College of Science and Health
Department of Mathematics
Course Syllabus

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Course Info: Math 1160-02: Precalculus

Textbook: College Algebra and Trigonometry by Ratti, Mcwaters and Skrzypek, 4th edition.

Description of Course:
A comprehensive study of exponential, logarithmic and trigonometric functions. Topics include function properties, exponential and logarithmic functions (their properties and graphs), solving exponential and logarithmic equations, trigonometric functions (their properties and graphs), trigonometric identities and solving trigonometric equations.

Course Prerequisites:
College Algebra - Math 1150 or by placement with permission from the Department Chairperson

Course Objectives:
To prepare students for calculus by introducing and investigating important transcendental functions (exponential, logarithmic and trigonometric) including their properties and applications. To integrate the knowledge of algebraic functions with transcendental functions and further develop critical thinking in problem solving.

Student Learning Outcomes:
Students will be able to:
- Work with graphs of exponential, logarithmic and trigonometric functions.
- Demonstrate the ability to think critically when solving exponential, logarithmic and trigonometric equations.
- Organize information from applied problems and use the relevant information to solve the problems.
- Effectively express precalculus concepts in presenting solutions to problems involving algebraic and transcendental functions.

Teaching Methods:
This course is taught as a lecture course with student participation.
1. Classroom lectures to illustrate concepts.
2. Student assignments to enhance concepts.
3. Web-based resources for independent learning and practice.

Course Expectations:
There will be two in-class exams, a <u>cumulative</u> final exam, and online homework assignments. Online homework assignment for each lecture will be posted on MyMathLab. To complete the homework, you must have a MyMathLab account. There will be no make-up exams for missed exams or the final. In cases of emergency, you must contact me before the exam date. Attendance to class is expected; students are responsible for everything from class even if not in attendance.

Grades will be based on homework, exams and a final exam using the following weights:

Homework	20%
2 Exams	25% each
Final Exam	30%

The following grade scale will be used as a basis for grades:

A	93	-	100 %		C	71	-	74.9
A-	89	-	92.9		C-	68	-	70.9
B+	85	-	88.9		D+	65	-	67.9
B	81	-	84.9		D	60	-	64.9
B-	78	-	80.9					
C+	75	-	77.9		F	0	-	59.9

Cell Phones and Electronic Devices:
Please turn your cell phone off during class. Cell phone and text-message conversations during class are forbidden. **You may not use a cell phone or any other electronic device other than an approved calculator during an exam.**

Important Dates:
- Withdrawal from the course with 100% refund: Wednesday, January 29
- Withdrawal from the course with 50% refund: Friday, March 6
- Withdrawal from the course with no refund: Thursday, April 9
- **Final Exam:** Friday, May 8

Plagiarism/Cheating:
For the exact statement of William Paterson University's polices on plagiarism and cheating see http://www.wpunj.edu/cte/wpu-academic-integrity-policy.html. It is your responsibility to read these policies, and you are expected to abide by the policies. Cheating/Plagiarism in this course could result in failure for the course and other disciplinary action.

Topical Outline of the Course Content	**Ratti-McWaters-Skrzypek 4th Edition**

I. Review of Functions
- Domain and Range of a Function
- Even and Odd Functions
- One-to-one Functions and the Horizontal Line Test
- Inverse Functions
- Graphs of One-to-one Functions and their Inverses

Chapter 2. GRAPHS AND FUNCTIONS.
- 2.4 Functions.
- 2.5 Properties of functions.
- 2.6 A library of functions.
- 2.7 Transformations of Functions.
- 2.8 Combining functions; composite functions.
- 2.9 Inverse functions.

II. Exponential and Logarithmic Functions
- Exponential Functions
- Graphs of Exponential Functions and their Properties
- The Natural Base *e*
- Logarithmic Functions
- Graphs of Logarithmic Functions and their Properties
- Solving Exponential and Logarithmic Equations
- Exponential and Logarithmic Models

4. EXPONENTIAL AND LOGARITHMIC FUNCTIONS.
- 4.1 Exponential Functions.
- 4.2 Logarithmic Functions.
- 4.3 Rules of Logarithms.
- 4.4 Exponential and Logarithmic Equations and Inequalities.

III. Trigonometric Functions
- Angles and their Measurement
- Trigonometric Functions (using the unit circle)
- Graphs of Trigonometric Functions
- Domain and Range of Trigonometric Functions
- Inverse Trigonometric Functions
- Applications of Trigonometry

5. TRIGONOMETRIC FUNCTIONS
- 5.1 Angles and their Measure.
- 5.2 Right-Triangle trigonometry.
- 5.3 Trigonometric Functions of any Angle; The unit circle.
- 5.4 Graphs of the Sine and Cosine Functions.
- 5.5 Graphs of other trigonometric functions.
- 5.6 Inverse of Trigonometric Functions.

7. APPLICATIONS OF TRIGONOMETRIC FUNCTIONS
- 7.1 The Law of Sines.
- 7.2 The Law of Cosines.

IV. Trigonometric Identities and Equations
- Elementary Trigonometric Identities
- Sum and Difference Formulas
- Double-Angle and Half-Angle Formulas
- The Laws of Sine and Cosine
- Trigonometric Equations

6. TRIGONOMETRIC IDENTITIES AND EQUATIONS.
6.1 Verifying Identities.
6.2 Sum and Difference Formulas.
6.3 Double-Angle and Half-Angle Formulas.
6.4 Product-to-sum Formulas.
6.5 Trigonometric Equations I.
6.6 Trigonometric Equations II.