

PHYS 105: MATHEMATICAL METHODS IN PHYSICS

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In Workflow

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Approval Path

- 1. 2025-11-14T20:56:09Z
Mikkel Jensen (mikkel.jensen): Approved for PHYS Committee Chair
- 2. 2025-11-17T17:09:39Z
Michael Ray (ray): Approved for PHYS Chair
- 3. 2025-11-24T17:21:45Z
Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
- 4. 2025-11-24T17:26:59Z
Chris Taylor (ctaylor): Approved for NSM Dean

History

- 1. Sep 9, 2024 by Matt Block (matthew.block)

Date Submitted: 2025-11-13T06:02:10Z

Viewing: PHYS 105 : Mathematical Methods in Physics

Last approved: Mon, 09 Sep 2024 14:02:42 GMT

Last edit: 2025-11-24T17:21:32Z

Changes proposed by: Alexander Pettitt (223010632)

Justification for this deactivation request

Please attach any supporting documents:

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Alexander	pettitt@csus.edu	916-278-6362

Catalog Title:

Mathematical Methods in Physics

Class Schedule Title:

Math Methods In Physics

Academic Group: (College)

NSM - Natural Sciences & Mathematics

Academic Organization: (Department)

Physics and Astronomy

Will this course be offered through the College of Continuing Education (CCE)?

No

Please specify:

Catalog Year Effective:

Fall 2026 (2026/2027 Catalog)

Subject Area: (prefix)

PHYS - Physics

Catalog Number: (course number)

105

Course ID: (For administrative use only.)

158356

Units:

4

Changes to a course's units impact any related programs. As a result, a corresponding change must also be submitted for those programs

Is the ONLY purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?

No

In what term(s) will this course typically be offered?

Fall term only

Does this course require a room for its final exam?

Yes, final exam requires a room

Does this course replace an existing experimental course?

This course replaces the following experimental course:

This course complies with the credit hour policy:

Yes

The Sac State credit hour policy was created to align with WASC accreditation standards. All approved courses must conform to that policy.

Justification for course proposal:

PHYS105 acts the Physics and Astronomy Department's mathematical pre-requisite for their upper-division physics classes. It serves the role of providing the mathematical tools that students require to be able to approach complicated physics topics such as electricity and magnetism. In this role it effectively attempts to cover the topics of MATH105A and MATH105B (totaling 8 units) at a brisk pace and with less emphasis on theory and more on application. It has become obvious, both to instructors of PHYS105 and to instructors of the classes this acts as prerequisite to, that there is simply too much to cover in 3 units to do the material justice to the level needed by students to succeed in the subsequent physics classes this feeds in to. This change will allow the material a much needed extra unit to give the students the time and practice needed to master these tools, rather than just leaving them with a fleeting familiarity. Ultimately this will better prepare our students for the notoriously tricky topics covered in such classes as PHYS135, PHYS150 and PHYS156.

Course Description: (Not to exceed 90 words and language should conform to catalog copy.)

Linear algebra, linear vector spaces, linear transformations, the eigenvalue problem, Sturm-Liouville Theory. Solving PDEs common to physical systems. Fourier transforms, Dirac delta function, differential and integral vector calculus with a focus on applications to problems in physics, such as classical mechanics, thermodynamics, quantum mechanics, and electromagnetism.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Attach Service Learning Designation Approval

Is this course designated as Curricular Community Engaged Learning?

No

Attach Curricular Community Engaged Learning Designation Approval

Does this course require safety training?

No

Does this course require personal protective equipment (PPE)?

No

Course Note: (Note must be a single sentence; do not include field trip or fee course notations.)

Does this course have prerequisites?

Yes

Prerequisite:

MATH 32; MATH 45; PHYS 11A, PHYS 11B, PHYS 11C or PHYS 5A, PHYS 5B.

Prerequisites Enforced at Registration?

Yes

Does this course have corequisites?

No

Corequisite:

Corequisites Enforced at Registration?

Graded:

Letter

Approval required for enrollment?

No Approval Required

Course Component(s) and Classification(s):

Discussion

Activity Classification

Activity Units

Clinical Classification

Clinical Units

Discussion Classification

CS#04 - Lecture /Recitation (K-factor=1 WTU per unit)

Discussion Units

4

Field Studies Classification

Field Studies Units

Independent Study Classification

Independent Study Units

Laboratory Classification

Laboratory Units

Lecture Classification

Lecture Units

Practicum Classification

Practicum Units

Research Classification

Research Units

Seminar Classification

Seminar Units

Supervision Classification

Supervision Units

Thesis Research Classification

Thesis Research Units

Tutorial Classification

Tutorial Units

Is this a paired course?

No

Please confirm that it complies with the Paired Courses Policy and enter the course with which it is paired:

Is this course crosslisted?

No

Do they meet together and fulfill the same requirement?

Please identify the crosslisted course:

Can this course be repeated for credit?

No

How many times can the course be taken (including first time passed)?

Total credits allowed (including first time passed)

Can the course be taken for credit more than once during the same term?

No

Description of the Expected Learning Outcomes and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Identify the properties that define a linear vector space,	-homework assignments -typical summative assessments include 2-3 Midterm examinations -a Final examination
2	Classify second-order, linear, ordinary differential equations,	-homework assignments -typical summative assessments include 2-3 Midterm examinations -a Final examination
3	Analyze partial differential equations and assess if they are well-posed,	-homework assignments -typical summative assessments include 2-3 Midterm examinations -a Final examination

4	Solve well-posed partial differential equations using separation of variables,	-homework assignments -typical summative assessments include 2-3 Midterm examinations -a Final examination
5	Solve ordinary differential equations using the method of Frobenius,	-homework assignments -typical summative assessments include 2-3 Midterm examinations -a Final examination
6	Utilize Fourier transforms and the Dirac delta function when appropriate	-homework assignments -typical summative assessments include 2-3 Midterm examinations -a Final examination

Attach a list of the required/recommended course readings and activities:

105_sample_syllabus.docx

For whom is this course being developed?

Is this course required in a degree program (major, minor, graduate degree, certificate?)

Yes

Has a corresponding Program Change been submitted to Workflow?

No

Identify the program(s) in which this course is required:

Programs:

BA in Physics

BA in Physics (Teacher Preparation)

BS in Physics (General Physics)

BS in Physics (Applied Physics)

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

If yes, attach a description of resources needed and verify that resources are available:

Will there be any departments affected by this proposed course?

No

Indicate which department(s) will be affected by the proposed course:

Attach evidence of consultation with the affected department

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

Attach Accessibility Checklist: (Optional at submission. Fulfills requirement to file with Dean's office.)

University Learning Goals

Undergraduate Learning Goals:

Competence in the disciplines

Graduate (Masters) Learning Goals:

Doctorate Learning Goal(s):

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

For the Council for the Preparation of School Personnel (to be filled out with assistance of your department chair):

Does this course change impact your department's currently written Program Standards Document?

Program Standards: Please include suggested language changes:

Common Standards: In what way does this course or program change impact the currently written Common Standards document? Please include any suggested language changes:

Is this change in response to program or unit assessment activities?

Please describe the changes to program or unit assessment activities:

Will this course introduce any new or changes to program assessments?

Please describe the new or changes to the program assessments:

Please attach any additional supporting materials:

Is this a Graduate Writing Intensive (GWI) course?

Please attach the GWI Course Approval Request form:

GE Course and GE Goal(s)

Is this a General Education (GE) course or is it being considered for GE?

No

In which GE area(s) does this apply?

Which GE objective(s) does this course satisfy?

Attach Course Syllabus with Detailed Outline of Weekly Topics:

Syllabi must include: GE area outcomes listed verbatim; catalog description of the course; prerequisites, if any; student learning objectives; assignments; texts; reading lists; materials; grading system; exams and other methods of evaluation.

Will more than one section of this course be offered?

Provide a description of what would be considered common to all sections and what might typically vary between sections:

Please write a statement indicating the means and methods for evaluating the extent to which the objectives of the GE Area(s) and any writing requirements are met for all course sections:

What steps does the department plan to take to ensure that instructors comply with the respective category criteria and who is responsible?

General Education - Area 6: Ethnic Studies

Section 1.

Please provide a statement indicating the means and methods for evaluating the extent to which the objectives of Area 6: Ethnic Studies, the cultural diversity requirements, and the writing requirements are met for all course sections.

Section 2.

Indicate in written statements how the course meets at least 3 of the 5 following criteria for Area 6: Ethnic Studies. Relate the statements directly to the course syllabus and outline. Be as succinct as possible.

1. Analyzes and articulates concepts such as race and racism, racialization, ethnicity, equity, ethnocentrism, eurocentrism, white supremacy, self-determination, liberation, decolonization, sovereignty, imperialism, settler colonialism, and anti-racism as analyzed in any one or more of the following: Native American Studies, Pan African Studies, Asian American Studies, and Chicanx/Latinx Studies.

2. Applies theory and knowledge produced by Native American, Pan African, Asian American, and/or Chicanx/Latinx communities to describe the critical events, histories, cultures, intellectual traditions, contributions, lived experiences, and social struggles of those groups with a particular emphasis on agency and group-affirmation.

3. Critically analyzes the intersection of race and racism as they relate to class, gender, sexuality, religion, spirituality, national origin, immigration status, ability, tribal citizenship, sovereignty, language, and/or age in Native American, Pan-African, Asian American, and/or Chicanx/Latinx communities.

4. Critically reviews how struggle, resistance, racial and social justice, solidarity, and liberation, as experienced and enacted by Native American, Pan-African, Asian American, and/or Chicanx/Latinx communities are relevant to current and structural issues such as communal, national, international, and transnational politics as, for example, in immigration, reparations, settler-colonialism, multiculturalism, language policies.

5. Describes and actively engages with anti-racist and anti-colonial issues and the practices and movements in Native American, Pan African, Asian American, and/or Chicanx/Latinx communities and a just and equitable society

Included writing component described on the course syllabus

If the course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams that include essay questions, periodic formal writing assignments, periodic journals, reading logs, or other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

If the course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams that include essay questions, a research/term paper, etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 3.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education Details – American Institutions (US History)

Section 1.

Please provide a statement indicating the means and methods for evaluating the extent to which the objectives of American Institutions Area US-1: US History, the cultural diversity requirements, and writing requirements are met for all course sections.

Section 2.

Indicate in written statements how the course meets the following criteria for American Institutions Area US-1: US History. Relate the statements directly to the course syllabus and outline. Be as succinct as possible.

Demonstrates a comprehensive understanding of the historical continuity of the American experience that covers at least a 100-year time span.

Describes and analyzes the roles and contributions of, and relationships among, major ethnic/social groups and movements to US history.

Explains and analyzes the causes and consequences of significant events in the US historical context relating to political, economic, geographic, and social change.

Explains and evaluates the historical development of US institutions and ideals in relation to the Constitution and American democracy.

Analyzes and evaluates the United States in its global context, with particular attention to its historical derivation from other cultures and its incorporation of immigrants into American society.

Identifies and applies primary sources (direct or firsthand evidence about an event, object, or person) and secondary sources (descriptions, interpretations, commentaries, evaluations, analyses of direct or firsthand evidence) to their understanding of US history.

Included writing component described on the course syllabus

1. If the course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams that include essay questions, periodic formal writing assignments, periodic journals, reading logs, or other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.
2. If the course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams that include essay questions, a research/term paper, etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 3.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education Details – American Institutions (US Constitution and CA Government)

Section 1.

Please provide a statement indicating the means and methods for evaluating the extent to which the objectives of American Institutions Area US-2: US History and American Institutions Area US-3 US Constitution and California State and Local Government, the cultural diversity requirements, and writing requirements are met for all course sections.

Section 2.

Indicate in written statements how the course meets the following criteria for American Institutions Area US-2: US Constitution and American Institutions Area US-3: California State and Local Government. Relate the statements directly to the course syllabus and outline. Be as succinct as possible.

Specific Criteria: Area US-2: US Constitution

Explains the political philosophies of the framers of the US Constitution, including the fundamental ideas of the Declaration of Independence; the Federalism-Anti-Federalism debate; ideas about representative democracy; checks and balances; and the foundations of the Bill of Rights and a limited Constitution.

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Explains the characteristics, operation, and interaction of institutions in the US Constitution.

- A. Congress: Legislative process, operation and structure, and elections.
- B. Executive: Electoral College, unitary executive, the exercise of executive power, and the functioning of the bureaucracy.
- C. Judicial: Judicial review, decision-making, and selection.

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Explains the rights and obligations of citizens under the US Constitution, including the Bill of Rights, and the incorporation of rights via the 14th Amendment.

Explains and analyzes the history and legacy of civil rights and civil rights movements in relation to the US Constitution and legislation.

Explains and evaluates the function, role, and impact of campaigns and elections, interest groups, political parties, mass media, social movements, and public opinion on democracy in the United States.

Explains the relationship between state, local, and federal government, including enumerated, reserved, and concurrent powers under the US Constitution over time

Specific Criteria: Area US-3: California State and Local Government

Explains the structure and functions of California's constitution, including plural executive, legislative and judicial branches, local governments, and the function and history of direct democracy in California politics and government.

Describes the historical development of California's political institutions, including California's finance and budgetary processes, as well as its electoral system.

Explains the contributions of diverse groups to California's political evolution.

Included writing component described on the course syllabus

If the course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams that include essay questions, periodic formal writing assignments, periodic journals, reading logs, or other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

If the course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams that include essay questions, a research/term paper, etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

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Section 3.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 1C: Oral Communication

Section I.

Indicate in statements below how the course meets the following criteria for Area 1C. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General Criteria:

Courses specifically designated to fulfill the oral communication requirement must emphasize the content as well as the form of communication and must include active participation in oral communication. Courses should also provide an understanding of the psychological bases and social significance of the communication studied.

Specific criteria:

Analysis of oral communication focuses on the rhetorical perspective, including reasoning and advocacy, organization and accuracy, style and structure of oral expression.

Students receive evaluation and instruction in effective listening techniques as well as the discovery and selection, critical evaluation, and oral report of specific content.

Assignments emphasize both theoretical and practical aspects of public speaking or group discussion, involving each student in a minimum of 3 in class presentations, totaling 22 minutes or more. Presentations must be followed by classroom feedback explaining the speaker's performance in relation to applicable theories of oral communication.

Includes a writing component described on course syllabus:

a) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

b) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found on PP. 2-3 of the "Statement of Policies Pertaining to the G.E. Program" of August, 1991.

General Education - Area 1A: English Communication

Section 1.

Indicate in written statements how the course meets the following criteria for Area 1A. Relate the statements to the course syllabus and outline. Be as succinct as possible.

Offers instruction in the composition of expository essays, including: 1) the fundamentals of usage; 2) sentence structure, and 3) essay structure.

Develops by suitable exercises and essay assignments, a general skill, applicable to any subject matter. [Students may satisfy the requirement in this category by passing English 5 or an approved equivalent.]

Includes a writing component described on course syllabus.

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments,

periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found on PP. 2-3 of the "Statement of Policies Pertaining to the G.E. Program" of August, 1991.

General Education - Area 1B: Critical Thinking and Composition

Section 1.

Indicate in written statements how the course meets the following criteria for Area 1B. Relate the statements to the course syllabus and outline. Be as succinct as possible.

Students study about and consciously develop skills in critical thinking.

Knowledge through logical analysis and argument construction is pursued throughout the course.

Instruction develops understanding of logical relationships between premises and conclusions.

Instruction develops ability to recognize more common formal and informal fallacies.

Grading reflects emphasis on logical processes.

Develops basic skills, applicable to a variety of academic subjects and to the fulfillment of such roles as citizen, consumer, leader and moral agent.

- 1) Skill in evaluating the validity, strength and relevance of arguments.
- 2) A sense of logical structure of both inductive and deductive forms.
- 3) Awareness of uses and abuses of argument language, including connotation, ambiguity and definition.
- 4) Skill in handling a variety of arguments in variety of contexts.
- 5) Ability to argue fairly and to handle bias, emotion, and propaganda.

Includes a writing component described on course syllabus.

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term

paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found on PP. 2-3 of the "Statement of Policies Pertaining to the G.E. Program" of August, 1991.

General Education - Area 5A: Physical Science

Section 1.

"Indicate in written statements how the course meets the following criteria for Area 5A. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General Criteria:

Is an introductory course with no college level prerequisites.

Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.

Introduces students to one or more of the disciplines whose purpose is to acquire knowledge of the physical universe.

Specific Criteria:

A student will be able to explain and apply core ideas and models concerning physical systems and mechanisms, citing critical observations, underlying assumptions and limitations.

A student will be able to describe how scientists create explanations of natural phenomena based on the systematic collection of empirical evidence subjected to rigorous testing and/or experimentation.

A student will be able to access and evaluate scientific information, including interpreting tables, graphs and equations.

A student will be able to recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public, and ethical concern.

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 5B: Biological Science

Section 1.

Indicate in written statements how the course meets the following criteria for Area 5B. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General criteria:

Is an introductory or survey course with no college level prerequisites.

Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.

Introduces students to one or more of the disciplines whose purpose is to acquire knowledge of living systems and life forms.

Specific criteria:

A student will be able to explain and apply core ideas and models concerning living systems and life forms, citing critical observations, underlying assumptions and limitations.

A student will be able to describe how scientists create explanations of natural phenomena based on the systematic collection of empirical evidence subjected to rigorous testing and/or experimentation.

A student will be able to access and evaluate scientific information, including interpreting tables, graphs and equations.

A student will be able to recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public and ethical concern.

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 5C: Laboratory

Section 1.

Indicate in written statements how the course meets the following criteria for Area 5C. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General criteria:

Involves at least two hours per week in the lab

Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.

Introduces students to one or more of the disciplines whose purpose is to acquire knowledge of the physical universe and/or living systems and life forms.

Develops an appreciation of the methodologies of science and the limitations of scientific inquiry.

Specific criteria:

A student will be able to use their senses and scientific instruments to gather, organize, and display empirical data.

A student will be able to identify patterns in data and use these to hypothesize underlying relationships.

A student will be able to explain and apply scientific techniques for coping with complexity and variability in the natural world.

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 2: Mathematical Concepts and Quantitative Reasoning

Section 1.

Indicate in written statements how the course meets the following criteria for Area 2. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General criteria:

Is an introductory or survey course with no college level prerequisites (except for intermediate algebra, which is required).

Develops basic mathematical or logical concepts, quantitative reasoning skills, and has general applicability in solving problems.

Develops computational skills or competence in the analysis of arguments.

Specific criteria:

A student will be able to solve problems by thinking logically, making conjectures, and constructing valid mathematical arguments.

A student will be able to make valid inferences from numerical, graphical and symbolic information.

A student will be able to apply mathematical reasoning to both abstract and applied problems, and to both scientific and non-scientific problems.

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Upper Division Area 5 or Area 2

Section 1.

Indicate in written statements how the course meets the following criteria for Upper Division Area 5 or Area 2. Relate the statements to the course syllabus and outline. Be as succinct as possible.

Course type:

For courses in Physical Science or Biological Science:

Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems.

Introduces students to one or more of the disciplines whose purpose is to acquire knowledge of the physical universe and/or living systems and life forms.

Develops an appreciation of the methodologies of science and the limitations of scientific inquiry.

For courses in Mathematical Concepts and Quantitative Reasoning:

Develops basic mathematical or logical concepts, quantitative reasoning skills, and has general applicability in solving problems.

Develops computational skills or competence in the analysis of arguments.

Please Note: Courses listed in this category:

1) Need not be introductory courses and need not be as broad in scope as courses included in Areas 2 and 5 i.e.; they may deal with a specialized topic.

2) These courses may have prerequisites or build on or apply concepts and knowledge covered in Areas 2, 5A and 5B. For math courses, there must be an intermediate algebra prerequisite.

Addresses the specific GE student learning outcomes for area B5. A student should be able to do one or more of the following:

Cite critical observations, underlying assumptions and limitations to explain and apply important ideas and models in one or more of the following: physical science, life science, mathematics, or computer science.

Recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public and ethical concern.

Discuss historical or philosophical perspectives pertaining to the practice of science or mathematics.

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 3A: Arts

Section 1.

Indicate in written statements how the course meets the following criteria for Area 3A. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General criteria:

Indicate how the course is introductory and has no prerequisites.

Indicate how the course is broad in scope or survey in nature.

Specific criteria:

Indicate in written statements how the course meets each of the following Learning Criteria for Area 3A. Relate the statements to the course syllabus and outline. Be as succinct as possible.

Think conceptually and critically about medium, performance or presentation, and production for at least one art form.

Demonstrate knowledge of artistic production, aesthetic properties, and the way creative work is shaped by artistic and cultural forces.

Have an acquaintance with a broad understanding of artistic forms, genres, and cultural sources.

Be able to develop and defend informed judgments about creative work

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 3B: Humanities

Section 1.

Indicate in written statements how the course meets the following criteria for Area 3B. Relate the statements to the course syllabus and outline. Be as succinct as possible.

Is broad in scope or survey in nature.

Develops an understanding of and appreciation for the diversity of the human community.

Develops a comprehensive understanding and appreciation of the heritage being studied and transmits a knowledge of the Western and Non-Western cultural heritage in the humanities. Students should be able to:

Demonstrate knowledge of the conventions and methods of the study of the humanities.

Investigate, describe, and analyze the roles and effects of human culture and understanding in the development of human societies.

Compare and analyze various conceptions of humankind.

Demonstrate knowledge and understanding of the historical development of cultures and civilizations, including their animating ideas and values.

In presenting the contribution and perspectives of people, the coursework addresses at least two of the following:

- Women
- Ethnicity
- Socio-economic status
- Religious affiliation
- Disabilities

- Gays & lesbians

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Area 4: Social and Behavioral Sciences

Section 1.

Please provide a statement indicating the means and methods for evaluating the extent to which the objectives of Area 4, the cultural diversity requirements, and writing requirements are met for all course sections.

What steps will the department take to ensure that instructors comply with the category criteria (and who is responsible)? Before a course can be offered in multiple sections, a designated person in the department must provide a description of what would be common to all sections and what might typically vary between sections.

Section 2.

Indicate in written statements how the course meets the following criteria for Area 4. Relate the statements directly to the course syllabus and outline. Be as succinct as possible.

Describes and evaluates ethical and social values in their historical and cultural context.

Explains and applies the principles and methods of academic disciplines to the study of social and individual behavior.

Demonstrates an understanding of the role of human diversity in human society, for example, race, ethnicity, class, age, ability/disability, sexual identity, gender and gender expression.

Explains and critically examines social dynamics and issues in their historical and cultural contexts.

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term

paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 3.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education Details - Area E: Understanding Personal Development (pending discontinuation)

Section 1.

Indicate in written statements how the course meets the following criteria. Relate the statements to the course syllabus and outline. Be as succinct as possible.

General criteria:

Demonstrates an understanding of academic content knowledge regarding self-development as a physiological, psychological, and social being.

Critically examines prior or current experiences or behaviors from their own lives in response to real world physiological, social and/or psychological contexts.

Applies skills and knowledge regarding development of the self to differing situations, such as real world challenges, an/or to make connections across perspectives

Specific criteria:

Students will be able to identify their own perspective and make connections/comparisons across perspectives

Students will be able to plan, monitor, and assess their own learning.

Students will be able to set personal and/or professional goals

Includes a writing component described on course syllabus

1) If course is lower division, formal and/or informal writing assignments encouraging students to think through course concepts using at least one of the following: periodic lab reports, exams which include essay questions, periodic formal writing assignments, periodic journals, reading logs, other. Writing in lower division courses need not be graded, but must, at a minimum, be evaluated for clarity and proper handling of terms, phrases, and concepts related to the course.

2) If course is upper division, a minimum of 1500 words of formal, graded writing. [Preferably there should be more than one formal writing assignment and each writing assignment (e.g. periodic lab reports, exams which include essay questions, a research/term paper etc.) should be due in stages throughout the semester to allow the writer to revise after receiving feedback from the instructor. Include an indication of how writing is to be evaluated and entered into course grade determination.]

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found in the CSUS Policy Manual, General Education Program, Section I.B.

General Education - Race and Ethnicity in American Society

Note: Course must be approved for categories in Area C or D before it can be considered for Race and Ethnicity.

In addition to meeting criteria for an Area C or D category, course proposals must meet additional criteria. Indicate in a written statement how the course meets the following criteria for "Race and Ethnicity". Relate the statement to the course syllabus and outline. Be as succinct as possible.

Examines significant aspects of the culture, contribution and social experience of underrepresented ethnic/racial minority groups in the U.S. including but not limited to: Asian Americans; Black Americans; Mexican Americans and Native Americans.

Focuses on more than one of the above groups, or course focuses on one group provided that it compares and contrasts experiences of the group with another group. Courses which focus on a single ethnic group and compares its sub groups are not acceptable.

Includes an analysis of concepts of ethnicity, ethnocentrism and racism and how these explain and shape the ethnic experience in the United States.

Includes an examination of such factors as race, class, gender, age, sexual preference, and how these shape the ethnic experience in the United States. (Secondary Criteria)

Explores the role culture plays in shaping and sustaining ethnic groups. (Secondary Criteria)

General Education - Writing Intensive

Section 1.

Indicate how the course meets the following criteria for Writing Intensive. Relate the statement to the course syllabus and outline. Be as succinct as possible. Courses must comply with the general criteria for Writing Intensive courses:

The course must build on the basic skills and knowledge acquired by students in their foundation courses in General Education or the major.

The course must expand students' knowledge by examining complex issues.

The course must expand students' abilities to reason logically and to write clearly in prose.

Students must be required to write not less than 5,000 words of clear and logical prose (not to include simple narrative or diary writing).

Instructors must work actively with students to sharpen analytical abilities and to improve their writing styles.

Writing assignments must be spread over the entire semester (with at least 3,000 of the 5,000 words due before the last two weeks of instruction).

Instructors must provide timely responses and evaluation of each writing assignment, and evaluations and comments must not only be about the subject matter content but also about writing skills.

Section 2.

If you would like, you may provide further information that might help the G.E. Course Review Committee understand how this course meets these criteria and/or the G.E. Program Objectives found on pp. 2-3 of the "Statement of Policies Pertaining to the G.E. Program" of August, 1991.

WRITING INTENSIVE

Recognizing the value of writing in all disciplines, as a tool in learning as well as conveying knowledge, the Academic Senate mandated that the teaching of writing be an all university responsibility. To that end, the Senate recommended that three units of Writing Intensive be a graduation requirement.

The chief aim of Writing Intensive is to promote students' ability to write logically and clearly, using standard written English, in their major discipline or in a discipline outside their major.

Course Requirement

The Writing Intensive requirement can be satisfied in one of three ways: a) Departments/programs may specify that the Writing Intensive requirement must be met in the major; b) In cases where the requirement is not specified as required in the major, the requirement must be satisfied by taking an Writing Intensive course in the General Education program, or c) student's choice.

Departments/programs wishing to have courses approved as Writing Intensive must submit the course syllabus to the General Education Review Committee which shall review and approve the course for listing as Writing Intensive. (General Education courses must also be approved for G.E. listing in the normal way.)

Criteria

Courses designated as Writing Intensive build on the basic skills and knowledge acquired by students in their foundation courses in General Education or the major. These courses are to expand students' knowledge by examining complex issues and they are to advance students' abilities to reason logically and to write clearly in prose.

The English Composition and Critical Thinking courses and the Writing Proficiency Examination are prerequisites to all Writing Intensive courses. Some Writing Intensive courses listed in the General Education program may explore more specialized topics and may thus require prerequisites, but most are to be courses of a broader nature and generally require no formal preparation in the discipline offering the course. Writing Intensive courses not in the General Education Program may also have prerequisites, but they should focus on the broad and general rather than the more technical areas of a discipline.

Students are required to write not less than 5,000 words (20 typed, double-spaced pages) of clear and logical prose in Writing Intensive classes. (Once a course is approved for Writing Intensive, all students enrolled in the class, whether they are taking it to fulfill their Writing Intensive requirement or not, must write no less than 5,000 words in order to receive a passing grade.)

An important aspect of the task of instructors is working actively with students to sharpen their analytical abilities and to improve their writing styles. Simple narrative and diary-type writing will not fulfill the requirement.

Writing assignments must be analytical in nature, discipline specific and spread out over the entire semester. (At least a total of 3,000 words of writing assignments must be due before the last two weeks of instruction.) Instructors must provide timely responses and evaluations of each writing assignment. Evaluations and comments must only be about the subject matter content but also address the writing skills. Additionally, evaluations and comments must be given to the students early enough to be reviewed before their next formal writing assignment is due.

Recommendations for Implementation

Although Writing Intensive courses have a 5,000 word requirement, this word requirement can be met by both formal and informal writing assignments. Instructors might require 10 pages each of formal and informal assignments (journals, responses to reading, for example). Yet all should require analysis in order to promote learning as well as improved writing skills.

Although the number of writing assignments depends upon the discipline and nature of the course, a study conducted by the Writing Intensive Committee in Spring 1988 discovered that those students who had been assigned a number of shorter assignments (usually four 5 page ones) reported that their writing had improved as a result, in part, of more frequent feedback. Those with only two long assignments reported that they did not feel the assignments had helped them improve their writing.

Please attach any additional files not requested above:

Reviewer Comments:

Key: 3900