**California State University Channel Islands**
# NEW COURSE PROPOSAL
**Courses must be submitted by October 15, 2011, and finalized by the end of the fall semester for the next catalog production.**
**Use YELLOWED areas to enter data.**

| | |
|---|---|
| DATE (*Change if modified and redate file with current date)*) | SEPTEMBER 26, 2011; REV 10.27.11; REV 11.16.11 |
| PROGRAM AREA(S) | MA IN EDUCATION: SPECIALIZATION CURRICULUM & INSTRUCTION |

1. **Course Information.** *[Follow accepted catalog format.]*
   **Prefix(es)** (Add additional prefixes if cross-listed) **and Course No.  EDCI 642**
   **Title:  ADVANCED SCIENCE TEACHING METHODS   Units: 3**
   X Prerequisites Admission into the MA in Education

   ☐ Corequisites ☐

   ☐ Consent of Instructor Required for Enrollment

   **Catalog Description** (Do not use any symbols ):  **Focuses on effective science teaching, learning, and assessment strategies aligned to the national science education frameworks and standards. Emphasis is placed on the application of content and pedagogy in a PK-12 curricular context.**

**Grading Scheme:**

x  A-F Grades

☐ Credit/No Credit
☐ Optional (Student Choice)

**Repeatability:**

☐ Repeatable for a maximum of ☐ units

Total Completions Allowed  1
☐ Multiple Enrollment in Same Semester

**Course Level Information:**

☐ Undergraduate

☐ Post-Baccalaureate/Credential
x  Graduate

**Mode of Instruction/Components** (*Hours per Unit are defaulted*).

| | Units | Hours per Unit | Benchmark Enrollment | Graded Component | CS & HEGIS # (Filled in by the Den) |
|---|---|---|---|---|---|
| Lecture | 3 | 1 | 20 | X | |
| Seminar | ☐ | 1 | ☐ | ☐ | |
| Laboratory | ☐ | 3 | ☐ | | |
| Activity | ☐ | 2 | ☐ | | |
| Field Studies | ☐ | | ☐ | ☐ | |
| Indep Study | | | | ☐ | |
| Other Blank | ☐ | | ☐ | | |
| | | | | | |

Leave the following hours per week areas blank.  The hours per week will be filled out for you.
3 hours lecture per week
    hours  blank per week                                   Is this course delivered online?   Yes_____   No__x__

2. **Course Attributes:**

☐ **General Education Categories**:  All courses with GE category notations (including deletions) must be submitted to the GE website: http://summit.csuci.edu/geapproval.  Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.
**A (English Language, Communication, Critical Thinking)**
☐ A-1 Oral Communication
A-2 English Writing
A-3 Critical Thinking
**B (Mathematics, Sciences & Technology)**
☐ B-1 Physical Sciences
B-2 Life Sciences – Biology

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      B-3 Mathematics – Mathematics and Applications
      B-4 Computers and Information Technology

**C (Fine Arts, Literature, Languages & Cultures)**
      C-1 Art
      C-2 Literature Courses
      C-3a Language
      C-3b Multicultural
      **D  (Social Perspectives)**
      **E  (Human Psychological and Physiological Perspectives)**
      **UDIGE/INTD Interdisciplinary**
      **Meets University Writing Requirement**
      **Meets University  Language Requirement**

**American Institutions, Title V Section 40404**:     Government     US Constitution     US History
Refer to website, Exec Order 405, for more information:  http://senate.csuci.edu/comm/curriculum/resources.htm
    **Service Learning Course** (Approval from the Center for Community Engagement must be received before you can request this course attribute).

3. **Justification and Requirements for the Course.**  (Make a brief statement to justify the need for the course)
   A.   Justification:  In-service science teachers typically have one to two courses in their teacher preparation programs that "teach" them how to teach science. This course provides a depth and breadth of the field of science education as a research based mechanism for transforming teaching and learning in the sciences. This course plays a significant role in the campus-wide STEM initiative as we prepare teachers and our future students in the sciences.

   B.   Degree Requirement:     Requirement for the Major/Minor     **Note:  Submit Program Modification if**
       x  Elective for the Major/Minor     **this course changes your program**.
       Free Elective

4. **Student Learning Outcomes.** (*List in numerical order.  You may wish to use the following resource in utilizing measurable verbs:  http://senate.csuci.edu/comm/curriculum/resources.htm*)
   Upon completion of the course, the student will be able to:
   1. formulate and explain a personal definition of science and the nature of science as aligned to the national standards and frameworks.
   2. develop a personal philosophy of science education.
   3. organize science content in a way that facilitates meaningful learning
   4. create concept maps of science content to be used for planning and assessment.
   5. develop lessons that help students exchange naïve knowledge for more sophisticated knowledge.
   6. describe the influence of modern learning theories and apply those theories in curriculum products.
   7. write appropriate goals and measurable objectives for science courses, units, and lessons.
   8. create and use a variety of assessment strategies.
   9. demonstrate and use various teaching strategies.
   10. infuse technology purposefully into teaching and assessment.
   11. create and evaluate inquiry lessons and materials.
   12. describe the role science plays in various cultures and groups of people throughout the world.

5. **Course Content in Outline Form.**  *[Be as brief as possible, but use as much space as necessary]*
   1. Content Knowledge in the Sciences: Core and Component Ideas
   2. Nature of Science and Science Education Frameworks and Standards
   3. History of Science and Science Education in America
   4. What is Scientific Literacy? What science should be taught in our schools?
   5. Inquiry and Science Teaching
   6. Enriching the Science Curriculum: Themes and Process of Science
   7. Learning Theories and Previous Knowledge
   8. Hypotheses and Experimental Design
   9. Teaching for Conceptual Understanding
   10. Multicultural Science Education
   11. Technology in Teaching and Learning Science

Does this course content overlap with a course offered in your academic program? **Yes** `[ ]` **No** x
If YES, what course(s) and provide a justification of the overlap. `[ ]`

Does this course content overlap a course offered in another academic area? **Yes** `[ ]` **No** x
If YES, what course(s) and provide a justification of the overlap. `[ ]`

Overlapping courses require Chairs' signatures.

6. **Cross-listed Courses** (*Please note each prefix in item No. 1)*
   **A.** List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).
   List each cross-listed prefix for the course: `[ ]`

   **B.** Program responsible for staffing:

7. **References.** *[Provide 3 - 5 references]*

   Board on Science Education. (2011). A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Washington DC: National Academy Press.

   National Research Council. (1996). National Science Education Standards. Washington DC: National Academy Press.

   American Association for the Advancement of Science (1993) . Benchmarks for Science Literacy: Project 2061. New York, NY: Oxford University Press.

8. **Tenure Track Faculty Qualified to Teach This Course.**

   Jeanne M. Grier, Bob Bleicher

9. **Requested Effective Date: Fall 2012**
   First semester offered:

10. **New Resources Requested. Yes** `[ ]` **No** x
    If YES, list the resources needed.

    A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)
    `[ ]`

    B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)
    `[ ]`

    C. Facility/Space/Transportation Needs
    `[ ]`

    D. Lab Fee Requested (please refer to Dean's Office for additional processing) **Yes** `[ ]` **No** x

    E. Other
    `[ ]`

**11. Will this new course alter any degree, credential, certificate, or minor in your program? Yes** x      **No**

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs:  October 1, 2011 of preceding year.

Priority deadline for Course Proposals and Modifications:  October 15, 2011, of preceding year.

Last day to submit forms to be considered during the current academic year:  April 15th.

| | |
|---|---|
| Jeanne M. Grier | September   26, 2011 |
| Proposer of Course (Type in name.  Signatures will be collected after Curriculum approval) | Date |

# Approval Sheet

**Program/Course:** 

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance.  By signing below, I acknowledge the importance of incorporating accessibility in course design.

| Program Chair | | |
|---|---|---|
| | Signature | Date |

| Program Chair | | |
|---|---|---|
| | Signature | Date |

| Program Chair | | |
|---|---|---|
| | Signature | Date |

| General Education Chair | | |
|---|---|---|
| | Signature | Date |

| Center for International Affairs Director | | |
|---|---|---|
| | Signature | Date |

| Center for Integrative Studies Director | | |
|---|---|---|
| | Signature | Date |

| Center for Multicultural Engagement Director | | |
|---|---|---|
| | Signature | Date |

| Center for Civic Engagement Director | | |
|---|---|---|
| | Signature | Date |

| Curriculum Chair | | |
|---|---|---|
| | Signature | Date |

| AVP | | |
|---|---|---|
| | Signature | Date |