Revised Course Proposal
SCI 5004 – Special Projects for Natural Science Teachers

1. Catalog Description
   a) SCI 5004
   b) Special Projects for Science Teachers
   c) (Arr-Arr-2)
   d) F, S
   e) Spc Proj Sci Tch
   f) Students propose, design and conduct a research project in their science classrooms. Projects may include theoretical, pedagogical or laboratory work under the supervision of a M.S. in Natural Sciences faculty advisor. A written proposal must be approved by the M.S. in Natural Sciences faculty advisor and the M.S. in Natural Sciences program coordinator prior to conducting the project.
   g) Enrollment in M.S. in Natural Sciences degree program
   h) Summer 2005

2) Student Learning Objectives and Evaluation
   a) Learning Objectives: Prior to completing this course, students will demonstrate the ability to:
      1. Understand the elements of a research project of secondary science education.
      2. Identify relevant and appropriate literature for science education.
      3. Learn to integrate relevant literature into research proposals.
      4. Construct and implement research design which is relevant and appropriate to secondary science classrooms.
      5. Evaluate, analyze and summarize research results.
   b) Evaluation
      Final grades will be based on an evaluation of the written proposal.

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<thead>
<tr>
<th>Objective</th>
<th>Written Proposal</th>
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<tbody>
<tr>
<td>1. Written proposal</td>
<td>X</td>
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<td>2. Review and critique of current literature</td>
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<td>3. Integration of suitable literature</td>
<td>X</td>
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<td>4. Project design</td>
<td>X</td>
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<td>5. Analysis of results</td>
<td>X</td>
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c) Not applicable
d) Not applicable
e) Not applicable
3. Outline of the Course
   a) This course is scheduled based on anticipated graduation date and the student’s teaching schedule. Students discuss their proposed project with their faculty advisor the summer prior to the academic year during which they will schedule and conduct their special projects and submit a written proposal to their advisor and the program coordinator for review and evaluation. Course content will depend on the nature of the individual project. All projects will share a common framework illustrated by the following outline:

   Phase I: Consultation with faculty advisor on selection and conduction of a special project.

   Phase II: Conduct literature search to insure uniqueness of project

   Phase III: Write project proposal to include hypothesis to be tested, outline of Methods and materials, assessment rubric for determining success of project, and timeline for completion of project.

   Phase IV: Implementation of project to include construction or acquisition of necessary equipment and/or materials followed by subsequent accumulation of pertinent data for analysis. Execution of the mechanics of each project shall be monitored through regular consultation with a faculty advisor.

   Phase V: Results are collected, analyzed, and presented as a seminar in SCI 5005, Seminar for Natural Science Teachers, the summer they graduate.

4. Rationale
   a) Science teachers need a solid foundation for implementing and evaluating meaningful projects in sciences and/or science education. This course is designed to help in-service teachers accomplish this goal in their local school districts. Students will be required to support their selection of a special project with a written proposal that includes a question, hypothesis, objectives, methods, literature review and the project’s contribution and benefits to the knowledge base of science and science education. Results and discussion will be presented as part of the capstone experience during SCI 5005, Seminar for Natural Science Teachers. Formalization of the proposal coupled with the existing requirement of conducting the investigation justify the need to increase the number of semester hours of credit.

   b) As an introductory level graduate course, this course is numbered at an appropriate level. The prerequisite, enrollment in the M.S. in Natural Sciences program, is justified since this course is designed specifically for students in this program and would not be appropriate for other graduate programs.
c) This is a revision of an existing course where a change in course credit is requested (from Arr-Arr-1 in the previous course to Arr-Arr-2 in the course revision). The elimination of SCI 5003, *Introduction to Research*, necessitates the completion of a practical, research design and implementation course with two semester credits rather than one. No similar courses are offered on campus.

d) This course is required for non-thesis degree candidates in the M.S. in Natural Sciences program

5. Implementation

a) The course may be assigned to any member of the M.S. in Natural Sciences graduate faculty.

b) No additional costs.

c) No specific texts are required.

6. Community College Transfer
   Not applicable

7. Date approved by the Master of Science in Natural Sciences Advisory Committee: 
   2 November 2004

8. Date approved by the Department of Biological Sciences Curriculum Committee: 
   12 January 2005.

9. Date approved by the Department of Chemistry Curriculum Committee: 
   17 November 2004.

10. Date approved by the Department of Geology and Geography Curriculum Committee:  
    17 November 2004.

11. Date approved by the Department of Physics Curriculum Committee: 
    16 November 2004.

12. Date approved by the College of Sciences Curriculum Committee: 
    11 February 2005.

13. Date approved by CGS: ___________________.