

STAT 141: INTRODUCTION TO DATA SCIENCE

In Workflow

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Approval Path

1. Tue, 05 Dec 2023 22:43:38 GMT
Vincent Pigno (vincent.pigno): Approved for MATH Committee Chair
2. Wed, 06 Dec 2023 01:23:40 GMT
Kimberly Elce (kelce): Approved for MATH Chair
3. Thu, 22 Feb 2024 00:09:41 GMT
Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. Wed, 06 Mar 2024 16:54:52 GMT
Shannon Datwyler (datwyler): Approved for NSM Dean

New Course Proposal

Date Submitted: Tue, 05 Dec 2023 00:39:11 GMT

Viewing: STAT 141 : Introduction to Data Science

Last edit: Thu, 22 Feb 2024 00:09:35 GMT

Changes proposed by: Clark Fitzgerald (223005263)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
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Catalog Title:

Introduction to Data Science

Class Schedule Title:

Introduction to Data Science

Academic Group: (College)

NSM - Natural Sciences & Mathematics

Academic Organization: (Department)

Mathematics & Statistics

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

No

Catalog Year Effective:

Fall 2024 (2024/2025 Catalog)

Subject Area: (prefix)

STAT - Statistics

Catalog Number: (course number)

141

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 prerequisites 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?

No

This course complies with the credit hour policy:

Yes

Justification for course proposal:

Data analysis has become a part of nearly every academic discipline. This course will offer accessible training in data science to students across campus.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)

Exploratory data analysis, data visualization, summarization, inference, modeling, and effective communication of results. Students will use professional tools to analyze real data sets and address relevant questions. Does not count toward the Statistics Major. 3.0 Units; Letter Graded

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?

Yes

Prerequisite:

One of (Stat 1, Stat 10B, Stat 50, Psyc 9, Soc 101, Swrk 110, Engr 115). Other courses may be accepted based on instructor discretion.

Prerequisites Enforced at Registration?

Yes

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=1 WTU 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	Load, modify, and select subsets of tabular data.	Homework, Midterm(s), Written project reports, Final Exam
2	Visualize complex data sets.	Homework, Midterm(s), Written project reports, Final Exam
3	Describe ethical concerns in data science.	Homework, Midterm(s), Written project reports, Final Exam
4	Draw statistically valid inferences from data.	Homework, Midterm(s), Written project reports, Final Exam
5	Communicate findings through written reports.	Written project reports

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

Stat 141 Recommended Reading and Course Activities.pdf

For whom is this course being developed?Majors of other Depts
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
Intellectual and practical skills
Personal and social responsibility

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?

B5. Further Studies in Physical Science, Life Forms and Quantitative Reasoning

Which GE objective(s) does this course satisfy?

Find and use common information resources, engage in specialized library research, use computers and seek out appropriate expert opinion and advice.

Use mathematical ideas to accomplish a variety of tasks.

Attach Course Syllabus with Detailed Outline of Weekly Topics:

stat141-intro-data-science-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?

No

General Education Details - Area B5: Further Studies in Physical Science, Life Forms and Quantitative Reasoning

Section 1.

Indicate in written statements how the course meets the following criteria for Category B5. Relate the statements to the course syllabus and outline. Be as succinct as possible.

Course type:

Quantitative Reasoning

For courses in quantitative reasoning:

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

Students will apply mathematical and statistical techniques to real world data sets. They will interpret the results, draw valid conclusions, and address real problems.

Develops computational skills or competence in the analysis of arguments.

Students will develop computational skills by analyzing data using professional data science software.

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 B1, B2, B3 or B4 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 B1, B2 and B4. 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.

All statistical models have assumptions, and students will become familiar with these assumptions as they model real data sets.

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

Graphs and data visualizations provide some of the most immediate, accessible, and compelling evidence, regardless of domain. Students enrolled in this class will learn how to create and interpret data visualizations, which will help them recognize evidence-based conclusions and form reasoned opinions.

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

The ethics content on this class will explicitly cover historical misinterpretations of data caused by Simpson's paradox.

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.]

Students will do at least two data analysis projects (750 words each) where they will analyze real data, create visualizations, and describe their methods and conclusions in clear prose. Students will have the opportunity to revise and incorporate feedback on at least one of these projects.

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.

NA

Key: 15061