WILLIAM CAREY UNIVERSITY
EDU 346 WINTER 2012 SCIENCE IN THE ELEMENTARY SCHOOL

Class Sessions: Monday and Wednesday, 1:00 pm until 3:00 pm
FAI 109

Instructor: Allison Downing, Ph. D.
Office Hours: LRS 100
601-318-6604 (Office)
601-318-6600 (Education Office)
adowning@wmcarey.edu


Course Description:
The development and philosophical basis of science process skills is explored. Teaching science through discovery and hands-on experiences is emphasized. Prerequisites: Science-core. (3 hours)

Purpose and Rationale:
1. This course is designed to give students who successfully complete it (a) an awareness of current, effective elementary practices, and (b) a theoretical background and foundation for teaching science in programs where students are actively engaged in thinking and doing. Pre-service teachers should become aware of the classroom practices that help prepare children to face the challenges of today’s world and the unusual conditions in the future. Pre-service teachers need to realize there is no single right way to teach science, and that they must become concerned decision makers who develop techniques for guiding students in the science area.

2. There is an explosion of knowledge that is being felt worldwide, and pre-service teachers need to know the impact of science on our lives and the resulting need for a higher level of science literacy in society. The American Association for the Advancement of Science published the Benchmarks for Science Literacy (1993), and the National Research Council released the National Science Education Standards (1996). The guidelines in these publications serve to make teachers aware of the important developments in science education over the past few years. The National Research Council issued standards for what all elementary students should know and be able to do in science. The NRC stated that science instruction should change…”with the classroom becoming a community in which students learn science through inquiry.” They also stressed “active involvement.” One of the major goals of science education today is to enrich the lives of young people by expanding their perception and appreciation of the world around them while stimulating their curiosity and sense of wonder. Experiences that are appropriate for elementary science need not create high anxieties for the non-scientist teacher, but should provide some of the greatest opportunities to turn students on to science.

WCU Theme for 2012-2013:
“Let us move to maturity.” Hebrews 6:1
Course Goals and Learning Objectives

1. The following major goals have been established for this course. The goals are to:
   a. develop awareness of science components, content and processes that constitute the science curriculum; (NSES Teaching Standard A; ACEI 2.2; INTASC 1 ; NAEYC 4; WCU CF 1, 2).
   b. develop an awareness of concepts, principles, cognitive skills and instructional skills in science (NSES Teaching Standard A; ACEI 2.2; INTASC 1; NAEYC 4; WCU CF 3)
   c. develop an understanding of and strategies for planning for integrating the curriculum with emphasis on knowledge, skills, attitudes, scientific method, guided discovery, and a process approach to teaching science (NSES Teaching Standard A,B,F; ACEI 2.2; INTASC 2; NAEYC 1,4; WCU CF 2,3)
   d. develop an awareness of an interdisciplinary approach to the teaching of science (NSES Teaching Standard A,E; ACEI 3.1; INTASC 4; NAEYC 4; WCU CF 1,3)
   e. develop an understanding of planning for the culturally diverse and exceptional students in the area of science (NSES Teaching Standard A,B; ACEI 3.2; INTASC 3; NAEYC 4; WCU CF 1,4)
   f. review current literature (NSES Teaching Standard F; ACEI 1.0; INTASC 9; NAEYC 5; WCU CF 1,3,6)

2. Each student will meet the following specific objectives during the course of the semester. Student will:
   a. discuss the issues in the science curriculum
      • demonstrate an understanding of how children learn science and the impact of Piaget, Gagne and others on the science curriculum. (NSES Teaching Standard F; ACEI 2.2; INTASC 1,2,3,4; NAEYC 1; WCU CF 1,3)
      • demonstrate a personal model for teaching science based on a synthesis of research and personal experience. (NSES Teaching Standard C,E; ACEI 2.2; INTASC 1,2,3,4,5 ; NAEYC 4; WCU CF 3)
      • comprehend chapters in textbook and other materials as assigned. (NSES Teaching Standard E,F; ACEI 1.0; INTASC 1,2; NAEYC 4; WCU CF 1)
      • critique current literature related to science. (NSES Teaching Standard F; ACEI 1.0; INTASC 9; NAEYC 5; WCU CF 1,3,6)
   b. analyze various broad areas of knowledge in science
      • describe the various content areas including physical science & technology, elementary chemical concepts, life science and technology, and earth, ecology, and environmental science and technology (NSES Teaching Standard E; ACEI 2.2; INTASC 1; NAEYC 4; WCU CF)
      • decide which areas of science are basic, useful, and learnable for all children (NSES Teaching Standard C; ACEI 2.2; INTASC 2; NAEYC 4; WCU CF 1,3).

3. This course is congruent with the mission of William Carey College with its emphasis on a high level of scholarship and the cultural value of the arts and sciences. Additionally, students are provided the opportunity to increase their professional skills, thus assuming a more responsible leadership role in the community at large and the public school in particular.

Information on the Program Standards, as identified by an abbreviation and item number may be found at: http://www.ncate.org/standard/programstds.htm.
Plagiarism
If you do not understand the concept of plagiarism you need to read the section on plagiarism in the APA Manual 6th edition on pages 15-16. (Available in the library). If you have any questions about plagiarism after reading this section, you need to talk with me. If you do not talk with me, it will be assumed you understand the definition of plagiarism. The plagiarism tutorials below are available for your assistance:

http://www.acts.twu.ca/Library/plagiarism.swf

http://www.lib.usm.edu/legacy/plag/plagiarismtutorial.php

Statement on Academic Integrity
William Carey University seeks to create an environment that encourages continued growth of moral and ethical values, which include personal honesty and mutual trust. The University places the highest value on academic integrity and regards any act of academic dishonesty as a serious offense. Academic dishonesty is considered unethical and in violation of William Carey University’s academic standards and Christian commitment. If such an incident occurs, students, faculty, and/or staff are obligated to initiate appropriate action. Depending upon the seriousness of the offense sanctions could include failure of the assignment, failure of the course, and could lead to suspension or dismissal from the University. A full explanation of the procedures for responding to instances of academic dishonesty is contained in the University’s Policies and Procedures manual and in the student handbook, The Redbook.

Americans with Disabilities Act
Students with disabilities who are protected by the Americans with Disabilities Act of 1990 and require special accommodations should contact Student Support Services on the Hattiesburg campus, Student Services on the Tradition campus, and the Director of Pre-Nursing on the New Orleans campus.

Disaster Plan Statement
In the event of closure or cancellations due to natural disaster or other emergency causes, general information will be forwarded to local media, posted on the WCU website http://wmcarey.edu, and sent via automated process to your WCU student e-mail address. Specific information regarding the continuation of coursework will be posted on the university’s course management system at https://elearning.wmcarey.edu. For up-to-the-minute alerts regarding emergency situations, sign up to receive notifications through Sader Watch, the WCU emergency text message service. Sign up instructions can be found under current students on the WCU homepage.

Cell Phones
Turn cell phones off or on silent and put them away while in class. Ringing phones are very distracting to presenters (and teachers). Texting during class is rude as well as distracting. If you have a family emergency speak with me before class and quietly leave the room if it is absolutely necessary that you use the phone.
COURSE REQUIREMENTS:

1. Read all chapters and other assigned materials prior to the class in which they will be discussed. Quizzes are available for each chapter in D2L. Quizzes should be completed by the end of the week each chapter is discussed. The quizzes will give you an idea of what to expect on the midterm and final exams.

2. Attend each of the class sessions and actively participate in all class activities. Tardiness/leaving early on four occasions will be counted as one absence. You will have THREE class days off during the trimester due to the full day workshop. Any other absences are considered unexcused. More than 5 absences will result in no credit for the course.

   **Friday, December 7th  Fairchild Education Bldg – Rm 109**
   Project WILD will be an ALL DAY WORKSHOP. This is a required workshop for this course. Being absent from this workshop will result in three (3) absences from the course.

3. Take and pass the scheduled midterm and final examinations.

4. Design a science fair project to present at a Class Science Fair. Parts of the project will be due throughout the course, see the course schedule. **Class Fair on February 13th**.

5. Reflections should be submitted on the Project WILD workshop.

6. Develop 2 INQUIRY-based lesson plans following the 5E instructional model for a specific grade level and content strand. Available science materials may be checked out from the science lab with prior approval from me. (Return materials in a timely manner as other students may need to use them). **Use the template** and any other resources available to you!!!

7. You will teach your lesson plan in a public school classroom. It is your responsibility to contact a principal and classroom teacher at the school in which you plan to teach. Meet with them so that the teacher can tell you what he/she prefers you teach. You will not be prepared to enter the classroom until January so **be sure the teacher is aware of this time constraint**. As a part of this requirement, you will also have to arrange a time to observe in this classroom for a minimum of two hours prior to the day you teach. Your classroom teacher will evaluate your teaching performance and must have a copy of your final lesson plan at least one week prior to your teaching time. You will provide the classroom teacher with a letter of explanation, the evaluation form (both found in D2L), and an envelope. **Schedule during January BEFORE the last class meeting.**

8. Present your classroom lesson to the EDU 346 class.

9. Find a local science fair where you can serve as a judge.

10. Complete a biography of a chosen scientist.

**ALL CRITERIA, TEMPLATES, AND RUBRICS CAN BE FOUND IN D2L!!!!!!!**
### Scoring Scale:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (%)</th>
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<tbody>
<tr>
<td>Examinations (Midterm and Final)</td>
<td>10</td>
</tr>
<tr>
<td>Chapter quizzes/Homework</td>
<td>10</td>
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<tr>
<td>First Lesson Plan</td>
<td>10</td>
</tr>
<tr>
<td>EDU 346 Class Presentation</td>
<td>5</td>
</tr>
<tr>
<td>Science Fair Project</td>
<td>25</td>
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<tr>
<td>Public School presentation</td>
<td>5</td>
</tr>
<tr>
<td>Second LP (for teaching)</td>
<td>15</td>
</tr>
<tr>
<td>Science Fair judge</td>
<td>5</td>
</tr>
<tr>
<td>Scientist biography</td>
<td>10</td>
</tr>
<tr>
<td>Attendance/Participation</td>
<td>5</td>
</tr>
</tbody>
</table>

### Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>90% – 100%</td>
</tr>
<tr>
<td>B</td>
<td>80% – 89%</td>
</tr>
<tr>
<td>C</td>
<td>70% – 79%</td>
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<tr>
<td>D</td>
<td>60% – 69%</td>
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Assignments turned in late will have points deducted. No assignments will be accepted after one week past the due date.

TK20: You will need to upload your second science lesson plan to TK20 after you submit it in D2L. You may choose to submit the corrected version.

Technology: You MUST submit documents in Word ’97 or newer. Anything other than Word cannot be opened by the professor and therefore cannot be graded. You may bring laptops or iPads to class as there will be times we will utilize internet resources. This statement will be revoked if students are on non-class related sites during class time (i.e. Facebook, Pinterest, etc).
References and Bibliography

Journal of Elementary Science Education
Journal of Science Teacher Education
Journal of Research in Science Teaching
Childhood Education
Science and Children
Science Scope
Science Education
The Journal of Special Education


TK20 Subscription Information for Undergraduate and Graduate Students

This is a great time to be at William Carey University. The State of Mississippi and all of its institutions of higher learning are committed to advancing excellence in education on campuses and across the state’s schools. Our research expertise and well-prepared graduates will play an even larger role in leading Mississippi’s children to excellence. In order to achieve this goal, we must systematically and regularly assess our progress and use the data we collect to inform where we focus our efforts to improve. Also each graduate teacher (B.S., B.M.E, B.A., M.Ed., and Ed.S.) will employ a comprehensive portfolio tool, TK20.

To help us in this effort, we have purchased TK20, a comprehensive system that will provide all of us with a rich set of tools to manage our growth, improve our processes, and make tasks easier. The TK20 system will allow you to:

1. Build your course and performance artifacts electronically online. Your artifacts will stay with you so you can use them for years - up to 7 years upon purchase. This will be a great benefit to you as you seek to advance in your education career and build your career portfolio over time. TK20 connects to the larger world of educators across the nation.

2. Create electronic portfolios for documenting your work for presentation to faculty and prospective employers. Many school districts now expect electronic portfolios. The Mississippi Department of Education will be instituting an artifact portfolio annual review beginning in 2012 for all Mississippi educators. Instead of burdening your principal with paper artifacts, this system will allow you to store your portfolio on the internet, including units, test data, teaching artifacts, etc.

3. Have a fully documented record of artifacts from your university classes and school.

Additionally the TK20 system will help us serve you better by providing instant data for advising and program improvement.

Students are to purchase a TK20 account by going to http://TK20.wmcarey.edu and clicking on "click here to purchase a student account", then follow the prompts. After purchasing your TK20 account, TK20 will email your log in information and further instructions. Your TK20 Account should be activated (purchased) by the end of the second week of classes. You will then begin exploring the system and its portfolio features. Make sure to get oriented to the system and complete the assignment your instructor will use for your key assessment.

On-line training materials have been organized to orient you to TK20. To access the on-line tutorials, go to http://TK20.wmcarey.edu and press the tutorials button. Please contact your program manager, Ms. Amy Herchenhahn, for additional information and support (601-318-6088).

We do understand that a university education requires a significant investment of time and resources and we are committed to helping you achieve the greatest return on your investment. We have spent a considerable amount of time finding the best system to meet your needs and ours. As you become familiar with the system and realize its potential and benefits, I am sure that you will be pleased.