SYLLABUS

MATH 173-01 Discrete mathematics for middle school teachers

SPRING 2020

CONTACT INFORMATION

Instructor:	Douglas Weathers
Office:	Smith Science 218N
Office Hours:	MW 10-11:50, Th 9:30-10:20, F 10-10:50 and by appt.
Telephone:	843-349-6694
E-mail:	wweathers@coastal.edu
Class:	MWF 1-1:50 SCI 104

COURSE DESCRIPTION

Overview: Discrete mathematics can be (badly) described as the study of sets whose elements are countable. Examples include a sets of logical statements under their connectives, the integers under the operations of addition and multiplication, and graphs. The aims of this class are twofold: to provide you with a survey of introductory discrete math topics and to sharpen your problem solving ability. It is imperative that future teachers can walk another person through the solution to a problem. Assessments on this class will focus on communication in addition to accuracy, and students may be asked to present their solutions to the class.

Course topics: Problem solving, logic, number theory, graph theory, probability (as time permits).

Prerequisite: MATH 130 or 130I with a C or better.

Required materials: The required text for this course is *Problem solving through recreational mathematics* by Bonnie Averbach and Orin Chein (ISBN 9780486409177).

Moodle: I will be using Moodle (https://moodle.coastal.edu) to post course materials and your grades. I am available by e-mail always; you can expect to hear a response within one work day.

Course description: Develop the number systems used in mathematics, with special focus on discrete systems and fundamental ideas of number theory. Introduce the basic ideas of discrete mathematics: graphs, trees, combinatorics, and basic probability.

Course objectives: This course will provide an extensive set of problem-solving methods to be used on problems including logic, number theory, integer representation, graphs, and combinatorics (time permitting).

Academic integrity:	Coastal Carolina University is an academic community that expects the highest standards of honesty, integrity and personal responsibility. Members of this community are accountable for their actions and are committed to creating an atmosphere of mutual respect and trust. For more, see `https://www.coastal.edu/aic`.

Student outcomes: Students successfully completing MATH 173 will have the ability to:
- Describe and clearly articulate mathematical ideas orally and in writing, particularly the fundamental ideas of discrete mathematics.
- Identify appropriate problem-solving strategires and demonstrate computational proficiency in applying those strategies.
- Use tree diagrams, truth tables, and graphs to solve problems in discrete mathematics.
- Determine the validity of an argument using deductive reasoning.
- Use basic principles of number theory including Diophantine equations, prime numbers, divisibility, and modular arithmetic to solve problems involving integers.
- Describe the base ten system and illustrate the process of changing bases.
- Compute probabilities and combinations and use them to solve problems.

Accomodations: Coastal Carolina University is committed to equitable access and inclusion of individuals with disabilities in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Individuals seeking reasonable accommodations should contact Accessibility & Disability Services (843-349-2503 or `https://www.coastal.edu/disabilityservices/`).

If you require accomodations, I am happy to help. Let me know immediately (i.e. NOT the day of the midterm).

Attendance: You are expected to attend every class. For the official CCU attendance policy, see `https://www.coastal.edu/policies/pdf/acad-125classattendance.pdf`.
Of course, we will make exceptions in the case of incapacitating illness (get an excuse), official representation of the University (get an excuse), death of a close relative, or a religious holiday. In any of the above cases, you are responsible for work or notes missed.

Students who miss (without excuse) 25% of our meetings will be given an F.

The student has the responsibility to stay informed of all assignments and due dates. Even in the case of an excused absence the student is responsible for the notes and any assignments due.

Cell phones: No cell phones are allowed in class.

Calculators: We will determine on a case-by-case basis whether a calculator will be allowed on each quiz and exam.

Basic decency: You are to treat your fellow classmates with respect at all times. Since we don't know every student's full life experience, we will avoid making light of sensitive or possibly traumatic topics. Anyone who is intentionally disrespecting a classmate will be made to leave.

Course grade: Cut-off numbers for each letter grade are given below.

A	B+	B	C+	C	D+	D	F
90	87	80	77	70	67	60	0

Your grade is a weighted average of the items in the following categories.

Homework	30%
Quizzes	30%
Midterm exam	20%
Final exam	20%

Grades are given on basis of performance, not effort or need. A passing grade in MATH 173 signifies that you have demonstrated problem solving ability and mastery of a certain amount of discrete math material. Students are encouraged to not worry about their grade and instead focus on understanding the material. The grade should then follow.

Homework: Problems from the textbook will be assigned on a weekly basis to be solved on paper and turned in. Because the focus of this class is on being able to solve that problem and articulate the solution, **no credit will be given unless an explanation of the solution is provided**. (In fact, some questions give the answer away!) These questions may be discussed in class, via e-mail, or in office hours, and you are encouraged to work with your classmates (though each student will turn in their own solution.) One homework will be dropped. No late homework will be accepted; students who will miss class on the homework's due date must turn it in early.

Quizzes: Each Friday there will be a quiz taking at least half of the class period. These questions will be similar to the ones encountered on the homework, and **you will be required to explain your solution for credit.** One quiz will be dropped and the evaluation of the instructor will count for a quiz grade (the grade on the quiz will be the response rate of the class). Students who miss class on a quiz day for an excused absence may make up the quiz the following Monday.

Exams: There will be a single midterm exam on **Friday, February 28** in class. Some of the questions will be straightforward multiple choice or short answer questions about the material, while some questions will require written solutions of a problem like the quizzes and homework. There will be a two-hour final exam on **Friday, May 1 at 1:30pm** in class. The composition of the final will be similar to the composition of the midterm. Students who miss an exam must let the instructor know immediately; the instructor may allow a make-up at their discretion.

Tutoring: If you find yourself struggling with the material, it is your responsibility to seek help, which I am happy to give! Please e-mail me, attend any of my office hours, or ask questions in class.

The terms of this syllabus are tentative and subject to change with fair notice.