Math 115-Calculus with Applications

1. **Course Description**
   - This course relates calculus to real-world applications in social science, economics, and business. Topics include algebra review, graphing, limits, derivatives of polynomials of one variable, maxima and minima, integration, derivatives of logarithmic and exponential functions, development of integration techniques, an introduction to multivariable calculus, and their application to problems. This course is designed primarily for students majoring in social science, economics, and business who require calculus and is not recommended for mathematics, physical science, engineering, or biological science majors.
2. **Topics Covered**
   - This course is designed for one audience: students that need to complete an applied calculus course for their degree or profession. The topics covered are algebra review, graphing, limits, derivatives of polynomials of one variable, maxima and minima, integration, derivatives of logarithmic and exponential functions, development of integration techniques, an introduction to multivariable calculus, and their application to problems.
2. **What to expect?**
   - **Time:** The most common term lengths are listed below; others would be proportionate. Outside of class time is studying, completing homework, reviewing, etc.

Length of term	In-class time	Out-of-class time (typical)	Total hours/wk (typical)	Total Term hours (typical)
17 weeks	5 hrs/wk	10 hrs/wk	15	255
8 weeks	10.7 hrs/wk	21.4 hrs/wk	32.1	255

   - Assignments could be online, pencil and paper, or with math related software that accompanies many classes. Students should also expect to spend some in class time working on projects with collaborative learning teams. These can be technology driven, or activity driven, and will most likely utilize some technology whether it be with graphing calculators, software packages, or online programs.
   - This course is intended to be a practical application course. Therefore, students should expect to analyze on occasion some online business-related data including, but not limited to, profit reports, optimal occurrence and values on business function graphs, analyzing rates of growth and decrease using graphs, and using online software to perform an analysis of business-related functions.
3. **Who should enroll?**
   - This course could be the last math class many students need to graduate and/or transfer. Students who have completed Math 64 or Math 112 are eligible to enroll, as are students who are eligible to take Math 126 or higher through placement measures. This course is recommended for students that need to complete an applied calculus course for their degree or profession. Students who are majoring in STEM, want to be an elementary school teacher in the future, or just need a transfer math class should take a different course.

4. **<u>What prior knowledge students need to know to be successful?</u>**
    - Solving linear equations
    - Solving quadratic equations by: factoring, square root property, and quadratic formula
    - Solving basic exponential and logarithmic equations.
    - Solving linear and quadratic inequalities
    - Writing solutions in interval notation
    - Rules of exponents
    - Simplifying radical and rational expressions
    - Evaluate functions
    - Domain and range
    - Find the slope and y-intercept of a linear function
    - Find the equation of a linear function