

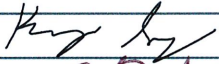



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|  FLORIDA ATLANTIC UNIVERSITY | NEW COURSE PROPOSAL Undergraduate Programs | | UUPC Approval <u>10/9/2023</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____ |
| | Department Mathematical Sciences College Science <i>(To obtain a course number, contact erudolph@fau.edu)</i> | | |
| Prefix MAD Number 3106 | <i>(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)</i> Lab Code | Type of Course <div style="border: 1px solid red; padding: 2px;">Lecture</div> | Course Title Discrete Mathematical Structures |
| Credits <i>(See Definition of a Credit Hour)</i> 3 | Grading <i>(Select One Option)</i> Regular <input checked="" type="radio"/> Sat/UnSat <input type="radio"/> | Course Description <i>(Syllabus must be attached; see Template and Guidelines)</i> Introduction of various mathematical structures and theorems to prepare students for further study in mathematics and applied mathematics. Topics chosen from graph theory, networks flows, matchings and algorithmic proofs, min-max theorems, lattices, Hasse diagrams, finite geometries and designs, eventually periodic functions, and periodic structures. | |
| Effective Date <i>(TERM & YEAR)</i> Fall 2024 | Prerequisites, with minimum grade* MAC 2311, or MAD 2104, or MAS 2103 with a grade of "C" or better | | Corequisites Registration Controls <i>(Major, College, Level)</i> |
| *Default minimum passing grade is D-. Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course | | | |
| WAC/Gordon Rule Course <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See WAC Guidelines . | | Intellectual Foundations Program (General Education) Requirement <i>(Select One Option)</i> None General Education criteria must be indicated in the syllabus and approval attached to the proposal. See Intellectual Foundations Guidelines . | |
| Minimum qualifications to teach course PhD in Mathematics or Related Fields | | | |
| Faculty Contact/Email/Phone Stephen Locke/lockes@fau.edu/561-297-3350 | | List/Attach comments from departments affected by new course Request for comments sent to Dept EECS on 9/20/2023 | |
| Approved by Department Chair <u></u> College Curriculum Chair <u></u> College Dean <u></u> UUPC Chair <u>Korey Sorge</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____ | | | Date <u>9/21/2023</u> _____ <u>9/26/23</u> <u>9/26/23</u> <u>10/9/2023</u> <u>10/9/2023</u> _____ _____ |

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

MAD 3106 Discrete Mathematical Structures, 3 credits

Fall 2024

Course description. Introduction of various mathematical structures and theorems to prepare students for further study in mathematics and applied mathematics. Topics chosen from graph theory, network flows, matchings and algorithmic proofs, min-max theorems, lattices, Hasse diagrams, finite geometries and designs, eventually periodic functions, and periodic structures.

Instructional Method. In-person, two 80-minute classes per week. (Modify pacing guide if three classes per week.)

Classes: TR 2:00-3:20 p.m.

Prerequisites/Corequisites. A grade of “C” or better in at least one MAC 2311, *Calculus with Analytic Geometry I*, MAD 2104, *Discrete Mathematics*, or MAS 2103, *Matrix Theory*; or permission of the instructor.

Textbook. Discrete Mathematical Structures (6th Edition), by Kolman, Busby, Ross (6th Edition), Prentice Hall 2008. Prentice Hall 2008

Pacing Guide. We will index the topics from Kolman, Busby, Ross (KBR), and Additional Notes (AN) to be provided by the instructor. Two Midterm Exams [80 minutes each], one final [150 minutes]. Here, [[3]] indicates 3 lecture periods

Topics:

KBR 2.4 Review of Mathematical Induction and gcd, Modular Arithmetic. [[2]]

KBR 3.5 Recurrence Relations. AN: Other Recurrences [[4]]

KBR 4.1 to 4.8 Relations and Digraphs [[2]]

AN: Eventually periodic functions. Pollard rho method of factoring. [[1]]

[Exam 1]

KBR 5.4 Growth of Functions. AN: Asymptotics [[1]]

KBR 6.1-6.4 Selected Topics in Graph Theory [[3]]

AN: Network Flows, Matchings. Max-Min theorems [[3]]

KBR 7.1-7.4 Order Relations and Structures [[3]]

[Exam 2]

KBR 9.1-9.5 Semigroups and Groups [[2]]

KBR 11.1-11.2. Groups and Coding [[2]]

AN: Finite Geometries, Designs, Coding [[3]]

[Final Exam]

Course Objectives and Student Learning Outcomes. Students will be exposed to various mathematical structures and learn to apply these structures in appropriate instances.

Objectives. We will cover multiple mathematical, combinatorial and algebraic structures giving students a general background and interest in this area. These ideas will be strengthened in future courses that the students take.

Course Evaluation Method. Two Midterm Exams, 25% each, one Final Exam 50%. In some semesters the Instructor may assign some group project and/or final presentations.

Exam Dates. Approximately at the 1/3 and 2/3 points of the semester there will be midterm exams. There will also be a final at the end of the semester, during the time slot specified by the FAU Registrar.

Grading Scale. 90-100 “A”, 87-89 “A-“, 84-86 “B+”, 80-83 “B”, 77-79 “B-“, 73-75 “C+”, 65-72 “C”, 55-64 D, “0-54 “F”.

Faculty Rights and Responsibilities. Florida Atlantic University respects the rights of instructors to teach and students to learn.

Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct University Regulation 4.007.

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.

University Regulation 4.002 of the University Regulations contains information on the grade appeals process

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)