ARIZONA STATE UNIVERSITY

GENERAL STUDIES PROGRAM COURSE PROPOSAL COVER FORM

Courses submitted to the GSC between 2/1 and 4/30 if approved, will be effective the following Spring.

Courses submitted between 5/1 and 1/31 if approved, will be effective the following Fall.

(SUBMISSION VIA ADOBE.PDF FILES IS PREFERRED)

DATE 28 Jan 2011

1. ACADEMIC UNIT: Division of Mathematics and Natural Sciences

2. COURSE PROPOSED: BIO 306 Modes of Biological Thought 3
   (prefix) (number) (title) (semester hours)

3. CONTACT PERSON:
   Name: Ken G. Sweat
   Phone: x36938
   Mail Code: 2352
   E-Mail: kengsweat@asu.edu

4. ELIGIBILITY: New courses must be approved by the Tempe Campus Curriculum Subcommittee and must have a regular course number. For the rules governing approval of omnibus courses, contact the General Studies Program Office at 955-6793.

5. AREA(S) PROPOSED COURSE WILL SERVE: A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study. (Please submit one designation per proposal)

   Core Areas
   Literacy and Critical Inquiry—L ☒
   Mathematical Studies—MA ☐ CS ☐
   Humanities, Fine Arts and Design—HU ☐
   Social and Behavioral Sciences—SB ☐
   Natural Sciences—SQ ☐ SG ☐

   Awareness Areas
   Global Awareness—G ☐
   Historical Awareness—H ☐
   Cultural Diversity in the United States—C ☐

6. DOCUMENTATION REQUIRED.
   (1) Course Description
   (2) Course Syllabus
   (3) Criteria Checklist for the area
   (4) Table of Contents from the textbook used, if available

7. In the space provided below (or on a separate sheet), please also provide a description of how the course meets the specific criteria in the area for which the course is being proposed.

This course has a majority of writing assignments that ask students to investigate and synthesize ideas regarding the philosophy of science and the nature of knowledge.

CROSS-LISTED COURSES: ☒ No ☐ Yes; Please identify courses: ________________________________

Is this an unsection course?: ☒ No ☐ Yes; Is it governed by a common syllabus? ______________

Roger L. Berger
Chair/Director (Print or Type) 2-3-11

Date

Rev. 1/94, 4/95, 7/96, 4/00, 1/02, 10/08
Arizona State University Criteria Checklist for

LITERACY AND CRITICAL INQUIRY - [L]

Rationale and Objectives

Literacy is here defined broadly as communicative competence in written and oral discourse. Critical inquiry involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the analysis of spoken and written evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns challenging subject matter. Thus, the Literacy and Critical Inquiry requirement stipulates two courses beyond First Year English.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Students must complete six credit hours from courses designated as [L], at least three credit hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 107, or 105 to take an [L] course.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.
Proposer: Please complete the following section and attach appropriate documentation.

### ASU - [L] CRITERIA

**TO QUALIFY FOR [L] DESIGNATION, THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE—AS EVIDENCED BY THE FOLLOWING CRITERIA:**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
</table>

#### CRITERION 1: At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations. Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report

1. Please describe the assignments that are considered in the computation of course grades—and indicate the proportion of the final grade that is determined by each assignment.

2. Also:
   - Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process—and label this information "C-1".

#### CRITERION 2: The composition tasks involve the gathering, interpretation, and evaluation of evidence

1. Please describe the way(s) in which this criterion is addressed in the course design

2. Also:
   - Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process—and label this information "C-2".

#### CRITERION 3: The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams

1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements

2. Also:
   - Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process—and label this information "C-3".
<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗</td>
<td>√</td>
<td>CRITERION 4: These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. <em>Intervention at earlier stages in the writing process is especially welcomed</em> See syllabus for assignment dates.</td>
</tr>
</tbody>
</table>

1. Please describe the sequence of course assignments—and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments.

2. **Also:**

   Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process—and label this information "C-4".
<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Number</th>
<th>Title</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO</td>
<td>306</td>
<td>Modes of Biological Thought</td>
<td>L</td>
</tr>
</tbody>
</table>

Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

<table>
<thead>
<tr>
<th>Criteria (from checksheet)</th>
<th>How course meets spirit (contextualize specific examples in next column)</th>
<th>Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations.</td>
<td>Course grade is based on four writing assignments (85%) and in class participation (15%).</td>
<td>See syllabus under Assignments and Grading, page 2.</td>
</tr>
<tr>
<td>2. The composition tasks involve the gathering, interpretation and evaluation of evidence.</td>
<td>Writing assignments direct students to assess the validity of Kuhn's descriptions of scientific revolutions, Mayr's definition of biology as a science different from the physics Kuhn is part of, and the conclusion of Chalmers that science can produce objective knowledge without a universal method.</td>
<td>Details of the individual writing assignments are given in a class handout included with this form.</td>
</tr>
<tr>
<td>3. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are also included in the course requirements.</td>
<td>Students are assigned essays to compare the philosophies of Kuhn, Mayr and Chalmers to their own, and assess how these philosophies influence the possibility that scientific endeavors can obtain objective knowledge.</td>
<td>Details of the individual writing assignments are given in a class handout included with this form.</td>
</tr>
<tr>
<td>4. These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments.</td>
<td>I generally try to get assignments back on the next class period, and always within 1 week. It should be noted as well that students are also responsible to have their papers 'pre-edited' before submitting to me by three of their classmates within a 1 week time period.</td>
<td>Please note on syllabus course schedule the timeline for peer evaluation and the time between assignments.</td>
</tr>
</tbody>
</table>
SYLLABUS: MODES OF BIOLOGICAL THOUGHT (LSC 300)

Instructors: Ken Sweat CLCC 116 (Lecturer)

Email/Phone: KenGSweat@asu.edu; 602-543-6938

Office Hours: Monday 2:00 – 4:00pm and Tuesday 1:30 – 3:30pm or by appointment.

Lecture: 12:30 – 1:45pm Tuesday & Thursday; Sands 105.

Course Description: Modes of biological thought is a course designed to introduce the student to the philosophy of science, and how scientists, especially biologists, approach knowledge.

Attendance: Attendance at all lectures is essential to performing well in this course. It is the student's responsibility to obtain information from missed lectures. Tardiness to class will not be tolerated. It disrupts the lesson, and can be especially disruptive of the efforts of other students. If it is unavoidable, please inform the instructor in advance. Reasonable accommodations will be made in cases of religious holidays or other emergency situations. It is the student's responsibility to provide the instructor with documentation of holidays and or emergencies and a plan to cover the missed course material.

Withdrawal Policy: It is the students' responsibility to withdraw themselves from the course should this be necessary. The deadline for an unrestricted withdrawal is 30 March 2007 (in person) and 1 April 2007 (ASU Interactive).

Text Books: Required for this course are the following:

Kuhn, T. The Structure of Scientific Revolutions, 1996

Mayr, E. This is Biology: the Science of the Living World, 1998

Chalmers, A. Science and Its Fabrication, 1990

Reading assignments appear on the schedule at the end of the syllabus. During the semester, various scientific papers will also be assigned.

Computers and this course: The vast majority of class materials will be posted on the course Blackboard website. Students are expected to have an ASURite ID and access the site regularly for information. Computers are available on campus in Technopolis located in the basement of the library. Technopolis staff can assist students who do not yet have an ASURite ID.
Assignments and Grading: Assessment of learning in this course will be through written assignments and classroom discussion. The following weights will be used to determine a student's final grade:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written assignments (3 at 20% each)</td>
<td>60%</td>
</tr>
<tr>
<td>Final Paper</td>
<td>25%</td>
</tr>
<tr>
<td>Classroom participation</td>
<td>15%</td>
</tr>
</tbody>
</table>

Grading Scale. The grading scale that will be used for the course is:

- 97% ≤ A+
- 93% ≤ A < 97%
- 90% ≤ A- < 93%
- 87% ≤ B+ < 90%
- 83% ≤ B < 87%
- 80% ≤ B- < 83%
- 77% ≤ C+ < 80%
- 70% ≤ C < 77%
- 60% ≤ D < 69%
- E < 60%

Classroom Participation: Each week, a series of questions will be posted to Blackboard regarding the reading assignment. Students are expected to be prepared to answer these questions individually during classroom discussions.

Homework: During the semester, three writing assignments will be made that will require a paper be completed outside of class time. Homework papers are to be at least three pages in length. Topics will be provided by the instructor when appropriate.

Final Paper: In lieu of a final exam, a final paper will be written and turned in on the day of the final. This paper will be at least five pages in length.

Written Paper Format: For all written assignments in this course, the following format guidelines will be strictly enforced. Failure to follow guidelines can result in a 10% penalty per violation. Papers will be typed, in 12 point Times, Times New Roman or Arial font, on 22 x 28 cm (8.5 x 11 in.) white paper. Margins will be 2.54 cm (1 inch) top, bottom and both sides. Citations will follow the format of the journal Ecology.

Incomplete and Late Assignments: An incomplete grade (I) will only be given to a student doing acceptable work (C or higher) who is unable to complete the course requirements due to illness or extenuating circumstances, and who only needs to make up a single assignment to complete the course requirements. Late assignments will be penalized 10% for each day they are late. If the delay was caused by a serious emergency or other dire situation, the instructor may choose not to penalize the assignment. Decisions are made on a case by case basis. The student is responsible for bringing to the instructor all documentation.
Students are required to read and act in accordance with University and Arizona Board of Regents policies, including:

The Academic Integrity Policy: http://www.asu.edu/studentlife/judicial/integrity.html

The Student Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308: http://www.abor.asu.edu/1_the_regents/policymanual/index.html#5

The Computer, Internet and Electronic Communications Policy
http://www.asu.edu/aad/manuals/acd/acd125.html

**Lecture Schedule:**
(subject to change with notice – meet in FAB B17).

<table>
<thead>
<tr>
<th>date</th>
<th>Readings:</th>
<th>Written Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 January</td>
<td>Introduction</td>
<td>In class</td>
</tr>
<tr>
<td>22 January</td>
<td>Gopen &amp; Swan article</td>
<td></td>
</tr>
<tr>
<td>24 January</td>
<td>Kuhn: Preface, Chapters 1-2</td>
<td></td>
</tr>
<tr>
<td>29 January</td>
<td>Kuhn: Chapter 3-4</td>
<td></td>
</tr>
<tr>
<td>31 January</td>
<td>Kuhn: Chapters 5-6</td>
<td></td>
</tr>
<tr>
<td>5 February</td>
<td>Kuhn: Chapters 7-8</td>
<td></td>
</tr>
<tr>
<td>7 February</td>
<td>Kuhn: Chapters 9-10</td>
<td></td>
</tr>
<tr>
<td>12 February</td>
<td>Kuhn: Chapters 11-12</td>
<td></td>
</tr>
<tr>
<td>14 February</td>
<td>Kuhn: Chapter 13 and Postscript</td>
<td></td>
</tr>
<tr>
<td>19 February</td>
<td>Mayr: Preface, Chapters 1-2</td>
<td></td>
</tr>
<tr>
<td>21 February</td>
<td>Mayr: Chapters 3-4</td>
<td></td>
</tr>
<tr>
<td>26 February</td>
<td>Mayr: Chapters 5-6</td>
<td>Paper 1 to peers</td>
</tr>
<tr>
<td>28 February</td>
<td>Mayr: Chapters 7-8</td>
<td>Paper 1 due</td>
</tr>
<tr>
<td>5 March</td>
<td>Mayr: Chapters 9-10</td>
<td></td>
</tr>
<tr>
<td>7 March</td>
<td>Mayr: Chapters 11-12</td>
<td></td>
</tr>
<tr>
<td>12 &amp; 14 March</td>
<td>Spring Break</td>
<td></td>
</tr>
<tr>
<td>19 March</td>
<td>Chalmers Preface, chapter 1</td>
<td>Paper 2 to peers</td>
</tr>
<tr>
<td>21 March</td>
<td>Chalmers chapter 2</td>
<td></td>
</tr>
<tr>
<td>26 March</td>
<td>Chalmers chapter 3</td>
<td>Paper 2 due</td>
</tr>
<tr>
<td>28 March</td>
<td>Chalmers chapter 4</td>
<td></td>
</tr>
<tr>
<td>2 April</td>
<td>Chalmers chapter 5</td>
<td></td>
</tr>
<tr>
<td>4 April</td>
<td>Chalmers chapter 6</td>
<td></td>
</tr>
<tr>
<td>9 April</td>
<td>Chalmers chapter 7</td>
<td></td>
</tr>
<tr>
<td>11 April</td>
<td>Chalmers chapter 8</td>
<td></td>
</tr>
<tr>
<td>16 April</td>
<td>tba</td>
<td>Paper 3 to peers</td>
</tr>
<tr>
<td>18 April</td>
<td>tba</td>
<td></td>
</tr>
<tr>
<td>23 April</td>
<td>tba</td>
<td>Paper 3 due</td>
</tr>
<tr>
<td>25 April</td>
<td>tba</td>
<td></td>
</tr>
<tr>
<td>30 April</td>
<td>tba</td>
<td></td>
</tr>
<tr>
<td>3 May</td>
<td>Exam week</td>
<td>Final paper due by noon</td>
</tr>
</tbody>
</table>

C-4.
Paper assignments for Modes of Biological Thought, Spring 2007

Paper #1:

How does Kuhn’s concept of progress in science compare with your own concepts of progress in science? Do you agree or disagree with Kuhn?

Paper #2:

How does Mayr’s concept of progress in science compare with your own concepts of progress in science? Does Mayr present a plausible argument that biology is a different kind of science than Kuhn’s physics?

Paper #3:

Can there exist a universal set of rules that define science? Is science ‘less legitimate’ without a fixed set of universal rules? Why or why not?

Final Paper:

Compare and contrast the views of science and progress in science presented in the course texts. How do these books compare to how you view science and progress in science? How have your views changed since the beginning of this semester?

All four papers contribute to the course meeting the criteria in C-2 & C-3
Contents
Contents