

## *Syllabus*

### Course Information

Course Number:	<b>CS-515</b>
Course Name:	<b>Discrete Mathematics, 3 Credit Hours</b>
Term:	Fall 2023 (August <b>28</b> , 2023 → December 15, 2023)
Meeting Time:	Asynchronous Online Class
Meeting Place:	Online using <a href="https://canvas.jmu.edu">canvas.jmu.edu</a>
Prerequisites:	Permission of Instructor.

### Instructor Information

Name:	MOHAMED ABOUTABL
Office:	ISAT/CS room 255
Phone:	540-568-7589 ( <i>not the preferred method of contact</i> )
E-mail: ( <i>preferred method of contact</i> )	<a href="mailto:aboutams@jmu.edu">aboutams@jmu.edu</a> (must put CS-515 as a prefix to the Subject) Will respond within 24 hours, except on weekends and major holidays.
Office hours:	This is an asynchronous online class. Zoom meetings can be arranged as needed. Most probably, they can be scheduled on Saturdays.

### Course Description

In this course, we will cover several subject areas in Mathematics that are important to Computer Science, including, but not limited to, Counting Techniques and Discrete Probability, Propositional Logic and Quantified Predicate Calculus, Set Theory, Relations and Functions, and mathematical Induction.

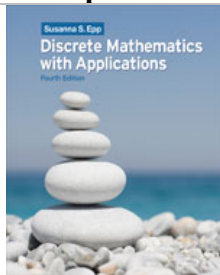
### Learning Objectives of the Course

By completing this course, the student shall be able to **describe** and **apply** basic concepts in the following topics (in no specific order):

- Propositional Logic
- Predicate logic
- Arguments and Methods of Proof
- Sequences & Mathematical Induction
- Set Theory
- Functions
- Relations
- Counting techniques

# Requirements and Policies

## Required Text / Software



***Discrete Mathematics with Applications*, 4<sup>th</sup> Edition,**  
By Susanna S. Epp.  
ISBN-10: 0-495-39132-8  
ISBN-13: 978-0-495-39132-6

Publisher's Book Page:

[http://www.cengagebrain.com/cgi-wadsworth/course\\_products\\_wp.pl?fid=M20b&product\\_isbn\\_issn=9780495391326&token=](http://www.cengagebrain.com/cgi-wadsworth/course_products_wp.pl?fid=M20b&product_isbn_issn=9780495391326&token=)

You will need an inexpensive scanner in order to scan your exam answer pages, or any other homework assignments, into a **PDF** file which you upload to Canvas using the specified submission link. Using Phone Camera's generated poor images in the past, so I strongly recommend a hardware flatbed scanner.

## Class Delivery:

The class will be conducted entirely online using the **Canvas** Learning Management System at JMU.

The class consists of several modules, each of which focuses on one topic and lasts for a pre-specified period of time, usually one or two weeks. Lecture notes and/or PowerPoint slides will be posted at the beginning of each module. The main assessment for each module shall be one or more discussion threads focused on the topic of the module. There will be occasional homework assignments and/or online quizzes to be submitted / completed online via Canvas.

## Proposed Schedule:

The following is a tentative schedule for the class. If changes are needed, they will be communicated with you.

### CS-515 Foundations of Computer Science

#### Tentative Weekly Schedule

Week of		Topic	Reading Material	Notes
1	8/28/2023	1) Mathematical Review	Chapter 1	
2	9/4/2023	2) Propositional Logic	Chapter 2	
3	9/11/2023			
4	9/18/2023	3) Predicate Logic	Chapter 3	
5	9/25/2023			
6	10/2/2023	4) Methods of Proof	Chapter 4	Midterm Exam on Sat 10/21/2023. Covers Modules 1 thru 4
7	10/9/2023			
8	10/16/2023			
9	10/23/2023	5) Mathematical Induction	Chapter 5	
10	10/30/2023			
11	11/6/2023	6) Set Theory	Chapter 6	
12	11/13/2023	7) Functions	Chapter 7	
13	11/20/2023	<b>Thanksgiving Break</b>		
14	11/27/2023	8) Relations	Chapter 8	
15	12/4/2023	9) Counting Techniques	Chapter 9	
16	12/11/2023	Finish Module 9 and Study for Final Exam		Final Exam on Fri 12/15/2023 Covers ALL Modules

## Attendance

You are expected to log on to the Canvas page of the course at least 3 times each week and actively participate in the on-going discussions. **Being away from the discussion forums for a total of 3 or more weeks during the semester (even if not consecutive) shall result in an automatic “F” grade for the course.**

## Participation in Discussion Forums

There are several discussion forums on the Canvas page of this course. Some forums are graded and your timely participation is required. Others are non-graded and your participation is optional. The following table provides further details:

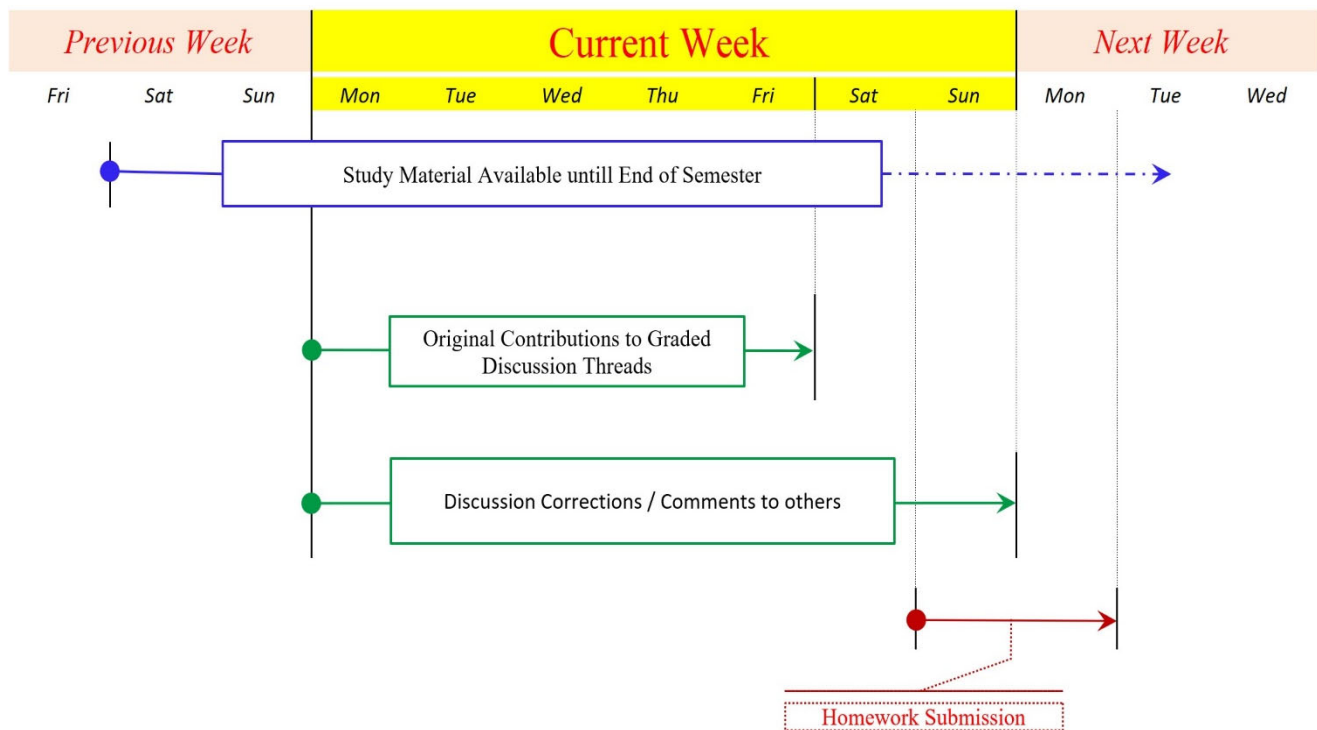
Forum	Purpose
Topical Forums (Graded)  These forums remain available for viewing after the end of the module’s duration till the end of the course.	<p>One Topical Forum is created for each Module. <b>Your final grade</b> will significantly be affected by your performance in these forums.</p> <p>Required Postings Policy:</p> <ul style="list-style-type: none"><li>• Several Threads of discussion may be proposed by the Instructor for each Topical</li><li>• Each student <b>must</b> contribute by ‘<u>replying</u>’ to all of the <i>instructor-created graded threads</i> in each Topical Forum. <b>Do not post your original contribution as a reply to another student’s posting; it will not be graded as an original contribution.</b> Making up your own thread does not count for grades. You cannot edit or remove a posting once you submit it. Instead, you may ‘reply’ to your own posting and point out any changes you desire to make.</li><li>• You will not be able to see the current postings on a graded thread until after you have posted your first contribution. So, your first posting on a thread must be a best-effort attempt to <u>completely</u> answer the question(s) of that thread. Yes, posting an empty message will unlock the forum for you, and it could happen accidentally. In these cases, upload your contribution immediately, otherwise you may not receive credit for that thread.</li><li>• After posting your own original contribution, you <b>must</b> read others’ contributions all the way the end of the module’s duration. Then you <b>should</b> comment on other students’ original contributions. Comments must address technical concepts (not the formatting, coloring, etc.) and can be corrections you suggest, positive opinions on <u>specific</u> things they have done. Note that comments like “I agree”, “I disagree”, and “I like your posting” shall not count for grade unless you elaborate on the reasons behind your point of view.</li><li>• You are <b>expected to respond</b> to any comments made by others on your own original contribution. Such response may result on you posting a corrected version of your solution (which will earn you some of the points you missed due to a previously incorrect answer).</li><li>• Please, maintain the threaded nature of the forum. That is: Your first contribution <b>MUST</b> be a reply to the question posted by the instructor. Your comments on others’ original contributions must be in the form of a reply to those contributions. Further comments can even go deeper in the tree of replies.</li><li>• <b>Two thirds ( <math>\frac{2}{3}</math> )</b> of the points awarded to participation in each topical discussion forum, are for your original contributions &amp; any corrections you may later make. <b>One third ( <math>\frac{1}{3}</math> )</b> of the points is for commenting on at least two other students’ original contributions on their own solution to the same thread.</li><li>• Only contributions posted during the duration of each thread shall count for grading purposes. You are strongly encouraged to contribute early and not wait till the last day. The instructor may be unable to respond to contributions made on the due date.</li><li>• The instructor will monitor the students’ contributions and provide input <b>when necessary</b>. When needed, suggested answers to the threads will be posted after the due date. You are encouraged to study these suggested answers and raise any questions you may still have to the instructor.</li></ul>

Additional Topical Forums ( <b>Not Graded</b> )	Additional problems may be posted for each module for the class to work on. These are not graded. However, your efforts on these forums shall be greatly rewarded in terms of much better understanding of the material. Solutions for these problems will be posted on Friday
Ask-the-Instructor (Non Graded)	Optional Posting. Contains questions that students want answered specifically by the instructor, on any course subjects not covered in a Topical Forum. Such questions may concern: <ul style="list-style-type: none"> <li>• Questions about the on-going modules and their deliverables.</li> <li>• Grading criteria, but not the grades awarded to the individual student.</li> </ul> Do not post personal questions on this, or any forum. Instead, send personal questions via e-mail.
The Café (Non Graded)	Posting is optional. In this forum, students can: <ul style="list-style-type: none"> <li>• Discuss interesting subtopics with fellow students.</li> <li>• Begin new threads related to the topic of the week.</li> <li>• Share interesting, and course-relevant, material they found on the Internet</li> </ul> <p>The instructor may also participate in suggesting discussion threads and answering students' questions in this forum. While posting is not required in "The Café" forum, students should check the forum for useful suggestions.</p>

Please keep the following criteria in mind when you post so that we can have a useful discussion. Quality posts are ones that satisfy at least one of the following criteria:

- Are germane to the subject being discussed
- Stimulate interest or further discussion
- Pose an interesting question about the material, or answer someone else's question
- Augment class material by relating personal experience

### Timeline of Weekly Activities (*showing availability & Due Dates* )



## Exams

- There will be one midterm exam and one final exam. These are closed-book, closed-notes, but open-mind exams.
- The exams are timed and can be attempted ONLY once. They must be taken during these specified periods:
  - **The Midterm exam is scheduled to be taken during a 180-minute period on (see schedule) starting at 9:00am, and to be completed by 9:00pm. You must start and finish inside the specified time period.**
  - **The Final exam is scheduled to be taken during a 180-minute period on (see schedule) starting at 9:00am, and to be completed by 9:00pm. You must start and finish inside the specified time period.**
- You are **not** allowed to use books, notes (except as indicated by the Instructor), the Internet, or any communication devices (e.g. smart phones, etc.) during the exam. Only blank sheets of paper, pens/pencils, a calculator, and erasers are allowed during the final exam.
- Please, include **all** pages of each deliverable in **one** PDF file named as <your-last-name>-<assignment-name>.pdf For example, **aboutabl-HW01.pdf**

## Performance Assessment

Item	Weight (towards overall class grade)
Participation in Required Topical Forums	35%
Assignments & Quizzes	35%
Midterm	15%
Final Exam	15%
Total	100%

Grade	A	B	C	F
score	≥ 90%	80% - 89.9%	70% - 79.9%	Below 70%, or missing 3 weeks of classes

## Academic Honesty

I require academic honesty from everyone who takes my classes. This means that you are not permitted to give or receive unauthorized aid on any graded work. For closed-book assignments you are not allowed the aid of any books, notes, or other information sources, nor are you permitted aid from any person except the instructor. For open-book assignments, you may consult your textbook and your own notes from class, but you are not allowed the aid of any books, websites, or other information sources not expressly authorized by me. You are permitted to form study groups if you wish to prepare for the final exam, and reasonable discussion of final exam in the online classroom is permitted. If in doubt about whether your actions could be viewed as academically dishonest please consult with me in advance and I will advise you appropriately. **If I believe you have been academically dishonest you will fail the course.** For more information, please review the JMU Honor Code at: <http://www.jmu.edu/honor/code.shtml>

## Adding/Dropping Classes

Check the JMU Registrar's website: [www.jmu.edu/registrar](http://www.jmu.edu/registrar) for add/drop deadlines.

## Contacting the Instructor

I will strive to provide a prompt reply (within 24 hours on weekdays) to your questions and comments. I typically will not be available on weekends or days when the University is closed. I expect the bulk of our interaction to occur on the class discussion boards, but feel free to call me or send e-mail if you have an issue that you do not want to discuss in public.

## Disability Accommodations

If you need an accommodation based on the impact of a disability, you should contact the Office of Disability Services (Wilson Hall, Room 107, [www.jmu.edu/ods](http://www.jmu.edu/ods), 540-568-6705) if you have not

previously done so. Disability Services will provide you with an Access Plan Letter that will verify your need for services and make recommendations for accommodations to be used in the classroom. Once you have presented me with this letter, you and I will communicate and review the course requirements, your disability characteristics, and your requested accommodations to develop an individualized plan, appropriate for this course.

**Inclement Weather Policies**

JMU's cancellation policy can be found at: <http://www.jmu.edu/JMUpolicy/1309.shtml>. Since this is an online class, it may or may not be affected by JMU cancellations.