PLANNED COURSE STATEMENT

Course Title: Precalculus	**Grade Level(s): 9-12**
Length of Course: 2 Semesters	**Credit Area: Math**
Prerequisite: Algebra II	**Amount of Credit: 1.0** (0.5/semester)
Adopted/Supplemental Materials: Larson, Hostetler, Edward Precalculus 2005	
Dual Credit Articulation:	

COURSE DESCRIPTION:

This course is aligned with RCC's MATH 111 and MATH 112. The first semester, in alignment with MATH 111, emphasizes the study of the linear, quadratic, polynomial, logarithmic, exponential, and rational functions. Within these topics students will distinguish between various forms of functions and their graphs with their respective transformations. Students will model real world situations using myriad functions in the context of the problem with emphasis of the domain of each function including discrete domain. Students will study conic sections including graphing and modeling with equations. The second semester, in alignment with MATH 112 focuses heavily on trigonometry. Such topics include solving triangles within the context of their application. Students will study trigonometric functions and their graphs with their respective transformations. Students will use their understanding of trigonometry to verify identities and solve trigonometric equations using the unit circle. Other topics include the study of polar coordinates with their graphs, vectors and the application thereof, series and sequences and their application.

COURSE GOALS:

Students will:

1st Semester (MATH 111)

1. Use linear modeling/programming to solve problems involving finding extrema
2. Solve systems of equations using substitution, elimination and matrices in 2 or more variables.
3. Solve systems of non-linear equations using substitution and graphing.
4. Graph quadratic equations from standard and vertex form including completing the square.
5. Model problems with quadratic equations as well as solve quadratic equations using factoring, completing the square and using the quadratic formula which includes complex solutions.
6. Graph polynomial functions and identify key elements such as intercepts and extrema.
7. Solve polynomial equations using technology.
8. Graph rational functions identifying asymptotes, holes, domain, and roots. This includes solving rational equations and extraneous solutions.

9. Use exponential and logarithmic properties to expand and condense expressions. Model growth and decay with exponential and logarithmic functions, and solve exponential and logarithmic equations identifying its domain.
10. Graph and model conic sections: circles, ellipses, and hyperbolas.

2nd Semester   (MATH 112)

11. Model events using series and sequences, understanding domain
12. Use trigonometric ratios to solve right triangles in application to real situations.
13. Use law of sines and cosines to model and solve any triangle in the context its application
14. Understand the use of degrees and radians, converting to the other, using the unit circle.
15. Use the unit circle to solve trigonometric equations
16. Use trigonometric identities to simplify expressions and solve equations
17. Graph trigonometric functions using the understanding of transformations to aid with graphing
18. Model cyclical situations with trigonometric functions and use them to solve problems.
19. Understand polar coordinates to graph points onto a plane
20. Convert polar coordinates to rectangular coordinates.
21. Use polar graphs to model situations where students apply trigonometry to solve problems
22. Use trigonometry in the context of vectors and using such to model and solve problems

ASSESSMENT STRATEGIES:
Daily work, starter and exit activities, participation, written exams, performance tasks, oral and written student presentations on specific concepts and processes, and a notebook including daily notes.

ACCOMMODATIONS AND MODIFICATIONS:
Any student who feels the course is moving too slowly and demonstrates mastery of the subject matter by consistently exceeding expectations for regular assignments is encouraged to meet with the teacher for more rigorous assignments and projects. More rigorous work will include alternate assignments and projects, not additional assignments. Work will be graded using the same standards for work completed by other students in the class. Conversely, a student with an IEP who needs more time to complete the work may have assignments modified to meet his/her needs.

CAREER RELATED LEARNING STANDARDS:
Students will demonstrate appropriate workplace behaviors (e.g. maintain regular attendance and be on time), apply decision-making and problem-solving techniques, demonstrate effective teamwork, apply the principles of effective communication to give and receive information, acquire, use, and transfer information, assess the relationship of educational achievement to career goals, research and analyze career options, assess characteristics related to personal, educational, and career goals, and demonstrate academic knowledge and technical skills required for successful employment.