

Instructor

- Mark Ferguson
- Email: mferguson@santarosa.edu
- All communications will be done through Zoom or through SRJC email:
 - I will reply within 24 hours to emails received Sunday 5:00 pm - Thursday 5:00 pm
 - I will reply by Monday at 5:00 pm to emails received between Thursday (after 5:00 pm) and Sunday (before 5:00 pm)
 - I will reply within 24 hours of the next working day after a holiday to emails received during that holiday.
- Please note that the SRJC Mathematics Department doesn't normally teach classes online, meaning this online MATH 4 might not be structured like other classes that are traditionally offered online through SRJC, and we won't be using Canvas.
- This syllabus is intended to give the student guidance to what/how/when topics will be covered and assessed during the semester and will be followed as closely as possible. However, I reserve the right to modify, supplement, or make changes to the syllabus as needed. Your enrollment in this online MATH 4 class indicates your agreement to all of the policies in the syllabus and all SRJC student-related policies.

Course Description

Discrete Mathematics: A lower-division mathematics course including formal logic, Boolean logic and logic circuits, mathematical induction, introduction to number theory, set theory, principles of combinatorics, functions, relations, recursion, algorithm efficiency and graph theory.

Course Outline of Record

Available online; go to the SRJC homepage and search for MATH 4 under the course outlines link.

Prerequisite

Successful completion of MATH 27 (precalculus) or higher (or equivalent).

Required Materials

- Textbook: Discrete Mathematics and Its Applications, Eighth Edition by Kenneth H. Rosen, McGraw-Hill Education, 2019. I will be teaching the course with the 8th edition of our textbook. If you choose an earlier/different version, it is up to you to reconcile the differences between editions.
- McGraw-Hill Connect access.
- Access to scanning software, a scanning app, or a scanner to send PDF's, or links to PDF's, via email. The Adobe Scan App for smartphones is highly recommended: <https://acrobat.adobe.com/us/en/mobile/scanner-app.html>.
- A graphing calculator/CAS is required. You may use any graphing calculator/CAS you wish; however, when I use technology, it will be a TI – 84 or Maple CAS. Let me know if you have questions regarding technology.
- Here is the bookstore link and then the McGraw-Hill link for your text with Connect; choose which version works for you (if you click the second link, select the digital student option to get access to e-book and Connect):
 - <https://www.bkstr.com/santarosastore/follett-discover-view/booklook?shopBy=discoverViewCourse&bookstoreId=1598&termId=20213&divisionDisplayName=&departmentDisplayName=MATH&courseDisplayName=4§ionDisplayName=5093>
 - <https://www.mheducation.com/highered/product/discrete-mathematics-applications-rosen/M9781259676512.html>

Tutoring

Provided by the SRJC Math Lab; Link: <https://mathematics.santarosa.edu/online-math-lab-tutoring>

Class Days

- Our class runs 17 weeks plus time during finals week, from Wednesday, January 20 to Tuesday, May 25.
- You are required to (Zoom) attend our first class on Wednesday, January 20, beginning at 11:00 am. Zoom links are always sent via SRJC email.
- After the first week, our class runs asynchronous. This means you are not required to attend Zoom lectures at any time. You might consider; however, reserving our class time window (Monday/Wednesday, 11:00 am – 1:00 pm) to work on MATH 4. Remember that for a typical college math class, students are expected to work 2 hours outside of class for each hour in class (this equates to at least 12 total hours each week!)
- I will be available for Zoom office hours every week throughout the semester. I will announce updated office hours each week, prior to the beginning of that week. Come to office hours prepared with well-formulated questions that you've developed after working on some problems or that come up after text readings. I will also be available via email.

Class Structure

- Weekly outlines will be delivered before Monday each week. Notably, the outlines will indicate subject matter and office hours for that week. **Carefully read all emails** or communications that you receive from me.
- Give yourself the best chance of succeeding by:
 - Meeting the prerequisites
 - Providing a good-faith effort
 - Communicating often and taking the time to formulate good questions
 - Having patience
 - Exhibiting academic integrity
 - Visiting Office Hours
 - Striving to be “impossible to be misunderstood”
 - Realizing that your work will be graded in accordance with a college-level, STEM-based class
- Our classroom is a place reserved for learning. Being kind, open-minded, respectful, patient, and tolerant are qualities conducive to learning. It is expected that you will be prepared to learn and exhibit these behaviors.
- It is critical that students work on homework frequently throughout the semester.
- The written exams in **our class will be graded according to mathematical standards that accompany a college-level, STEM-based class**. Please keep that in mind when you are writing up your exams.
- When developing a logical argument or asking a question, please make it a goal to be “**impossible to be misunderstood**” and **take the care and time to formulate good questions**, before asking them.

Academic Integrity

All work is to be original; verifiable plagiarism or academic dishonesty of any kind will result in recording an F for the class or being dropped from the class. Students who plagiarize or cheat may also be referred to the Vice President of Student Services for discipline sanction, in cases of egregious violation.

Accommodations for Students with Disabilities

Please contact me privately regarding concerns about accommodations. If you have not received authorization from DRD, it is recommended that you contact them directly. DRD's link: <https://drd.santarosa.edu>

Activities & Points—Keep Track of Your Grade

Activity (NO LATE WORK ACCEPTED; ALLOWED RESOURCES WILL BE DESCRIBED IN THE INSTRUCTIONS FOR EACH ACTIVITY)	Points Possible	Your Points	Your Cumulative Points	Cumulative Points Possible	Your Cumulative Percentage
Connect Quiz 1 available Sunday, February 7 at 5:00 pm and due by Tuesday, February 9 at 5:00 pm.	20			20	
Exam 1 dispersed Sunday, February 28 at 5:00 pm and PDF due by Tuesday, March 2 at 5:00 pm.	90			110	
Connect Quiz 2 available Sunday, March 14 at 5:00 pm and due by Tuesday, March 16 at 5:00 pm.	20			130	
Connect Quiz 3 available Sunday, April 11 at 5:00 pm and due by Tuesday, April 13 at 5:00 pm.	20			150	
Exam 2 dispersed Sunday, April 18 at 5:00 pm and PDF due by Tuesday, April 20 at 5:00 pm.	90			240	
Connect Quiz 4 available Sunday, May 9 at 5:00 pm and due by Tuesday, May 11 at 5:00 pm.	20			260	
Weekly Connect Homework; top 6 out of 8 scores counted at 10 points each. Due Mondays at 5:00 pm on weeks 4, 6, 8, 10, 12, 14, 16, & 18; the first assignment is due February 8.	60			320	
Take out lowest Connect Quiz Score	-20			300	
Final Exam dispersed Sunday, May 23 at 5:00 pm and due by Tuesday, May 25, 9:00 pm	100			400	

Grading Policy

Letter grades will be assigned on a scale no stricter than the following:

Letter Grade	Percentage
A	90 to 100
B	80 to 89
C	70 to 79
D	60 to 69
F	0 to 59

Schedule and List of Textbook Sections

Week Number	Date (Week Beginning...)	Section Number and Title from Our Text Read these sections	Notes
1	January 20	1.1 Propositional Logic 1.2 Applications of Propositional Logic Connect Homework for these sections due February 8	
2	January 25	1.3 Propositional Equivalences 1.4 Predicates and Quantifiers 1.5 Nested Quantifiers Connect Homework for these sections due February 8	
3	February 1	1.6 Rules of Inference 1.7 Introduction to Proofs 1.8 Proof Methods and Strategy Connect Homework for these sections due February 8	1.8 Reading Only
4	February 8	2.1 Sets 2.2 Set Operations 2.3 Functions Connect Homework for these sections due February 22	
5	February 16	2.4 Sequences and Summations 2.6 Matrices 3.1 Algorithms Connect Homework for these sections due February 22	
6	February 22	3.2 The Growth of Functions 3.3 Complexity of Algorithms 4.1 Divisibility and Modular Arithmetic Connect Homework for these sections due March 8	3.3 Reading Only
7	March 1	5.1 Mathematical Induction 5.2 Strong Induction and Well-Ordering 5.3 Recursive Definitions and Structural Induction Connect Homework for these sections due March 8	
8	March 8	5.5 Program Correctness 6.1 The Basics of Counting 6.2 The Pigeonhole Principle Connect Homework for these sections due March 29	
9	March 15	6.3 Permutations and Combinations 6.4 Binomial Coefficients and Identities 6.5 Generalized Permutations and Combinations Connect Homework for these sections due March 29	

Section 5093, Online, 4 Units

Week Number	Date (Week Beginning...)	Section Number and Title from Our Text Read these sections	Notes
10	March 29	7.1 An Introduction to Discrete Probability 7.2 Probability Theory 8.1 Applications of Recurrence Relations Connect Homework for these sections due April 12	
11	April 5	8.2 Solving Linear Recurrence Relations 8.5 Inclusion-Exclusion 9.1 Relations and Their Properties 9.2 n-ary Relations and Their Applications Connect Homework for these sections due April 12	9.2 Reading Only
12	April 12	9.5 Equivalence Relations 10.1 Graphs and Graph Models 10.2 Graph Terminology and Special Types of Graphs Connect Homework for these sections due April 26	
13	April 19	10.3 Representing Graphs and Graph Isomorphism 10.4 Connectivity 10.5 Euler and Hamiltonian Paths Connect Homework for these sections due April 26	
14	April 26	10.6 Shortest-Path Problems 11.1 Introduction to Trees 11.2 Applications of Trees Connect Homework for these sections due May 10	
15	May 3	11.3 Tree Traversal 11.4 Spanning Trees 11.5 Minimum Spanning Trees Connect Homework for these sections due May 10	
16	May 10	12.1 Boolean Functions 12.2 Representing Boolean Functions 12.3 Logic Gates Connect Homework for these sections due May 24	
17	May 17	12.4 Minimization of Circuits Chapter 13 Modeling Computation Connect Homework for these sections due May 24	Chapter 13 Reading Only
18 (Finals)	May 24	Final Exam due Tuesday, May 25, 9:00 pm	