CHAD 33: QUANTITATIVE REASONING IN HUMAN DEVELOPMENT

In Workflow

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Approval Path

1. Wed, 05 Apr 2023 22:48:43 GMT
   Sue Hobbs (sue.hobbs): Approved for UGSE Chair
2. Thu, 14 Sep 2023 23:23:46 GMT
   Bita Rivas (b.rivas): Approved for ED College Committee Chair
3. Sun, 17 Sep 2023 16:44:11 GMT
   Deidre Sessoms (dsessoms): Approved for ED Dean

New Course Proposal

Date Submitted: Wed, 05 Apr 2023 21:37:17 GMT

Viewing: CHAD 33 : Quantitative Reasoning in Human Development
Last edit: Wed, 05 Apr 2023 21:37:16 GMT

Changes proposed by: Sheri Hembree (101037114)

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Catalog Title:

Quantitative Reasoning in Human Development

Class Schedule Title:

Reasoning and Development

Academic Group: (College)

ED - Education

Academic Organization: (Department)

Undergraduate Studies in Education

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

No

Catalog Year Effective:

Fall 2024 (2024/2025 Catalog)

Subject Area: (prefix)

CHAD - Child and Adolescent Development

Catalog Number: (course number)
33

Course ID: (For administrative use only.)
TBD

Units:
3

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, Spring

Does this course require a room for its final exam?
Yes, final exam requires a room

This course complies with the credit hour policy:
Yes

Justification for course proposal:
This course focuses on quantitative reasoning and the development of mathematical and statistical reasoning skills required in the social sciences. It is being proposed to meet the B4 GE course requirement.

In the social sciences, math is used to construct models representing real-world events. This course will build the scientific and mathematical foundational knowledge required for critically evaluating empirical quantitative research. Students in this course will explore data sets and will be able to solve problems by thinking logically, making conjectures, and constructing valid mathematical arguments. Students will be able to make valid inferences from numerical, graphical and symbolic information. Students will be able to apply mathematical reasoning to both abstract and applied problems, and to both scientific and non-scientific problems.

As stated in the B4 GE criteria,
"Scientifically and mathematically literate individuals are willing to engage in science- and math-related issues and ideas as reflective citizens. They are able to draw evidence-based conclusions and make reasoned decisions concerning science- and math-related issues in real-life contexts. Scientific and mathematical literacy includes both an individual's knowledge of scientific and mathematical concepts and principles as well as the use of that knowledge to acquire new knowledge, to identify questions, and to explain scientific and mathematical phenomena".

Students will use the knowledge and skills they develop in this course to think critically about educational and developmental research studies, and be better critical consumers of information, and scientifically literate citizens in this information-laden society.

In addition to providing students with quantitative reasoning skills, this course will also meet the University's undergraduate learning goals.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
This course focuses on thinking and reasoning about phenomena in human development using introductory ideas from science, statistics, and mathematics. With data collected by researchers and classmates, students will develop a better understanding of how a scientific approach and basic mathematical concepts can be used to organize and reason about current topics in human development.

Are one or more field trips required with this course?
No

Fee Course?
No

Is this course designated as Service Learning?
No

Is this course designated as Curricular Community Engaged Learning?
No

Does this course require safety training?
No

Does this course require personal protective equipment (PPE)?
No

Does this course have prerequisites?
No

Does this course have corequisites?
No

Graded:
Letter

Approval required for enrollment?
No Approval Required

Course Component(s) and Classification(s):
Lecture

Lecture Classification
CS#02 - Lecture/Discussion (K-factor=1WTU per unit)
Lecture Units
3

Is this a paired course?
No

Is this course crosslisted?
No

Can this course be repeated for credit?
No

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	solve problems by thinking logically, making conjectures, and constructing mathematical arguments.	Lab Assignments; Data projects
2	make valid inferences from numerical, graphical, and symbolic information.	Lab Assignments
3	apply mathematical reasoning to both abstract and applied problems, and to both scientific and non-scientific problems.	Statistics in the Literature Assignments; Statistics the Media Assignments; Data Projects
4	use scientific reasoning and quantitative data to understand human behavior and development in applied and theoretical contexts.	Data Projects
5	compare and contrast statistical concepts relevant to research in human development	Statistics in the Literature Assignments
6	apply scientific literacy skills to a variety of social issues and everyday problems	Statistics in the Media Assignments; Lab Assignments

Attach a list of the required/recommended course readings and activities:
CHAD 33 Labs and Data Projects.pdf
CHAD33_readings.pdf

For whom is this course being developed?
Majors in the Dept

Minors in the Dept
General Education

Is this course required in a degree program (major, minor, graduate degree, certificate?)
No

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?
No

Will there be any departments affected by this proposed course?
No

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

University Learning Goals

Undergraduate Learning Goals:
Competence in the disciplines
Integrative learning
Intellectual and practical skills

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

GE Course and GE Goal(s)

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

In which GE area(s) does this apply?
B4. Mathematical Concepts and Quantitative Reasoning

Which GE objective(s) does this course satisfy?
Use mathematical ideas to accomplish a variety of tasks.

Attach Course Syllabus with Detailed Outline of Weekly Topics:
CHAD 33_sample syllabus.pdf

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?
Yes

Provide a description of what would be considered common to all sections and what might typically vary between sections:
A common text or reader will be used in all sections. Instructors may add readings in addition to the common readings. Course instructors will use a syllabus template and at least 2 common signature assignments for assessment. Changes to these common items will be made as a course group, consistent with course outcomes. Instructors may vary other assignments and activities, so long as course outcomes are met and can be assessed.

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:
Common signature assignments and other course assignments will be evaluated relative to the course and GE objectives. For example, students will complete assignments where they will use statistics to make decisions about research results (to determine statistical significance) as well as everyday problems (e.g., whether polling results are biased). A random sample of these assignments will evaluated independently by faculty to determine whether the objectives are met.

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

Course instructors will be organized into a course group and use Canvas to coordinate their sections. A tenure track faculty member will be responsible for ensuring that new faculty have requisite shared items and syllabi will be collected and reviewed by the department.

General Education Details - Area B4: Mathematical Concepts and Quantitative Reasoning

Section 1.

Indicate in written statements how the course meets the following criteria for Category B4. 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).

There are no college-level prerequisites for the course, except for intermediate algebra.

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

Through the exploration of both popular science and empirical scientific research articles, as well as data sets, students will engage in developing basic statistical concepts such as how the central tendency is related to the variability within the distribution of a data set, how the variation of the data can be displayed in various graphical forms, and the basic scientific research inquiry process. They will be guided through the process of asking a question, differentiating between anecdote and empirical data, and reason using this information to draw conclusions in human development and across problem-solving contexts.

Develops computational skills or competence in the analysis of arguments.

Students will be exploring data sets and computing various descriptive and inferential statistics. They will represent data graphically. They will practice using technological tools for analysis and computation. They will also be analyzing arguments by way of hypothesis testing and evaluating conclusions drawn from statistical results.

Specific criteria:

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

Students will be solving problems by using logic and reasoning, making conjectures about data sets, and constructing valid mathematical arguments through the use of statistical analysis.

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

All three forms of information - numerical, graphical, and symbolic- will be used at various points in this course for students to be able to make valid inferences. They will learn how to use statistics and mathematics to make sense of information displayed graphically and symbolically (numerical is symbolical, the symbols are numbers). Students will use data to compute numbers, use these numbers to create graphical representations, and use mathematical and statistical symbols to construct valid arguments.

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

Students will be asked to reason about a variety of issues in human development and education, without using data. Students will read and be asked to apply mathematical reasoning to popular articles. Students will also be asked to read scientific articles and draw conclusions. All of these activities will be conducted throughout the semester using different popular topics, such as issues in schooling, parenting, and research in social and psychological science, covering abstract problems (e.g., issues in "happiness") and applied problems (e.g., child interventions) as well as scientific (laboratory-based research; experimental data) and non-scientific problems (issues more difficult to test using scientific reasoning) and the difference between scientific and non-scientific problems.

Includes a writing component described on course syllabus

l) 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.]

This course is lower division. Students will be expected to think through course concepts using periodic formal writing assignments, reading logs, and periodic journals. These will be evaluated for clarity and proper use of mathematical and statistical vocabulary as related to the course.

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.

This course is designed for first-year college students interested in thinking about social and developmental issues, and learning how mathematics, statistics, and reasoning can be used in everyday life. It is designed to be engaging and encourage students to apply course-related skills in future coursework and in their lives. The course may be particularly useful for students with future interests in studying social sciences. Faculty teaching upper division CHAD quantitative research methods courses were consulted in course development with attention paid to including foundation mathematics and statistical skills that are useful in these UD courses.

Key: 14872