Northern Marianas College
CURRICULUM ACTION REQUEST

Effective Semester / Session: Fall 2018

Type of Action:

___	New
X	Modification
___	Move to Inactive (Stop Out)
___	Cancellation

Course Alpha and Number: ED433

Course Title: Science As Inquiry Methodology

Reason for initiating, revising, or canceling:
The course guide has been updated to reflect change and modifications to the course textbook, Method of Evaluation, Course Outline, Student Learning Outcomes, Degree or Certificate Requirement Met by Course, Course Activities and Design, and Assessment Measures.

Rosaline Cepeda 4/12/2018
Proposer Date

Charlotte Cepeda 4.12.18
Department Chair Date

Adam Walsh 4-12-18
Language & Format Review Specialist Date

Ajani Burrell 4/12/18
Academic Council Chair Date

Amanda Angel-Diaz 4/17/18
Acting Dean of Learning & Support Services Date

1. **Department**
   School of Education

2. **Purpose**
   Students need to master inquiry strategies to be successful in all aspects of learning. Additionally, teaching methods and techniques will help students relate their natural environment to themselves in an interdisciplinary manner. ED433, Science As Inquiry Methodology, provides an intensive examination of science content through a supportive experiential learning environment. It also offers the teacher-in-training the opportunity to gain an understanding of the development of children's thinking by planning and guiding student-directed science exploration.

3. **Description**

   A. **Required/Recommended Textbook(s) and Related Materials**
   Required:
   Chitman-Booker, L., & Kopp, K. (2013). *The 5Es of inquiry-based science.* Huntington Beach, CA: Shell Education SOUSA,

   DAVID A.. PILECKI, THOMAS J. (2018). *FROM STEM TO STEAM: brain-compatible strategies and lessons that integrate the arts.* S.I.: CORWIN PRESS INC.

   Recommended: N/A

   B. **Contact Hours**
   1. **Lecture:** 3 per week / 45 per semester
   2. **Lab:** N/A
   3. **Other:** N/A

   C. **Credits**
   1. **Number:** 3
   2. **Type:** Regular degree credits

   D. **Catalogue Course Description**
   This course provides the skills, concepts, and content needed to teach science to elementary school children in ways that make science personally relevant. It provides the teacher-in-training with experience in planning, developing, and conducting interdisciplinary science investigations. Concepts covered include: project planning, presentation of strategies, group management, and the inquiry process.

Prerequisites: All core course and general education requirements with a grade of "C" or better, and ED300, ED351, ED370 and ED450, or permission of the Director of the School of Education. English Placement Level: EN202. Math Placement Level: MA132

E. Degree or Certificate Requirements Met by Course
This is a required course for all BS Elementary Education, Elementary Education concentration.

F. Course Activities and Design
This course is designed to incorporate lectures, science experiments and demonstrations, presentations, assigned projects, reflections, and a one-month unit plan. All of which will exhibit a variety of teaching methods that can be used to teach science concepts.

4. Course Prerequisite(s); Concurrent Course Enrollment
Prerequisites: All core course and general education requirements with a grade of "C" or better and ED300, ED351, ED370, and ED450, or permission of the Director of the School of Education. English Placement Level: EN 202. Math Placement Level: MA 132.

Required English/Mathematics Proficiency Level(s)
English Placement Level: EN202
Mathematics Placement Level: MA132

5. Estimated Cost of Course; Instructional Resources Needed
Cost to the Student: Tuition for a 3-credit hour course, student flat fee, and instructional materials fee.

Cost to the College: Instructor's salary

Instructional resources needed for this course include TV/DVD, laptop computer, computer projector, whiteboard and markers, CRC materials, photocopied materials, and various consumable materials as necessary.

6. Method of Evaluation
Student grades will be determined based on:
a. Attendance and Participation
b. Chapter Reflections
c. Article and/or Video Reviews
d. Engineering Presentations
e. Science Demonstrations
f. One-Month Science Thematic Unit Plan
g. Midterm and Final Exam.

NMC's grading and attendance policies will be followed.

7. Course Outline

This is a topical outline and does not necessarily indicate the sequence in which the material will be presented.

1.0 Children, Science, and Inquiry: Preliminary Questions
- 1.1 Science in elementary school
- 1.2. How science changes over time

2.0 Processes and Strategies for Inquiring
- 2.1 Processes of science
- 2.2 Investigation strategies

3.0 Learning Science with Understanding
- 3.1 The new view of learning, developing, and science teaching
- 3.2 Enhancing the understanding of science
- 3.3 Children's inter-native conceptions and science learning

4.0 Teaching Science for Understanding: The 5-E Instructional Model
- 4.1 Inquiry Instruction
- 4.2 The 5-E instructional model of science instruction
- 4.3 Guided discovery, textbook, and direct instruction approaches to science
- 4.4 Research on the effectiveness of different approaches in science instruction

5.0 Planning and Managing Inquiry Instruction
- 5.1 Planning science lessons
- 5.2 Diagnostic, formative, and summative assessment
- 5.3 Implementing learning activities

6.0 Assessing Science Learning
- 6.1 Assessment, evaluation, and inquiry science
- 6.2 Diagnostic, formative, and summative assessment
- 6.3 Informal, traditional, and performance assessment

7.0 Effective Questioning
- 7.1 Questioning to guide inquiry discussions
- 7.2 Responding to student ideas
- 7.3 Questioning strategies in the classroom

8.0 Technology Tools and Resources for Inquiry Science
- 8.1 The internet as a technology resource for inquiry science
- 8.2 Utilizing various multimedia to enhance science inquiry
- 8.3 Managing educational technology in the classroom

9.0 Connecting Science with Other Subjects
- 9.1 Connecting science and mathematics
- 9.2 Connecting science and literacy
- 9.3 Connecting science and social studies

10.0 Science and ALL Learners
- 10.1 Students with special needs
- 10.2 Students who are gifted and talented
- 10.3 Students from linguistically and culturally diverse backgrounds

8. Instructional Goals

The course will introduce students to:

1.0 The value in studying science;

2.0 The processes of science and scientific inquiry;

3.0 Instructional practices and preparation for teaching science through inquiry utilizing the 5-E instructional model;

4.0 Developing and creating standard based integrated curriculum units, lesson plans, activities, and/or experiments;

5.0 Influences of technology in science; and

6.0 Effective assessment measures for science.

9. Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1.0 Recognize the importance of studying science for all students;

2.0 Demonstrate the processes of science, scientific inquiry, and the 5-E instructional model through science experiments;

3.0 Design and implement instructional practices and preparation for teaching science through inquiry utilizing the 5-E instructional model;

4.0 Develop and compose standard based integrated curriculum units, lesson plans, activities, and/or experiments;

5.0 Explain the influences of technology in science; and

6.0 Generate effective assessment measures for science.

10. Assessment Measures of Student Learning Outcomes

Assessment of student learning may include, but not be limited to, the following:

1.0 Demonstrate understanding through:
- 1.1 Activities,
- 1.2 Experiments,
- 1.3 Presentations,
- 1.4 Participation,
- 1.5 Lesson plans, and
- 1.6 Unit plans

2.0 Reflections and article and/or video reviews;

3.0 Evaluation by the instructor using provided rubrics;

4.0 Thematic unit plan; and

5.0 Quizzes and Examinations