College of Dupage
Math 1533-NET01: Finite Mathematics

Contact Information:

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Course Objectives and Topic Outline:

Course description to appear in catalog: Students will be introduced to sets, counting techniques, probability, modeling, systems of linear equations and inequalities, matrix algebra, linear programming, Markov chains, and game theory. This course is intended for students planning to major in business, or the behavioral, social, or biological sciences.
Credit Hours: 4 Lecture Hours: 4 Lab Hours: 0
Prerequisite: MATH 1428 College Algebra with Applications with a grade of "C" or better, or equivalent or MATH 1431 Precalculus I with a grade of "C" or better, or equivalent or a qualifying score on the mathematics placement test.

A. General Course Objectives:
Upon successful completion of the course the student should be able to do the following:

1. Construct linear functions and models
2. Solve linear systems by matrix reduction
3. Calculate matrix sums, differences, products, and inverses
4. Determine the maximum and minimum values of functions using techniques of linear programming, including the simplex method
5. Identify intersections, unions, and complements of sets
6. Construct Venn diagrams
7. Compute permutations and combinations
8. Calculate basic probabilities using independence, conditional probability, and Bayes' theorem
9. Solve problems using Markov chains
10. Use the basic principles of game theory
11. Solve application problems of finite mathematics in the areas of business, behavioral, social, and biological sciences
12. Use technology as an aid in problem solving

B. Topical Outline:

1. Linear functions and models
2. Solution of a linear system by matrix reduction
3. Matrix methods:
    a) Addition, subtraction, and multiplication
    b) Inverses
    c) Solution of a linear system using matrix inverses
    d) Applications, including the Leontief input/output model

4. Linear programming
    a) Graphical method
    b) Simplex method
5. Sets, Venn diagrams, and counting techniques
6. Basic probability (including independence, conditional probability, and Bayes' theorem)
7. Regular and absorbing Markov chains
8. Applications of probability, such as expected value, decision making, linear regression, and Bernoulli trials (binomial probability)
9. Introduction to game theory
10. Additional topics - at least four hours should be spent on topics chosen from below:
    a) Linear regression
    b) Cryptography
    c) Graph theory
    d) Non-linear models
    e) Logic and/or Boolean algebra

Course Materials:

- *Finite Mathematics for the Managerial, Life, and Social Sciences*, 12th ed., by Tan
  (You can buy the textbook and the web access bundled together: ISBN 9781337606592)

- The online access code to the textbook will be **required**. The homework platform is called WebAssign.
  (Online access comes with a virtual copy of the textbook. This can be bought instead of the bundled option above: ISBN 9781337652766)

- A TI-83, TI-84, or equivalent graphing calculator. Calculators with internet connections are not allowed.

- A consistent internet connection

Classtime:

There are no set class times for this section. Videos and/or written notes will be posted for every section covered at the beginning of each week of the semester. When watching videos, students should be active participants, taking their own notes on the topic in their notebook, writing down questions, and trying to make connections to previous material covered. Passively reading notes or watching video is not recommended, as it does not aid in understanding or remembering the material.

Homework:

Homework will be assigned for every lecture using WebAssign. Students need to spend time and attempt every assigned homework problem to master the material and be prepared for quizzes and exams.

Students **do not need a WebAssign course code** to access the homework. Any link to WebAssign found in the Blackboard course page will send students to WebAssign assignments.

Solution guides and online step-by-step solutions should not be overused when doing homework. Students who rely on these resources are not self-sufficient and will underperform on exams. When stuck on a problem, take the time to read class notes and the textbook for related examples. Set aside time for contacting the instructor or the Math Assistance Area for help.

All homework assignments will be due on Sunday at 11:59PM of the week following when they are assigned. The lowest three homework grades will be dropped before computing the Homework Average in the final grade.

Quizzes:

Quizzes will be taken in Blackboard and should be a quick check on how well students understand the material. Students are responsible for taking their quiz when they have a steady internet connection and must know how to type mathematical expressions into the Blackboard dialogue box.

Calculators are allowed during quizzes, but no notes or outside aids are allowed during quizzes. Quizzes in general are easier than exams with regards to the complexity or length of the questions asked.

Many quizzes will be timed and must be started and completed by Sunday at 11:59PM CST of the week following when they are assigned. Untimed quizzes must be completed by their deadline.

The lowest quiz score will be dropped before computing the Quiz Average in the final grade.

Exams:

There will be three (3) unit exams and a cumulative final exam. Unit exams will only cover material specified in the course calendar. The final exam will cover material over the entire semester. Exam topics are specified in the course calendar.

The final exam will replace the lowest unit exam if that improves a student's final grade.

Exam Proctoring:

All exams must be taken in a COD Testing Center or at a testing center approved by the COD Testing Center. Unit exams must be taken within the two weeks they become available (according to the course calendar) during hours that the Testing Center will be open. COD Testing Center hours and locations can be found at the website https://www.cod.edu/academics/testing/hours.aspx.

The final exam must also be taken in a COD Testing Center and is available during COD final exam week, December 9 through December 15.

No cell phones or computers will be allowed at all at a student's desk during the exam. Graphing calculators are allowed on exams. If a student cannot complete the problems asked without referring to the textbook or other sources, then they should do the best they can while maintaining their academic honesty.

Students may be eligible for taking their exams using remote proctoring through the COD Virtual Testing Center. If a student is living more than 50 miles from any COD Testing Center, they can submit a proof of address through a link provided in Blackboard. Afterwards, they will be sent instructions to sign up for exam proctoring in the Virtual Testing Center (VTC). *Students using the*

VTC are responsible for signing up for their exam days and times. Time slots fill up fast, so they should sign up weeks in advance.

Students eligible for remote proctoring may also take their exams in-person in any testing center approved by the COD Testing Center. *Contact the instructor for more information about this option.*

Students with medical accommodations preventing them from taking exams in a COD Testing Center must contact the Center for Access and Accommodations (see the section later in this syllabus) and will be eligible for virtual proctoring.

Attendance Policy & Free Passes:

There is a constant stream of new material, homework, and other assessments in this course. Students should be working every day to master the material and complete the assigned work. Taking an occasional day off each week is recommended to not become over-stressed, but doing no work for more than a day will usually cause students to fall behind and never catch up.

Each student is allowed three "free passes" for the semester, good for a 48-hour extension on any assignment. *No more than one* of these passes may be used on a unit exam, and cannot be used at all on the final exam. The 48 hours starts from the original deadline of the assignment, and students *must* complete the form request (which is linked to in Blackboard) before the deadline to request the use of a free pass before submitting it. Email requests will not be honored.

All exams must still be taken in a COD Testing Center or using the Virtual Testing Center. There are no extensions after the 48 hours, even if the Testing Center has limited hours during that time.

Quizzes will be available each week Monday through Sunday, and exams will be available on exam weeks Monday through Saturday. These can be made available earlier for students if requested, but taking week-long vacations or trips where you can't finish the quizzes online or cannot access the Testing Center to take an exam is highly discouraged.

If you receive an email from your instructor that requires a response, you must answer within **2** business days or else action may be taken that penalizes your lack of response.

Grade Calculation:

Graded Assessment	Percentage of Final Grade
Homework (lowest 3 dropped)	10%
Quizzes (lowest dropped)	15%
Three Unit Exams	17% Each
Cumulative Final Exam	24%

Letter Grade	A	B	C	D	F
Percentage	89.5% and Up	79.5% - 89.5%	69.5% - 79.5%	60% - 69.5%	Below 60%

Sample Grade Calculation:

Assignment	**Grade (%)**
Homework #1	95%
Homework #2	80%
Homework #3	50%
Homework #4	88%
Homework Average (After dropping lowest 3 scores)	95%/1 = 95%
Quiz #1	85%
Quiz #2	80%
Quiz Average (After dropping lowest quiz score)	(85%)/1 = 85%
Exam 1 (lowest unit exam)	70%
Exam 2	82%
Exam 3	91%
Final Exam (replaces Exam 1 below)	84%
Final Grade	(95%)x10% + (85%)x15% + (84%)x17% + (82%)x17% + (91%)x17% + (84%)x24% = 86.1%

Online Learning:

When watching the weekly video lessons, **you should be taking notes in a dedicated notebook**. Make sure you pause the video frequently to verify you understand the points being made. You should use the textbook as a supplementary resource while watching the videos.

Remember that any references you find on the internet may 1) be incorrect, or 2) be too difficult for the rigor of this course. If you use a method of solving problems that is not presented in our textbook or not recognized by the instructor, you risk losing losing points on assignments. Connect everything you learn elsewhere back to the textbook or the posted lesson videos!

If there are issues relating to email access or problems viewing content in Blackboard, please contact the Student Help Desk (studenthelp@dupage.edu).

Academic Integrity:

Students should be aware of the Code of Academic Conduct and know the consequences should the code be violated. The document can be found at

Code of Academic Conduct

If a student is caught violating the Code they will receive a grade penalty and will be reported through COD's academic integrity reporting system.

Student academic dishonesty includes but is not limited to**:**

- Dishonest use of course materials, such as student papers, examinations, reports and material posted on the Internet.

- Knowingly posting course materials of any kind on Internet sites such as (but not limited to) Course Hero and Chegg without the consent of the instructor.

- Knowingly assisting others in the dishonest use of course materials such as student papers, examinations and reports.

- Knowingly providing course materials such as papers, lab data, reports and/or electronic files to be used by another student as that student's own work.

- Plagiarizing, i.e., using language or ideas from materials without acknowledgement and/or copying work from other sources and submitting it as one's own.

- Examples of plagiarism include but are not limited to:

  § Copying a phrase, a sentence, or a longer passage from a source (including an Internet source) and submitting it as one's own.

  § Summarizing or paraphrasing someone else's ideas without acknowledging the source.

  § Submitting group assignments individually as one's own independent work.

  § Copying or taking pictures of course materials such as videos, exams, quizzes or assignments and posting the copied items and/or pictures on the Internet **or** sharing these copied items and/or pictures with other students who have not yet completed the assignments.

  § Taking pictures or copying course materials that are considered confidential by the instructor such as exams or quizzes.

If an exam is being proctored, students should comply with the proctor's instructions. If a proctor accuses a student of violating the Code of Academic Conduct or not conforming to the assessment's instructions, and the student does not agree with the accusation, the student should provide countervailing written or video evidence to support their case.

A student's completion of homework without overusing solution manuals has strong correlation with the student's performance on the exams. If a student's unproctored exam grade is significantly higher than their homework grade for a unit of study, they may be required to have a one-on-one Zoom or Blackboard Collaborate meeting with the instructor to explain this discrepancy. If the student cannot satisfactorily justify the improvement, disciplinary action will be taken in this event, which may include a 0 on that assignment, a letter grade deduction on their course grade, or a failing grade in the course. This meeting, if requested by the instructor, must happen within 3 days of receiving the exam grade.

Center for Access and Accommodations:

The College of DuPage is committed to the equitable access of educational opportunities for students with disabilities in accordance with The Americans with Disabilities Act, As Amended and Section 504 of the Rehabilitation Act of 1973. Any student who feels they may need an accommodation on the basis of an illness, injury, medical condition, or disability should contact the Center for Access and Accommodations to determine eligibility for accommodations and to obtain an official Letter of Accommodation. The Center for Access and Accommodations can be reached via email at access@cod.edu. Students may also initiate a request for services by going to www.cod.edu/access and clicking on the green box labeled "complete form to request accommodations." If you are already registered with the Center for Access and Accommodations, please email me your Letter of Accommodation as soon as possible. Please DO NOT send any private health documentation or Doctor's notes to the course instructor.

Covid-19 Policy

Students should adhere to COD's Covid-19 safety protocols throughout the semester if visiting campus. All relevant policies regarding masking, vaccinations, reporting can be found on the COD website at

https://www.cod.edu/coronavirus/index.aspx

If you have been exposed to Covid-19 or have been diagnosed with Covid-19, please fill out the Student Self-Reporting form at

https://cm.maxient.com/reportingform.php?CollegeofDuPage&layout_id=9

Withdrawal Policy:

The final day for a student to withdraw from any course will be equal to 75% of the time for the respective academic session (see the Registration Calendar) through myACCESS https://myaccess.cod.edu or in person at the Registration office, Student Services Center (SSC), Room 2221.

After the deadline, students will be required to appeal for late withdrawal and provide appropriate documentation to the Student Registration Services Office for all requests. Students who

are granted approval to withdraw by petition will not be eligible for refunds of tuition or fees and will receive a 'W' grade on their transcript. Appeals must be submitted prior to the designated final exam period for 16-week classes and before the last class meeting for all other session classes.