Theme: Preparing Inquiring Educators for Diverse Setting: Developing Knowledge, Applications, Dispositions

1. **Course Title and Credits:** ELCL 6280 Mathematics Education Research Seminar
   3 graduate credits

2. **Course Description:**
   This course focuses on the examination and critique of existing published studies in the field of mathematics education and on the development of research paradigms in this field. Classroom research projects and methods for assessing the effects of curricular change on students, teachers, and school structures are emphasized. National and state standards for teaching mathematics are examined from the perspective of research methods and empirical outcomes. This course serves as a prerequisite for ELCL 629, Research in Education I for Teaching Children Mathematics concentration candidates and is usually offered online.

3. **Pre-requisite:** Completion of ELCL 616, Contemporary Issues and Trends in Mathematics Education with a grade of B or higher. Registration by permission only.

4. **Course Objectives:**
   A. Identification and analysis of current issues and trends in research in mathematics education in light of national, international, and state content standards for mathematics education
   B. Development of a knowledge base for conducting empirical investigations in mathematics education.
   C. Compare and contrast quality of research of varied formats of published articles
   D. Collect, summarize, and critically analyze research literature in mathematics education using library resources
   E. Production of an annotated bibliography and research summary of existing studies in a specific research area within the mathematics education field that will guide them in their formulation of a research problem to be addressed
   F. Production of an in-depth critique and synthesis of existing studies in a specific research area within the mathematics education field
   G. Formulation of a set of preliminary ideas for an individual research project to be followed up in ELCL 629, Research in Education I.

5. **Student Learning Outcomes:**
   Candidates will be able to:
   A. identify and analyze the major current research issues and paradigms in mathematics education
   B. identify and analyze a variety of methods for conducting empirical investigations in mathematics education
C. write a critical analysis and comparison of multiple formats of published research on the same topic
D. collect, summarize, and critically analyze research literature in mathematics education using library resources
E. produce an annotated bibliography and research summary of existing studies in a specific research area within the mathematics education field
F. produce an in-depth critique and synthesis of existing studies in a specific research area within the mathematics education field
G. Formulate a set of preliminary ideas for an individual research project to be followed up in ELCL 629, Research in Education I.

<table>
<thead>
<tr>
<th>Student Learning Outcome</th>
<th>Standards for TCM Program-Specific Outcomes</th>
<th>COE Advanced Programs Outcomes</th>
<th>NJ Professional Standards for Teachers and Administrators</th>
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<tbody>
<tr>
<td>1. identify and analyze research trends</td>
<td>6. conduct research</td>
<td>1a; 1c; 4a; 4c; 5j</td>
<td>1. subject matter knowledge</td>
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<td>2. identify and analyze research methods</td>
<td>6. conduct research 7. lit review</td>
<td>1a; 1c; 4a; 4c; 5j</td>
<td>1. subject matter knowledge 5. assessment</td>
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<tr>
<td>3. comparison of published research</td>
<td>7. lit review</td>
<td>4a</td>
<td>1. subject matter knowledge 5. assessment</td>
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<td>4. use of library resources</td>
<td>7. lit review 8. employ technology</td>
<td>4c; 4a</td>
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<tr>
<td>5. annotated bibliography</td>
<td>7. lit review</td>
<td>4c</td>
<td>1. subject matter knowledge</td>
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<tr>
<td>6. in-depth summary of research collected-presented in writing and orally</td>
<td>7. lit review</td>
<td>4a; 5i; 1a; 1b</td>
<td>1. subject matter knowledge 5. assessment</td>
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<td>7. preliminary ideas for Research I</td>
<td>6. conduct research</td>
<td>1c; 3b</td>
<td>4. instructional strategies 5. assessment</td>
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6. **Course Content:**
A. Overview of Research in Mathematics Education
   Examination of evolving trends and common threads in approaches to mathematics education from the vantage points of historical and current practices
B. Critiquing the Literature/Comparing Levels of Research Publications
   Distinguishing between how-to articles, opinion pieces, and empirical research studies
C. Broad Categories of Research Paradigms in Mathematics Education
   Examination of formats and data sources for conducting empirical research in mathematics education (e.g., experimental and quasi-experimental designs, ethnographic approaches, action research paradigms, case study methods)
D. Review of researchable problems in mathematics education using ERIC and other library and online databases to generate a search
E. In-depth exploration of research on particular current issues and practices in mathematics education
F. Collection of published research within a specialization area
G. Production of a summary of the literature
H. Sharing of summaries of the literature within specific areas of the field.
I. Development of an individual classroom research agenda leading to a researchable issue for a master’s thesis (to be developed further in CIEE 629, Research in Education I).

7. **Teaching/Learning Methods:**
   A. Assigned readings related to syllabus topics
   B. Online postings and discussions in Blackboard
   C. Literature critique assignments
   D. Active online library research
   E. Oral presentation of final project by students

8. **Evaluation Methods:**
   A. responses to Bb discussion boards on research terminology, issues in mathematics education research, and how to critique published research (SLO #A, B)
   B. written critique and comparison of three assigned articles on the same research topic (SLO #C)
   C. written annotated bibliography of a researchable topic in mathematics education (SLO #D, E)
   D. written report of the research findings on a particular topic in mathematics education leading to a researchable problem for a master’s thesis (to be followed up in ELCL 629, Research in Education I) (SLO #F,G)
   E. small group or individual presentations of the research evaluated on a particular topic in mathematics education (SLO #F,G)

9. **Recommended Texts/Readings:**


   Most current version of *NJ Core Curriculum Content Standards for Mathematics*
Journal for Research in Mathematics Education (JRME) - Issues between 2000 to present

http://nctm.org - Website of the National Council of Teachers of Mathematics

10. **Preparer’s Name and Date:** Professor Rochelle G. Kaplan, Fall 1996

11. **Department Approval Date:** Spring 1997

12. **Reviser’s Name and Date:** Rochelle G. Kaplan, updated Spring 2000; Fall 2002; Spring 2007; Fall 2010

13. **Department Revision Approval Date:** Spring 2000; Fall 2002; Spring 2007; Fall 2010

14. **Bibliography:**

- *Teaching Children Mathematics*, issues from 2000 to present.

- *Educational Studies in Mathematics*, issues from 2000-present

- *Focus on Learning Problems in Mathematics*, issues from 2000-present

- *For the Learning of Mathematics*, issues from 2000-present.

- *The Journal of Mathematical Behavior*, issues from 2000 to present.

- *The Journal for Research in Mathematics Education*, issues from 2000-present

- *Mathematics in the Middle School*, issues from 2000 to present.

- *The Mathematics Teacher*, issues from 2000 to the present.


*New Jersey Core Curriculum Content Standards for Mathematics* (latest revision).