

**MATH1300X ELEMENTARY MATHEMATICAL MODELS
KENTUCKY WESLEYAN COLLEGE
FALL 2015**

Professor: Kyle Besing

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Office Hours: Monday and Wednesday 1:00 – 5:00 pm
Tuesday and Thursday 10:00 – 10:50 am
or by appointment

Course Description: Applications of the basic functions of mathematics, with an emphasis on linear, exponential, and logarithmic models, descriptive statistics and using the normal distribution.

Meeting times: Monday and Wednesday, 5:00 – 7:00 pm

Meeting location: Administration Building Room 207

Credits: 4 semester hours

Textbook: Course handouts and class notes will take the place of a text. These will be posted to Moodle and it is the responsibility of the student to print out a copy of the appropriate handouts before class. Additionally, you are required to have a scientific calculator. Students may not share calculators during quizzes and tests. You will not be permitted to use a cell phone as a calculator.

Student Learning Objectives: This course is in the General Education Curriculum and, as such, has the following specific learning outcomes:

General Education LO's	Course LO's
LO 1: Exhibit critical and logical thinking	Demonstrate the ability to apply variation models, linear and exponential regression models, statistical models to solve real world problems in biology, chemistry, business and other fields.
LO 2: Demonstrate problem-solving ability	Demonstrate the ability to solve variation problems, linear and exponential growth equations, basic statistics efficiently and correctly.
LO 4: Communicate Effectively	Communicate results using linear and exponential regression on a set of data.

Academic Alerts: Wesleyan cares about your success. The Academic Alert system is designed to help you succeed. Instructors issue an alert to you, your advisor, your coach, and the CARES TEAM if you are having difficulty in class, not responding to your instructors attempts to contact you about attendance issues, or any concerns they might have about your success. The CARES TEAM will work with you to resolve your issues. If you have questions, please talk to your instructor.

Attendance: Attendance is an integral component of learning, successful completion of courses and the professional work ethic. Excessive absences in classes can result in lowered grades and reduction or loss of financial aid. Attendance is reported each class period to the Wesleyan CARES TEAM. Students are responsible for any material or announcements given in class. Six unexcused absences will result in a failing grade.

Homework: Homework will be assigned regularly. Generally, these will be due at the beginning on class one week after being assigned. **Late homework will not be accepted.** Questions about homework should be discussed with the professor either during class or office hours.

Modeling Project: To synthesize your knowledge of functions gained during the course you will collect population data from several counties, where the population is increasing, in an assigned state. You will create a data table and scatter plots to determine which counties' population data looks most like linear growth and indicate why the others were not chosen. **This project will be due on November 23.**

Quizzes: Quizzes will be given weekly.

Tests: There will be four tests as well as a comprehensive final exam.

Exam Schedule (Tentative): Note these dates are subject to change.

Test 1 Monday, September 21

Test 2 Monday, October 12

Test 3 Monday, November 9

Test 4 Monday, November 30

Final Exam: Monday, December 7 from 5:00 – 7:00 pm

Grading: Points in this course are awarded as follows.

Exam 1:	10%
Exam 2:	10%
Exam 3:	10%
Exam 4:	10%
Final Exam:	15%
Quizzes:	30%
Modeling Project:	15%

Grading Scale: The following percentages will guarantee at least the associated letter grade. A 90%, B 80%, C 70%, and D 60%. Earning less than 60% of the possible points can result in a grade of F.

Course Policies:

- Cell phones are prohibited in the classroom, unless they are turned off and inside a container, like a backpack.
- Headphones connected to listening devices are forbidden in the classroom.

- Excessive talking with other students is disruptive to instruction and will not be tolerated.
- A respectful conduct towards fellow students and your instructor is expected at all times.
- Excused absences will need to be arranged at least 24 hours in advance. Medical emergencies are an exception, but written documentation will need to be produced in this case. Assignments will not be made up for unexcused absences.
- Anyone in violation of course policies will be warned once, then asked to leave the classroom.

Academic Misconduct: Kentucky Wesleyan College expects its students to adhere to the highest standards of academic honesty. Any student who, beyond a reasonable doubt, violates these standards is subject to disciplinary action by the faculty member in whose class the academic dishonesty has occurred and by proper college authorities. Examples of acts constituting academic dishonesty include (but are not limited to) the following:

- (1) Knowingly participating in fraudulent activities relating to examinations, assignments or projects: e.g.
 - Plagiarism - claiming or implying that the ideas or works of others are one's own original thoughts (includes making use of reports, term papers, films or other writing advertised for sale).
 - Writing reports, etc., or completing projects for others to submit for evaluation.
 - Submitting work that has been submitted in another class (unless there is written permission and it is acceptable to the instructor).
 - Taking examinations for another student. Any form of cheating during the administration of an examination.
 - Intentionally missing examinations to obtain information from class members for illegitimate make-up of examinations.
 - Providing material or information to another person with knowledge that these materials or information would be used improperly.
- (2) Theft of examinations, projects, grade books, etc. Alteration of grades or scores on examinations, reports or in grade books. Procedures and penalties: A faculty member who finds beyond a reasonable doubt that a student has committed an act of academic dishonesty shall have the option after consultation with the academic dean of imposing one of the following penalties:
 - Substitute examination or assignment.
 - A grade of "F" for examination or assignment.
 - Expulsion from the class with a grade of "F" for the course.
 - Recommendations to the academic dean that the student be expelled from the college.

In addition to being honest, Kentucky Wesleyan students are expected to be civil and respectful to their instructors and fellow students. The faculty member may handle first-time, relatively minor offenses by himself or herself. The faculty member should include the Vice President of Academic Affairs in more serious cases. The Vice President of Academic Affairs may withdraw the student from the class and/or file disciplinary charges to the Vice President of Student Services. See "Student Code of Conduct," standard #10, in the KWC Student Handbook.

Procedures for review or appeal of penalties may be found in the Kentucky Wesleyan College Student Handbook.

Disability Support Statement: *“Kentucky Wesleyan College is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodations to participate and complete requirements for this class, notify me immediately and contact Dr. Leah Hoover at the Office of Disability Services (FOB #15 or 270-852-3212) for verification of eligibility and determination of specific accommodations.”*

Course Schedule:

- **Week One: August 26**
 - Use percentages to solve real life applications
 - Modeling Project (SLO 4)
 - * Determine whether data fits linear model or exponential model
 - * Use the model to predict future data
 - * Use a spreadsheet to create a scatter plot and find a line of best fit
 - * Determine whether data fits a linear model
 - * Find an exponential function to model given data and use the function to predict future values
- **Week Two: August 31 and September 2**
 - Review basic Algebra Skills
 - Set up a system of linear equations to model applications
 - Quiz
- **Week Three: September 9**
 - Review Graphing points and lines
 - Find a linear model to fit data, by using a line of best fit.
 - Write a linear model that represents a real world situation
- **Week Four: September 14 and 16**
 - Solve a system of linear equations by the graphical, substitution, or elimination methods
 - Solve real world problems using scientific notation and dimensional analysis
 - Quiz
- **Week Five: September 21 and 23**
 - Test #1 (SLO 1, 2)
 - Solve real world problems using direct and indirect variation
- **Week Six: September 28 and 30**
 - Solve real world problems using joint variation.
 - Determine the balance in a bank account and how long it will take for the balance to grow a certain amount.
 - Quiz
- **Week Seven: October 5 and 7**
 - Solve proportions real life applications involving growth and decay
 - Use logarithms and their properties to solve exponential/logarithm equations
 - Quiz
- **Week Eight: October 12 and 14**
 - Test #2 (SLO 1, 2)
 - Solving real life application using logarithms

- **Week Nine: October 19 and 21**
 - Solve real world applications: Earthquakes, pH scale, savings bonds, depreciation
 - Quiz
- **Week Ten: October 26 and 28**
 - Determining an exponential equation through curve fitting
 - Quiz
- **Week Eleven: November 2 and 4**
 - Find the measures of central tendencies for a set of data
 - Determine if a set of data has outliers, which skew the distribution. Give examples of data that would have a skew distribution
 - Quiz
- **Week Twelve: November 9 and 11**
 - Test #3 (SLO 1, 2)
 - Draw and analyze box and whiskers plots
- **Week Thirteen: November 16 and 18**
 - Calculate measures of variability and determine data sets which has more variability
 - Quiz
- **Week Fourteen: November 23**
 - Modeling Project DUE
 - Use z-scores to compare scores on different tests
 - Quiz
- **Week Fifteen: November 30 and December 2**
 - Test #4 (SLO 1, 2)
 - Use the uniform distribution chart to solve problems
- **Week Sixteen: December 7**
 - Final Exam (SLO 1, 2)

Disclaimer Statement: The professor reserves the right to make changes to the syllabus, including project due dates and test dates (excluding the officially scheduled final examination), when unforeseen circumstances occur. These changes will be announced as early as possible so that students can adjust their schedules.