**Math 1233 College Algebra**

**Prerequisite:** Math 1003 (Intermediate Algebra) with a grade of “C” or better, math THEA score of 270, math Accuplacer score of 90, or satisfactory score on placement exam.

**Textbook:** *A Graphical Approach to College Algebra, 5th Edition,* by Hornsby, Lial, Rockswold

**Calculator:** A graphing calculator is required for this course.

**Objective:** This course is designed to be a comprehensive course in the study of algebra for students planning to take additional mathematics.

**Assessment of THECB core objectives for MATHEMATICS**

* **Critical thinking**
  + Critical thinking will be assessed by applying the Math 1233 Assessment for Critical Thinking to specific embedded questions on an hourly exam.
* **Communication**
  + Communication regarding mathematical problem solving will be assessed by applying the Math 1233 Assessment for Communication to an embedded question on a comprehensive final exam.
* **Empirical and quantitative skills**
  + Empirical and quantitative skills will be assessed by applying the Math 1233 Assessment for Empirical and Quantitative Skills to embedded questions on two hourly exams.

**Homework:** Homework assignments will be given daily. It is your responsibility to attempt all assigned problems and to come to class prepared to discuss the material. Also, daily homework quizzes may be instituted at the discretion of the instructor.

**Attendance:** You are expected to attend class, to arrive on time, and to remain in class until dismissed. Obviously, the only way to accomplish the work required is to be present, both physically and mentally, at every class meeting. Students may be dropped by the instructor for excessive absences unless there are extenuating circumstances which are promptly communicated. Please refer to the university’s official class attendance policy before deciding to discontinue attending class.

**Additional Assistance:** Please contact your instructor for extra help during this course. Math help sessions are offered by the math department in room Bolin 101 every afternoon.

**Grading:** There will be unit tests, a final exam, and a daily grade which will be generated from the daily assignments as well as any in-class quizzes. The final course grade will be determined by the earned percentage of total possible points.

Earned % of Total Points Course Grade

90 - 100 A

80 - 89 B

70 - 79 C

60 - 69 D

Below 60 F

The outline below shows sections and topics to be covered from the textbook:

1.1 Real Numbers and the Rectangular Coordinate System

1.2 Introduction to Relations and Functions

1.3 Linear Functions

1.4 Equations of Lines and Linear Models

1.5 Linear equations and Inequalities

1.6 Applications of Linear Functions

2.1 Graphs of Basic Functions and Relations; Symmetry

2.2 Vertical and Horizontal Shifts of Graphs

2.3 Stretching, Shrinking, and Reflecting Graphs

2.4 Absolute Value Functions

2.5 Piecewise-Defined Functions

2.6 Operations and Composition

3.1 Complex Numbers

3.2 Quadratic Functions and Graphs

3.3 Quadratic Equations and Inequalities

3.4 Further Applications of Quadratic Functions and Models

3.5 Higher-Degree Polynomial Functions and Graphs

3.6 Topics in the Theory of Polynomial Functions (I)

3.7 Topics in the Theory of Polynomial Functions (II)

3.8 Polynomial Equations and Inequalities; Further Applications and Models

4.1 Rational Functions and Graphs

4.2 More on Rational Functions and Graphs

4.3 Rational Equations, Inequalities, Models, and Applications

4.4 Functions Defined by Powers and Roots

4.5 Equations Inequalities, and Applications Involving Root Functions

5.1 Inverse Functions

5.2 Exponential Functions

5.3 Logarithms and Their Properties

5.4 Logarithmic Functions

5.5 Exponential and Logarithmic Equations and Inequalities

5.6 Further Applications and Modeling with Exponential and Logarithmic Functions

**Math 1233 Assessment for Critical Thinking Skills**

An assessment of student competency would be based on the following rubric:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Capstone  4 | Milestones  3-2 | Benchmark  1 |
| Evidence | Solution technique chosen is among the best possible for the problem | Solution technique chosen will work but is not among the best possible choices | A solution technique is chosen without consideration of the details of the problem |
| Explanation of issues | A sequence of mathematical steps leading toward the solution is performed without error | A sequence of mathematical steps leading toward the solution is performed but the work is not complete or has one to two mathematical errors | The chosen sequence of mathematical steps is performed with multiple errors or does not lead towards a correct conclusion |
| Conclusion and related outcomes | Conclusion is clearly expressed and is logically connected to previous work | Conclusion is ambiguous or does not take all appropriate information into account | Conclusion, even if correct, is not supported with any argument |

**Math 1233 Assessment for Communication Skills**

An assessment of student competency would be based on the following rubric:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Capstone  4 | Milestones  3-2 | Benchmark  1 |
| Content Development | Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole work. | Uses appropriate, relevant, and compelling content to explore ideas within the context of the discipline and shape the whole work. | Uses appropriate and relevant content to develop simple ideas in some parts of the work. |
| Genre and Disciplinary Conventions | Demonstrates detailed attention to and successful execution of a wide range of conventions particular to a specific discipline and/or writing task (s) including organization, content, presentation, formatting, and stylistic choices. | Follows expectations appropriate to a specific discipline and/or writing task(s) for basic organization, content, and presentation. | Attempts to use a consistent system for basic organization and presentation. |
| Control of Syntax and Mechanics | Work skillfully communicates meaning with clarity and fluency, and is virtually error-free | Work generally conveys meaning to readers. There are relatively few errors | Work sometimes impedes meaning because of errors in usage |

**Math 1233 Assessment for Empirical and Quantitative Skills**

An assessment of student competency would be based on the following rubric:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Capstone  4 | Milestones  3-2 | Benchmark  1 |
| Representation | Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding. | Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate. | Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate. |
| Calculation | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. | Calculations attempted are either unsuccessful or  represent only a portion of the calculations required to comprehensively solve the problem. | Calculations are attempted but are both unsuccessful and are not comprehensive. |
| Application/Analysis | Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work. | Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work. | Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work. |