Core Curriculum
Course Proposal Cover Sheet

Department: **Mathematics**
College: **College of Science & Technology**
Department Head: **Bryant Wyatt**

Course Prefix & Number: **Math 110**
Course Title: **Math for Business**
Course Description: Linear equations and applications, linear forms and systems of linear equations, matrix algebra and applications, linear programming, probability and applications, and statistics.

MATHEMATICS

FOUNDATIONAL COMPONENT AREA JUSTIFICATION FORM

Rationale: Please provide a rationale for the course which explains how the course being proposed fits into this component based on the component's description. For your convenience, the overall description and rationale for this component are included below.

Mathematics (from THECB Chapter 4: 4.28)

- Courses in this category focus on quantitative literacy in logic, patterns, and relationships
- Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.
- The following three Core Objectives must be addressed in each course approved to fulfill this category requirement: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills.
    - 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.

<u>Rationale for Inclusion in this Category:</u>

The **Math 110** course is primarily a study of the mathematical applications and their use in business and economics. In this capacity, students use logic to analyze patterns and relationships to evaluate the types of functions that most appropriately model applicable real world situations. Students must justify their solutions in written form, using appropriate technology as needed to support their conclusions.

STUDENT LEARNING OUTCOME ALIGNMENT FORM
Mathematics

Course Prefix/Number: **Math 110**
Course Title: **Math for Business I**

Core Objective: Critical Thinking CT1: Students will evaluate evidence in analysis, interpretation or arguments

Course SLO(s):

1. Determine optimum solutions from objectives and constraints in business.
2. Evaluate the probability of success using sets and counting techniques.
3. Determine solutions to Linear Programming problems using the Geometric approach and the Simplex method.
4. Evaluate compound interest, balances of annuities and sinking funds, the present value of an annuity, amortization, leasing agreements, capital expenditures, and bonds.
5. Organize data statistically, build pie charts and bar charts, compute measures of central tendency (mean, median, and mode), measures of dispersion (variance and standard deviation), and demonstrate understanding of the Normal Distribution

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

Core Objective: Critical Thinking CT2: Students will be able to synthesize varied components of information to form a rational conclusion.

Course SLO(s):

1. Apply mathematics to business applications.
2. Evaluate financial instruments and calculate of interest.
3. Examine models to predict possible future business outcomes.
4. Determine optimum solutions from objectives and constraints in business.
5. Evaluate the probability of success using sets and counting techniques

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

Core Objective: Communication C1: Students will express ideas in written, visual or oral forms to a range of diverse audiences in multiple settings.

Course SLO(s):

1. Evaluate compound interest, balances of annuities and sinking funds, the present value of an annuity, amortization, leasing agreements, capital expenditures, and bonds.
2. Evaluate the probability of success using sets and counting techniques.
3. Organize data statistically, build pie charts and bar charts, compute measures of central tendency (mean, median, and mode), measures of dispersion (variance and standard deviation), and demonstrate understanding of the Normal Distribution.

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

Core Objective: Empirical and Quantitative EQS1: Students will gather, interpret or use numerical data/observable facts to arrive at an informed conclusion.

Course SLO(s):

1. Apply mathematics to business applications.
2. Examine models to predict possible future business outcomes.
3. Determine optimum solutions from objectives and constraints in business
4. Evaluate the probability of success using sets and counting techniques.
5. Determine solutions of simultaneous linear equations with n equations and n unknowns using matrix algebra and technology as appropriate.
6. Determine the inverse of a matrix by using row operations by hand and by using technology as appropriate.

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

As department head, I will ensure that all faculty that teach this course are aware of the requirements that these core objectives and learning strategies be incorporated into the above referenced course. This action is taken so that Tarleton State University will be in compliance with Texas Higher Education Coordinating Board foundational component area and core objective requirements for the General Education Core Curriculum.

Signature_____

We, the undersigned faculty, support the proposed changes to this course and agree to incorporate them into our section of the above referenced course. This action is taken so that Tarleton State University will be in compliance with Texas Higher Education Coordinating Board foundational component area and core objective requirements for the General Education Core Curriculum.
(Signed document should be kept in department office, listing names below on the electronic document implies acceptance)

The SLOs for Math for Business I were developed by mathematics faculty; the department then voted to approve these SLOs in 2009. All mathematics department faculty are in agreement that these SLOs represent the Math for Business I course.