

Dr. Donald Adongo, FH 6A-2

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Office Hours: MTUF 9:00 – 10:20 am (FH 6A-2); 1:00 – 2:00 pm (FH 109)

Section 01 CRN 52058

(MAT 670-01 CRN 52059)

(MAT 790-01 CRN 51038)

Meeting: 10:30 am – 12:40 pm MTUF FH 307

<http://campus.murraystate.edu/faculty/dadongo>

DEPARTMENT: Mathematics and Statistics

COURSE PREFIX: MAT

COURSE NUMBER: 570

CREDIT HOURS: 3

I. TITLE:

Linear Programming

II. COURSE DESCRIPTION AND PREREQUISITE(S):

Theory and application of linear programming and the role it plays in operations research.

Prerequisite(s): MAT 335.

III. COURSE OBJECTIVES:

The student will be able to:

- A. Analyze two dimensional optimization problems and solve them geometrically;
- B. Use the Simplex Method to compute solutions to given LP problems;
- C. Find the Dual to a given LP problem and use the Dual Simplex Method to solve the problem.
- D. Carry out sensitivity analysis on the LP problem;
- E. Analyze the structure of and mathematically model various systems occurring in applications (diet, work-scheduling, capital budgeting and production scheduling problems).

IV. CONTENT OUTLINE:

- A. Linear Programming: An Overview and Sample Problems
- B. Geometric and Algebraic Preliminaries
- C. The Simplex Method
- D. The Simplex Method in a Matrix Context
- E. The Revised Simplex Method
- F. Duality
- G. Sensitivity Analysis

V. INSTRUCTIONAL ACTIVITIES:

Lecture, daily assignments, group work, projects, reading assignments, oral presentations, and quizzes on the material.

VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

Large scale problems will be simulated in the lab using computer software like ©MatLab.

VII. TEXT(S) AND RESOURCES:

Linear Programming, James E. Calvert and William L. Voxman; © 1989 Harcourt Brace Jovanovich, Inc.

VIII. EVALUATION AND GRADING PROCEDURES:

- A. Your grade will be based on EXAM grades, HOMEWORK grades, LAB Assignments (Computer) grades, PROJECT grade and the FINAL EXAM. Thirty percent of the course grade will come from 2 major exams (each exam counts 15 percent of the grade) and twenty five percent of the course grade will come from the final exam. The homework, labs and project grades are each worth 15 percent of the course grade.

Grading Scale:

90 - 100 %	A
80 - 89 %	B
70 - 79 %	C
60 - 69 %	D
Below 60%	E

Exams: The Exams will test your comprehension of concepts and skills not covered on a previous exam. Exams may contain both problem-solving questions and essay questions. Exams occur for everyone (to be fair to everyone) on the scheduled date. Sometimes, however, extenuating circumstances do exist. If you absolutely must miss an exam, you are to stop by or call me (or leave a message with the office if I am not in when you call) before the exam to tell me why you cannot be at the exam. In addition, you must complete the "missed exam form" (see the course website) within one day. If you do not, you will get a zero on that exam with no opportunity to make it up. An excused missed exam will be made up in my office within two days (an extension may be granted in rare cases), with the grade to be determined as explained at that time. Our two semester exams will be **June 3**, and **June 13**.

Final: The Final will be a comprehensive exam covering any material addressed that semester. The Final exam will be on **Friday, June 27th** at 10:30 a.m. in **FH 307**.

Homework: Homework will be assigned at the beginning of each section and will also be listed on the course web site. Homework will be collected twice a week (Monday & Thursday).

Computer Labs: Computer assignments will be given with each chapter involving the computer language ©MATLAB. The software (© Matlab) is available in the computer lab on the first floor of Faculty Hall. The lab will be open during the second part of my office hours, 1:00 - 2:00 pm. A familiarity with Matlab will be one of the goals for this course. Programs and any other work will be submitted in hard-copies.

Project: Projects will be assigned by the second week of classes. You will present your projects in class on **Thursday, June 26, 2014**.

Important Grade-dates: The last day to drop a course without receiving a grade (or a W) is **Wednesday, May 28**. The last day to drop individual courses and receive a grade of "W" (no penalty) is **Tuesday, June 24**.

B. **Auditing:** If you seek to change your status to audit, you must continue to do all the graded assignments, to attend classes regularly after the audit is given, to miss no more than 5 class periods after the audit is given, and to maintain a grade of at least 70% of the grade they had upon taking the Audit. If these requirements are not followed, then an "E" will be earned for this course.

Note: Students taking the course MAT 670 or MAT 790 are required to do substantially more work than in the course MAT 570. This involves students working additional problems for homework, labs, projects and exams.

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletins.

If you miss class you are responsible for obtaining the day's notes and assignments. You are expected to attend every class period and your grade will suffer if you do not attend. For every class missed you will lose 0.75 percentage points from your course grade. To level the playing field between those who must miss classes because of MSU and those who do not, the only kind of absence which will not be counted in this regard is a university-required absence. Thus, anything else (for instance, being sick, going on a job interview, taking care of a sick relative, etc.) will count as one of these absences. Note the following provisions on arriving late to class or leaving early:

- Every two tardies (arriving late) will count as an absence.
- Leaving class early will count as an absence unless you provide me with a reason in advance.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

- 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
- 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
- 3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Equal Opportunity. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

Note: Faculty reserve the right to invalidate any examination or other evaluative measures if substantial evidence exists that the integrity of the examination has been compromised.

In this Course, violations of Academic Honesty will result in a failing grade awarded on the particular exercise involved.

XI. NON-DISCRIMINATION POLICY STATEMENT:

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

XII. Other required departmental or collegiate committee information

Electronic Communication Policy: It is the default policy of the Department of Mathematics and Statistics that, without the prior consent of the course instructor, no device may be used for electronic communication in class. This shall include cell phones, smart-phones, computers, laptops, and tablets. In addition, this includes verbal calling, incoming calls, email, text messaging, the use of cell phone calculators on tests and quizzes, and the use of the wireless capabilities of calculators or other electronic devices. Unless given special permission in advance from the course instructor for potential cases of emergency or critical family situations, cell phones must be kept on silent and out of sight (i.e. secured to a person's belt or kept in a bag or purse away from desks). Should a student's cell phone be visible, ring, or should the student be engaged in some other form of unauthorized usage that the course instructor finds to be disruptive to the class, the student may be asked to leave class and not return for that class period, and be counted absent for that day. Similar restrictions and penalties apply to use of other electronic devices, unless permitted by the instructor for that class period.

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Please fill out this portion, detach and return to the instructor by **Wednesday May 28, 2014**.

By my signature below, I certify that I have received a copy of the course syllabus for MAT 570-(01) [MAT 670, MAT 790] taught by Dr. Donald Adongo during the Summer Session of 2014. Furthermore, I certify that I have read and understand the contents of the course syllabus.

Printed Name:

Signature:

Date: