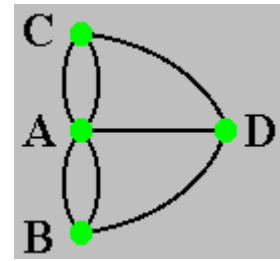


**MTH 122 Discrete Mathematics Semester 082
Course Syllabus**



Instructor: Karen E. Donnelly. Office: 257 Core Building
Office Phone: 6297 Home Phone: 866-8997
email: karend@saintjoe.edu

Office Hours

Monday 2:00 p.m. -- 3:00 p.m.
 Tuesday 10:00 a.m. -- 11:00 a.m.;
 2:00 p.m. – 3:00 p.m.
 Wednesday 2:00 p.m. – 3:00 p.m.

Thursday 10:00 a.m. -- 11:00 a.m.;
 2:00 p.m. – 3:00 p.m.
 Friday: 10:00 a.m. – 11:00 a.m.
Contact for appointment during other

If you need to see me at a time that is not during office hours, please call or send email for an appointment.

Donnelly's home page URL: www.saintjoe.edu/~karend

Discrete Math Web Page URL: www.saintjoe.edu/~karend/m122

Text: Rosen, Kenneth H. *Discrete Mathematics and Its Applications*, 6th Edition. New York: McGraw Hill, 2007. ISBN: 978-0-07-288008-3

Course Objectives:

1. To study fundamentals mathematical concepts of logic, sets, and functions.
2. To refine mathematical reasoning skills through the study of mathematical logic and proof.
3. To develop problem solving skills for enumeration.
4. To investigate discrete structures, including sets, matrices, permutations, relations, graphs, trees, and finite-state machines.
5. To apply the above to applications with an emphasis on applications to computing.

Course Outline:

1. Logic and proof. (Chapter 1)
2. Sets, Functions, Sequences, and Sums (Chapter 2)
2. Algorithms, Integers, Matrices (Chapter 3)
3. Induction and Recursion (Chapter 4)
4. Counting Techniques and Probability (Chapters 5 and 6)
5. Recurrence Relations, Principle of Inclusion-Exclusion (Parts of Chapter 7)
6. Graph Theory (Parts of Chapter 9)
7. Relations (Parts of Chapter 8)
8. Trees (Parts of Chapters 10)

Tentative Exam Schedule:

- Exam # 1 -- Friday February 6th
- Exam # 2 -- Friday March 13th
- Exam # 3: -- Wednesday April 15th
- Final Exam (comprehensive) -- Wednesday April 29th 3:00 p.m.

Grade Distribution:

Assignments, Quizzes:	25%	Final Exam:	25%
Three Exams:	45%	Attendance, Participation:	05%

Grading Scale:

93%-100%	A	90%-92%	A-		
87%-89%	B+	83%-86%	B	80%-82%	B-
77%-79%	C +	73%-76%	C	70%-72%	C-
67%-69%	D+	60%-66%	D		
59% or Below	F				

Expectations and Requirements:

Special Note: If you are a student with a disability, please meet with me immediately to discuss the accommodations you will need during class activity, examinations, and out of class assignments in order to participate fully and demonstrate your abilities.

1. Academic Honesty: Plagiarism or other forms of academic dishonesty on any assignments, tests, or quizzes will not be tolerated. If the instructor finds that a student has engaged in dishonesty, the student may be referred to the Dean of Academic Affairs for appropriate action.

2. Quizzes and Exams: Students are expected to be present for all exams. **No exams or quizzes may be made up** unless the student has contacted the instructor and received permission **prior** to the date of the original exam or quiz. This includes students participating in athletics who must arrange to take the quiz or exam **on or before the scheduled date**.

3. Assignments: Assignments, unless otherwise specified by the instructor, are to be **completed individually**. While students are encouraged to **consult** each other for ideas for assignments, the solutions should be completed individually. Any help one student gives another should be instructional help only. If the instructor feels that a student has not completed an assignment individually, the instructor may question the student on that assignment. The student should be able to explain how he/she worked the problem and should be able to work similar problems. **Late assignments will not be accepted without permission.** *If permission is given, the following penalties may be assigned:*

1 day late: 10% reduction; 2 days late: 20% reduction; 3 days late: 30% reduction.

Not accepted after 3 days late.

Homework Guidelines:

- Write out complete answers NEATLY and CLEARLY.
- Number each exercise to the left.
- Problems should proceed in numerical order from top to bottom.
- You must show your work! Correct mathematical notation must be used. Partial credit is given when work is shown even if answer is incorrect. However, correct answers without any work shown will in general be given no credit.
- If the problem is a computation leading to a final answer, box the answer.
- **Use pencil and eraser** -- do not scratch out work.
- **Staple** your pages together before submitting.

Start homework early and see me for help with problems you don't know how to work! *It is inappropriate to ask how to do a problem in class the day it is due!!!!* My office is Core 257-- See my schedule for office hours or call or send email for an appointment. I am always delighted to help.

4. Class Preparation and Participation:

a) **Keep up with reading assignments.** To receive the maximum grade on attendance and participation the student must read assignments **prior** to class, be prepared to ask and respond to questions, and be an actively engaged participant in class.

b) Take good notes and **review notes** on a regular basis as well as promptly begin and continue work on assignments as they are assigned.

c) **Attendance is required.** If you must miss class due to illness or other valid excuse (e.g. athletic event) please send me email or telephone with an explanation prior to the class date.

d) **Electronic Equipment in class.** No devices with headphones may be used in class. All cell phones must be turned off during class. No laptops may be used in class unless permission is given by instructor.

5. Getting Help:

Students who do not understand a concept should do the following:

- a) Ask questions in class. (More than likely other students do not understand as well.)
- b) Seek individual help from the instructor. I am more than willing to give you the extra help you may need. Come in during office hours or make an appointment. Tutoring (free) can also be arranged either through me or through counseling services.
- c) Share with me any concerns you may have or any suggestions you have for the class structure that will help you learn more effectively.

The above content and requirements are tentative and subject to change according to time constraints and other factors as determined by the instructor.

MTH 122 Discrete Mathematics Semester 082 Homework Exercise Sets

Exercise Set 1	Section 1.1, page 16	6a,b,c,d; 10 ("nevertheless" ,"but" mean "and"); 12; 14;
Exercise Set 2	Section 1.1 page 18	20a,b,d,e,f,g;24a; 28b,d; 32c; 38 a,c;
Exercise Set 3	Section 1.2, page 28	4a; 6; 8c; 10c; 14; 18; 26
Exercise Set 4	Section 1.3, page 46	2a,b; 6; 10a,b,c,d; 16 (Justify your answers); 32: Universe of discourse for a) dogs, b)horses, c) koalas, d) monkeys e) pigs Use for a) $F(x)$: x has fleas, b) $A(x)$: x can add, c) $C(x)$: x can climb, d) $F(x)$: x can speak French; e) $S(x)$: x can swim, $F(x)$: x can fish.
Exercise Set 5	Section 1.5, page 72	4 all; 14 all
Exercise Set 6	Section 1.6, page 85	2; 8; 10;18
Exercise Set 7	Section 2.1, page 119	4; 12; 18 all; 28b;,34 all
Exercise Set 8	Section 2.2, page 130	2 all; 4 all; 16 e using set membership tables;, 26; 50 all
Exercise Set 9	Section 2.3, page 146	2 all;4 all; 8a,b,c,d,e,f; 10; 11; 12; 13; 18a,b; 26b,c
Exercise Set 10	Section 2.4, p 160	4 all, 10 b,f,h; 13b; 14 a,b; 15a,b; 16b,c; 18a,d
Exercise Set 11	Section 3.4, page 208	10a,b,c; 16a,d; 18, 19 all, 26a,d; 32b
Exercise Set 12	Section 3.5, page 217	4a,b; 12 a b f; 14a; 20a,b,c; 22 for 20a,b,c; 24
Exercise Set 13	Section 3.6, page 229	2a,c; 4b,c; 6; 8; 24d,e
Exercise Set 14	Section 3.8, page 244	2a; 4b,c; 18; 28 all, 30
Exercise Set 15	Section 5.1, page 344	2; 4; 6; 8; 10; 12; 20all; 30 all; 42
Exercise Set 16	Section 5.2, page 353	2; 4; 14; 16; 32
Exercise Set 17	Section 5.3, page 360	2; 4; 5; 6; 8; 12; 18; 30
Exercise Set 18	Section 6.1, page 398	2; 4; 6; 8; 10; 12; 16; 24a,b; 38; 30
Exercise Set 19	Section 6.2, page 414	2; 6; 12; 18
Exercise Set 20	Section 4.1, page 279	4; 6; 10; 20; 34
Exercise Set 21	Section 7.1, page 456	2a,d; 4; 6b,d,h; 8a,b,d; 10
Exercise Set 22	Section 7.5, page 504	2; 4; 8; 10; 16
Exercise Set 23	Section 9.1, page 596	2; 4; 6; 8; 14; 18
Exercise Set 24	Section 9.2, page 608	2; 8; 10 for 8; 20; 22; 24
Exercise Set 25	Section 9.3, page 618	2; 4; 6; 8; 10; 14; 16; 20; 38; 40; 58a
Exercise Set 26	Section 9.4, page 629	2, 3, 4, 5, 6, 12 all, 14 all, 29, 30, 31
Exercise Set 27	Section 9.5, page 621	2; 4; 6; 10; 18; 30; 32; 38
Exercise Set 30	Section 8.1, page 527	2; 4; 6; 12; 19
Exercise Set 31	Section 8.3, page 542	2a,d; 4b; 8 for all of 4; 14; 20 for 3c; 22; 26
Exercise Set 32	Section 8.5, page 562	2; 22; 23; 24; 27; 36; 44