

MATH 96F: 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 (torsetj@csus.edu)
10. Registrar's Office (w lindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Wed, 26 Jan 2022 22:34:46 GMT
Lisa Taylor (taylorlm): Approved for MATH Committee Chair
2. Wed, 26 Jan 2022 23:20:11 GMT
Kimberly Elce (kelce): Approved for MATH Chair
3. Wed, 02 Feb 2022 23:29:18 GMT
Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. Wed, 02 Feb 2022 23:58:23 GMT
Shannon Datwyler (datwyler): Approved for NSM Dean

New Course Proposal

Date Submitted: Mon, 24 Jan 2022 22:24:59 GMT

Viewing: MATH 96F : Mathematical Programming

Last edit: Wed, 26 Jan 2022 22:33:40 GMT

Changes proposed by: Clark Fitzgerald (223005263)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Clark Fitzgerald	fitzgerald@csus.edu	84748

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 2022 (2022/2023 Catalog)

Subject Area: (prefix)

MATH - Mathematics

Catalog Number: (course number)

96F

Course ID: (For administrative use only.)

TBD

Units:

3

Is the primary purpose of this change to update the term typically offered or the enforcement of prerequisites 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

Does this course replace an existing experimental course?

No

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.

In addition, 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, control flow, data structures, and functions; 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

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 appropriate high school based AP credit

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: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."

Students will#be able to:

1. Implement mathematical modeling by translating#high level#descriptions of computational algorithms into working programs.
2. Apply basic computer literacy by finding and managing files and software.
3. Translate#mathematical formulas into a programming language by using variables and mathematical operations.
4. Implement modular programs by using standard programming constructs.
5. Generate and#modify#data by using#data structures such as#vectors and arrays.
6. Visualize and interpret data by plotting functions and vectors.
7. Produce written project reports including typeset mathematical notation and#high#quality#graphics.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

Class assignments and projects will assess outcomes 1, 2, 3, 4, 5, 6, 7

Midterm examinations will assess outcomes 2, 3, 5, 6

Comprehensive final will assess outcomes 2, 3, 5, 6

For whom is this course being developed?

Majors in the Dept

Minors 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)?

Yes

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

Math 96F Resources.docx

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

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_96F_syllabus.pdf

Reviewer Comments:

Lisa Taylor (taylorlm) (Wed, 26 Jan 2022 22:34:41 GMT): Added Minors to the students that will use this course, and re-uploaded syllabus.

Kimberly Elce (kelce) (Wed, 26 Jan 2022 23:17:34 GMT): Computer Science Department was consulted. I received the following response from Vice Chair Baynes. I reviewed it and I think it looks like it makes sense for the math department to have this course.

Kimberly Elce (kelce) (Wed, 26 Jan 2022 23:20:01 GMT): Computer Science Department was consulted, and I received the following response from Vice Chair Baynes. "I reviewed it and I think it looks like it makes sense for the math department to have this course."

Key: 14638