MATH 64: MATHEMATICAL PROGRAMMING

In Workflow

1. MATH Committee Chair (taylorlm@csus.edu)
2. MATH Chair (kelce@skymail.csus.edu)
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4. NSM Dean (datwyler@csus.edu)
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9. Catalog Editor (catalog@csus.edu)
10. Registrar's Office (wlindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Wed, 28 Sep 2022 21:39:59 GMT
   Lisa Taylor (taylorlm): Approved for MATH Committee Chair
2. Fri, 30 Sep 2022 17:52:38 GMT
   Kimberly Elce (kelce): Approved for MATH Chair
3. Fri, 07 Oct 2022 03:01:18 GMT
   Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. Fri, 21 Oct 2022 20:33:40 GMT
   Shannon Datwyler (datwyler): Approved for NSM Dean

New Course Proposal

Date Submitted: Wed, 28 Sep 2022 21:38:39 GMT

Viewing: MATH 64 : Mathematical Programming

Last edit: Fri, 07 Oct 2022 03:00:52 GMT

Changes proposed by: Lisa Taylor (101035034)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Clark Fitzgerald	fitzgerald@csus.edu	(916) 278-4748

Catalog Title:
Mathematical Programming

Class Schedule Title:
Mathematical Programming

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 2023 (2023/2024 Catalog)

Subject Area: (prefix)
MATH - Mathematics

Catalog Number: (course number)
64

Course ID: (For administrative use only.)
203771

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 is a technology and programming course designed specifically for math majors and statistics minors. Graduating math majors often teach or work in jobs involving data analysis, and we believe that math-focused programming that teaches practical numerical computation and data visualization will help them succeed in these professions.

Additionally, students are used to using technology for computation. However, they have less experience using technology to aid in the process of problem solving. This course will focus on mathematical problem solving in situations where technology and more specifically programming greatly enhance the problem solving process.

The proposed course will prepare math majors for success in subsequent upper division courses including STAT 128 (Statistical Computing), STAT 129 (Big Data), potentially Math 150 (Numerical Analysis), and future statistics classes to be developed (Regression / Statistical Learning).

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
Computational strategies in mathematical problem solving; implementation of mathematical algorithms; programming concepts including variables, functions, data structures, and control flow; data visualization, typesetting, and report generation.

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:
MATH 30 or a score of 4 or higher on the AP Calculus AB exam or instructor approval.

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#04 - Lecture /Recitation (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	Develop and evaluate code by writing, explaining, testing, and debugging.	Class assignments and projects Midterm examinations Comprehensive final
2	Design solutions to mathematical problems by producing high-level descriptions of computational strategies.	Class assignments and projects Midterm examinations Comprehensive final
3	Implement mathematical modeling by translating formulae and high-level descriptions of algorithms into working programs.	Class assignments and projects Midterm examinations Comprehensive final
4	Apply foundational computer literacy by finding and managing files and software.	Class assignments and projects Midterm examinations Comprehensive final
5	Implement modular programs by using standard constructs.	Class assignments and projects Midterm examinations Comprehensive final
6	Generate and modify data by using data structures such as vectors and arrays.	Class assignments and projects Midterm examinations Comprehensive final
7	Visualize and interpret data by plotting functions and vectors.	Class assignments and projects Midterm examinations Comprehensive final
8	Communicate results through written reports including typeset mathematical notation and high-quality graphics.	Class assignments and projects Midterm examinations Comprehensive final

Attach a list of the required/recommended course readings and activities:
Math 64 recommended course readings activities.pdf

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

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?
Yes

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

Department(s)
Computer Science

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

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?
No

Please attach any additional files not requested above:
Math 64 syllabus dept approved 2022 9-20.pdf
math64_consult.pdf

Key: 14788