes (e.g., tearing, burning, rusting).
3.3 Compare the properties of matter during phase changes through the addition and/or removal of energy (e.g., boiling, condensation, evaporation).
3.4 Differentiate between the properties of homogeneous mixtures (i.e., solutions) and heterogeneous mixtures.
3.5 Identify examples of and relationships among atoms, elements, molecules, and compounds.
3.6 Identify and compare potential and kinetic energy.
3.7 Differentiate among forms of energy, transformations of energy, and their real-world applications (e.g., chemical, electrical, mechanical, heat, light, sound).
3.8 Distinguish among temperature, heat, and forms of heat transfer (e.g., conduction, convection, radiation).

3.9 Analyze the functionality of an electrical circuit based on its conductors, insulators, and components.
3.10 Identify and apply the characteristics of contact forces (e.g., push, pull, friction), at-a distance forces (e.g., magnetic, gravitational, electrostatic), and their effects on matter (e.g.,
motion, speed).

Major Competency: **(4) Knowledge of Earth and space**

4.1 Identify characteristics of geologic formations (e.g., volcanoes, canyons, mountains) and the mechanisms by which they are changed (e.g., physical and chemical weathering, erosion deposition).
4.2 Identify and distinguish among major groups and properties of rocks and minerals and the processes of their formations.
4.3 Identify and analyze the characteristics of soil, its components and profile, and the process of soil formation.
4.4 Identify and analyze processes by which energy from the Sun is transferred (e.g., radiation, conduction, convection) through Earth's systems (e.g., biosphere, hydrosphere, geosphere, atmosphere, cryosphere).
4.5 Identify and analyze the causes and effects of atmospheric processes and conditions (e.g.,water cycle, weather, climate).
4.6 Identify and analyze various conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.
4.7 Analyze the Sun-Earth-Moon system in order to explain repeated patterns such as day and night, phases of the Moon, tides, and seasons.
4.8 Compare and differentiate the composition and various relationships among the objects of our Solar System (e.g., Sun, planets, moons, asteroids, comets).
4.9 Identify major events in the history of space exploration and their effects on society.

Major Competency: **(5) Knowledge of life science**

5.1 Identify and compare the characteristics of living and nonliving things.
5.2 Analyze the cell theory as it relates to the functional and structural hierarchy of all living things.
5.3 Identify and compare the structures and functions of plant and animal cells.
5.4 Classify living things into major groups (i.e., Linnaean system) and compare according to characteristics (e.g., physical features, behaviors, development).
5.5 Compare and contrast the structures, functions, and interactions of human and other animal organ systems (e.g., respiration, reproduction, digestion).
5.6 Distinguish among infectious agents (e.g., viruses, bacteria, fungi, parasites), their transmission, and their effects on the human body.
5.7 Identify and analyze the processes of heredity and natural selection and the scientific theory of evolution.

Mathematics

Major Competency: **(1) Knowledge of student thinking and instructional practices**

1.1 Analyze and apply appropriate mathematical concepts, procedures, and professional vocabulary (e.g., subitize, transitivity, iteration, tiling) to evaluate student solutions.
1.2 Analyze and discriminate among various problem structures with unknowns in all positions in order to develop student understanding of operations (e.g., put-together/take-apart, arrays/area).
1.3 Analyze and evaluate the validity of a student's mathematical model or argument (e.g., inventive strategies, standard algorithms) used for problem solving.
1.4 Interpret individual student mathematics assessment data (e.g., diagnostic, formative, progress monitoring) to guide instructional decisions and differentiate instruction.
1.5 Select and analyze structured experiences for small and large groups of students according to the cognitive complexity of the task.
1.6 Analyze learning progressions to show how students' mathematical knowledge, skills, and understanding develop over time.
1.7 Distinguish among the components of math fluency (i.e., accuracy, automaticity, rate, flexibility).

Major Competency: **(2) Knowledge of operations, algebraic thinking, counting and number in base ten**

2.1 Interpret and extend multiple representations of patterns and functional relationships by using tables, graphs, equations, expressions, and verbal descriptions.
2.2 Select the representation of an algebraic expression, equation, or inequality that models a real-world situation.
2.3 Analyze and apply the properties of equality and operations in the context of interpreting solutions.
2.4 Determine whether two algebraic expressions are equivalent by applying properties of operations or equality.
2.5 Evaluate expressions with parentheses, brackets, and braces.
2.6 Analyze and apply strategies (e.g., models, estimation, reasonableness) to solve multistep word problems.
2.7 Apply number theory concepts (e.g., primes, composites, multiples, factors, parity, rules of divisibility).
2.8 Identify strategies (e.g., compensation, combining tens and ones) based on place value to perform multidigit arithmetic.

Major Competency: **(3) Knowledge of fractions, ratios, and integers**

3.1 Compare fractions, integers, and integers with integer exponents and place them on a number line.

3.2 Convert among standard measurement units within and between measurement systems (e.g., metric, U.S. customary) in the context of multistep, real-world problems.
3.3 Solve problems involving addition, subtraction, multiplication, and division of fractions, including mixing whole numbers and fractions, decimals and percents by using visual models and equations to represent the problems and their solutions.
3.4 Select the representation (e.g., linear, area, set model) that best represents the problem and solution, given a word problem or equation involving fractions.
3.5 Solve real-world problems involving ratios and proportions.

Major Competency: **(4) Knowledge of measurement, data analysis, and statistics**

4.1 Calculate and interpret statistics of variability (e.g., range, mean absolute deviation) and central tendency (e.g., mean, median).
4.2 Analyze and interpret data through the use of frequency tables and graphs.
4.3 Select appropriate measurement units to solve problems involving estimates and measurements.
4.4 Evaluate the choice of measures of center and variability, with respect to the shape of the data distribution and the context in which the data were gathered.
4.5 Solve problems involving distance, time, liquid volume, mass, and money, which may include units expressed as fractions or decimals.

Major Competency: **(5) Knowledge of measurement, data analysis, and statistics**

5.1 Apply geometric properties and relationships to solve problems involving perimeter, area, surface area, and volume.
5.2 Identify and locate ordered pairs in all four quadrants of a rectangular coordinate system.
5.3 Identify and analyze properties of three-dimensional shapes using formal mathematical terms such as volume, faces, edges, and vertices.
5.4 Classify two-dimensional figures in a hierarchy based on mathematical properties

FLORIDA ATLANTIC UNIVERSITY

EDG 3324-XXX XXXXX

Effective Teaching Practices

Date:

Building: Room:

3 Credit(s)

Semester 20XX - 1 Full Term

Instructor Information

Email:
Office:
Office Hours:

Course Description

Effective Teaching Practices
Prerequisites: Admission to Elementary Education program or permission of instructor Preparation for and implementation of current research-supported, effective teaching practices, focusing on planning, presentation of subject matter and assessment. Emphasis is on the Florida Performance Measurement System and the Educator Accomplished Practices. One day clinical experience per week. Students are placed in schools according to the campus where the student has enrolled. Not offered in the summer. This is an Academic Service Learning (ASL) course.

Effective Teaching Practices
Prerequisites: Admission to Elementary Education program or permission of instructor Preparation for and implementation of current research-supported, effective teaching practices, focusing on planning, presentation of subject matter and assessment. Emphasis is on the Florida Performance Measurement System and the Educator Accomplished Practices. One day clinical experience per week. Students are placed in schools according to the campus where the student has

enrolled. Not offered in the summer. This is an Academic Service Learning (ASL) course. : Students must complete one full-day per week (7.5 hours 7:30am-3:00pm) of clinical placement in a public school setting.

Admission to Elementary Education program or permission of instructor.

Co-Requisite EEX 4946

Instructional Method

Required Texts/Materials

No Required Text

No Required Text

Suggested Resources:

Florida State Standards http://www.fldoe.org/academics/standards/

Florida Educator Accomplished Practices

http://www.fldoe.org/teaching/professional-dev/the-fl-educator-accomplished-practices.st

ml Marzano Evaluation System

CPalms https://www.cpalms.org/Public/

Course Objectives/Student Learning Outcomes

Become familiar with the current body of research that supports effective

teaching behaviors. (FEAP A1, A2, A3,A4, B1, B2; ; ELD.K12.ELL.SI.1) **(PE**

5.2)

2. Be able to recognize and reflect on effective teaching practices in simulations and a

classroom setting to enable you to become a reflective-decision maker. (FEAP A1, A2, A3,A4, B1, B2; ELD.K12.ELL.SI.1) **(PE 5.3)**

3. Identify and demonstrate the appropriate use of instructional materials and resources and integrate the use of technology. (FEAP A1, A2, A3, A4, B1; ELD.K12.ELL.SI.1; LA.1; MA.1; SC.1; SS.1) **(PE 1.2, PE 1.3 PE 1.5)**

4. Recognize and exhibit instructional and assessment skills in the areas of presentation of subject matter and evaluation of students. (FEAP A1, A3, A4, B1; ELD.K12.ELL.SI.1; LA.1; MA.1; SC.1; SS.1) (**PE 3.1, PE 3.5, PE 3.6, PE 3.8, PE 3.9, PE 3.10)**

Develop, prepare, present and reflect on mini-unit lesson plans. (FEAP A1, A3, A4, B1; ELD.K12.ELL.SI.1; LA.1; MA.1; SC.1; SS.1) **(PE 1.2, PE 1.3, PE 1.5)**

6. Recognize and incorporate discipline specific Florida State Standards in lesson plans. (FEAP A 1, 3, 4; ELD.K12.ELL.SI.1) **(PE 2.2, PE 2.3, PE 2.6)**

7. Recognize how to meet the instructional needs of students, including providing for different learning styles, the LEP learner, and the needs of the low socio-economic status student. (FEAP A2, A3, A4, B2; ELD.K12.ELL.SI.1; LA.1; MA.1; SC.1; SS.1) **(PE 2.4, PE 3.10)**

8. Recognize the need for confidentiality of student and parent information and working effectively with the total school community. (FEAP B1, B2) **(PE 6.1, PE 6.2, PE 6.3)**

9. Acquire skills related to cooperative learning through classroom instruction and specific experiential activities. (FEAP A2, A3, B1, B2; ELD.K12.ELL.SI.1; LA.1; MA.1; SC.1; SS.1) **(PE 2.5, PE 2.6, PE 3.1, PE 3.5, PE 3.6, PE 3.8, PE 3.9)**

10. Recognize overt signs of emotional distress, alcohol and drug abuse, and overt physical

and behavioral indicators of child abuse. (FEAP A2, B1, B2) **(PE 6.3)**

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To
ensure these rights, faculty members have the prerogative to:

• Establish and implement academic standards.

• Establish and enforce reasonable behavior standards in each class.

• Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

Disability Policy

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/.

Academic Service Learning (AS-L) Designated Course

This course is designated as an "academic service-learning" course. The assistance you provide to the

agency/organization during your academic service-learning (AS-L) experience is a service to the community and will allow you to apply knowledge from the course to local, national, and/or global social issues. Throughout this course you will be participating in AS-L activities while demonstrating civic engagement at campus, local, national, and/or global community levels. You will also reflect on your AS-L experience and the impact on the community as well as your professional development. Academic service-learning notation of hours will post to your transcript with submission of hours to your faculty instructor. An Academic Service-Learning

This course contains multiple assignments designed to help students conduct research and inquiry at an intensive level. If this class is selected to participate in the university-wide assessment program, students will be asked to complete a consent form and submit electronically some of their

research assignments for review. Visit the Office of Undergraduate Research and Inquiry (OURI) for additional opportunities and information at www.fau.edu/ouri.

Projects are expected to achieve all six of the following Student Learning Outcomes (SLOs):

SLO 1: Knowledge. Students are expected to demonstrate content knowledge, and knowledge of core principles and skills.
SLO 2: Formulate Questions. Students are required to formulate research questions, scholarly or creative problems in a manner appropriate to the planning discipline.

SLO 3: Plan of Action. Students are expected to develop and implement a plan of action to address research and inquiry questions or scholarly problems.

SLO 4: Critical Thinking. Students are expected to apply critical thinking skills to evaluate information, their own work, and the work of others.

SLO 5: Ethical Conduct. Students are expected to identify significant ethical issues in research and inquiry and/or address them in practice.

SLO 6: Communication. Students will convey all aspects of their research and inquiry (processes and/or products) in appropriate formats, venues, and delivery modes

Student Survey is required to be taken at the end of your AS-L project. Please visit the Weppner Center for LEAD & Service-Learning website, www.fau.edu/leadandserve, for the survey link and more information on FAU's Academic Service-Learning program.

Minimum project hours: 10

Assumption of Risk Statement for Student*

I understand that there are certain physical risks inherent in every form of service-learning. I understand the risks associated with this Academic Service-Learning assignment. I nonetheless agree to assume those risks so as to gain the benefits from participation in this valuable learning experience. I hereby release the State of Florida, the Board of Trustees, Florida Atlantic University and its agents and employees from any and all liability associated with my participation in this assignment at Florida Atlantic University.

If you are selected to participate in the university-wide Academic Service-Learning program, you will be required to document a minimum of 10 hours of student service to the community agency.

Course Evaluation Method

Attendance – 20% Attendance for this course is mandatory. More than 3 absences constitutes missing more than 20% of the course. Attendance is calculated in the grade and each absence (regardless of reason) will impact the grade.

In-Class Assignments – 60%
Out-of-Class Assignments – 20%

Competency Assignments - The College of Education tracks candidate performance through the use of Competency Assignments. Competency Assignments are designed to ensure that teacher candidates successfully demonstrate the Florida Educator Accomplished Practices through course and field work. Specific elements are identified and must be assessed at the Developing (Satisfactory) or Applying (Exemplary) level. These assignments are assessed in the Live Text Assessment System. The highest grade that a candidate can receive in this course without successfully demonstrating competence on these specific elements is a C-.

LiveText Statement

Students in this course are required by the College of Education to have an active LiveText account to track mastery of programs skills, competencies and critical assignments and to meet program and college accreditation requirements. Students must have an account within: the first four (4) weeks of the fall or spring semester, within the first three (3) weeks of summer session, or after the first class of a fast-track course. Students who do not have an active LiveText account may have an academic hold placed on their record. Information regarding account activation is provided on the College of Education website: https://www.fau.edu/education/students/livetext/

Code of Academic Integrity

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 University Regulation 4.001.

It is expected that all candidates will attend each class, arrive on time and ready to participate. Technology use for personal reasons should be kept a minimum. Classroom discussion is intended to provide a variety of viewpoints. This can only happen if we respect each other and our differences. One of the objectives of this course is to facilitate critical thinking and debate around topics, theories, and concepts where disagreement is not only anticipated, but encouraged. The ability to think critically, express your ideas clearly, and respond to the professor and other students civilly are the keystones of the academic experience. In this course, the professor will provide instruction in an objective manner and will remain open to a wide variety of viewpoints, so long as those viewpoints are evidence-based and presented in a respectful way. During class, the professor may take positions and make statements for the sole purpose of accomplishing an academic objective or enhancing the
learning environment. Additionally, the adoption of class materials for this course does not imply an endorsement of the full content of those materials or the positions of the authors of those materials. Often the professor will provide materials as a point of departure for critical thinking and debate. Students should keep in mind that the ideas presented or discussed during class may not necessarily reflect the professor's personal beliefs or opinions on the subject matter. Group work requires that everyone shares responsibility and is accountable.

One Full-Day Per Week in a public school setting required for a total of 90 hours (7.5 hours per week - 7:30am-3:00pm) - Candidates must adhere to Florida Code of Ethics for the Teaching Profession.

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non attendance. 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-approved activities. Examples of University-approved reasons for absences include participating on an 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 absences 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.

Class participation includes regular attendance and being on time; preparedness and active participation in classroom activities and discussions. The expectation is that teacher candidates will attend ALL class sessions and participate in large and small group activities. According to University

policy, “Students are expected to attend all of their scheduled University Classes and to satisfy all academic objectives as outlined by the instructor.” Attendance includes meaningful, active involvement in all class sessions, class discussions, and class activities as well as professional, ethical, conduct in class. Reasonable accommodations are made for extenuating circumstances, including religious observances, excused medical concerns. Two late arrivals/early dismissals count as one absence. Any combination of absences, tardies, or leaving early that results in more than 3 absences constitutes missing more than 20% of course hours. For example, 3 absences and 1 tardy constitutes missing more than 20% or course hours (as 3 1⁄2 is more than 3). A candidate’s final grade will be impacted for each class missed and tardy/early departure, regardless of reason. Outside commitments/problems/responsibilities do not alter the requirements of the course. It is the teacher candidate’s responsibility to obtain missed coursework due to absences, late arrivals, or early departures. Teacher candidates are expected to be on time and to remain for the duration of each class session or field experience. Since late arrivals and early departures are disruptive, they will be
treated as absences and/or a lowering of the candidate’s final grade. Plan for driving time, problems on the highway, parking your car and walking to class. It is the instructor's discretion not to admit late students into the classroom until a break occurs. For each two times a candidate is late for class, or leaves early, it will be counted as a class absence.

One Full-Day Per Week in a public school setting required for a total of 90 hours (7.5 hours per week) - Candidates must adhere to Florida Code of Ethics for the Teaching Profession.

Religious Accommodation Policy Statement

In accordance with the 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 regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University’s established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out of-class student work for each credit hour. Equivalent time and effort are required for

Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%

Letter Grade	Letter Grade
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

• There was a computational or recording error in the grading.

• The grading process used non-academic criteria.

• There was a gross violation of the instructor’s own grading system.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

All in-class assignments are completed during the class meeting. If a candidate is absent from class and misses the work, it is at the discretion of the instructor to determine if the assignment can be completed independently and not as part of the course lecture / group work for partial credit. If it is determined that the assignment cannot be replicated outside of the class meeting, the candidate will receive a grade of zero for that missed class work.

All out-of-class assignments are expected to be submitted on the date they are due as indicated in Canvas.

Late assignments will be penalized in the following manner:

-If the assignment is not submitted before the next class, it will not be accepted and the grade will be a zero (0).

-In the event that a field placement assignment is postponed by the Clinical Educator, it is the responsibility of the teacher candidate to communicate with the course instructor about the postponement. If there is no communication, the instructor can provide a grade of zero. -Other extenuating circumstances can be considered on a case-by-case basis at the discretion of the instructor. All extensions must be requested in writing and accompanied by appropriate documentation. In order to successfully pass the course all Competency Assignments must be assessed as “Satisfactory”.

Special Course Requirements

LiveText: Students in this course are required by the College of Education to have an active LiveText account to track mastery of programs skills, competencies and critical assignments and to meet program and college accreditation requirements. Students must have an account within: the first four (4) weeks of the fall or spring semester, within the first three (3) weeks of summer session, or after the first class of a fast-track course. Students who do not have an active LiveText account may have an academic hold placed on their record. Information regarding account activation is provided on the

College of Education website: https://www.fau.edu/education/students/livetext/

CANVAS: All important course information (including announcements, grades, assignments, etc.) will be communicated through Canvas.

CLINICAL PLACEMENT: One Full-Day Per Week in a public school setting required for a total of 90 hours (7.5 hours per week / 7:30am-3:00pm) - Candidates must adhere to Florida Code of Ethics for the Teaching Profession.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. **[Policy 12.16 Artificial Intelligence]**

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the **Florida Atlantic Code of Academic Integrity, Regulation 4.001.**

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit **https://fau.edu/ai/citation**

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 therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Student Support Services and Online Resources

Center for Learning and Student Success (CLASS)
Counseling and Psychological Services

(CAPS) FAU Libraries

Math Learning Center

Office of Information Technology Helpdesk

Center for Global Engagement

Office of Undergraduate Research and Inquiry

(OURI) Science Learning Center

Speaking Center

Student Accessibility Services

Student Athlete Success Center (SASC)

Testing and Certification

Test Preparation

University Academic Advising Services

University Center for Excellence in Writing

(UCEW) Writing Across the Curriculum (WAC)

Course Topical Outline

LINK TO COURSE OUTLINE

Appendix A

Connection to Competencies and Skills Required for Teacher Certification in Florida (26th Edition) FTCE Competencies

Subject Area/Section: Professional Education (83)

Major Competency: **(1) Knowledge of instructional design and planning (page 9 of 234)**

Sub-competencies:
1.2. Select a variety of instructional practices, materials, and technologies that foster critical, creative, and reflective thinking aligned with state-adopted standards at the appropriate level of rigor. **(PE 1.2)**
1.3. Determine and apply learning experiences and activities that require students to demonstrate a variety of applicable skills and competencies. **(PE 1.3)**
1.5. Apply learning theories to instructional design and planning. **(PE 1.5)**

Major Competency: **(2) Knowledge of appropriate student-centered learning environments (page 9 of 234)**

Sub-competencies:
2.2. Apply appropriate strategies and procedures to manage individual student behaviors and group dynamics. **(PE 2.2)**
2.3. Use effective techniques for communicating high expectations to all students. **(PE 2.3)**
2.4. Evaluate and adapt the learning environment to accommodate the needs and backgrounds (i.e., cultural, home language, family) of all students. **(PE 2.4)**
2.5. Apply relevant techniques for modeling appropriate oral and written communication skills. **(PE 2.5)**
2.6. Determine skills and practices that encourage innovation and foster a safe climate of openness, inquiry, equity, and support for all students. **(PE 2.6)**

Major Competency: **(3) Knowledge of various types of assessment strategies for determining impact on student learning (page 10 of 234)**

Sub-competencies:
3.1. Use motivational strategies to engage and challenge all students. **(PE 3.1)**
3.5. Relate subject matter to life experiences and across disciplines. **(PE 3.5)**
3.6. Apply techniques for developing higher-order critical thinking skills. **(PE 3.6)**
3.8. Identify differentiated instructional practices based on assessment of learning needs, individual differences, and continuous student feedback. **(PE 3.8)**
3.9. Determine and apply techniques to provide feedback in order to promote student achievement. **(PE 3.9)**
3.10. Apply appropriate subject area activities to accommodate learning needs, developmental levels, and experiential backgrounds of all students.**(PE 3.10)**

Major Competency: **(4) Knowledge of instructional delivery and facilitation through a comprehensive understanding of subject matter (page 9 of 234)**

Sub-competencies:
4.1. Analyze assessment data from multiple sources to guide instructional decisions. **(PE 4.1)**
4.2. Select formative and summative assessments that match learning objectives leading to student mastery. **(PE 4.2)**
4.3. Use a variety of assessment tools to monitor student progress, achievement, and learning gains. **(PE 4.3)**
4.4. Determine appropriate assessments and testing conditions to accommodate learning styles and varying knowledge levels of students. **(PE 4.4)**
4.5. Identify ways to share the importance and outcomes of student assessment data with students and stakeholders. **(PE 4.5)**
4.6. Use technology to organize and integrate assessment data. **(PE 4.6)**

Major Competency: **(5) Knowledge of relevant continuous professional improvement (page 11 of 234)**

Sub-competencies:
5.2. Analyze and apply data-informed research to improve instruction and student achievement. **(PE 5.2)**
5.3. Use a variety of data, independently and in collaboration with colleagues, to evaluate learning outcomes, adjust planning, and continuously improve and reflect upon the effectiveness of lessons and practices. **(PE 5.3)**

Major Competency: **(6) Knowledge of relevant continuous professional improvement (page 11 of 234)**

Sub-competencies:

6.1. Apply the Code of Ethics and Principles of Professional Conduct to professional and personal situations. **(PE 6.1)**
6.2. Identify statutory grounds and procedures for disciplinary action, the penalties that can be imposed by the Educational Practices Commission against a certificate holder, and the appeals process available to the individual. **(PE 6.2)**
6.3. Apply knowledge of rights, legal responsibilities, and procedures for reporting incidences of abuse, neglect, or other signs of distress. **(PE 6.3)**
6.4. Identify and apply policies and procedures for the safe, appropriate, and ethical use of Technologies. **(PE 6.4)**

Major Competency: **(7) Knowledge of research-based practices appropriate for teaching English Language Learners (ELLs) (page 12 of 234)**

Sub-competencies:
7.1. Relate the nature and role of culture, cultural groups, and individual cultural identities into learning experiences for all students. **(PE 7.1)**
7.2. Analyze student developmental characteristics in relation to first and second language literacy acquisition stages to design instruction for students. **(PE 7.2)**
7.4. Evaluate and differentiate standards-based curriculum, materials, resources, and technology for ELLs based on multicultural, multi-level learning environments. **(PE 7.4)**

Major Competency: **(8) Knowledge of effective literacy strategies that can be applied across the curriculum to impact student learning (page 12 of 234)**

Sub-competencies:
8.2. Select instructional practices for developing and using content area vocabulary. **(PE 8.2)**
8.5. Select appropriate resources for the subject matter and students' literacy levels. **(PE 8.5)**
8.6. Differentiate instructional practices based on literacy data for all students. **(PE 8.6)**

FAU
FLORIDA ATLANTIC UNIVERSITY
College of Education

Department of Curriculum and Instruction

SEMESTER:
COURSE NUMBER: Math Content: K-6 Teachers - MAE 4310
CRN XXXXX Section XXX
COURSE TITLE: Math Content and Standards: K-6 Teachers
CREDIT HOURS: 3 hours
OFFICE HOURS:

Contact Hours:
Prerequisites: 6 semester hours of college-level math (grade "C" or higher earned)

INSTRUCTOR:
OFFICE:
EMAIL ADDRESS:
OFFICE HOURS:

Catalog Description: An in-depth review of content knowledge required to effectively teach mathematics grades K-6. This course provides a meaningful approach to learning the Florida Mathematics Standards (K-6) while emphasizing the competencies needed for successfully passing the Florida Teacher Certification Examination (FTCE).

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 mathematics content knowledge necessary to document emerging numeracy/mathematics development, develop lessons plans that demonstrate respect for the developmental characteristics of young people and needs of ELL students, follow the standards for mathematical practice, and demonstrate the capability to teach and respect all young people.

Required Texts/Readings: Not applicable. Please see Special Course Requirements
Special Course Requirements:

- 4 function calculator mandatory
- Software Package IXL.com Mathematics, students must sign up for and go through the K-8 software and submit evidence of competence.

Supplementary/Recommended Readings:

Bassarear, T. (2015). *Mathematics for elementary school teachers (6th ed.)*. Boston, MA: Houghton Mifflin.

Billstein, R., Libeskind, S., & Lott , J. (2015). *A problem solving approach to mathematics for elementary school teachers (12th Edition)*. Upper Saddle River, NJ: Pearson Education, Inc.

BEST Standards Math: https://www.fldoe.org/academics/standards/subject-areas/math science/mathematics/

Musser, G., Peterson, B., & Burger, W. (2013). *Essentials of mathematics for elementary teachers: A contemporary approach.* Boston, MA: John Wiley & Sons Publishing, Inc.

National Council of Teachers of Mathematics. (2006). *Curriculum Focal Points.* NCTM:

Reston, VA: Author.
National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. NCTM: Reston, VA.
National Council of Teachers of Mathematics. (1989). *Curriculum and evaluation standards for school mathematics*. NCTM: Reston, VA.
Parrish, S. (2014). *Number Talks: Helping children build mental math and computation strategies*. Sausalito, CA: Math Solutions.
Reys, R., Lindquist, M., Lambdin, D., Smith, N. & Suydam, M. (2015). *Helping children learn mathematics (11th Ed)*. Boston, MA: John Wiley & Sons Publishing, Inc.
State of Florida. Florida Department of Education Mathematics Curriculum Framework at: http://www.fldoe.org/pdf/mathfs.pdf.

Standards and Guidelines Used for Developing Course Objectives:

Elementary and Middle School Education K-6 Subtest in Mathematics (FTCE) http://www.fldoe.org/core/fileparse.php/3/urlt/ftce19edition.pdf

Florida Mathematics Standards (K-6) (MAFS) http://www.fldoe.org/core/fileparse.php/7575/urlt/mathfs.pdf

National Council of Teachers of Mathematics Curriculum and Evaluation Standards for School Mathematics (NCTM) at: www.nctm.org

Course Objectives/Student Learning Outcomes (NCTM):

1. Demonstrate content knowledge and application of number sense/estimation/mental calculation as well as fractions, decimals, ratios, percent, proportions, and number theory. **GK Math 1.1**
2. Demonstrate content knowledge and applications of geometry & spatial sense concepts. **GK Math 2.1**
3. Demonstrate content knowledge and application of measurement concepts. **GK Math 2.3**
4. Demonstrate content knowledge and application of math as the science of patterns and order and which involve patterns, which lead to algebraic thinking and understanding. **GK Math 1.3**
5. Demonstrate content knowledge and application of statistics and data analysis, students should be able to use, collect, and analyze data to make informed decisions. **GK Math 4.1**
6. Demonstrate content knowledge and application of probability where students analyze and perform games of chance and use the data to predict outcomes and make decisions. **GK Math 4.6**
7. Demonstrate the use of technology used when doing mathematics. Students should be able to work with and operate emerging technologies such as GeoGebra and fraction and graphing calculators used today to do mathematics.
8. Demonstrate understanding and application of problem solving, as well as describe and employ problem solving processes and strategies to solve complex math problems in all math content areas.

Teaching Methodologies:

Modeling, guided practice, at the board problem solving process, simulations, lecture, in-class and online discussions, internet communication (use of iReady, e-mail, websites, distance learning, Canvas), Video recorded lectures through Mediasite, PowerPoint/screen /overhead presentations by instructor and students, videos, computer, and other media.

CONTENT OUTLINE: All assignments posted in Canvas.

Due dates Topic

8/20 **Welcome and Course Introduction** - Review of Course Syllabus and assignment. Posted presentation in Canvas.

8/27 IXL: 1.B.6; 1.E.4; 2.M.3; 3.R.5; 3.DD.5; 4.A.3; 4.C.3; 5.F.2; 5.H.2; 6.D.2 **Math Topic Handout #1 (10 Points)**

9/3 **Journal 1** - Discuss how you could use the steps Geoge Polya's method of problem solving with 3rd grade students.
IXL: 1.B.7; 1.C.5; 2.C.6; 2.J.4; 3.A.5; 4.B.4; 5.F.3; 5.H.5; 6.D.5; 8.D.5

9/10 **FTCE Quiz 1**
IXL: 1.N.6; 1.O.6; 2.D.6; 2.CC.3; 3.G.7; 3.K.4; 4.E.1; 4.F.8; 5.P.3; 6.F.6 **IXL Progress and Improvement pdf (progress check)**

9/17 **Journal 2**- Multiplying 3 and 4 digit numbers is fundamental in grade 4. Discuss how to use **both the box and lattice methods** to teach these skills to 4th graders. IXL: 1.U.2; 1.W.4; 2.E.3; 2.K.3; 3.T.4; 3.Y.1; 4.H.6; 4.H.14; 5.R.4; 6.F.8 **Math Topic Handout #2 (10 Points)**

9/24 **FTCE Quiz 2**
IXL: 1.X.2; 1.BB.2; 2.O.4; 2.Z.5; 3.H.7; 3.AA.2; 4.K.12; 4.M.10; 5.U.4; 6.Q.5
10/1 **Journal 3**- Many students do mental addition with small numbers but struggle with larger numbers. **Discuss two strategies** for working with 5th grade students when adding 3 digit decimals such as 561.4 + 237.5.
IXL: 1.DD.5; 2.DD.5; 3.EE.8; 3.UU.6; 4.O.6; 4.P.5; 4.Q.3; 5.Y.4; 5.GG.1; 6.R.5 **IXL Progress and Improvement pdf (progress check)**
Math Topic Handout #3 (10 Points)

10/8 **FTCE Quiz 3**
IXL: 1.EE.9; 2.FF.4; 3.TT.5; 4.R.14; 4.S.6; 4.II.1; 5.HH.3; 5.II.8; 6.S.17; 6.U.5
10/15 **Journal 4** – Understanding decimals and money is an important concept in 6th grade. Discuss three strategies that could be used to develop these skills. IXL: 1.FF.6; 2.HH.5; 3.X.5; 4.U.4; 4.W.8; 4.JJ.5; 5.II.10; 5.JJ.7; 6.V.10; 6.KK.4
Math Topic Handout #4 (10 Points)
10/22 **FTCE Quiz 4**
IXL: 1.JJ.3; 2.JJ.9; 3.Y.1; 4.DD.7; 4.EE2; 5.LL.3; 6.II.20; 8.E.3; 8.I.5; 8.R.5
10/29 **Journal 5** - Developing the concepts of two and three dimensional shapes is important in 4th grade. Discuss three strategies that can be used to develop these skills.
11/12 **Math Topic Handout #5 (10 Points)**
IXL: 8.R.13; 8.T.3; 8.Z.1; 8.BB.1; 8.Q.1; 8.Q.2; 8.Q.7; 8.Q.8; 8.Q.13

11/19 **Last day to Turn in PDF IXL Progress and Improvement Report**
11/26 **Final Exam Review posted on Canvas**

11/27 - 12/1 Thanksgiving Break

12/2 - 12/4 Reading days **Last day to turn in Extra Credit**

12/10 **Final Exam**

Course Assignments/Requirements:
Assignments will include, but will be not limited to, the following: class work, homework, tests and quizzes, IXL.com/computer activities, and math journal problem solving. All assignments turned in for a grade must have a rubric grading sheet attached to them. As requested by University administration, all students should use their FAU MYFAU Email for the course when communicating with the instructor.

For this course, all written assignments should be word-processed and submitted electronically to Canvas. All work is expected to be the work of the student. Students violating the Code of Academic Integrity will receive harsh penalties as per the University policy. **Assignments are expected to be uploaded to Canvas on or before the due date. Late work will not be accepted for full credit. Late work will be accepted for 1 week after the due date with an automatic 15% deduction. Assignments later than 1 week will receive a grade of zero.** Acceptance of late assignments are at the discretion of the professor.

Assignment #1: Journal problems: (20 Points each)

Students will complete a total of 5 Journals and each Journal will be worth **20 points each**. Please write in either Times Roman or Arial 10 font 1.5 spacing **PLEASE turn in each journal separately in Canvas. Please do not attach multiple journals together.**

Assignments are expected to be uploaded to Canvas on or before the due date. Late work will not be accepted for full credit. Late work will be accepted for 1 week after the due date with an automatic 15% deduction. Assignments later than 1 week will receive a grade of zero.

Format for Each Journal -

Section 1 - **Copy the Journal question/topic from the syllabus**

Section 2 - **Math BEST Standards** covered for the grade level or levels discussed in the journal. You are to include both the numerical and word description of the standard. **Use IXL and Click on the Learning tab then the Florida Standards tab. Choose the grade level. Use Florida's B.E.S.T. Standards.**

Section 3 - **Detailed explanation** answering the Journal question/topic - include URL's from all sources. Include **pictures** and **diagrams** in your detailed explanation. This is the longest section of your Journal. You need to FULLY explain your Journal in DETAIL in order to receive full credit.

Section 4 – Explain in detail the **common errors and problems** that students could encounter. Also explain in detail strategies that a teacher could use to prevent these errors and problems.

Section 5 - **Reflection**. You are to reflect on how you believe the knowledge from this Journal will impact your future practice as a teacher. This must be unique per journal and detailed explanation of your reasoning

Rubric for Journal

EXAMPLE Journal 1

Section 1 - Describe three ways that you could develop number sense for students in 1st

grade. Section 2 – Grade 1 BEST Standard (copy the numerical and word description)

Section 3 – Grade 1 - Detailed explanation on 1st way that you can develop number sense. Add pictures and URL at the end of the description.
Grade 1 - Detailed explanation on 2nd way that you can develop number sense. Add pictures and URL at the end of the description.
Grade 1 - Detailed explanation on 3rd way that you can develop number sense. Add pictures and URL at the end of the description.

Section 4 – Grade 1 Common errors and problems and how the teacher could prevent these errors.
Section 5 – Your reflection on how you believe the knowledge from this Journal will impact your future practice as a teacher.

Performance	Criteria for Exceeds Expectations (E)	Criteria for Meets Expectations (M)	Criteria for Does Not Meet Expectations (D)
Demonstrates accuracy of subject matter knowledge in the problem-solving process. Demonstrates and models the use of higher- order thinking abilities, processes, and strategies. Identifies ELL/ESE technology and other strategies/tools in solving math problems and critical thought.	Complete accuracy demonstrated in the problem-solving process. Chooses and applies a correct strategy and follows a clear thought process. clear reflection for future application. Clearly identifies ELL/ESE technology and other strategies /tools/models used in problem solving and math	Partial arithmetic error, but shows good problem-solving process. Uses a correct strategy but may lack process and/or explanation to solve. Share some Technology or other tools/methods for problem solving and content with mathematics.	Incorrect arithmetic and problem solving process. Incorrect thinking process and strategies employed. Provides no Technology or other tools for problem solving and math content knowledge. Does not show/provide methodology for demonstrating the math problem or standard used.
Modifies and adapts math concepts with increased attention to the learners' creative thinking abilities/thought processes.	content. Includes State Standards Clear and sensible modifications of problem for the learner to understand thought processes. States math standard covered.	In Number talk teaches/provides methods for showing the problem with some class support lacks math standard.	

Assignment #2: Technology Evidence/Homework from IXL.com Software (300 points)
Students are to go to IXL.com. Click on membership and family. Click join now. Math is $9.95 per month. All IXL assignments are highlighted in yellow in the schedule. To understand your assignments – 1.A.8 means: Grade 1- Section A - Skill 8.

In order to receive full credit for a skill, **you must receive a SMART Score of 80 or higher.** Students will submit your final **Progress and Improvement report** on Canvas that shows your completion of all assigned IXL exercises. Students will submit **2 IXL Progress and Improvement pdf's as a progress check.** Download the Progress and Improvement report and submit. Students who choose to complete the entire assignment may submit before the due date. **Assignments are expected to be uploaded to Canvas on or before the due date. Late work will not be accepted for full credit. Late work will be accepted for 3 days after the due date with an automatic 15% deduction. Assignments later than 3 days will receive a grade of zero.**

Assignment #3: Tests and Quizzes (20 points each)

The date for each quiz is posted on the schedule. Students are to use the Notes for each Competency to study for each assessment. Each assessment will be posted for a window. **It is the student's responsibility to make certain you log in and take your assessments.** Competency modules will be unavailable the day of the quiz. Unless prior arrangements are made with the Professor, no make-up quizzes will be provided.

Quiz 1 will test Competency 1.

Quiz 2 will test Competency 2.

Quiz 3 will test Competency 3.

Quiz 4 will test Competency 4.

The Final exam will include Competencies 1 through 5. These are all forms of assessing content knowledge that a pre-service teacher candidate should be aware of. Competency modules will be unavailable the day of the final exam. Unless prior arrangements are made with the Professor, no make-up exam will be provided.

Assignment #4: Math topics Handouts (10 points each)

Students will answer math questions as posted for each topic. Questions should be answered as completely as possible. The handouts for these assignments will be posted.. Assignments are expected to be uploaded to Canvas on or before the due date. **Late work will not be accepted for full credit. Late work will be accepted for 1 week after the due date with an automatic 15% deduction. Assignments later than 1 week will receive a grade of zero. After one week, the answer key will be posted so that students can check their work.**

Final Exam Assessment - The final exam will be given on Canvas. Final Exam will be worth 100 points

Extra Credit - Students will be offered **5 points** extra credit for completing your **SPOT**. Once a student has completed the SPOT, you can take a screenshot showing it has been completed. Post the screenshot in the SPOT in Canvas. Any extra credit must be posted prior to the final exam for credit.

Course Evaluation: Item

- Math Journal (in depth math problems related to content weekly) (100pts) ● Technology Evidence and Content practice - IXL assignments (300 pts) ● 4 Quizzes in FTCE Content test format (20 questions per quiz) (20 pts each - 80 points) ● 5 Math Handouts (10 points each - 50 points)
- Final Exam (100 points)
- Extra Credit SPOT (5pts)

Grading Scale: FAU Grading scale

Letter Percent Grade Pts Letter Percent Grade Pts. A 94-100 = 4.0 C 74-76 = 2.0

A- 90-93 = 3.67 C- 70-73 = 1.67 B+ 87-89 = 3.33 D+ 67-69 = 1.33 B 84-86 = 3.00 D 64-66 = 1.00 B- 80-83 = 2.67 D- 61-63 = 0.67 C+ 77-79 = 2.33 F Below 61 = 0.00

ATTENDANCE POLICY: "Students are expected to attend all of the scheduled University classes and to satisfy all academic objectives as outlined by the instructor."

Policy on Make-up tests, Late Work, and Incompletes: For the most part there will be no make-up tests or assignments. **All assignments must be submitted on time.** Flexibility by the instructor regarding make-ups will be considered for each student's individual case. If you miss class or an assignment deadline due to an approved university activity (i.e., scholastic or athletic teams, musical or theatrical performances, and debate activities) preparations can be made on an individual basis with no penalty. **According to University policy, "Students are expected to attend all of their scheduled University Classes and to satisfy all academic objectives as outlined by the instructor." Attendance includes meaningful, active involvement in all class sessions, class discussions, and class activities as well as professional, ethical, conduct in class.** Reasonable accommodations are made for religious observances. The responsibility of attending class belongs to each student. For Live Online courses, students are expected to arrive on time, keep their camera on live, participate in class discussions, and remain in the class until dismissed by the instructor. The grade of Incomplete ("I") is reserved for students who are passing a course but have not completed all of 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. **Disability Policy Statement:**

In compliance with The Americans with Disabilities Act (A.D.A.), students who, due to a disability require special accommodation to properly execute course work must register with the Office for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, LA 240 (954-236-1222); in Jupiter SR 110 (561-799-8010) -- and follow all OSD procedures.

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 Code of Academic Integrity in the University Regulations University Regulations at:
http://fau.eduregulations/chapter4/4.001_Code_of_Acacemic_Integrity.pdf

. **Sexual Misconduct Policy**

In any case involving allegations of sexual misconduct, you are encouraged to report the matter to the University Title IX Coordinator in the Office of Civil Rights and Title IX (OCR9). If University faculty become aware of an allegation of sexual misconduct, they are expected to report it to OCR9. If a report is made, someone from OCR9 and/or Campus Victim Services will contact you to make you aware of available resources including support services, supportive measures, and the University's grievance procedures. More information, including contact information for OCR9, is available at https://www.fau.edu/ocr9/title-ix/. You may also contact Victim Services at victimservices@fau.edu or 561-297-0500 (ask to speak to an Advocate) or schedule an appointment with a counselor at Counseling and Psychological Services (CAPS) by calling 561-297-CAPS.

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.

Bibliography: Books and Articles

Bassarear, T. (2015). *Mathematics for elementary school teachers (6th ed.)*. Boston, MA: Houghton Mifflin.

Billstein, R., Libeskind, S. & Lott, J. (2015). *A problem solving approach to mathematics for elementary school teachers (12th ed.)*. Upper Saddle River, NJ: Pearson Educ, Inc. Boaler, J. (2008). *What's math got to do with it? Helping children learn to love their least favorite subject--and why it's important for America*. New York, NY: Penguin Group (USA) Inc.

Brahier, D. (2009). *Teaching secondary and middle school mathematics (3rd ed.)*. Boston, MA: Reason Education, Inc.

Geist, E. (2009). *Children are born mathematicians: Supporting mathematical development, Birth to age 8*. Upper Saddle River, NJ: Pearson Education, Inc.

Guillaume, A. & Kirtman, L. (2005). Learning lessons about lessons: Memories of mathematics instruction. *Teaching Children Mathematics*, *11 (6)*, 302-309. Musser, G., Peterson, B. & Burger, W. (2013). *Essentials of mathematics for elementary teachers: A contemporary approach.* Boston, MA: Wiley & Sons Pub. Inc. National Council of Teachers of Mathematics. (2000). *Principles and Standards for School Mathematics*: NCTM: Reston, VA.

Parrish, S. (2014). *Number Talks: Helping children build mental math and computation strategies*. Sausalito, CA: Math Solutions.

Reys, R., Lindquist, M., Lambdin, D., Smith, N. & Suydam, M. (2015). *Helping children learn*

mathematics (11th ed.). Boston, MA: John Wiley & Sons Publishing, Inc.
Sherman, H., Richardson, L. & Yard, G. (2009*). Teaching learners who struggle with mathematics: Systematic intervention and remediation (2nd ed.)*. Upper Saddle River, NJ: Pearson Education, Inc.
Sousa, D. (2008). *How the brain learns mathematics*. Thousand Oaks, CA: Corwin Press.
Zemelman, S., Daniels, H. & Hyde, A. (2012). *Best practice: New standards for teaching and learning in America's school (4th ed.)*. Portsmouth, NH: Heinemann.

Journals & Magazines

Dimensions in Mathematics
Issues in the Undergraduate Mathematics Preparation of School Teachers
Journal for Research in Childhood Education
Journal for Research in Mathematics Education
Mathematics Teacher
Mathematics Teaching in the Middle School
Mathitudes Online at: http://www.coe.fau.edu/mathitudes/ *Online Journal for School Mathematics (ON-Math) School Science and Mathematics*
Teaching Children Mathematics
Teaching Pre K-8

Internet

Florida Department of Education Electronic Curriculum Planning Tool, Software for the New Florida Curriculum Frameworks, Mathematics. Florida DOE at: http://www.cpalms.org/Public/
Math Vantage Video Series at: http://www.iptv.org/series.cfm/3449/math_vantage/ep:104/episodes
Marilyn Burns Manipulative Video Series 3
GeoGebraTube at: http://tube.geogebra.org/
The Beacon Learning Center Website at: http://www.beaconlc.org/BEACON/default2.asp Blackboard Web-assisted Learning with FAU at: http://www.blackboard.fau.edu IXL.com
Tenmarks.com
Nanyang Technological University Library at: http://www.ntu.edu.sg/library/search/tools.htm Google http://www.google.com
Yahoo http://www.yahoo.com
Alta Vista http://www.altavista.digital.com Ask Jeeves http://www.ask.com
Excite http://www.excite.com HotBot http://www.hotbot.com Lycos http://lycos.com
WiseNut

http://www.wisenut.com

Proquest Please access using FAU's library/searching outlets, requires a valid FAU account.

Websites

Note: If the address is not given, search using the title/name of the site. URLs may change. National Council of Teachers of Mathematics at: www.nctm.org

Common Core State Standards at: http://www.corestandards.org/the-standards/mathematics Funbrain at: www.funbrain.com

Fun School at: www.funschool.com

Math at: www.math.com

Cool Math at: www.coolmath.com

Math Archives (anything about mathematics) at: www.archives.math.utk.edu Fun Math Lessons at: www.math.rice.edu

Beacon Learning Center Lesson Plans at: www.beaconlc.org

Marcopolo Standards-Based Lessons at: www.marcopolo education.org Ask Dr. Math at: www.forum.swarthmore.edu

ETA/Cuisenaire Math Manipulatives at: www.etacuisenairelcom/catalog/department?deptId=MATH

Math Power and Professor Freedman's Math Help website at: www.mathpower.com

Key Curriculum Press, Geometer's Sketchpad Software

Common Core State Standards Initiative for Math at: http://www.corestandards.org/math

GeoGebra, free math software at: www.geogebra.org

Reports & Standards

Elementary and Middle School Education K-6 Subtest in Mathematics (FTCE) http://www.fldoe.org/core/fileparse.php/3/urlt/ftce19edition.pdf

Florida Mathematics Standards (K-6) (MAFS) http://www.fldoe.org/core/fileparse.php/7575/urlt/mathfs.pdf

National Council of Teachers of Mathematics Curriculum and Evaluation Standards for School Mathematics (NCTM) at: www.nctm.org

State of Florida DOE. *Florida Department of Education Curriculum Frameworks: Mathemati*cs http://www.fldoe.org/core/fileparse.php/5423/urlt/2007-NGSSS-MathematicsWithoutAccessPoints.pdf

The Third International Mathematics and Science Study Report www.timss.org

Common Core State Standards Initiative for Mathematics found at: http://www.corestandards.org/Math

Professional Organizations

The National Council of Teachers of Mathematics (NCTM) at: www.nctm.org The Florida Council of Teachers of Mathematics (FCTM)

American Educational Research Association (AERA)

National Governors Association and Council of Chief State School Officers Common Core State Standards Initiative for Mathematics found at: http://www.corestandards.org/Math BEST Standards for Matheatics https://www.fldoe.org/academics/standards/subject-areas/math science/mathematics/

Appendix A

Connection to Competencies and Skills Required for Teacher Certification in Florida (26th Edition) FTCE Competencies

General Knowledge Test Mathematics

Knowledge of number sense, concepts, and operations

1. Compare real numbers and identify their location on a number line.

2. Solve real-world problems involving the four operations with rational numbers.

3. Evaluate expressions involving order of operations.

Knowledge of geometry and measurement

1. Identify and classify simple two- and three-dimensional figures according to their mathematical properties.

2. Solve problems involving ratio and proportion (e.g., scaled drawings, models, real-world scenarios).

3. Determine an appropriate measurement unit and form (e.g., scientific notation) for real-world problems involving length, area, volume, or mass.

4. Solve real-world measurement problems including fundamental units (e.g., length, mass, time), derived units (e.g., miles per hour, dollars per gallon), and unit conversions.

Knowledge of algebraic thinking and the coordinate plane

1. Determine whether two algebraic expressions are equivalent by applying properties of operations or equality.

2. Identify an algebraic expression, equation, or inequality that models a real-world situation.

3. Solve equations and inequalities (e.g., linear, quadratic) graphically or algebraically.

4. Determine and solve equations or inequalities, graphically or algebraically, in

real-world problems.

5. Graph and interpret a linear equation in real-world problems (e.g., use data to plot points, explain slope and y-intercept, determine additional solutions).

6. Identify relations that satisfy the definition of a function.

7. Compare the slopes of two linear functions represented algebraically and graphically

Knowledge of probability, statistics, and data interpretation

1. Analyze data presented in various forms (e.g., histograms, bar graphs, circle graphs, pictographs, line plots, tables) to solve problems.

2. Analyze and evaluate how the presentation of data can lead to different or inappropriate interpretations in the context of a real-world situation.

3. Calculate range, mean, median, and mode of data sets.

4. Interpret the meaning of measures of central tendency (i.e., mean, median, mode) and dispersion (i.e., range, standard deviation) in the context of a real-world situation.

5. Analyze and evaluate how the selection of statistics (e.g., mean, median, mode) can lead to different or inappropriate interpretations in the context of a real-world situation.

6. Solve and interpret real-world problems involving probability using counting procedures, tables, and tree diagrams.

7. Infer and analyze conclusions from sample surveys, experiments, and observational studies.

Middle Grades Mathematics 5 through 9: Competencies and Skills

Competency 1—Knowledge of number sense, operations, and proportionality

1. **Compare and convert between rational numbers represented in various ways (i.e., fractions, terminating and repeating decimals, percentages, number line).**

2. **Solve problems by performing operations with rational numbers, using estimates and algorithms, and evaluate multi-step expressions using order of operations (e.g., expressions with integer exponents, multiple levels of grouping symbols, and absolute value).**
3. **Estimate irrational numbers, including square roots, and compare them to rational numbers.**
4. **Represent and perform operations with real number approximations with scientific notation, giving attention to significant digits.**
5. **Apply factors of whole numbers to arithmetic operations (e.g., common factors, LCD, GCM).**
6. **Solve problems involving ratios and proportions (e.g., mixtures, comparisons, rates, measurement conversions, graphs, percent growth, taxes, depreciation).**
7. **Apply properties of operations (i.e., associative, commutative, distributive, inverse relationships between operations) in performing multi-step arithmetic operations with rational numbers.**
8. **Solve problems by performing operations with numbers involving radicals and with rational numbers with rational exponents, making use of the laws of exponents.**
9. **Interpret operations on rational numbers and radicals within mathematical and real-world contexts.**

Competency 2—Knowledge of algebra

1. **Identify and apply numerical and algebraic patterns, using tables, graphs, written descriptions, and formulas.**
2. **Evaluate a function at a given value of its input to determine whether a relationship presented in various forms (e.g., tables, written descriptions, function notation) represents a function and to determine its type (i.e., linear, quadratic, cubic, exponential growth and decay, absolute value, square root, cube root).**
3. **Apply operations with exponents and radicals to generate equivalent expressions (e.g., polynomials, radical expressions, rational expressions).**
4. **Solve linear and absolute value equations or inequalities with one or two variables, representing solutions algebraically or graphically, and interpret the key features (vertex, line of symmetry) of an absolute value function within real-world or mathematical contexts.**
5. **Identify the slope and intercepts of a line using a graph, table, or equation, and**

determine the equation of a line (i.e., passes through two given points, through one given point, perpendicular to a given line, parallel to a given line, has a given slope).

6. **Solve and interpret systems of two-variable linear equations and inequalities, algebraically, graphically, and in real-world contexts.**
7. **Identify and interpret the x-intercepts, y-intercept, vertex, line of symmetry, and concavity of a quadratic function representing real-world and mathematical situations.**
8. **Analyze key features of quadratic functions presented in mathematical and real-world contexts, and solve using a variety of methods (e.g., factoring, quadratic formula, completing the square, graphing).**
9. **Determine and select graphical representations of exponential functions in the form ab^x and $a(1 + r)^x$ that represent real-world problems of exponential growth and decay (e.g., problems about depreciation, compound interest, population growth).**
10. **Determine the impacts of shifting and scaling transformations on the formulas for linear, quadratic, and absolute value functions.**

Competency 3—Knowledge of geometry

1. **Classify triangles, quadrilaterals, and solids based on their defining attributes.**
2. **Apply formulas for the area of a triangle and composite figures to find solutions for various shapes (e.g., rectangles, trapezoids, parallelograms, rhombi).**
3. **Apply formulas for volume and surface area of solids (i.e., right solids, Cavalieri's principle, nets for non-right solids).**
4. **Solve mathematical and real-world problems involving formulas for the perimeter, circumference, and area of 2D figures and the surface area and volume of 3D figures.**
5. **Solve mathematical and real-world problems using the coordinate plane.**
6. **Solve mathematical and real-world problems involving proportional relationships between similar 2D and 3D figures.**
7. **Solve mathematical and real-world problems using the Triangle Inequality Theorem, the Pythagorean Theorem, and the Pythagorean Theorem converse.**
8. **Solve mathematical and real-world problems involving formula for the sum of interior angles of polygons, the Triangle Sum Theorem, properties of angles, parallel lines cut by a transversal, and relationships between angles of triangles.**
9. **Apply translations, rotations, reflections, and scaling transformations based on the relationship between a 2D geometric figure and its pre-image to demonstrate congruence and similarity.**

10. Apply Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle, and Hypotenuse-Leg criteria to prove pairs of triangles are congruent or similar, including the concepts of congruence and similarity of triangles to solve mathematical and real-world problems.
11. Determine the center, the radius, and the equation of a circle, and select graphical representations of a circle on a coordinate plane.

Competency 4—Knowledge of data analysis, statistics, and probability

1. Identify and determine measures of central tendency and measures of variation of a numerical data set.
2. Interpret information and patterns from a numerical data display and from the shape of its distribution (i.e., symmetry, gaps, clusters, outliers, mode, range).
3. Identify displays for univariate numerical and categorical data (e.g., histograms, box plots, bar charts, frequency tables).
4. Determine estimates for a population total, mean, and percentage using data from a survey.
5. Identify statistical questions and samples to draw inferences about a population.
6. Determine the properties of correlations in bivariate data displayed in scatter plots and frequency tables, representing real-world situations.
7. Select linear functions that fit to real-world bivariate numerical data and that suggest a possible linear association, and interpret the x- and y-intercepts.
8. Determine the theoretical probabilities of outcomes (e.g., rolling a 3 on a standard 6-sided die) and events (e.g., drawing two red balls in a row when drawing with replacement from a bag containing a given number of red and green balls) in simple and repeated experiments.
9. Determine and compare experimental and theoretical probabilities to make predictions and draw conclusions about real-world situations.

Competency 5—Knowledge of student reasoning and instructional practice

1. Analyze real-world contexts across subject areas to represent them with appropriate mathematical expressions and equations.
2. Identify appropriate methods to facilitate instruction in using mathematical strategies, concepts, and procedures with mathematical fluency to solve problems in various real-world or mathematical contexts.

3. **Identify opportunities for students to evaluate the reasonableness of their results, and assess the validity of students' mathematical arguments.**
4. **Identify patterns to make mathematical connections between different mathematical and real-world problems across subject areas, and analyze a sequence of concepts for mathematical continuity within and across grade levels.**
5. **Select appropriate mathematical representations (e.g., verbal statements, pictures, graphs, algebraic expressions) and instructional tools for teaching mathematical concepts to all students.**
6. **Analyze learning progressions to demonstrate how students' mathematical knowledge and skills develop over time among concrete, representational, and abstract modes of understanding.**
7. **Analyze and interpret individual student mathematics assessment data using a variety of assessment formats to guide instructional decisions and differentiate instruction.**
8. **Analyze students' mathematical misconceptions, errors, and gaps in knowledge and choose instructional approaches to promote student achievement.**

FLORIDA ATLANTIC UNIVERSITY

MAE 4350-XXX XXXXX

Prin and Meth: K9 School Math

Date:

Building: Room:

3 Credit(s)

Semester 20XX - 1 Full Term

Instructor Information

Instructor:
Email:
Office:
Office Hours:
Email:

Course Description

Principles and Methods: K-9 School Math
Prerequisites: MAE 4310, LAE 4353, TSL 4080 with minimum grades of "C"; (Note: Students majoring in ESE are required to complete 6 credits of college-level math, but are not required to complete MAE 4310 as a prerequisite to this course.)
A review of mathematics information and skills and a study of methods/materials related to K-9 mathematics teaching in a diverse setting.

COURSE CONNECTION to PRE-SERVICE TEACHERS in TRAINING

As reflective critical thinkers, students will make informed decisions, exhibit ethical behavior, and provide evidence of becoming capable professionals who have mastered the mathematics content
knowledge necessary for learning to teach it at the elementary school level. As part of the

FAU learning community, you are not just a college student but a pre-service teacher in training.

Prerequisites/Corequisites

Prerequisite(s): All of the following:

LAE 4353 Graduate / Undergraduate (Minimum Grade of C)

TSL 4080 Graduate / Undergraduate (Minimum Grade of C)

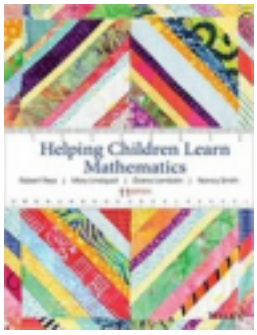
MAE 4310 Graduate / Undergraduate (Minimum Grade of C)

Corequisites: None

Instructional Method

In-Person

Required Texts/Materials



Helping Children Learn Mathematics
Reys, R E., Lindquist, M. M., Lambdin, D. V., Smith, N.L., & Suydam, M. N. Helping children learn mathematics (11th Ed). Boston, MA: John Wiley & Sons Publishing, Inc.

Helping Children Learn Mathematics
ISBN: 9781119034063
Publisher: John Wiley & Sons, Incorporated
Edition: 11th

Helping Children Learn Math
ISBN: 9781118654101
Publisher: John Wiley & Sons, Incorporated
Edition: 11th

Course Objectives/Student Learning Outcomes

Florida Educator Accomplished Practices (FEAP) High Effect Size

Indicators: A.(1): Instructional Design and Lesson Planning

A.(1)(b) The effective educator demonstrates deep and comprehensive knowledge of the subject taught.

A.(2): Quality of Instruction.

A.(2)d. Selects appropriate formative assessments to monitor learning;

A.(2)e. Uses a variety of data, independently, and in collaboration with colleagues, to evaluate learning outcomes, adjust planning and continuously improve the effectiveness of the lessons;

A.(2)f. Develops learning experiences that require students to demonstrate a variety of applicable skills and competencies.

Course Objectives: Based on Florida's B.E.S.T. Standards for

Mathematics Mathematical Thinking and Reasoning Standards

Florida students are expected to engage with mathematics through the Mathematical Thinking and Reasoning (MTR) Standards. These standards are written in clear language so all stakeholders can understand them and students can use them as self-monitoring tools. The MTR Standards promote deeper learning and understanding of mathematics. The clarifications are included to guide teachers in the integration of the MTR Standards within mathematics instruction.

MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively.

Mathematicians who participate in effortful learning both individually and with

others: Analyze the problem in a way that makes sense given the task.

Ask questions that will help with solving the task.

Build perseverance by modifying methods as needed while solving a challenging task.

Stay engaged and maintain a positive mindset when working to solve tasks. Help and

support each other when attempting a new method or approach.

MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple

ways.

Mathematicians who demonstrate understanding by representing problems in multiple ways: Build understanding through modeling and using manipulatives.

Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. **GK Math 4.1**

Progress from modeling problems with objects and drawings to using algorithms and equations.

Express connections between concepts and representations.

Choose a representation based on the given context or purpose.

MA.K12.MTR.3.1 Complete tasks with mathematical fluency.

Mathematicians who complete tasks with mathematical fluency:

Select efficient and appropriate methods for solving problems within the given context.

Maintain flexibility and accuracy while performing procedures and mental calculations.

Complete tasks accurately and with confidence.

Adapt procedures to apply them to a new context.

Use feedback to improve efficiency when performing calculations.

MA.K12.MTR.4.1 Engage in discussions that reflect on the mathematical thinking of self and others.

Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:

Communicate mathematical ideas, vocabulary and methods effectively.

Analyze the mathematical thinking of others.

Compare the efficiency of a method to those expressed by others.

Recognize errors and suggest how to correctly solve the task.

Justify results by explaining methods and processes.

Construct possible arguments based on evidence.

MA.K12.MTR.5.1 Use patterns and structure to help understand and connect

mathematical concepts.

Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

Focus on relevant details within a problem.

Create plans and procedures to logically order events, steps or ideas to solve problems.

Decompose a complex problem into manageable parts.

Relate previously learned concepts to new concepts.

Look for similarities among problems.

Connect solutions of problems to more complicated large-scale situations.

MA.K12.MTR.6.1 Assess the reasonableness of solutions.

Mathematicians who assess the reasonableness of solutions:

Estimate to discover possible solutions.

Use benchmark quantities to determine if a solution makes sense. **GK Math 4.2**

Check calculations when solving problems.

Verify possible solutions by explaining the methods used.

Evaluate results based on the given context.

MA.K12.MTR.7.1 Apply mathematics to real-world contexts.

Mathematicians who apply mathematics to real-world contexts:

Connect mathematical concepts to everyday experiences. **GK Math 3.4**

Use models and methods to understand, represent and solve problems.

Perform investigations to gather data or determine if a method is appropriate.

GK Math 4.2

Redesign models and methods to improve accuracy or efficiency.

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

• Establish and implement academic standards.

• Establish and enforce reasonable behavior standards in each class.

• Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

Disability Policy

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/.

Course Evaluation Method

LIVETEXT REQUIREMENT

All students must have a LiveText account, which tracks mastery of program skills, competencies, and critical assignments, and to meet program and college accreditation requirements. To receive a passing grade in this course you must have an active LiveText account and submit all Critical Assignments (CA) on time. Information is available on the FAU COE website at http://www.coe.fau.edu/students/livetext/

MATERIALS NEEDED FOR EVERY CLASS

Familiarity with and access to FAU's Canvas course management system. Your own notebook, computer & printer, calculator, and textbook.

SUMMARY OF COURSE REQUIREMENTS:

Full participation in ALL classroom activities (reading assignments/emails/Canvas) and including (All) chapter reading questions answered for the Helping Children text, one (1) PowerPoint of 10-12 slides, one (1) Critical Assignment (CA) 50-minute Lesson Plan, one (1) Critical Assignment (CA) on 10 Problem-Solving with Strategies, two (2) virtual binder checks. We are also expected to view all course postings on Canvas, as well as promptly answering email, and submitting work on time. Late

work not accepted for full credit.

TEACHING METHODOLOGIES:

This is a methods course, Live in Room ED 313. We meet on Mondays and Wednesdays from 4:45 to 7:45 PM. Our course activities, for example, Reading Questions from the text, Problem-solving Strategies (CA), PowerPoint, Lesson Plan (CA), Class Presentations, Recitation, Peer-review, all deal with methods of teaching mathematics. Each of the assignments is illustrated by templates/samples/rubrics found in the Files section of Canvas.

ASSESSMENTS Points

Choice of PowerPoint/Lesson Plan Topic 10

Class Participation 10/class

Reading Question Assignments (6) 10 each

PowerPoint and Presentation 25

Misconceptions about your topic 10

Binder Checks (2) 10 each

CA #1 Problem-solving Strategies (5@ 10) 50

CA #2 Lesson Plan and Presentation 25

LiveText Submissions (2) 10 each

Final Exam 100

Code of Academic Integrity

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 University Regulation 4.001.

ACADEMIC HONESTY

As a student at FAU, you are expected to uphold the Honor Code of the University at all times.

Please refer to the University Catalog for a full description of the Honor Code, especially as it pertains to academic irregularities and students' academic grievances. The most important thing to remember is that cheating of any kind will have very severe repercussions and will not be tolerated. This includes cheating on tests and quizzes, plagiarism, or having others complete your work for you.

Here are helpful hints to maintain academic integrity at all times especially with regards to plagiarism.

1. You cannot use the ideas or words of another and present them as your own. You can, however, use ideas from others in a paper or speech provided that you properly acknowledge the source of your material.

2. If you paraphrase information from a website and include it in work that you submit, you must properly acknowledge the website and author.

3. Stealing (pinching) information from the internet is a serious violation of the University Honor Code. Many students are accused of plagiarism because they are not aware of the appropriate procedures for acknowledging sources.

If you are unsure how and if to site your sources, consult your professor. All FAU instructors have access to software (Turnitin) that detects work that is plagiarized from the internet, or copied from another student.

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non attendance. 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-approved activities. Examples of University-approved reasons for absences include participating on an 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 absences 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.

Additional Attendance Requirements

1. The class roll will be taken by the Professor during each class period.

2. Your professor cannot excuse you from class. All work that was due must be sent to your professor before the next class meeting begins to be eligible for credit.

3. If you have a university-approved absence, or your participation in a religious observation, you will have the opportunity to make-up the work missed in a reasonable period of time. Also, if you are absent, you are responsible for sending-in the work when due.
4. If you miss a class, you are to complete the 1-page Class Absence Form found in the Files section of Canvas and send it as an email attachment to the Professor before the class meeting. See the Files section of Canvas, in the folder CourseFiles, for the Class Absence Form (Limit, 1).

Religious Accommodation Policy Statement

In accordance with the 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 regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%

B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%

Letter Grade	Letter Grade
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

• There was a computational or recording error in the grading.

• The grading process used non-academic criteria.

• There was a gross violation of the instructor's own grading system.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

The absence policy for undergraduate studies says students are responsible for arranging make-up work missed because of a legitimate class absence. Examples of legitimate absence include: illness, family emergencies, military obligation, court-imposed legal obligations, religious observations, or participation in a University-approved activity. A student is responsible to give an instructor notice prior to any anticipated absence and within a reasonable time frame after an unanticipated absence. Instructors must allow each student to make up work missed without any reduction in the final

course grade as a direct result of an absence.

Attendance includes meaningful, active involvement in all class sessions, class discussions, and course activities, during the Live Classroom meetings, including through email and Canvas. Professional conduct includes being respectful to your peers, being on time and staying until class ends, and turning work in on time. Late work not accepted for full credit. With only 12 classes and no Final Exam, we have no room for Late Work.

Special Course Requirements

DEFINITION OF CLASS PARTICIPATION:

Class Participation includes attending the class on time Live in ED 313, taking your notes from the slides provided by the Professor, maintaining your virtual/physical binder, completing class activities and handouts, turning work in on time, responding and answering questions during recitation, completing the Absent Form (if unable to attend) provided by the Professor in the CourseFiles folder,
and by promptly reading and answering all Canvas email messages throughout the week. All the above for a maximum of 10 points per class. If absent, download the Class Absence Form, fill-out, and send to Dr. Persin as a Canvas email attachment to recover some points.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

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 therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Student Support Services and Online Resources

- Center for Learning and Student Success (CLASS)
- Counseling and Psychological Services (CAPS)
- FAU Libraries
- Math Learning Center
- Office of Information Technology Helpdesk
- Center for Global Engagement
- Office of Undergraduate Research and Inquiry (OURI)
- Science Learning Center
- Speaking Center
- Student Accessibility Services
- Student Athlete Success Center (SASC)
- Testing and Certification
- Test Preparation
- University Academic Advising Services
- University Center for Excellence in Writing (UCEW)
- Writing Across the Curriculum (WAC)

Bibliography of Online Resources

1. Teaching Children Mathematics

The 5-E Model of Instruction

https://nasaeclips.arc.nasa.gov/teachertoolbox/the5e **2. Professional**

Organizations

The National Council of Teachers of Mathematics (NCTM)

https://www.nctm.org/ The Florida Council of Teachers of Mathematics (FCTM)

https://fctm.net/ American Educational Research Association (AERA)

https://www.aera.net/ **3. Mathematic/Education Websites**

The Palm Beach County Math Teachers https://fctm.net/pbcctm/

The Florida Council of Teachers of Mathematics (FCTM):

https://fctm.net/ Funbrain at: https://www.funbrain.com/

Math Playground at: https://www.mathplayground.com/

4. Dr. Persin's Research Interests

How Children Learn Math

https://ed.stanford.edu/news/learning-math-without-fear Asteroid Mining

http://chview.nova.org/station/ast-mine.htm

Programming in Java http://java.sun.com/docs/books/tutorial/

The Chemistry of the Ozone Layer
https://study.com/academy/lesson/ozone-formula-structure properties.html
Living on Mars

http://www.astrobio.net/index.php?option=com_debate&task=detail&id=1026 **5. Dr.**

Persin's Professional Memberships

The National Council of Teachers of Mathematics (NCTM)

https://www.nctm.org/ The Florida Council of Teachers of Mathematics (FCTM)

https://fctm.net/

American Educational Research Association (AERA) https://www.aera.net/

The Palm Beach County Math Teachers https://fctm.net/pbcctm/

American Association of Physics Teachers (AAPT) http://www.aapt.org/

Institute of Electrical and Electronic Engineers (IEEE)

http://www.ieee.org/portal/site Association of Computing Machinery (ACM)

http://www.acm.org/

Editorial Board (The Chemist)

http://www.theaic.org/pub_thechemist_journals/index.html

Sexual Misconduct Policy

In any case involving allegations of sexual misconduct, you are encouraged to report the matter to the University Title IX Coordinator in the Office of Civil Rights and Title IX (OCR9). If University faculty become aware of an allegation of sexual misconduct, they are expected to report it to OCR9. If a report is made, someone from OCR9 and/or Campus Victim Services will contact you to make you aware of available resources including support services, supportive measures, and the University's grievance procedures. More information, including contact information for OCR9, is available at https://www.fau.edu/ocr9/title-ix/. You may also contact Victim Services at victimservices@fau.edu or 561-297-0500 (ask to speak to an Advocate) or schedule an appointment with a counselor at Counseling and Psychological Services (CAPS) by calling 561-297-CAPS.

AI Prohibited Policy: The use of AI to assist in any work assigned in this specific course is prohibited.

Course Topical Outline

Class #1 Introductory Slides I: Course Introduction/Overview/Review of the Syllabus
AUG 19 Discussion of Assignments, Instructional Resources

The 5-E Teaching Model for your Lesson Plans

Notes on Chapters 1, 2, & 3: Mathematics and What is Taught, Supporting Diverse Learners in the Classroom, How Students Learn, Teacher Planning, Cultural Connections

PowerPoint and Lesson Plan Topics (Chosen from B.E.S.T. Standards)

Homework: Chose your B.E.S.T. Standard for PowerPoint/Lesson plan topic

Answer Reading Questions for Chapters 1, 2, & 3 posted on Canvas

Class #2 AUG 26

Prenumber Concepts, Counting Principles, Cardinal, Ordinal, and Nominal Numbers, Our Numeration System, Place Values, Decimals, Rounding, Computational Fluency, Meanings for the Operations, Basic Fact Instruction, Thinking Strategies for Basic Facts, B.E.S.T. Standards

Designing Your Lesson Plan (Due dates are November 4, 18, & 25)

Class #3 SEPT 9

Answers to Reading Questions for Chapters 1, 2, & 3, Due

Notes on Chapters 4, 5, & 6: Summative and Formative Assessments, Assessing Student Abilities and Dispositions, Mathematical Practices for Common Core Standards and Mathematical Processes for NCTM Principles and Standards,

Teaching Math Through Problem-solving

Demonstrating Math Concepts, “Hands-on”

Ideas for Math Students. **How to Design Your**

PowerPoint (Due dates are October 14, 21,

& 28)

Homework: Answer Reading Questions for Chapters 4, 5, & 6 posted on Canvas, and Problem-solving Strategies #1 & 2 of 10

Answers to Reading Questions for Chapters 4, 5, & 6, Due. AND Problem solving Strategies #1 & 2 of 10, Due

Notes on Chapters 7, 8, & 9: Number Sense,

Class #4 SEPT 16

Class #5 SEPT 23

Class #6 SEPT 30

Homework: Answer Reading Questions for Chapters 7, 8, & 9 posted on Canvas

Answers to Reading Questions for Chapters 7, 8, & 9, Due

Notes on Chapters 10, 11, & 12: Calculators in the Classroom, Mental Computation, Estimation, Teaching Algorithms with Understanding, The 4 Basic Operations on Whole Numbers and Decimals, Making Sense of Fractions, Fractions and Equivalent Fractions, The 4 Basic Operations on Fractions

Homework: Answer Reading Questions for Chapters 10, 11, & 12 posted on Canvas, and Problem-solving Strategies #3 & 4 of 10

Answers to Reading Questions for Chapters 10, 11, & 12, Due and Problem-solving Strategies #3 & 4 of 10, Due

Notes on Chapters 13, 14, & 15: Ratio, Proportions, and Percent, Language and Symbols of Algebra, Representing, Generalizing, and Justifying, Geometry with 3-D and 2-D Shapes, Symmetry, Space, and Transformations, Visualizations and Spatial Reasoning

Homework: Answer Reading Questions for Chapters 13, 14, & 15 posted on Canvas

Answers to Reading Questions for Chapters 13, 14, & 15, Due

Notes on Chapters 16, 17, & 18: The Measurement Process, Systems of Measurement, Other Aspects of Measuring, Connecting Attributes, Data Analysis, Statistics and Probability, Formulating Research Questions, Data Collection and Analysis Measures of Central Tendency, Interpreting and Communicating Results, Probability and Randomness, Number Theory in Elementary School Mathematics, Rules for Divisibility

Homework: Answer Reading Questions for Chapters 16, 17, & 18 posted on Canvas

Binder Check #1, Problem-solving Strategies #5 & 6 of 10, and PowerPoints for Alpha-group 1

Class #7 OCT 7

Class #8 OCT 14

Class #9 OCT 21

Class #10 OCT 28

Class #11 NOV 4

Class #12 NOV 18

Answers to Reading Questions for Chapters

16, 17, & 18, Due Virtual Binder Check #1

and Problem-solving Strategy #5 & 6 of 10,

Due How to Present your PowerPoint

Homework: Find 10 Common Misconceptions about your Lesson Plan Topic and PowerPoints for Alpha-group 1

Due: 10 Common Misconceptions about

your Lesson Plan Topic PowerPoints Due

for Alpha-group 1

Homework: Problem-solving Strategy #7 & 8 of 10 and PowerPoints for Alpha-group 2

Problem-solving Strategy #7 & 8 of 10, Due,

PowerPoints Due for Alpha-group 2

Homework: PowerPoints for Alpha-group 3

and Problem-solving Strategy #9 & 10 of 10

PowerPoints Due for Alpha-group 3

and Problem-solving Strategy #9 & 10 Due

Homework: Lesson Plans for Alpha-group 1

Lesson Plans Due for Alpha-group 1 Due

Homework: Lesson Plans for Alpha-group 2

Submit Best 5 Problem-solving Strategies to Livetext

Lesson Plans Due for Alpha-group 2

Binder Check #2

Class #13

NOV 25

FAU Reading Days on DEC 2, 3, 4 (Classes do not meet.)

Class #14

DEC 9

Final Exam

Homework: Submit Best 5 Problem-solving

Strategies to Livetext Submit Lesson Plans

to LiveText (Groups 1 & 2)

Lesson Plan Presentations Due for

Alpha-group 3 Homework: Submit Lesson

Plan to Livetext

Study for Final Exam

Download and Study the Final Exam Study

Guide from Canvas Complete all

Submissions to LiveText

Our Final Exam – Monday, DEC 9 from 4:30 to 7:30 PM “Ghost Proctored" by the Professor on Zoom

FAU Final Exam Period DEC 5 – DEC 11

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. **[Policy 12.16 Artificial Intelligence]**

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student’s responsibility to comply with the instructor’s expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.
If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the **Florida Atlantic Code of Academic Integrity, Regulation 4.001.**

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit **https://fau.edu/ai/citation**

Appendix A

Connection to Competencies and Skills Required for Teacher Certification in Florida (26th Edition) FTCE Competencies

Subject Area/Section: General Knowledge Test (82)
Major Competency: (4) Knowledge of probability, statistics, and data interpretation (page 7 of 234)
Sub Competency FTCE (GK Math subsection)
4.1. Analyze data presented in various forms (e.g., histograms, bar graphs, circle graphs, pictographs, line plots, tables) to solve problems. **(GK Math 4.1)**

Subject Area/Section: Professional Education (83)
Major Competency: (1) Knowledge of instructional design and planning (page 9 of 234)
Sub-competencies:
1.1. Choose appropriate methods, strategies, and evaluation instruments (e.g., formative assessment, summative assessment) for assessing and monitoring student performance levels, needs, and learning. **(PE 1.1)**
1.2. Select a variety of instructional practices, materials, and technologies that foster critical, creative, and reflective thinking aligned with state-adopted standards at the appropriate level of rigor. **(PE 1.2)**
1.4. Identify instructional resources based on measurable objectives, individual student learning needs, and performance levels. **(PE 1.4)**
1.8. Select lessons and concepts that are sequenced to activate prior knowledge and ensure coherence among the lessons. **(PE 1.8)**
1.10. Determine and apply appropriate intervention strategies based on individual student needs and data. **(PE 1.10)**

Major Competency: (7) Knowledge of research practices appropriate for teaching English Language Learners (ELLs) (page 12 of 234)
Sub-competencies:
7.4. Evaluate and differentiate standards-based curriculum, materials, resources, and technology for ELLs based on multicultural, multi-level learning environments. **(PE 7.4)**
7.5. Analyze assessment issues as they affect ELLs and determine appropriate accommodations according to ELLs' varying English proficiency levels and academic levels. **(PE 7.5)**

Major Competency: (8) Knowledge of effective literacy strategies that can be applied across the curriculum to impact student learning (page 12 of 234)
Sub-competencies:
8.2. Select instructional practices for developing and using content area vocabulary. **(PE 8.2)**

8.3. Determine instructional practices to facilitate students' reading comprehension through content areas. **(PE 8.3)**

Middle Grades Mathematics 5 through 9: Competencies and Skills

Competency 1—Knowledge of number sense, operations, and proportionality

1. Compare and convert between rational numbers represented in various ways (i.e., fractions, terminating and repeating decimals, percentages, number line).
2. Solve problems by performing operations with rational numbers, using estimates and algorithms, and evaluate multi-step expressions using order of operations (e.g., expressions with integer exponents, multiple levels of grouping symbols, and absolute value).
3. Estimate irrational numbers, including square roots, and compare them to rational numbers.
4. Represent and perform operations with real number approximations with scientific notation, giving attention to significant digits.
5. Apply factors of whole numbers to arithmetic operations (e.g., common factors, LCD, GCM).
6. Solve problems involving ratios and proportions (e.g., mixtures, comparisons, rates, measurement conversions, graphs, percent growth, taxes, depreciation).
7. Apply properties of operations (i.e., associative, commutative, distributive, inverse relationships between operations) in performing multi-step arithmetic operations with rational numbers.
8. Solve problems by performing operations with numbers involving radicals and with rational numbers with rational exponents, making use of the laws of exponents.
9. Interpret operations on rational numbers and radicals within mathematical and real-world contexts.

Competency 2—Knowledge of algebra

1. Identify and apply numerical and algebraic patterns, using tables, graphs, written descriptions, and formulas.
2. Evaluate a function at a given value of its input to determine whether a relationship presented in various forms (e.g., tables, written descriptions, function notation) represents a function and to determine its type (i.e., linear, quadratic, cubic, exponential growth and decay, absolute value, square root, cube root).

3. Apply operations with exponents and radicals to generate equivalent expressions (e.g., polynomials, radical expressions, rational expressions).
4. Solve linear and absolute value equations or inequalities with one or two variables, representing solutions algebraically or graphically, and interpret the key features (vertex, line of symmetry) of an absolute value function within real-world or mathematical contexts.
5. Identify the slope and intercepts of a line using a graph, table, or equation, and determine the equation of a line (i.e., passes through two given points, through one given point, perpendicular to a given line, parallel to a given line, has a given slope).
6. Solve and interpret systems of two-variable linear equations and inequalities, algebraically, graphically, and in real-world contexts.
7. Identify and interpret the x-intercepts, y-intercept, vertex, line of symmetry, and concavity of a quadratic function representing real-world and mathematical situations.
8. Analyze key features of quadratic functions presented in mathematical and real-world contexts, and solve using a variety of methods (e.g., factoring, quadratic formula, completing the square, graphing).
9. Determine and select graphical representations of exponential functions in the form ab^x and $a(1 + r)^x$ that represent real-world problems of exponential growth and decay (e.g., problems about depreciation, compound interest, population growth).
10. Determine the impacts of shifting and scaling transformations on the formulas for linear, quadratic, and absolute value functions.

Competency 3—Knowledge of geometry

1. Classify triangles, quadrilaterals, and solids based on their defining attributes.
2. Apply formulas for the area of a triangle and composite figures to find solutions for various shapes (e.g., rectangles, trapezoids, parallelograms, rhombi).
3. Apply formulas for volume and surface area of solids (i.e., right solids, Cavalieri's principle, nets for non-right solids).
4. Solve mathematical and real-world problems involving formulas for the perimeter, circumference, and area of 2D figures and the surface area and volume of 3D figures.
5. Solve mathematical and real-world problems using the coordinate plane.
6. Solve mathematical and real-world problems involving proportional relationships between similar 2D and 3D figures.
7. Solve mathematical and real-world problems using the Triangle Inequality Theorem, the Pythagorean Theorem, and the Pythagorean Theorem converse.
8. Solve mathematical and real-world problems involving formula for the sum of interior angles of polygons, the Triangle Sum Theorem, properties of angles, parallel lines cut by a transversal, and relationships between angles of triangles.

9. Apply translations, rotations, reflections, and scaling transformations based on the relationship between a 2D geometric figure and its pre-image to demonstrate congruence and similarity.
10. Apply Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle, and Hypotenuse-Leg criteria to prove pairs of triangles are congruent or similar, including the concepts of congruence and similarity of triangles to solve mathematical and real-world problems.
11. Determine the center, the radius, and the equation of a circle, and select graphical representations of a circle on a coordinate plane.

Competency 4—Knowledge of data analysis, statistics, and probability

1. Identify and determine measures of central tendency and measures of variation of a numerical data set.
2. Interpret information and patterns from a numerical data display and from the shape of its distribution (i.e., symmetry, gaps, clusters, outliers, mode, range).
3. Identify displays for univariate numerical and categorical data (e.g., histograms, box plots, bar charts, frequency tables).
4. Determine estimates for a population total, mean, and percentage using data from a survey.
5. Identify statistical questions and samples to draw inferences about a population.
6. Determine the properties of correlations in bivariate data displayed in scatter plots and frequency tables, representing real-world situations.
7. Select linear functions that fit to real-world bivariate numerical data and that suggest a possible linear association, and interpret the x- and y-intercepts.
8. Determine the theoretical probabilities of outcomes (e.g., rolling a 3 on a standard 6-sided die) and events (e.g., drawing two red balls in a row when drawing with replacement from a bag containing a given number of red and green balls) in simple and repeated experiments.
9. Determine and compare experimental and theoretical probabilities to make predictions and draw conclusions about real-world situations.

Competency 5—Knowledge of student reasoning and instructional practice

1. Analyze real-world contexts across subject areas to represent them with appropriate mathematical expressions and equations.
2. Identify appropriate methods to facilitate instruction in using mathematical strategies, concepts, and procedures with mathematical fluency to solve problems in various

real-world or mathematical contexts.

3. Identify opportunities for students to evaluate the reasonableness of their results, and assess the validity of students' mathematical arguments.
4. Identify patterns to make mathematical connections between different mathematical and real-world problems across subject areas, and analyze a sequence of concepts for mathematical continuity within and across grade levels.
5. Select appropriate mathematical representations (e.g., verbal statements, pictures, graphs, algebraic expressions) and instructional tools for teaching mathematical concepts to all students.
6. Analyze learning progressions to demonstrate how students' mathematical knowledge and skills develop over time among concrete, representational, and abstract modes of understanding.
7. Analyze and interpret individual student mathematics assessment data using a variety of assessment formats to guide instructional decisions and differentiate instruction.
8. Analyze students' mathematical misconceptions, errors, and gaps in knowledge and choose instructional approaches to promote student achievement.

FLORIDA ATLANTIC UNIVERSITY

SCE 4113-XXX XXXXX

Science Content: K-6 Teachers

Date:

3 Credit(s)

Semester 20XX - 1 Full Term

Instructor Information

Email:
Office:
Office Hours:
Phone:

Email:

Course Description

Science Content and Standards for K-6 Teachers
Prerequisites: 7 credits of college level science including 3 credits in physical science, 3 credits in biological science and at least one science laboratory, all with minimum grades of "C"; Elementary Education majors only
In-depth review of content required to teach K-6 science effectively. Emphasizes relevant Florida Science Standards and Competencies. This is an Academic Service Learning (ASL) course.

COURSE MATERIALS NEEDED FOR EVERY CLASS

Familiarity with and access to FAU's Canvas course management system.

Your own computer and printer, binder, calculator, lined filler paper, plastic ruler,

pens/pencils (Blue/Black only, and textbook.
You will also need a scanning App installed on your phone. Some of the best free ones include Camscanner and Adobe Scan.

Prerequisites: 7 credits of college level science including 3 credits in physical science, 3 credits in biological science and at least one science laboratory, all with minimum grades of "C"; Elementary Education majors only.

Corequisites: None

Instructional Method

Required Texts/Materials

The Sciences
Trefil, J., & Hazen, R. (2016). Sciences:

An integrated approach.

8th Edition. Wiley.

ISBN: 978-1-119-04968-5

The Sciences
ISBN: 9781119234326
Publisher: John Wiley & Sons, Incorporated
Edition: 8th

Science (Loose Pgs)
ISBN: 9781119049685
Publisher: John Wiley & Sons, Incorporated
Edition: 8th

Course Objectives/Student Learning Outcomes

Florida Educator Accomplished Practices (FEAPs) High Effect Size

Indicators: A.(1): Instructional Design and Lesson Planning

A.(1)(b) The effective educator demonstrates deep and comprehensive knowledge of the subject taught.

A.(2): Quality of Instruction.

A.(2)d. Selects appropriate formative assessments to monitor learning;

A.(2)e. Uses a variety of data, independently, and in collaboration with colleagues, to evaluate learning outcomes, adjust planning and continuously improve the effectiveness of the lessons;

A.(2)f. Develops learning experiences that require students to demonstrate a variety of applicable skills and competencies.

Course Objectives/Student Learning Outcomes:

All Based On: Florida Science Standards K-6 (CPALMS)

1. Demonstrate understanding and application of scientific investigation, defining a problem, gathering information, stating hypotheses, observing the natural world through investigation, forming conclusions, showing that scientific investigation should be replicable, and publishing results.
2. Demonstrate content knowledge and application pertaining to the composition of galaxies and planets, and the ways energy causes motion and creates change.
3. Demonstrate understanding and application of the principles pertaining to electrical conductors and non-conductors.
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 . . .).
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.
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).
7. Demonstrate content knowledge and application to properties of solids, liquids, and gases (examples: mass, weight, volume, color, texture, and temperature).
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.
9. Demonstrate content knowledge and application of atomic theory and matter.
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).

11. Demonstrate content knowledge and application pertaining to the ways that basic forms of energy (light, heat, sound, electrical, chemical, and mechanical) cause motion or create change.

12. Demonstrate understanding and application of the principles related to attraction and repulsion between electrically charged and non-charged objects.

13. Demonstrate understanding and application of the transformation of electrical energy into heat, light, sound, and energy of motion.

14. Demonstrate content knowledge and application of the principles of electrical/closed circuitry.

15. Demonstrate ability to recognize that some things in the world around us happen quickly and others happen slowly (mega-volcanic eruptions, flooding, and hurricanes; slowly-drought).

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

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

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

19. Demonstrate content knowledge and application by comparing materials and their properties.

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

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

• Establish and implement academic standards.

• Establish and enforce reasonable behavior standards in each class.
• Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

Disability Policy

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/.

Academic Service Learning (AS-L) Designated Course

This course is designated as an "academic service-learning" course. The assistance you provide to the agency/organization during your academic service-learning (AS-L) experience is a service to the community and will allow you to apply knowledge from the course to local, national, and/or global social issues. Throughout this course you will be participating in AS-L activities while demonstrating civic engagement at campus, local, national, and/or global community levels. You will also reflect on your AS-L experience and the impact on the community as well as your professional development. Academic service-learning notation of hours will post to your transcript with submission of hours to your faculty instructor. An Academic Service-Learning

This course contains multiple assignments designed to help students conduct research and inquiry at an intensive level. If this class is selected to participate in the university-wide assessment program, students will be asked to complete a consent form and submit electronically some of their research assignments for review. Visit the Office of Undergraduate Research and Inquiry (OURI) for additional opportunities and information at www.fau.edu/ouri.

Projects are expected to achieve all six of the following Student Learning Outcomes (SLOs):

SLO 1: Knowledge. Students are expected to demonstrate content knowledge, and knowledge of core principles and skills.

SLO 2: Formulate Questions. Students are required to formulate research questions, scholarly or creative problems in a manner appropriate to the planning discipline.

SLO 3: Plan of Action. Students are expected to develop and implement a plan of action to address research and inquiry questions or scholarly problems.

SLO 4: Critical Thinking. Students are expected to apply critical thinking skills to evaluate information, their own work, and the work of others.

SLO 5: Ethical Conduct. Students are expected to identify significant ethical issues in research and inquiry and/or address them in practice.

SLO 6: Communication. Students will convey all aspects of their research and inquiry (processes and/or products) in appropriate formats, venues, and delivery modes

Student Survey is required to be taken at the end of your AS-L project. Please visit the Weppner Center for LEAD & Service-Learning website, www.fau.edu/leadandserve, for the survey link and more information on FAU's Academic Service-Learning program.

Minimum project hours: 10

Assumption of Risk Statement for Student

I understand that there are certain physical risks inherent in every form of service-learning. I understand the risks associated with this Academic Service-Learning assignment. I nonetheless agree to assume those risks so as to gain the benefits from participation in this valuable learning experience. I hereby release the State of Florida, the Board of Trustees, Florida Atlantic University and its agents and employees from any and all liability associated with my participation in this assignment at Florida Atlantic University.

If you are selected to participate in the university-wide Academic Service-Learning program, you will be required to document a minimum of 10 hours of student service to the community agency.

Course Evaluation Method

SUMMARY OF COURSE REQUIREMENTS:

Full class participation: Class Participation includes taking your notes from the slides provided by the Professor, maintaining your physical/virtual 3-ring binder, completing class activities and handouts, turning work in on time, providing your own detailed answers on your Reading Questions during Recitation, participating via ZOOM with Video enabled, and by promptly reading and answering all messages in FAU email/Canvas.

TEACHING METHODOLIGIES:

Inquiry lab activities, lectures, discussion/recitation (teacher/student-centered), and demonstrations. Other techniques, including problem-solving, and processing data will be incorporated in the lab work.

ASSESSMENT PROCEDURES:

Assignment Points

Attendance/Class Participation 10/class

Reading Question Assignments 10 each

Inquiry Lab Activities 15 each
Classwork Reviews Handouts 20 each

Binder Checks (2) 10 each

Final Exam 100

Code of Academic Integrity

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 University Regulation 4.001.

ACADEMIC HONESTY

As a student at FAU, you are expected to uphold the Honor Code of the University at all times. Please refer to the University Catalog for a full description of the Honor Code, especially as it pertains to academic irregularities and students' academic grievances.

The most important thing to remember is that cheating of any kind will have very severe repercussions and will not be tolerated. This includes cheating on tests and quizzes, plagiarism, or having others complete your work for you.

Here are some helpful hints to ensure that you maintain academic integrity at all times especially with regards to plagiarism.

1. You cannot use the ideas or words of another and present them as your own. You can, however, use ideas from others in a paper or speech, provided that you properly acknowledge the source of your material.

2. If you paraphrase information from a website and include it in work that you submit, you must properly acknowledge the website and author. All FAU instructors have access to a software program that automatically detects work that is plagiarized from the internet.

3. Stealing (pinching) information from the internet is a serious violation of the University Honor Code. Many students are accused of plagiarism because they are not aware of the appropriate procedures for acknowledging sources.

If you are unsure how and if to site your sources, consult your professor. All FAU instructors have access to software (Turnitin) that detects work that is plagiarized from the internet or copied from another student.

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non attendance. 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-approved activities. Examples of University-approved reasons for absences include participating on an 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 absences 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 Policy Statement

In accordance with the 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 regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%

Letter Grade	Letter Grade
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

• There was a computational or recording error in the grading.

• The grading process used non-academic criteria.

• There was a gross violation of the instructor's own grading system.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

All assignments have due dates and times. No late work will be accepted for full credit. Do to time constraints, there will be no Final exam. Please keep up with your work on a daily basis. Grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations
(whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Note: All class meetings are recorded on Zoom and will be made available to students for viewing after each class.

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 therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Student Support Services and Online Resources

- Center for Learning and Student Success (CLASS)
- Counseling and Psychological Services (CAPS)
- FAU Libraries
- Math Learning Center
- Office of Information Technology Helpdesk
- Center for Global Engagement
- Office of Undergraduate Research and Inquiry (OURI)
- Science Learning Center

Speaking Center

Student Accessibility Services

Student Athlete Success Center (SASC)

Testing and Certification

Test Preparation

University Academic Advising Services
University Center for Excellence in Writing (UCEW)

Writing Across the Curriculum (WAC)

Course Bibliography of Online Resources:

1. Educational Research

FAU Library System http://www.fau.edu/library/

Science Education Journals

http://dir.yahoo.com/Education/journals

http://homepages.wmich.edu/~rudged/journals.html

Computer: APA Style websites

http://www.wisc.edu/writing/Handbook/DocAPA.html

http://www.english.uiuc.edu/cws/wwrorkshop/bibliography/apa/apamenu.htm

Useful websites for teachers

http://school.discovery.com http://www.teachers.net

http://www.education-world.com

http://www.k-6educators.about.com

http://www.lessonplanspage.com http://www.edhelper.com

http://www.juliantrubin.com/fairprojects.html

2. Science Organizations

National Academy of Science http://www.nas.edu/ How People Learn

http://nap.edu American Association for the Advancement of Science

http://www.aaas.org/ National Science Foundation http://www.nsf.gov/

National Science Teacher Association http://www.nsta.org

National Aeronautics and Space Administration

http://www.nasa.gov/home/index.html National Science Teachers Association

www.nsta.org

Florida Association of Science Teachers

http://www.fastscience.org/ Science News Online

http://sciencenews.org

Science Daily Center https://www.sciencedaily.com/

Supplementary/Useful Resources:
Next Generation CPalms State Standards: http://www.cpalms.org/Public/

Next Generation Science Standards: www.nextgenscience.org/

Florida Teacher Certification Exams:

http://www.fl.nesinc.com/testPage.asp?test=060 Video clips of experiments:

http://www.stevespanglerscience.com/experiments/ **3. Dr. Persin's Research**

Interests

Asteroid Mining http://chview.nova.org/station/ast-mine.htm

Programming in Java http://java.sun.com/docs/books/tutorial/

The Chemistry of the Ozone Layer http://www.oar.noaa.gov/climate/t_ozonelayer.html

Living on Mars

http://www.astrobio.net/index.php?option=com_debate&task=detail&id=1026 Cloud

Computing http://communication.howstuffworks.com/cloud-computing.htm

4. Dr. Persin's Professional Memberships

American Association of Physics Teachers (AAPT) http://www.aapt.org/

Institute of Electrical and Electronic Engineers (IEEE)

http://www.ieee.org/portal/site Association of Computing Machinery (ACM)

http://www.acm.org/

Editorial Board (The Chemist) http://www.theaic.org/pub_thechemist_journals/index.html

5. Appendix

Sexual Misconduct Policy

In any case involving allegations of sexual misconduct, you are encouraged to report the matter to the University Title IX Coordinator in the Office of Civil Rights and Title IX (OCR9). If University faculty become aware of an allegation of sexual misconduct, they are expected to report it to OCR9. If a report is made, someone from OCR9 and/or Campus Victim Services will contact you to make you aware of available resources including support services, supportive measures, and the University's grievance procedures. More information, including contact information for OCR9, is available at https://www.fau.edu/ocr9/title-ix/. You may also contact Victim Services at victimservices@fau.edu or 561-297-0500 (ask to speak to an Advocate) or schedule an appointment with a counselor at Counseling and Psychological Services (CAPS) by calling 561-297-CAPS.

AI Prohibited Policy:

The use of AI to assist in any work assigned in this specific course is prohibited.

Course Topical Outline

Class #/Date

#1

AUG 21

(observing, modeling …). Characteristics of experiments (constants, controls, variables…) Other types of investigation (literature reviews, surveys…).

Attitudes and dispositions of scientific thinking (curiosity, skepticism ...). Inquiry Lab Activity #1: The Center of Gravity

Assignment: Answer Questions for Chapter 1 posted on Canvas.

#2

AUG 28
Course Introduction: Syllabus, Assignments, Attendance, Grading Demos: Cartesian Diver/Center of Gravity/Thickness of Paper

Notes on Chapter 1 - Science: A Way of Thinking, pages 1-24

Dynamic nature of science models, laws, mechanisms, hypotheses, theories to explain natural phenomena, the scientific method

Branches of Science (Biology, Chemistry, Physics, Environmental, Life) Science practices thru integrated process skills

Notes on Chapter 2 - The Ordered Universe, pages 25-50

Notes on Chapter 3 - Energy, pages 51-75

Demos: Falling Object Speed

Early Astronomy, motion, mass, weight, force, gravity, Newton's Laws … Work, measured in Joules, is defined as force applied over a distance. Energy, ability to do work, has 2 types with 8 forms, Conservation Law

Inquiry Activity #2: The Speed of a Falling Object

Assignment: Answer Questions for Chapters 2 & 3 posted on Canvas.

#3 Notes on Chapter 4 – Heat and The Laws of Thermodynamics, pages 76-97
SEPT 4 Notes on Chapter 5 – Electricity and Magnetism, pages 98-122 Kinetic

Theory, heat vs temperature, heat capacity, heat transfer.

Laws of Thermodynamics, entropy, 3 ways to state Law II.

Electric and Magnetic Forces, static electricity, charge, Coulomb's

Law, magnetic poles, fields

Batteries, electric currents, voltage, Ohm's Law, Electromagnetics, Oersted, Faraday, AC vs DC

Inquiry Lab Activity #3: Ways to Slowly Melt Ice

Assignment: Answer Questions for Chapters 4 & 5 posted on Canvas.

#4

SEPT 11

Waves: 2 types with 2 forms, the equation, 5 properties, E/M Waves/Spectrum, 3 interactions with matter

Einstein: relativity (2 types), frame of reference, time dilation, length contraction, Einstein's Equation

Classwork Handout #1: Review of Chapters 1 - 5

Assignment: Answer Questions for Chapters 6 & 7 posted on Canvas.

#5

SEPT 18

Notes on Chapter 6 – Waves and Electromagnetic Radiation, pages 123-149

Notes on Chapter 7 – Albert Einstein and Relativity, pages 98-122 Demos: Properties of Waves

Notes on Chapter 8 – The Atom, pages 171-191

Notes on Chapter 9 – Quantum Mechanics, pages 192-207

The Periodic Table, elements, atoms, molecules, Brownian Movement, parts of an atom, Atomic Models

The quantized atom, Bohr's Equations, Quantum Mechanics, Heisenberg's Uncertainty Principle

Photons, particles vs waves, probabilities

Inquiry Activity #4: Electron Probabilities

Assignment: Answer Questions for Chapters 8 & 9 posted on Canvas.

#6 SEPT 25	Notes on Chapter 10 – Atoms in Combination: The Chemical Bond, pages 208- 262 Notes on Chapter 11 – Materials and Their Properties, pages 240-207 Chemical Bonds (3) - Ionic, Metallic, Covalent, States of Matter (4) – Solid, Liquid, Gas, Plasma Types of solids (4) – crystals, glasses, plastics, polymers, changes of state Chemical reactions, oxidation, reduction, balancing equations, polymerization, hydrocarbons Material science, composites, electrical properties, conductors, insulator, semiconductors, superconductors Inquiry Activity #5: Molecular Models Assignment: Answer Questions, Chapters 10 & 11 posted on Canvas.
#7 OCT 2	Notes on Chapter 12 – The Nucleus of the Atom, pages 263-286 Notes on Chapter 13 – The Ultimate Structure of Matter, pages 287-305 Nucleus of the atom, protons, neutrons, atomic number, mass number, isotopes, strong force, weak force Radioactive decay, alpha/beta/gamma, half-life, Radiometric dating, Fission & Fusion Elementary particles, cosmic rays, particle accelerators, leptons, hadrons, and quarks, antimatter, Forces (4) Classwork Handout #2: Review of Chapters 6 – 10, Binder Check #1. Assignment: Answer Questions, Chapters 12 & 13 posted on Canvas.

#8 Notes on Chapters 14, 15, 16 –Stars, Cosmos, Solar System, pages 306-375

Dark Energy, Vera Rubin's discovery

OCT 9
Telescopes, light years, solar wind, fusion reaction in stars, nebulae, main sequence, Theory of Star Formation, galaxies

Solar System, terrestrial planets, great bombardment, layers of the Earth, formation of the Moon, Jovian planets

Hertzsprung-Russel diagram, red giants, white dwarfs, supernovae, black holes

Kuiper belt, asteroids, comets, asteroid belt, meteoroids, meteors, meteorites

Cosmology, Milky Way Galaxy, redshift,

Inquiry Activity #6: Solar System Scale Model

blueshift, Hubble's Law, Big Bang Dark Matter,

Assignment: Answer Questions, Chap. 14, 15, & 16 posted on Canvas.

#9 OCT 16	Notes on Chapter 17 – Plate Tectonics, pages 376-399 Notes on Chapter 18 – Earth's Many Cycles, pages 400-426 Plate tectonics, Earth's layers, Plate boundaries, convergent/divergent plates Subduction zones, transform plate boundaries, volcanoes and earthquakes Earth's cycles, Hydrologic vs Atmospheric cycles, the Water Cycle, air masses, jet stream, weather vs climate, The Rock Cycle, Types of Rocks (3) – Igneous, Metamorphic, Sedimentary. Intrusive vs extrusive rocks Classwork Handout #3: Review of Chapters 11 – 16. Assignment: Answer Questions, Chapters 17 & 18 posted on Canvas.

#10

449-473

OCT 23
Notes on Chapter 19 – Ecology, Ecosystems,

Ecology, ecosystems, environment, ecological niches, energy transfer in an ecosystem,

Environment, pages 427-448 Notes on

Pollution types (3), Law of Unintended Consequences, Ozone Layer, CFC's, Acid

Chapter 20 – Strategies of Life, pages

rain, Greenhouse Effect, Climate Change

Strategies for life, Biology, Taxonomy, Linnaean Classification, "Dear King Philip Came Over From Great Spain", Species, Homo sapiens,

vertebrates vs invertebrates, mammals, primates, fungi

Inquiry Activity #7: Food Chains and Food Webs

Assignment: Reading Questions, Chapters 19 & 20 posted on Canvas.

#11 OCT 30	Notes on Chapter 21 – The Living Cell, pages 474-493 Notes on Chapter 22 – Molecules of Life, pages 494-513 Vascular plants, gymnosperms vs angiosperms, arthropods. Cells, cell wall, cell membrane, receptors, organelles, nucleus, Metabolism Photosynthesis, chloroplasts, glycolysis, mitochondria, MRSGREN, Mitosis vs Meiosis Molecule characteristics (4), types of Biological Molecules (3), enzymes Proteins, amino acids, carbohydrates, sugars, lipids, fats, vitamins and minerals Inquiry Activity #8: Protein Folding Assignment: Reading Questions, Chapters 21 & 22 posted on Canvas.

#12

NOV 6

Notes on Chapter 23 – Classical and Modern Genetics, pages 514-536 Notes on Chapter 24 – The New Science of Life, pages 537-558

Genetics, Gregor Mendel, hybrids, 3 Laws of Classical Genetics

Genes - Dominant vs Recessive, Modern Molecular Genetics, DNA vs RNA, nucleic acids, double helix, DNA Bases (4) – A T C G, Replication and Transcription, Messenger RNA, Genetic Code, Mutations, Viruses, chromosomes, genomes

Genetic Engineering, DNA fingerprinting, stem cells, cloning, gene therapy

DNA repair, tracing ancestry

Classwork Handout #4: Review of Chapters 17 – 21.

Assignment: Reading Questions, Chapters 23 & 24 posted on Canvas.

#13 NOV 13	Notes on Chapter 25 – Evolution, pages 559-584 Evolution, the fossil record, biochemical evidence, vestigial and adapted organs Chemical evolution, natural selection, adaptation, Charles Darwin, Geologic Time Mass extinction, rate of evolution Classwork Handout #5: Review of Chapters 22 – 25. Assignment: Reading Questions for Chapter 25 posted on Canvas.
#14 NOV 20	Binder Check Video #2 due Final Exam Study Guide for Chapters 1 – 25 Assignment: Complete Final Exam Review Handout Thanksgiving Recess – November 27, 28, 29
#15 DEC 11	FAU Reading Days December 2, 3, 4 (Classes do not meet) University Final Exam Period December 5 – 11 SCE4113 Final Exam: DEC 11 from 4:30 to 7:30 PM "Ghost Proctored" by the Professor on Zoom

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. **[Policy 12.16 Artificial Intelligence]**

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the

use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course
entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the **Florida Atlantic Code of Academic Integrity, Regulation 4.001.**

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit **https://fau.edu/ai/citation**

Appendix A

Connection to Competencies and Skills Required for Teacher Certification in Florida (26th Edition) FTCE Competencies

Elementary Education K–6 Subtest 3: Science (60)

Competency 1—Knowledge of effective science instruction

1. Analyze and apply developmentally appropriate researched-based strategies for teaching science practices.

2. Select and apply safe and effective instructional strategies to utilize manipulatives, models, scientific equipment, real-world examples, and print and digital representations to support and enhance science instruction.

3. Identify and analyze strategies for formal and informal learning experiences to provide a science curriculum that promotes students' innate curiosity and active inquiry (e.g., hands-on experiences, active engagement in the natural world, student interaction).

4. Select and analyze collaborative strategies to help students explain concepts, to introduce and clarify formal science terms, and to identify misconceptions.

5. Identify and apply appropriate reading strategies, mathematical practices, and science-content materials to enhance science instruction for learners at all levels.

6. Apply differentiated strategies in science instruction and assessments based on student needs.

7. Identify and apply ways to organize and manage a classroom for safe, effective science teaching that reflect state safety procedures and restrictions (e.g., procedures, equipment, disposal of chemicals, classroom layout, use of living organisms).

8. Select and apply appropriate technology, science tools and measurement units for students' use in data collection and the pursuit of science.

9. Select and analyze developmentally appropriate diagnostic, formative and summative assessments to evaluate prior knowledge, guide instruction, and evaluate student achievement.

10. Choose scientifically and professionally responsible content and activities that are socially and culturally sensitive.

Competency 2—Knowledge of the nature of science

1. Analyze the dynamic nature of science models, laws, mechanisms, and theories that explain natural phenomena (e.g., durability, tentativeness, replication, reliance on evidence).

2. Identify and apply science and engineering practices through integrated process skills (e.g., observing, classifying, predicting, hypothesizing, designing and carrying out investigations, developing and using models, constructing and communicating explanations).

3. Differentiate between the characteristics of experiments (e.g., multiple trials, control groups, variables) and other types of scientific investigations (e.g., observations, surveys).

4. Identify and analyze attitudes and dispositions underlying scientific thinking (e.g., curiosity, openness to new ideas, appropriate skepticism, cooperation).

5. Identify and select appropriate tools, including digital technologies, and units of measurement for various science tasks.

6. Evaluate and interpret pictorial representations, charts, tables, and graphs of authentic data from scientific investigations to make predictions, construct explanations, and support conclusions.

7. Identify and analyze ways in which science is an interdisciplinary process and interconnected to STEM disciplines (i.e., science, technology, engineering, mathematics).

8. Analyze the interactions of science and technology with society including cultural, ethical, economic, political, and global factors.

Competency 3—Knowledge of physical sciences

1. Identify and differentiate among the physical properties of matter (e.g., mass, volume, texture, hardness, freezing point).

2. Identify and differentiate between physical and chemical changes (e.g., tearing, burning, rusting).

3. Compare the properties of matter during phase changes through the addition and/or removal of energy (e.g., boiling, condensation, evaporation).

4. Differentiate between the properties of homogeneous mixtures (i.e., solutions) and heterogeneous mixtures.

5. Identify examples of and relationships among atoms, elements, molecules, and compounds.

6. Identify and compare potential and kinetic energy.

7. Differentiate among forms of energy, transformations of energy, and their real-world applications (e.g., chemical, electrical, mechanical, heat, light, sound).

8. Distinguish among temperature, heat, and forms of heat transfer (e.g., conduction, convection, radiation).

9. Analyze the functionality of an electrical circuit based on its conductors, insulators, and components.

10. Identify and apply the characteristics of contact forces (e.g., push, pull, friction), at-a-distance forces (e.g., magnetic, gravitational, electrostatic), and their effects on matter (e.g., motion, speed).

Competency 4—Knowledge of Earth and space

1. Identify characteristics of geologic formations (e.g., volcanoes, canyons, mountains) and the mechanisms by which they are changed (e.g., physical and chemical weathering, erosion, deposition).

2. Identify and distinguish among major groups and properties of rocks and minerals and the processes of their formations.

3. Identify and analyze the characteristics of soil, its components and profile, and the process of soil formation.

4. Identify and analyze processes by which energy from the Sun is transferred (e.g., radiation, conduction, convection) through Earth's systems (e.g., biosphere, hydrosphere, geosphere, atmosphere, cryosphere).

5. Identify and analyze the causes and effects of atmospheric processes and conditions (e.g., water cycle, weather, climate).

6. Identify and analyze various conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.

7. Analyze the Sun-Earth-Moon system in order to explain repeated patterns such as day and night, phases of the Moon, tides, and seasons.

8. Compare and differentiate the composition and various relationships among the objects of our Solar System (e.g., Sun, planets, moons, asteroids, comets).

9. Identify major events in the history of space exploration and their effects on society.

Competency 5—Knowledge of life science

1. Identify and compare the characteristics of living and nonliving things.

2. Analyze the cell theory as it relates to the functional and structural hierarchy of all living things.

3. Identify and compare the structures and functions of plant and animal cells.

4. Classify living things into major groups (i.e., Linnaean system) and compare according to characteristics (e.g., physical features, behaviors, development).

5. Compare and contrast the structures, functions, and interactions of human and other animal organ systems (e.g., respiration, reproduction, digestion).

6. Distinguish among infectious agents (e.g., viruses, bacteria, fungi, parasites), their transmission, and their effects on the human body.

7. Identify and analyze the processes of heredity and natural selection and the scientific theory of evolution.

8. Analyze the interdependence of living things with each other and with their environment (e.g., food webs, ecosystems, pollution).

9. Identify and analyze plant structures and the processes of photosynthesis, transpiration, and reproduction (i.e., sexual, asexual).

10. Predict the responses of plants to various stimuli (e.g., heat, light, gravity).

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11. Identify and compare the life cycles and predictable ways plants and animals change as they grow, develop, and age.

FLORIDA ATLANTIC UNIVERSITY

SCE 4350-XXX XXXXX

Prin & Mthd:K-9 School Science

Date:

Building: Room:

3 Credit(s)

Semester 20XX - 1 Full Term

Instructor Information

Email:
Office:
Office Hours:
Phone:

Email:

Course Description

Principles and Methods: K-9 School Science
Prerequisites: SCE 4113, LAE 4353, TSL 4080, all with minimum grades of "C" A review of concepts in science and a study of methods and materials related to K-9 science teaching.

COURSE DESCRIPTION

3 semester hours. A review of concepts in science along with the methods and materials related for science teaching in elementary/middle school. “Education is not the learning of facts but the training of the mind to think.” Einstein

CLASS TIMES and LOCATION

COURSE CONNECTION TO PRE-SERVICE TEACHERS IN TRAINING

As a reflective thinker, the Pre-Service Teacher in Training will make informed decisions, exhibit ethical behavior, and provide evidence of being a capable professional. This will be done by demonstrating abilities to teach science through an inquiry-based approach. Lesson plans are based on the structured 5E Model, specific to the developmental characteristics of students and the needs of diverse student populations in K to Grade 9.

Prerequisites/Corequisites

Prerequisite(s): All of the following:

LAE 4353 Graduate / Undergraduate (Minimum Grade of C)

TSL 4080 Graduate / Undergraduate (Minimum Grade of C)

SCE 4113 Graduate / Undergraduate (Minimum Grade of C)

Instructional Method

In-Person

Required Texts/Materials

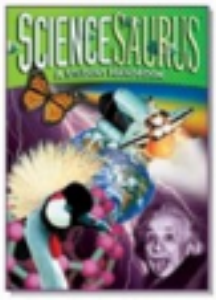
Teaching science Through Inquiry-Based Instruction
Contant, Bass, Tweed, & Carin.

Teaching science Through Inquiry-Based Instruction. (13th Edition) New York: Pearson.

ISBN-13: 978-0134516790

ScienceSaurus Student Handbook
Sciencesaurus: Student handbook. (Green Text) Houghton Mifflin .

ISBN-13: 978-0669529166



Teaching Science Through Inquiry-Based Instruction
ISBN: 9780134516691
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Edition: 13th

Teaching Science Through Inquiry-Based Instruction
ISBN: 9780134516677
Publisher: Pearson Lifetime eBooks
Edition: 13th

Pearson eText Teaching Science Through Inquiry-Based Instruction -- Instant Access Pearson+ Single Title Subscription, 4-Month Term
ISBN: 9780134515595
Publisher: Pearson+ Subscriptions
Edition: 13th

Teaching Science Through Inquiry etc. (w/Access)
ISBN: 9780134515472
Publisher: Pearson
Edition: 13th

Recommended Readings and Materials

MATERIALS NEEDED FOR CLASS
FAU's Canvas course system. Computer/printer, Desktop with course materials folders, binder, calculator, Adobe Scan Imaging App, and your 2 books.

LiveText Requirement
All students must connect to LiveText by Watermark. Helpful information and tutorials are available

on the FAU COE website: https://www.fau.edu/education/students/livetext/

Course Objectives/Student Learning Outcomes

Florida Educator Accomplished Practices (FEAPs) High Effect Size

Indicators: A.(1): Knowledge and application of Instructional Design and Lesson

Planning.

A.(1)(b) The effective educator demonstrates deep and comprehensive knowledge of the subject taught.

A.(2): High quality instruction and meaningful class activities.

A.(2)d. Selects appropriate formative assessments to monitor learning.

A.(2)e. Uses a variety of data, independently, and in collaboration with colleagues, to evaluate learning outcomes, adjust planning and continuously improve the effectiveness of the lessons.

A.(2)f. Develops learning experiences that require students to demonstrate a variety of applicable skills and competencies.

Course Objectives:

1. Students will be able to analyze and discuss the advantages and limitations of modern approaches to teaching science in the elementary and middle school. (ACEI 1.0, 2.2)

2. Students will be able to demonstrate knowledge and understanding of various hands-on discovery approaches to science teaching/learning, especially guided discovery teaching/learning. (ESOL 5.4), (ACEI 3.1, 3.3, & 3.4)

3. Students will be able to identify skills and strategies important for the development and assessment of thinking skills, problem solving skills, and effective questioning techniques. (ESOL 16.2), (ACEI 4.0)

4. Students will be able to develop skills necessary for effective lesson-planning including incorporation of hands-on science instruction, and locating/preparing necessary resources and materials. (ESOL 8.4, 8.5, 11.5, 16.2, 20), (ACEI 3.1, 3.3, 3.4, 5.1, & 5.2)

5. Students will be able to demonstrate their proficiency in the knowledge and understanding of basic science concepts, scientific principles, the nature of science, and goals/objectives of science education in accordance with national and state science education standards. (FSMCS: ELE 18.1, 18.2, 18.3, 19.1, 19.3, 19.4, 19.5, 19.6, 19.8, 19.9, 19.10, 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 21.1,

21.2, 21.3, 21.4, 22.1, 22.3, 22.4, 22.5,22.6, 23.1, 23.2, 23.3, 23.4, 24.1, 24.2, 24.3, 24.4, 24.5, 25.1, 25.2), (ACEI 2.2)

6. Students will be able to describe ways of incorporating the various forms of technology into science instruction/lesson plans) (ESOL 17.5) (FSAC 26.1, 26.2, 26.4), (ACEI 2.2)
7. Students will be able to describe ways of assessing what students know and are able to do. (ESOL 17.5), (ACEI 4.0)

8. Students will be able to plan ways of integrating science with mathematics, arts, social studies, music, and language arts. (ESOL 8.4, 8.5, 11.3, 11.4, 11.5), (ACEI 2.8)

9. Students will be able to develop an understanding of the importance of teaching science to students with disabilities, including students of all social and cultural backgrounds. (ESOL 6.5, 6.6, 6.10), (ACEI 3.3 & 3.4)

KEY: Florida Educator Accomplished Practices (FEAP), Association for Childhood Education International (ACEI), Florida Subject Area Competencies (FSAC), Subject Matter Content Standards for Florida Teachers (FSMCS), English for Speakers of Other Languages (ESOL)

Faculty Rights and Responsibilities

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

• Establish and implement academic standards.

• Establish and enforce reasonable behavior standards in each class.

• Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

Disability Policy

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/.

Academic Service Learning (AS-L) Designated Course

This course is designated as an “academic service-learning” course. The assistance you provide to the agency/organization during your academic service-learning (AS-L) experience is a service to the community and will allow you to apply knowledge from the course to local, national, and/or global social issues. Throughout this course you will be participating in AS-L activities while demonstrating civic engagement at campus, local, national, and/or global community levels. You will also reflect on
your AS-L experience and the impact on the community as well as your professional development. Academic service-learning notation of hours will post to your transcript with submission of hours to your faculty instructor. An Academic Service-Learning

This course contains multiple assignments designed to help students conduct research and inquiry at an intensive level. If this class is selected to participate in the university-wide assessment program, students will be asked to complete a consent form and submit electronically some of their research assignments for review. Visit the Office of Undergraduate Research and Inquiry (OURI) for additional opportunities and information at www.fau.edu/ouri.

Projects are expected to achieve all six of the following Student Learning Outcomes (SLOs):

SLO 1: Knowledge. Students are expected to demonstrate content knowledge, and knowledge of core principles and skills.

SLO 2: Formulate Questions. Students are required to formulate research questions, scholarly or creative problems in a manner appropriate to the planning discipline.

SLO 3: Plan of Action. Students are expected to develop and implement a plan of action to address research and inquiry questions or scholarly problems.

SLO 4: Critical Thinking. Students are expected to apply critical thinking skills to evaluate information, their own work, and the work of others.

SLO 5: Ethical Conduct. Students are expected to identify significant ethical issues in research and inquiry and/or address them in practice.

SLO 6: Communication. Students will convey all aspects of their research and inquiry (processes and/or products) in appropriate formats, venues, and delivery modes

Student Survey is required to be taken at the end of your AS-L project. Please visit the Weppner Center for LEAD & Service-Learning website, www.fau.edu/leadandserve, for the survey link and more information on FAU’s Academic Service-Learning program.

Minimum project hours: 10

Assumption of Risk Statement for Student

I understand that there are certain physical risks inherent in every form of service-learning. I understand the risks associated with this Academic Service-Learning assignment. I nonetheless agree to assume those risks so as to gain the benefits from participation in this valuable learning experience. I hereby release the State of Florida, the Board of Trustees, Florida Atlantic University and its agents and employees from any and all liability associated with my participation in this assignment at Florida Atlantic University.

If you are selected to participate in the university-wide Academic Service-Learning program, you will be required to document a minimum of 10 hours of student service to the community agency.

Course Evaluation Method

DEFINITION OF CLASS PARTICIPATION: Class Participation includes attending the class on time in Room ED313, taking your notes from the slides provided by the Professor, maintaining your virtual/physical binder, completing class activities and handouts, turning work in on time, responding and answering questions during recitation, participating with Recitation, completing the Absent Form (if unable to attend, limit 2) provided by the Professor in the CourseFiles folder, and by promptly reading and answering all Canvas email messages throughout the week. If absent, download the Class Absence Form (limit 2), fill-out, and send to Dr. Persin as a Canvas email attachment to recover some points.

SUMMARY OF COURSE REQUIREMENTS: Full participation in ALL classroom activities (reading assignments/discussions/emails/Canvas) and including (All) chapter reading questions answered for the Teaching SCIENCE text and Sciencesaurus, one (1) Science Teaching Philosophy Paper, one (1) PowerPoint presentation of 10 ±1 slides, one (1) Critical Assignment (CA) lesson plan and presentation, one (1) Science Project, several weekly in-class assignments, two (2) binder checks, Final Exam review, and Final Exam. Students are also expected to conduct peer-review, view all course postings on Canvas, as well as promptly answering email, attending all classes, not showing up late or leaving early, participating in class Recitation, and submitting work on time. (Assignments noted as Critical (CA) are necessary to pass the course.)

ASSESSMENTS Points

Cpalms Standard Choice 10

Science Teaching Philosophy Paper 25

Attendance/Weekly Participation 10/week

Reading Question Assignments (5) 10 each

Lab Activities (6) 15 each

Presentations (3) 25 each

Binder Checks (2) 10 each

Final Exam 100

Code of Academic Integrity

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 University Regulation 4.001.

ACADEMIC HONESTY

As a student at FAU, you are expected to uphold the Honor Code of the University at all times. Please refer to the University Catalog for a full description of the Honor Code, especially as it pertains to academic irregularities and students' academic grievances.

Here are some helpful hints to ensure that you maintain academic integrity at all times especially with regards to plagiarism.

1. You cannot use the ideas or words of another and present them as your own. You can, however, use ideas from others in a paper or speech provided that you properly acknowledge the source of your material.

2. If you paraphrase information from a website and include it in work that you submit, you must properly acknowledge the website and author.

3. Stealing (pinching) information from the internet is a serious violation of the University Honor Code. Many students are accused of plagiarism because they are not aware of the appropriate procedures for acknowledging sources.

If you are unsure how and if to site your sources, consult your professor. FAU instructors have access to software (Turnitin) that detects work that is plagiarized from the internet, or copied from another student.

Attendance Policy Statement

Students are expected to attend all their scheduled University classes and to satisfy all academic

objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non attendance. 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-approved activities. Examples of University-approved reasons for absences include participating on an 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 absences 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.

ATTENDANCE

1. According to Florida Atlantic University policy, "Students are expected to attend all scheduled university classes and to satisfy all academic objectives as outlined by the instructor." Reasonable accommodations are made for religious observances. Otherwise, only absences for university functions are excused.

2. Attendance includes meaningful, active involvement in all class sessions, class discussions, and course activities, during the live face-to-face format, including through email and Canvas. Professional conduct includes being respectful to your peers, being on time and staying until class ends, and turning work in on time. No late work will be accepted for full credit.

3. Your professor cannot excuse you from class. All work that was due must be sent to your professor before the next class meeting begins to be eligible for credit. If you have a university-approved absence, or your participation in a religious observation, you will have the opportunity to make-up the work missed in a reasonable period of time. Also, if you are absent, you must fill-out and send the Class Absence Form as a Canvas email attachment to the Professor before the end of the day (Limit 2). See the Files section of Canvas, in the folder CourseFiles, for the Class Absence Form.

5. The class roll will be taken by the Professor during each class period. Students arriving late and/or leaving early will be noted.

Religious Accommodation Policy Statement

In accordance with the 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 regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations.

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour

For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Course Grading Scale

Letter Grade	Letter Grade
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%
F	Below 60

Grade Appeal Process

You may request a review of the final course grade when you believe that one of the following conditions apply:

• There was a computational or recording error in the grading.

• The grading process used non-academic criteria.

• There was a gross violation of the instructor's own grading system.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

Policy on Make-up Tests, Late work, and Incompletes

No late work will be accepted for full credit.

All work that was due must be sent to your professor before the next class meeting begins to be eligible for credit. If you have a university-approved absence, or your participation in a religious observation, you will have the opportunity to make-up the work missed in a reasonable period of time.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Artificial Intelligence Preamble

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by

the instructor of the class for a specific assignment. **[Policy 12.16 Artificial Intelligence]**

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the **Florida Atlantic Code of Academic Integrity, Regulation 4.001.**

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit **https://fau.edu/ai/citation**

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 therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Student Support Services and Online Resources

- Center for Learning and Student Success (CLASS)
- Counseling and Psychological Services (CAPS)
- FAU Libraries
- Math Learning Center
- Office of Information Technology Helpdesk
- Center for Global Engagement
- Office of Undergraduate Research and Inquiry (OURI)
- Science Learning Center

Speaking Center

Student Accessibility Services

Student Athlete Success Center (SASC)

Testing and Certification

Test Preparation

University Academic Advising Services

University Center for Excellence in Writing (UCEW)

Writing Across the Curriculum (WAC)

Course Topical Outline

Classes Topics

Course Introduction/Overview, Syllabus, Discussion of Assignments

#1

Introductory Slides I: What is Science, Inquiry, Scientific Method, Concept Mapping, Metric System, and Processing Lab Data.

PowerPoint and Lesson Plan Presentation Topics (Chosen from Cpalms)

AUG 22 Homework: Science Teaching Philosophy Paper

#2

AUG 29

#3

SEPT 5

#4

SEPT 12
Science Teaching Philosophy Paper, Due

Introductory Slides II: The 5-E Teaching Model, Strategies for the Classroom, Demonstrating Science Concepts, “Hands-on” Ideas

Lab Activity #1: Causes of Friction

How to Design Your PowerPoint (Due dates on Sept 19 & 26) Science Fair Project Ideas (Have 1 or 2 for next week.)

Homework: Reading Questions from Teaching SCIENCE Text – Ch. 1 & 2, and Sciencesaurus (Upload to Canvas)

Answers to Reading Questions due for Recitation

CA For LiveText) – Designing Your Lesson Plan

(Lesson Plan due dates on Oct 17 & 24)

Lab Activity #2: Heat To Melt Ice

Science Fair Project Due (Nov 7 & 14)

Homework: Reading Questions from Teaching SCIENCE Text – Ch. 3 & 4, and Sciencesaurus (Upload to Canvas)

Answers to Reading Questions due for Recitation

How to Write a Lesson Plan Objective and Evaluate It

Lab Activity #3: Falling Objects.

Homework: PowerPoint Presentations for Alpha-group 1, Reading Questions from Teaching SCIENCE Text – Ch. 5 & 6, and Sciencesaurus (Upload to Canvas)

#5 Answers to Reading Questions due for Recitation

SEPT 19

#7

#6

OCT 3

SEPT 26

#8

OCT 10

Recitation on Common Misconceptions for

Lesson Plan Topics Binder Check #1 Video #1

#9

Homework: Lesson Plan for Alpha-group 1

Lesson Plan Presentations Due for Alpha-group 1

OCT 17

PowerPoint Presentations Due for Alpha-group 1

Lab Activity #4: Speed of Sound.

Lab Activity #6: What to do for Pi-Day.

Homework: PowerPoint Presentations for Alpha-group 2, Reading Questions from Teaching SCIENCE Text – Ch. 7 & 8, and Sciencesaurus (Upload to Canvas)

Homework: Lesson Plan for Alpha-group 2

Lesson Plan Presentations Due for Alpha-group 2

#10

OCT 24

Answers to Reading Questions due for Recitation

#11

PowerPoint Presentations Due for Alpha-group 2

OCT 31

Lab Activity #5: Satellite Speed vs Gravity.

Homework: Reading Questions from Teaching SCIENCE Text – Ch. 9 & 10, and Sciencesaurus (Upload to Canvas

#12

Answers to Reading Questions due for Recitation

NOV 7

How to Set-up a 5-E Model Lesson Plan

#13

Homework: Find 10 Common Misconceptions about your Lesson Plan Topic

NOV 14

	Alpha-group 1 (Board and Abstract) Homework: Science Projects for Alpha-group 2
#14 NOV 21	(Board and Abstract) Submit Lesson Plans to LiveText
	Science Project Presentations Due for Alpha-group 2 (Board and Abstract) Homework: Study the Exam Review Study Guide
#15 DEC 5 How to present your Science Project Homework: Work on your Science Fair Project	Submit Lesson Plans to LiveText Recitation on Final Exam Review Study Guide Binder Check #2 Video Due, Upload to Canvas Homework: Submit Lesson Plan to LiveText Study for Final Exam
(Class Does not Meet.) Students work on Science Fair Projects. Homework: Science Projects for Alpha-group 1	(FAU Reading Days on DEC 2, 3, & 4) FAU Final Exam Period DEC 5 – DEC 11
(Board and Abstract) Submit Lesson Plans to LiveText	Our Final Exam – Thursday, DEC 5 from 4:30 to 7:30 PM Home Test – “Ghost”-Proctored by the Professor on Zoom
Science Project Presentations Due for	

APPENDIX

Sexual Misconduct Policy

In any case involving allegations of sexual misconduct, you are encouraged to report the matter to

the University Title IX Coordinator in the Office of Civil Rights and Title IX (OCR9). If University faculty become aware of an allegation of sexual misconduct, they are expected to report it to OCR9. If a report is made, someone from OCR9 and/or Campus Victim Services will contact you to make you aware of available resources including support services, supportive measures, and the University's grievance procedures. More information, including contact information for OCR9, is available at https://www.fau.edu/ocr9/title-ix/. You may also contact Victim Services at victimservices@fau.edu or 561-297-0500 (ask to speak to an Advocate) or schedule an appointment with a counselor at Counseling and Psychological Services (CAPS) by calling 561-297-CAPS.

AI Prohibited Policy:

The use of AI to assist in any work assigned in this specific course is prohibited.

Appendix A

Connection to Competencies and Skills Required for Teacher Certification in Florida (26th Edition) FTCE Competencies

Elementary Education K–6 Subtest 3: Science (60)

Competency 1—Knowledge of effective science instruction

1. Analyze and apply developmentally appropriate researched-based strategies for teaching science practices.

2. Select and apply safe and effective instructional strategies to utilize manipulatives, models, scientific equipment, real-world examples, and print and digital representations to support and enhance science instruction.

3. Identify and analyze strategies for formal and informal learning experiences to provide a science curriculum that promotes students' innate curiosity and active inquiry (e.g., hands-on experiences, active engagement in the natural world, student interaction).

4. Select and analyze collaborative strategies to help students explain concepts, to introduce and clarify formal science terms, and to identify misconceptions.

5. Identify and apply appropriate reading strategies, mathematical practices, and science-content materials to enhance science instruction for learners at all levels.

6. Apply differentiated strategies in science instruction and assessments based on student

needs.

7. Identify and apply ways to organize and manage a classroom for safe, effective science teaching that reflect state safety procedures and restrictions (e.g., procedures, equipment, disposal of chemicals, classroom layout, use of living organisms).

8. Select and apply appropriate technology, science tools and measurement units for students' use in data collection and the pursuit of science.

9. Select and analyze developmentally appropriate diagnostic, formative and summative assessments to evaluate prior knowledge, guide instruction, and evaluate student achievement.

10. Choose scientifically and professionally responsible content and activities that are socially and culturally sensitive.

Competency 2—Knowledge of the nature of science

1. Analyze the dynamic nature of science models, laws, mechanisms, and theories that explain natural phenomena (e.g., durability, tentativeness, replication, reliance on evidence).

2. Identify and apply science and engineering practices through integrated process skills (e.g., observing, classifying, predicting, hypothesizing, designing and carrying out investigations, developing and using models, constructing and communicating explanations).

3. Differentiate between the characteristics of experiments (e.g., multiple trials, control groups, variables) and other types of scientific investigations (e.g., observations, surveys).

4. Identify and analyze attitudes and dispositions underlying scientific thinking (e.g., curiosity, openness to new ideas, appropriate skepticism, cooperation).

5. Identify and select appropriate tools, including digital technologies, and units of measurement for various science tasks.

6. Evaluate and interpret pictorial representations, charts, tables, and graphs of authentic data from scientific investigations to make predictions, construct explanations, and support conclusions.

7. Identify and analyze ways in which science is an interdisciplinary process and interconnected to STEM disciplines (i.e., science, technology, engineering, mathematics).

8. Analyze the interactions of science and technology with society including cultural, ethical, economic, political, and global factors.

Competency 3—Knowledge of physical sciences

1. Identify and differentiate among the physical properties of matter (e.g., mass, volume, texture, hardness, freezing point).

2. Identify and differentiate between physical and chemical changes (e.g., tearing, burning, rusting).

3. Compare the properties of matter during phase changes through the addition and/or removal of energy (e.g., boiling, condensation, evaporation).

4. Differentiate between the properties of homogeneous mixtures (i.e., solutions) and heterogeneous mixtures.

5. Identify examples of and relationships among atoms, elements, molecules, and compounds.

6. Identify and compare potential and kinetic energy.

7. Differentiate among forms of energy, transformations of energy, and their real-world applications (e.g., chemical, electrical, mechanical, heat, light, sound).

8. Distinguish among temperature, heat, and forms of heat transfer (e.g., conduction, convection, radiation).

9. Analyze the functionality of an electrical circuit based on its conductors, insulators, and components.

10. Identify and apply the characteristics of contact forces (e.g., push, pull, friction), at-a-distance forces (e.g., magnetic, gravitational, electrostatic), and their effects on matter (e.g., motion, speed).

Competency 4—Knowledge of Earth and space

1. Identify characteristics of geologic formations (e.g., volcanoes, canyons, mountains) and the mechanisms by which they are changed (e.g., physical and chemical weathering, erosion, deposition).

2. Identify and distinguish among major groups and properties of rocks and minerals and the processes of their formations.

3. Identify and analyze the characteristics of soil, its components and profile, and the process of soil formation.

4. Identify and analyze processes by which energy from the Sun is transferred (e.g., radiation, conduction, convection) through Earth's systems (e.g., biosphere, hydrosphere, geosphere, atmosphere, cryosphere).

5. Identify and analyze the causes and effects of atmospheric processes and conditions (e.g., water cycle, weather, climate).

6. Identify and analyze various conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.

7. Analyze the Sun-Earth-Moon system in order to explain repeated patterns such as day and night, phases of the Moon, tides, and seasons.

8. Compare and differentiate the composition and various relationships among the objects of our Solar System (e.g., Sun, planets, moons, asteroids, comets).

9. Identify major events in the history of space exploration and their effects on society.

Competency 5—Knowledge of life science

1. Identify and compare the characteristics of living and nonliving things.

2. Analyze the cell theory as it relates to the functional and structural hierarchy of all living things.

3. Identify and compare the structures and functions of plant and animal cells.

4. Classify living things into major groups (i.e., Linnaean system) and compare according to characteristics (e.g., physical features, behaviors, development).

5. Compare and contrast the structures, functions, and interactions of human and other animal organ systems (e.g., respiration, reproduction, digestion).

6. Distinguish among infectious agents (e.g., viruses, bacteria, fungi, parasites), their transmission, and their effects on the human body.

7. Identify and analyze the processes of heredity and natural selection and the scientific theory of evolution.

8. Analyze the interdependence of living things with each other and with their environment (e.g., food webs, ecosystems, pollution).

9. Identify and analyze plant structures and the processes of photosynthesis, transpiration, and reproduction (i.e., sexual, asexual).

10. Predict the responses of plants to various stimuli (e.g., heat, light, gravity).

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11. Identify and compare the life cycles and predictable ways plants and animals change as they grow, develop, and age.