UTA Course Syllabus Fall 2013

Math 1301: TTh, Section 001, 9:30-10:50 & Section 002, 11:00-12:20

Disclaimer: This syllabus is provided for student convenience and is based on the most recent information available. If you have special concerns about course information, you are advised to contact the instructor.

This course satisfies the University of Texas at Arlington core curriculum requirement in mathematics.

This course will address three objectives:

- **Critical Thinking Skills** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- **Communication Skills** - to include effective development, interpretation and expression of ideas through written, oral and visual communication.
- **Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

1. Instructor:
2. Office Location:
3. Office Hours:
4. Phone:
5. Fax:
6. Mailbox:
7. Email:
8. Instructor WWW Site: Course materials will be available on Blackboard
9. Additional Links: Math sites as needed for extra (individual) instruction

10. Course Prerequisites: Math Placement Score of 11 or above and/or TSI standards met.

11. Text/Materials: **1301 Handbook (required)** by Justin Blackwell and Sonja Godeken; **Elementary Mathematical Modeling (optional)** by M.E. Davis and C.H. Edwards. **TI-84 calculator; i>clicker required** (more information will be given in class about the clicker system).

12. Course Description: This course is intended for Liberal Arts majors. (Business majors should enroll in Math 1302 or 1315; Science/Engineering majors should enroll in Math 1322.) The majority of student time and effort will be spent on formulating and solving word problems including growth projections, statistical modeling, optimization, compound interest and amortization of loans. Students will work solving problems in small groups, with the instructor acting as facilitator. Skills at the level of traditional
college algebra will be taught, but the course will ask students to apply it to solve word problems. Students will explain, in writing, their reasoning and steps in problem solving. Tests will NOT be entirely multiple-choice, but rather, show all work.

13. Course Learning Goals/Objectives:
This course is designed to develop the reasoning, modeling and problem solving skills of students. Upon completion of M1301, students will be able to perform the following.
1. Students will be able to solve word problems requiring elementary algebra: linear and piecewise-linear functions, quadratic functions, logs and exponential functions. The problem topics include population (and other) growth, money, and amortization.
2. Students will be able to perform unit conversions, which is emphasized throughout the course.
3. Students will be able to explain their steps in problem solving.
4. Students will be able to use graphing calculators as aids in solving nonlinear equations, systems of equations and optimization problems.
14. Attendance and Drop Policy: Attendance is mandatory and roll will be taken each class meeting. Students must follow UTA drop policy if they intend to drop the class: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. Contact the Financial Aid Office for more information.

15. Tentative Lecture/Topic Schedule (course content): TBA in class

Specific Course Requirements with descriptions

1. Quizzes/Signature Assignment: Students should expect at least one weekly quiz (7 estimated) or test. The two lowest quiz grades will be dropped at the end of the semester. To specifically assess the core objectives of Critical Thinking, Communication, and Empirical and Quantitative Reasoning, all students will complete a signature assignment (described at the end of this syllabus), which will count for one quiz grade.

2. Examinations: There will be three tests, one at the end of each unit. Estimated dates for exams are: September 19, October 17, November 26 as shown on the course calendar. Students may replace one lowest test grade with their final exam grade at the end of the semester. If a test is missed (grade zero), it may be replaced with the final exam grade only if the absence was excused (see below).

3. Final Examination: Final Exam Comprehensive on XXX

4. Other Graded Assignments (Homework/ Labs): Daily “entry and exit quizzes,” on basic concepts covered in class, will be given at the beginning and end of each class and may not be made up if class is missed. Students will use i>clickers for daily quiz work. (More information will be given in class.) Daily homework assignments will be worked on in class and may be used during quizzes. Students should expect to work outside of class at least twice the time spent in class.

5. Missed Exams, Quizzes and Makeup Work: If a quiz or test is missed the student receives a zero (0). There are NO make up exams, quizzes and late homework is not accepted. Special circumstances, such as serious illness or a death in the family, will be considered only if student notifies instructor on or before the day of an EXAM and student brings an authorized note upon return to class. Students should use email for communication with instructor—see email address above.
6. Grading Format Weighting

- 25% of your grade will be based upon weekly quizzes.
- 55% of your grade depends upon unit exams.
- 20% of your grade depends upon the final exam.
- Entry/Exit quizzes may count up to 5% of your grade in bonus points.
- Grades will be assigned as follows: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = F.
- All students are expected to take the final exam (no “opting out” of the final).

Signature Assignment Outline:

Students will, through a process of innovation and inquiry, create a process to analyze, evaluate and synthesize accurate and appropriate conclusions about the absorbency of different brands of paper towels.

- Students will measure, record, graphically represent and interpret data they have collected.
- Students will evaluate results and reach conclusions about the mathematical models they created. This work will include the use of TI graphing calculators to create appropriate mathematical regression models that best represent the relationship between the independent and dependent variables in the collected data.
- Students will manipulate and analyze the numerical data and observable facts about the assigned questions to arrive at informed conclusions.
- Students will effectively develop, interpret and express their ideas to each other and to their instructor, including effective written, visual and oral communication in the classroom and on the Blackboard website.

Brief outline:

Near the end of the semester, after studying several specific families of functions—Linear, Quadratic and Exponential—and after working with their TI graphing calculators to create “best-fit” regression models for each of these types of functions, students will be asked to apply their knowledge to a new data set. The instructor will provide the necessary items (metric ruler, dropper bottle with water, paper towel marked as brand “w, x, y or z”) for them to collect data on the absorbency of paper towels.

The entire class must reach consensus on an appropriate methodology for collecting data using the provided materials to answer the question: Which brand of paper towel is the most absorbent?

After selecting the methodology, students will work in small groups to collect their data. They will collaborate with other small groups that tested the same brand of paper towel to analyze and interpret their data and reach conclusions about how best to represent their data. (The appropriate model may not be one already studied.)

The small groups will then collaborate with the entire class to include all the different brands of paper towels in the discussion. Through a process of analysis, evaluation and synthesis, the entire class will reach an appropriate, accurate and fully justified conclusion about the best mathematical model representation of their data and about the most absorbent paper towel.
Students will post their conclusions on Blackboard and will be expected to express themselves effectively in this format as well as verbally in the classroom. They will be expected to produce visual representations of the mathematical models used to arrive at their conclusions and to be able to justify their conclusions.