Syllabus for Math 10 Section 2838 Discrete Structures Fall 2018
TTh 9:30am-10:50am, Room MC 66

Prerequisite: Math 8
Instructor: Dr. Moya Mazorow (or Professor Maz) **Office:** MC 33
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Use your school address and state the class number and section in the subject line or the system may send it to spam mail. Emails that ask questions answered on the syllabus will receive a low priority. All emails should be professional, courteous and clearly written.

Office Hours:

In MC 33 TTh 6:15 am – 6:45 am, In MC 66 10:55 – 11:10 am
In MC 84B T Math 10 workshop 12:45pm-125pm. I will often be able to stay until 145. This time will be used to answer questions on textbook problems, go over strategies for supplemental problems and to cover additional examples of the material.

Important Dates

Monday 9/03 – Labor Day – classes do not meet
Sunday 9/9 – Deadline for dropping and avoiding W and to receive a refund
Tuesday 9/18 – **Exam 1**
Friday 9/28 – Deadline to apply for Pass/No Pass
Tuesday 10/16 – **Exam 2**
Sunday 11/18 – Deadline for dropping and obtaining W.
Tuesday 11/20 – **Exam 3**
Thursday and Friday Nov 22 and 23 Thanksgiving Day – classes do not meet
Thursday 12/6 last class meeting before final
Thursday 12/13 8am to 11am **Final**

Course Description: This course is intended for computer science, engineering, and mathematics majors. Topics include proof techniques, cardinality of sets, partial orderings and equivalence relations, symbolic logic and valid arguments, permutations and combinations with repetition, and an introduction to graph theory.

Required Material: Discrete Mathematics and Its Applications, 7th Ed. Rosen, McGraw Hill – It is plagiarism to copy answers written by others and submit as your own work. Successful students read the text before lecture and then again after lecture. Examples from the text and class should be reworked before attempting any problems or assignments.

Entry Skills for Math 10 – Skills I have been told to assume you have:

1. Differentiate and integrate exponential, logarithmic, hyperbolic functions.
2. Use various techniques of integrations and applications.
3. Analyze infinite series (congruence and divergence).
4. Use Power and Taylor series to express an infinite series.
5. Recognize indeterminate forms and improper integral (using polar coordinates or parametric equations).
6. Use analytical geometry (rotation of axes) to differentiate and integrate.
7. Know the binomial theorem.

Calculators: Department Policy: Provided that its use is not a substitute for the demonstration of achievement of the course objectives, technology including calculators may be used at the discretion of the instructor. This means sometimes on assessments you will be using calculators and other times not.

Students with Disabilities:
If you qualify for any special accommodations, you need to officially process your request through the Disabled Students Programs and Services (DSPS) office as close to the beginning of the semester as possible. If you believe you have a learning disability that has not yet been documented, please see me and make an appointment at the DSPS office for assistance. The DSPS office is located in the Admissions/Student Services Complex, Room 101, (310) 434-4265 and (310) 434-4273 (TDD). Scheduling of accommodated exams will be arranged on a case-by-case basis.

Emergency Procedures:
In case of an emergency, yes even a smoke alarm, we will all exit the building. We must reconvene at the gate by the football field between the MC building and the gym and take roll before anyone is excused.

Class Conduct:

- I expect everyone to be respectful to each and every person in the classroom.
- Food or drink is prohibited in the classroom with the exception of water bottles, which are permitted as long as they remain closed when not in active use, and are kept away from all equipment.
- Electronic device use is permitted in this class as long as it relates to current class topics. Devices must be kept on the desk—not in your lap. Students using devices for other purposes will lose the privilege of device use during class. Cell phone and iPod etiquette: Place your phone on vibrate mode upon entering the class. Do not answer texts or calls during class time. If you get an urgent text or call, step into the hallway, take care of business and then quietly reenter the classroom.

Regular Attendance: Regular and timely attendance and submission of assignments is a requirement to remain enrolled. Leaving early or coming late counts as half class missed. You may be dropped if you have 4 days of absences or have failed to submit 4 assignments. Students are responsible for all announcements made in class regardless of their presence. Students are responsible for official withdrawal from their classes through Corsair Connect. To receive a guaranteed W you must withdraw yourself before the deadline.

Honor Code & Code of Conduct Academic Conduct:
Honest and ethical students are protected in this class. It is your responsibility to familiarize yourself with The Code of Academic Conduct, which is printed in the General Catalog. When you enrolled, you affirmed the honor statement. Additional information can be found at:
http://www.smc.edu/StudentServices/StudentJudicialAffairs/Pages/Program-Services.aspx
Please be extremely careful that you do not engage in any behavior that could even be construed as cheating. Violations could result in failing grades, reports to the Campus Disciplinarian, and subsequent academic disciplinary action. An assignment that is

recorded as a 0 because of academic dishonesty may not be dropped. Examples of behaviors that are not permitted include but are not limited to: Copying another student's homework, copying solutions from a website or solution manual, inappropriate language or physicality in the classroom, and inappropriate behaviors during an exam (talking with another student, looking at or copying from another student's paper, using a disallowed PDA or calculator, using disallowed notes, leaving the room without prior permission, removing exam materials from the classroom).

Method of Evaluation: Assessments are used to evaluate your knowledge and retention of specific course objectives and content but due to the nature of mathematics understanding and retention of previous material will be needed to complete each successfully. Focus is on written explanations of the approach being used and how definitions, theorems and symbolic manipulation intertwine. You are expected to memorize all definitions and theorems. Late penalties are discussed in the next section.

- **Exams – 57% of grade**: Unless requested and approved in advance the exams must be taken on the day scheduled. You won't be allowed to take an exam if other students have already left the room.
- **Final – 25% of Grade**: Comprehensive exam covering course content**.** This exam will not be returned to you but it can be viewed in my office for one year after being taken. Unless requested and approved in advance the final exam must be taken at the time scheduled by the college.
- **Other – this includes supplements, groupwork, quizzes: 18% of grade –** Make sure any work turned in is submitted on time, is complete, neat, and includes your name and documentation of what technology was used. Supplements and classwork are generally due at 11:59 pm on canvas. If submitted on canvas and not typed then it should be a scanned pdf copy of the handwritten solutions. When you work as a team to discover a solution, each student must turn in their own understanding of the problem. Copying another's work is plagiarism. Remember details and organization are being evaluated.

Grading: You "earn" your grade in this class based on your ability to demonstrate knowledge of course objectives and SLO's. Grades are rounded to the nearest tenth. With one exception the following scores will guarantee the corresponding grades

Exams:	E	57% of grade	Grading Scale:	90.0-100	= A Excellent
				80.0-89.9	= B Good
Final Exam:	FE	25% of grade		70-79.9	= C Satisfactory
Other:	OT	18% of grade		60-69.9	= D Less than Satisfactory
				Below 60	= F Failing
Extra Credit assignments are generally not available for this class.					

The exception is that if your score on the final exam is less than 50% then you are not guaranteed a course grade of C or higher.

Missed/Late Work:
To request an extension on assignments and avoid the penalties listed below you must contact me in advance and we will discuss changing the due date and the point penalty. There are no penalties for an absence due to a documented religious holiday. Please inform me by 9/4 of the dates of religious holidays that might impact your submissions.

- If you miss an exam then, in the first such instance, your % score for that exam will be the same as your % score on the final exam. Missing additional exams results in scores of zero on those exams.
- If you miss the final because of an emergency and you are currently passing, you can email me and I will consider a request to grant an incomplete. A grade of "Incomplete" may be granted at the very end of the term, only when 90% of the course work has been completed with a "C" or better, and an unforeseen event or illness prevents the student from completing the coursework. "Incomplete"grade situations are extremely rare, and are entirely at the discretion of the instructor, within the parameters set above.
- If you are absent on the day of a quiz, you will receive a 0.
- Classwork is due at 11:59 pm on canvas of the day it is done in class. If you are absent it is still due at 11:59 pm of the same day. Penalty for late submissions are the same for homework.
- Homework is due at the time stated on the assignment. Late homework submissions will be penalized. There will be a flat penalty of 40% of your homework grade plus an additional 20% for each late day beyond the first. No homework will be accepted after 3 days from the due date or the date of the exam whichever comes first. An example is given below based on a problem worth 10 points:
  - 10 points possible x 40% deduction = 4 point deducted for first day late and 10 points possible x 20% deduction = 2 point deducted for each additional day late.
  - Assignment is due on Thursday and student submits on Sunday. This results in the initial penalty of 40% plus two days additional penalty (Fri-first day, Sat-add day, Sun-add day). This is a penalty of 4+2*2=8 points. The highest score that can be earned is 2 points.

Disclaimer:
Some elements of the syllabus may be changed at the instructor's discretion. The changes will be communicated via Canvas announcement and official email. Students will be given at least 48 hours notice of changes whenever possible.

Instructor errors: Please let me know, promptly and courteously, if I have made a mistake in class, or if I have made a mistake in grading or in posting your grade to Canvas. I appreciate the feedback because I want to correct errors as soon as possible.

COURSE SPECIFIC GOALS

Overreaching Course Goals: (SLO's)

1. Given a theoretical or applied problem, students will be able to represent the problem and solve it using techniques such as combinatorics, graph theory, function theory and logic.
2. Given a mathematical statement, students will be able to construct and communicate a valid argument using standard proof techniques.

To reach the overreaching course goals incremental steps will be used. The strategy is to take the separate skills listed below and develop thinking abilities and the knowledge and understanding that result from their use to demonstrate the course goals on the final. The assignments will focus on developing these skills and allowing you to receive feedback on your presentation. The exams will allow me to assess your retention of the material and your ability to independently demonstrate your knowledge. On exams you will be expected to integrate skills together.

Course Objectives – Assessed on assignments, exams and on the final.

Upon completion of this course, the student will be able to:

1. Determine whether a function between sets is injective, surjective or bijective.
2. Determine whether an infinite set is countable or uncountable.
3. Prove propositions using techniques including mathematical induction, contradiction and contrapositive.
4. Prove logical equivalence of compound statements using truth tables and properties of conjunction, disjunction and negation.
5. Translate an English argument into symbolic form using logical connectives, and determine whether or not an argument is valid, both with and without using truth tables.
6. Find a disjunctive normal form for a Boolean function.
7. Demonstrate the application of Boolean functions to logic circuits.
8. Refine logic circuits using Karnaugh maps.
9. Determine whether a relation is reflexive, symmetric, antisymmetric or transitive.
10. Prove and use theorems about equivalence relations and orderings.
11. Use permutations, combinations and multinomial coefficients to solve basic combinatorial problems.
12. Solve combinatorial problems using the pigeonhole principle, distribution, and the principle of inclusion-exclusion.
13. Verify binomial coefficient identities by combinatorial arguments.
14. Solve first and second order recurrence relations.
15. Prove theorems and use algorithms from graph theory related to connectedness, Eulerian graphs, and trees.

Lecture Schedule & Homework Assignments (**Subject to Change**)
EOO- every other odd-numbered problem

Date	**Text Section/Activity**
Aug 28	1.1, 1.2, 1.3
30	1.6, 1.7
Sept 4	1.8, 12.1
6	12.2, 12.3, 12.4
Sept 11	4.1, 4.5
13	Catchup
Sept 18	**Exam 1**
20	2.1, 2.2
Sept 25	2.3, 2.5
27	2.5, 5.1
Oct 2	5.2, 5.3
4	9.1
Oct 9	9.4, 9.5
11	Catchup
Oct 16	**Exam 2**
18	10.1, 10.2
Oct 23	10.3, 10.4, 10.5
25	10.6, 10.7
Oct 30	10.8
Nov 1	11.1
Nov 6	11.2
8	More Ch 11
Nov 13	6.1
15	6.2, 6.3
Nov 20	**Exam 3**
22	No School
Nov 27	6.4, 6.5
29	8.1, 8.2
Dec 4	8.5, 8.6
6	**Review**
Dec 13	Final exam (8:00 am – 11:00 am)

Disclaimer:: This syllabus acts as a contract between the student(s) and professor. However, I reserve the right to make an exception on a case by case basis for students with disabilities. Grades will be submitted as stated above and will not be modified based on personal stories. All information in this syllabus is subject to change, including, but not limited to lecture material and exam/quiz dates. All changes will be announced and students are responsible for knowing all changes.