

Instructor Personal Information

DEPARTMENT: Mathematics and Statistics

COURSE PREFIX: MAT

COURSE NUMBER: 117

CREDIT HOURS: 3

I. TITLE:

Mathematical Concepts

II. COURSE DESCRIPTION AND PREREQUISITE(S):

Provides students with problem-solving skills and literacy related to the mathematics which is commonly encountered in our society. Topics can include descriptive statistics, personal finance, voting methods, elementary probability, and graph theory. This course is especially appropriate for students whose degree programs do not otherwise require a course in mathematics. It is not an adequate preparation for any other mathematics course except MAT 115 and 215.

Prerequisite(s): ACT Mathematics sub-score of 19, or MAT 096.

III. COURSE OBJECTIVES:

The student will:

- A. understand the difference between geometric growth and arithmetic growth;
- B. be able to use compound interest, loan, and annuity formulae;
- C. understand and be able to apply the fundamentals of probability;
- D. understand and be able to apply the concept of expected value;
- E. be able to collect data appropriately and then be able to illustrate characteristics of the data using (as pertinent) histograms, charts, the mean, median, five-number summaries, variance, and standard deviation;
- F. know how to interpret statistical information, including charts and graphs;
- G. understand and be able to compute normal distribution calculations;
- H. know the meaning and purpose of measures of central tendency such as the mean and median, and measures of dispersion such as standard deviation and quartiles;
- I. be able to interpret the margin-of-error of a poll;
- J. understand various voting methods and that the outcome of an election or vote may depend upon the method of voting employed for the election;
- K. understand the concept of strategic voting;
- L. understand the distinction between Euler circuits and Hamilton circuits and be able to apply each;
- M. understand the distinction between Hamilton circuits and trees, and be able to apply each.

IV. CONTENT OUTLINE:

- A. Financial mathematics, including annuities and amortized loans
- B. Probability
- C. Statistics
- D. Voting Theory
- E. Graph Theory

V. INSTRUCTIONAL ACTIVITIES:

Lecture, daily assignments, group work, projects, reading assignments, oral presentations, and quizzes the material, as per instructor course design.

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

None.

VII. TEXT(S) AND RESOURCES:

Thinking Mathematically by Robert Blitzer, fifth edition.

VIII. EVALUATION AND GRADING PROCEDURES:

Exams, projects and/or quizzes are used to assess the student's development of mathematical skills, their understanding of key concepts and their ability to express this understanding via numerical and graphical and narrative methods. Critical thinking and mathematical writing are major components of exams and quizzes. These skills are evaluated in terms of clarity, organization, notation, correctness of mathematical procedures and ability to explain results. Group work may be evaluated or not (e.g. activity may be for learning purposes); graded group work is usually in the form of a group quiz -- with

each group member receiving the same grade. There will be 3 - 5 exams, projects and/or quizzes and a final exam. These are typically weighted:

| | |
|--------------|-----------|
| Exam avg. | 50 - 60% |
| Quiz/project | 10 - 25% |
| Final Exam | 15 - 30 % |

Letter grades will be assigned by the following scale:

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

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletins. [Click here to enter additional attendance policy if necessary.](#)

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.

XI. NON-DISCRIMINATION POLICY AND STUDENTS WITH DISABILITIES:

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).

Students with Disabilities

Students requiring special assistance due to a disability should visit the Office of Student Disability Services immediately for assistance with accommodations. For more information, students should contact the Office of Student Disability Services, 423 Wells Hall, Murray, KY 42017. 270-809-2018 (voice) 270-809-5889 (TTD).

XII. Other required departmental or collegiate committee information

[Click here to enter text.](#)