COURSE DESCRIPTION

This course is designed to help beginning teacher candidates understand various research paradigms. They will learn how to identify and use research literature and systematic evidence to improve practice. Emphasis is placed on linking research and practice and making informed instructional decisions. Prerequisites: To be taken in the last year of coursework.

CANDIDATE OUTCOMES

This course is designed to enable candidates to:

1. Conduct research on student learning.

2. Evaluate the strengths and weaknesses of research studies within various paradigms, including action research, using measures of rigor.

3. Propose and complete an action research project that includes an overview, contextual statement, review of the literature, methodology, data analysis, conclusions, reflections and relationship to practice.

4. Make explicit links between theory and practice in their own action research.

5. Examine ethical considerations when conducting research with children including their own project.

6. Explain the critical importance of considering multiple perspectives using different approaches to inquiry.

7. Demonstrate leadership in conducting class discussions and presenting their action research projects to others.
RELATIONSHIP TO PROFESSIONAL STANDARDS

Each subject area has standards identified by their Specialized Professional Association (SPA) in the areas of reflective practice and systematic inquiry. Learning outcomes are referenced to the Interstate New Teacher Assessment and Support Consortium (INTASC) and the National Board of Professional Teaching Standards (NBPTS) Core Propositions.

TEACHING/LEARNING METHOD

This course will be conducted using a project-based approach. This means that candidates’ action research questions will be the focus of the course and will drive readings, classroom discussions, activities and projects. There will be a series of in-class micro projects that will be assigned. The purpose of these micro projects will be to support candidates’ action research project (macro project) and provide opportunities to learn and verify theories, methods and techniques of action research. Candidates are expected to implement all micro projects and participate fully in all related discussions. Candidates will have the opportunity to construct knowledge and critically reflect on the process.

REQUIRED TEXTS


2. CEHD Secondary Education Handbook (GSE website)

3. The Professional Development Portfolio—Secondary Education (GSE website)

COURSE REQUIREMENTS

1. Active participation: This is defined as full attendance, active participation in class discussions and activities, demonstration of positive and collaborative disposition towards colleagues, and satisfactory completion of all project work on time.

2. Action Research Proposal: The proposal will describe the proposed action research including the following elements: Introduction, Inquiry Questions, Methodology, Findings, and Implications for Practice and Implications for Student Learning.

3. Action Research Paper: Each participant will write a report that includes the following sections: Introduction, Inquiry Questions, Methodology, Findings, and Implications for Practice and Implications for Student Learning. All papers will follow APA format.

4. Action Research Presentation: Candidate will be required to present their action research project for peer review. Presentations will describe your action research to the class. You will explain the reason for your interest in this area of focus, your research question(s), methodology, findings, and implications for practice and student learning.
EVALUATION

Since this is a graduate level course, high quality work is expected on all projects and in class work. Attendance at all classes for the entire class is a course expectation. Each candidate will be evaluated on the basis of participation and satisfactory completion of projects. In order to qualify for a final grade of A+, a candidate enrolled in EDUC 675 must (in addition to scoring the maximum possible points) participate in all class discussion, activities and projects. When absent from class, candidates are responsible for obtaining the material covered in class and handing in any work that is due. Each project will be assessed using a scoring rubric. All projects are due at the beginning of class on the day they are due. Projects that are late will automatically receive a ten percent grade reduction (one full letter grade lower). The grades in this course will be distributed as follows:

<table>
<thead>
<tr>
<th></th>
<th>Participation/in-class projects</th>
<th>Action Research Proposal</th>
<th>Action Research Paper</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Points Possible</td>
<td>20% = 40 points</td>
<td>20% = 40 points</td>
<td>50% = 80 points</td>
<td>20% = 40 points</td>
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<table>
<thead>
<tr>
<th>Total Points Possible</th>
<th>Possible Grade</th>
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<tbody>
<tr>
<td>200-190</td>
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<tr>
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<td>178-169</td>
<td>A-</td>
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<td>B+</td>
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<td>B</td>
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<td>148-139</td>
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<tr>
<td>138-129</td>
<td>C+</td>
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<tr>
<td>128-0</td>
<td>F</td>
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</table>

PERFORMANCE-BASED ASSESSMENT

A. Criteria for Evaluating the Action Research Proposal

Introduction
Clearly describe the research problem you want to investigate, state the main inquiry question and/or hypothesis and rational for wanting to investigate it. Where applicable, identify your independent and dependent variables. Briefly define them. Identify and review 5 peer reviewed journal article relating to your inquiry question. Your review should focus on type of questions, hypotheses and theories generated, research design, data collection and analytical techniques used, and findings or conclusions reached. Your review must not be a mere summary of what has been done, but a coherent, analytical and critical reflection on the prior research, including relevance, timeliness, assumptions, implications and limitations. Your review should include
only literature that relates to or inform your research and must have been published in 1995 or later.

**Methodology**
State the method of research you are going to use and the reasons for choosing it. In addition, include a statement about the sample or subject you are going to study. Briefly describe your data collection procedure(s)/strategy. For instance, what data will you collect and how will you collect it? What observation protocol and/or instrument will you use? Finally, briefly describe your data analysis procedure(s)/strategy or include a statement on how you will make sense of the data you are going to collect.

**Implications for Practice and Student Learning**
Include a statement on what you hope your research will achieve and discuss the possible implications for secondary science teaching and learning. Identify the potential benefits and the limitations of your research.

**References**
Include a list of your references. All references must be cited in your research proposal and adhere to APA style.

**Appendix (optional)**
Include any instrument, questionnaire, observation protocol, and/or rubric cited in your proposal at the end as an appendix. Make sure that all materials going into the appendix are presented in chronological order and numbered accordingly.

**B. Criteria for Evaluating the Action Research Project**

1. Does your action research paper have a *Cover Page*?
   a. Does the cover page have a title, author’s name and date?

2. Does your action research paper have a *Table of Contents*?

3. Does your action research paper have an *Introduction*?
   a. Does it clearly state the purpose of the study?
   b. Does it clearly explain why the study is important?
   c. Does it clearly state what the limitations of the study are?

4. Does your action research paper have a *Statement of Research Problem*?
   a. Does it clearly describe the research problem?
   b. Does it clearly state what the research question and/or hypothesis is?
   d. Does it clearly describe the potential benefits and limitations of the study?

5. Does your action research paper have a *Review of Literature* section?
   a. Is the review related to the research question?
   b. Does the review connect the study to the literature?
   c. Is the review coherent and analytical?
6. Does your action research paper have a Research Method section?
   a. Does it clearly state what the research method is?
   b. Does it clearly describe the research sample or participants, how they were selected and the rational for doing so?
   c. Does it clearly describe the research instrument/protocol?
   d. Does it clearly describe the data collection procedure?
   e. Does it clearly describe the data analysis procedure?

7. Does it have a Findings section?
   a. Does it clearly summarize the main findings?
   b. Does it clearly relate the findings to your research question and/or hypothesis?
   c. Does it clearly explain what the findings mean within the context of the study?
   d. Does it clearly relate the findings to other similar findings?
   e. Does it provide rival explanations and underlying assumptions?

8. Does it have an Implications section?
   a. Does it clearly explain the possible implications of the findings for secondary science teaching and learning?
   b. Does it clearly discusses any limitations and identifies future research possibilities?

9. Does it have a Reference section?
   a. Does it include a list of 5 references?
   b. Did all references cited in the action research paper adhere to APA style?
   c. Are all references cited dated 1995 or later?

10. Does it have an Appendix section (please note that this may or may not be applicable)?
    a. Does it include any informed consent form, research instrument, questionnaire, observation protocol, sample data set, diagram, photos, figures and/or tables cited in your action research paper?
    b. Are all the materials going into the appendix presented in chronological order and numbered accordingly?

11. Organization and Presentation
    a. Is the action research paper written in clear and understandable English?
    b. Is it free from typographical errors?
    c. Is it free from spelling errors?
    d. Is it free from grammatical errors?
    e. Is the action research paper organized into logical paragraphs?
    f. Are the paragraphs organized into logical headings and sub-headings?
    g. Does the report adhere to all formatting guidelines?

C. Criteria for Evaluating the Action Research Presentation

1. The candidate prepared a one-page abstract of her/his action research paper.
2. The candidate clearly states her/his research question and/or hypothesis.
3. The candidate identifies and defined her/his variables accordingly.
4. The candidate clearly explains the strengths and limitations of her/his sample.
5. The candidate clearly explains her/his research method, including sampling, data collection and analysis.
6. The candidate clearly explains her/his research findings, including evidence to support claims.
7. The candidate clearly explains the implications of her/his findings for secondary teaching and learning.
8. The candidate clearly explained the strengths and limitations of her/his study.
9. The presentation was interactive.

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT STATEMENT OF EXPECTATIONS

The Graduate School of Education (GSE) expects that all candidates abide by the following:

Candidates are expected to exhibit professional behavior and dispositions. See gse.gmu.edu for a listing of these dispositions.

Candidates must follow the guidelines of the University Honor Code. See http://www.gmu.edu/catalog/apolicies/#TOC_H12 for the full honor code.

Candidates must agree to abide by the university policy for Responsible Use of Computing. See http://mail.gmu.edu and click on Responsible Use of Computing at the bottom of the screen.

Candidates with disabilities who seek accommodations in a course must be registered with the GMU Disability Resource Center (DRC) and inform the instructor, in writing, at the beginning of the semester. See www.gmu.edu/candidate/drc or call 703-993-2474 to access the DRC.

PROPOSED CLASS SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic/Project Work</th>
<th>Readings and Assignments</th>
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<tr>
<td>9/1</td>
<td>Introduction</td>
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<tr>
<td>9/8</td>
<td>Understanding Action Research</td>
<td>Chapter 1</td>
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<tr>
<td>9/15</td>
<td>Area of Focus</td>
<td>Chapter 2</td>
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<td>9/22</td>
<td>Area of Focus</td>
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<td>Data Collection</td>
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<td>Chapter 4</td>
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<td>Data Analysis</td>
<td>Chapter 5</td>
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<td>10/27</td>
<td>Action Planning</td>
<td>Chapter 6</td>
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<td>11/3</td>
<td>Sharing and Critiquing and On-line</td>
<td>Chapter 7</td>
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<td>11/10</td>
<td>Writing Action Research</td>
<td>Chapter 8</td>
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<td>11/17</td>
<td>Prepare for Presentation</td>
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<td>Presentations/Final Paper</td>
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<tr>
<td>12/15</td>
<td>Class Evaluation</td>
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</tbody>
</table>
BIBLIOGRAPHY


**RECOMMENDED WEB SITES**

http://www.pen.k12.va.us/VDOE/Superintendent/Sols/home.shtml (Commonwealth of Virginia (current) Standards of Learning Currently in Effect for Virginia Public Schools)
http://www.nsta.org (National Science Teachers Association)
http://www.nctm.org (National Council of Teachers of Mathematics)
http://www.ncte.org (National Council of Teachers of English)
http://www.ncss.org (National Council for the Social Studies)
http://www.nsf.gov (National Science Foundation)
http://www.narst.org (National Association for Research in Science Teaching)
http://www.ascd.org (Association for Supervision and Curriculum Development)
http://www.enc.org (Eisenhower National Clearinghouse for Science and Mathematics Education Reform)
http://www.ed.gov (US Education Department)
http://www.ed.gov/nces (US Education Department, National Center for Educational Statistics)
http://www.nara.gov (National Archives and Records Administration)
http://www.epa.gov (US Environmental Protection Agency)
http://www.fda.gov (US Food and Drug Administration)
http://www.doe.gov (US Department of Energy)
http://www.neh.gov (National Endowment for the Humanities)
http://www.nih.gov (National Institute of Health)
http://www.negp.gov (National Education Goals Panel)
http://wwwcsteep.bc.edu/TIMSS (Third International Mathematics and Science Study Center)
http://www.spacelink.nasa.gov (NASA)
http://www.un.org (United Nations)
http://www.unesco.org (UNESCO)
http://www.unep.org (UN Environmental Program)
http://www.sciencenews.org (Science News)
http://www.iste.org (International Society for Technology in Education)
http://www.concord.org (Concord Consortium—an Research & Development organization that focuses on science, mathematics and technology education)
http://www.terc.edu (Research & Development organization that focuses on science, mathematics and technology education)
http://www.vernier.com (Vernier Software—a company that develops microcomputer-based laboratory materials and tools)