



**FLORIDA
ATLANTIC
UNIVERSITY**

**COURSE CHANGE REQUEST
Undergraduate Programs**

Department Mathematics and Statistics
College Science

UUPC Approval 1/29/24
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

Current Course Prefix and Number MAD 2502

Current Course Title Introduction to Computational Mathematics

Syllabus must be attached for ANY changes to current course details. See Template. Please consult and list departments that may be affected by the changes; attach documentation.

Change title to:

Change prefix

From: _____ **To:** _____

Change course number

From: _____ **To:** _____

Change credits*

From: _____ **To:** _____

Change grading

From: _____ **To:** _____

Change WAC/Gordon Rule status**

Add **Remove**

Change General Education Requirements***

Add **Remove**

*See Definition of a Credit Hour.

**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.

***GE criteria must be indicated in syllabus and approval attached to this form. See Intellectual Foundations Guidelines.

Change description to:

An introduction to mathematical computation by means of algorithmically solving a number of mathematical problems. The emphasis will be on the mathematical algorithms involved with problems from analysis, number theory, combinatorics, algebra, linear algebra, numerical analysis and probability. Practical assignments in a specified programming language will be given.

Change prerequisites/minimum grades to:
MAC 2311 OR MAP 2492 with minimum grade C

Change corequisites to:
MAP 2492

Change registration controls to:

Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).

Effective Term/Year for Changes: Fall 2024

Terminate course? Effective Term/Year for Termination:

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Approved by

Department Chair
College Curriculum Chair
College Dean
UUPC Chair Korey Sarge
Undergraduate Studies Dean Dan Meeroff
UFS President _____
Provost _____

Date

01/16/2024

01/19/24

1/19/24

1/29/24

1/29/24

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

Syllabus

MAD 2502 Introduction to Computational Mathematics (3 credits)

Course Description.

An introduction to mathematical computation by means of algorithmically solving a number of mathematical problems. The emphasis will be on the mathematical algorithms involved with problems from analysis, number theory, combinatorics, algebra, linear algebra, numerical analysis and probability. Practical assignments in a specified programming language will be given.

Prerequisites MAC 2311 OR MAP 2492 with minimum grade C, OR MAP 2492 as Co-requisite

Classroom and Time: AAA and BBB

Required Text and Materials

The course will not follow a particular book. Links to electronic resources will be provided. Course participants are expected to deepen their understanding of the course material through additional reading on a weekly basis.

Course Objectives and Student Learning Outcomes

The course provides an introduction to the use of computers for solving mathematical problems. For this, the basics of a specified programming language are introduced, and it is demonstrated how a programming language can enable and support the solution of mathematical problems. This is a course on understanding concepts and techniques of how programming can help to solve mathematical problems, not a course merely on how to program.

After completion of the course, you should be acquainted with the use of different data types and programming concepts; be able to analyze problems from a computing perspective; and be able to write simple programs in the language used in class to solve computational problems from different areas within mathematics. This course should enable you to read more advanced material on programming and prepares you to learn other programming languages or packages that are commonly encountered in computational mathematics.

Assessment Procedures

There are five homework projects, a midterm exam, and a comprehensive final exam.

Exam dates: The midterm exam will be given approximately at the 1/2 point of the semester. The Final Exam will be given at the end of the semester, during the time slot specified by the FAU Registrar.

Course grade will be determined by:

Homework projects: 40% (10% each after the lowest score is dropped)
Midterm exam: 25%
Final Exam: 35%

Grading scale:

> 94	A
90 – 93	A–
87 – 89	B+
84 – 86	B
80 – 83	B–
77 – 79	C+
74 – 76	C
70 – 73	C–
67 – 69	D+
64 – 66	D
61 – 63	D–
< 60	F

Weekly Pacing Guide

- **Week 1** Introduction to a program language
- **Week 2** Variable and basic data structure
- **Week 3** Taylor series; truncation error; finite-difference approximations
- **Week 4** Branching statement
- **Week 5** Iteration
- **Week 6** Recursion
- **Week 7** Object oriented programming
- **Week 8** Complexity
- **Week 9** Presentation of numbers
- **Week 10** Errors, good programming practices
- **Week 11** Reading and writing data
- **Week 12** Visualization and plotting
- **Week 13** Least squares regression
- **Week 14** Root find
- **Week 15** Numerical integration

Disability Policy. In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie, and Jupiter – however, disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Code of Academic Integrity. Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards because it interferes with the university's mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty

is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001. On exams, all work must be individual, with no electronic devices, no texts, no notes. In class, except on exam days, there may be group work, students may usually use their notes and texts. Please expect academic irregularities to be reported via the 4.001 process.

Attendance Policy Statement. Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences on grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of nonattendance.

Students are responsible for arranging to make up work missed because of legitimate class absences, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

If you don't come to class, you miss an important part of the learning process. You also deprive other students of your input and ideas. Non-attendance may cause a forfeiture of the 10% allotted for class participation and homework.

Religious Accommodation Policy Statement. In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at www.fau.edu/regulations. Any student who feels aggrieved regarding religious accommodations may present a grievance to the director of Equal Opportunity Programs. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

Time Commitment Per Credit Hour. For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

Grade Appeal Process. You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

Policy on Make-up Tests, Late Work, and Incompletes. Students are expected to be in class, every class. However, if a student has an excuse that is listed in the catalog as an acceptable reason for having missed a class, accommodations will be made. The missed exam will be of

approximately the same difficulty as that given to the rest of the class, but may not be of exactly the same difficulty.

An incomplete grade, "I", will only be given if requested at a time when the student is passing the course. Incomplete grades must be completed within a short time span after the class ends.

Homework to be submitted (usually once a week) needs to be submitted on time. Being late once won't be held against the student, but multiple late homework submissions will result in a lower grade in the homework and participation section. It is important that students attempt homework problems and exercises from the text on their own. Copying from other sources will not generally help you learn how to do your own proofs. If you had any help on submitted work, your submission should clearly state what help you received, and from whom.

Policy on the Recording of Lectures. Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Counseling and Psychological Services (CAPS) Center. Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

Student Support Services and Online Resources (links will appear in Simple syllabus version)

- Center for Learning and Student Success (CLASS)
- Counseling and Psychological Services (CAPS)
- FAU Libraries
- Math Learning Center
- Office of Information Technology Helpdesk
- Office of International Programs and Study Abroad
- Office of Undergraduate Research and Inquiry (OURI)
- Science Learning Center
- Speaking Center
- Student Accessibility Services
- Student Athlete Success Center (SASC)
- Testing and Certification
- Test Preparation
- University Academic Advising Services
- University Center for Excellence in Writing (UCEW)
- Writing Across the Curriculum (WAC)