



SYLLABUS AND CONTENTS OF MATH 140 (1436/1437)

Course Name: Precalculus

Course Number: Math 140

Prerequisite: None

Credit Hours: 2 hours

Actual Hours: 3 hours

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Semester SUMMER 1436-1437

Instructor Information

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Textbook:

Precalculus Made Simple, Second Edition, 2015

Authors:

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References:

- Precalculus a Graphing Approach, Ron Larson, Robert P. Hostetler, 5th edition, Cengage Learning, 2007.
- Precalculus, Ron Larson, Robert P. Hostetler, David C. Falvo, 8th edition, Cengage Learning, 2010.
- Precalculus: A Functional Approach to Graphing and Problem Solving, Karl Smith, 6th edition, Jones & Bartlett Publishers, 2011.

CONTENTS:

Equations and Inequalities: Linear Equations in One Variable, Linear Inequalities, Equations and Inequalities Involving Absolute value, Complex Numbers, Quadratic Equations.

Functions: Functions, Graphing Functions, Transformations of functions (odd and even), Operations on Functions, Inverse Functions.

Exponential and Logarithmic functions: Exponential Functions, Logarithmic Functions, Logarithmic and Exponential Equations.

Trigonometric Functions: Degree and Radian Measure, Unit Circle Approach, Right Triangle Approach, Evaluating Trigonometric Functions for General Angles, Inverse Trigonometric Functions.

Linear System and introduction to Matrices: System of Linear Equations in Two Variables, The Algebra of Matrices.

GOALS

In this course the student will:

- Understand the concepts of the equation, inequality in one variable, linear equation, linear inequality and its solution set.
- Solve linear equations and applications.
- Solve a linear inequality in one variable and write the solution set using interval notation, Line Graph and inequality notation.
- Solve a compound inequality in one variable.
- Solve equations and inequalities involving absolute value.
- Understand complex number and perform operations with complex numbers.
- Solve a quadratic equation by factoring, square root property, completing the square and quadratic formula
- Use the discriminant of a quadratic equation to determine what type of solutions it has.
- Explore the use of the quadratic formula in real-life problems
- Understand the concepts of a relation and a function, and determine their domain and range.
- Determine whether an algebraic rule in two variables or a graph in the xy-plane represents a function or not.
- Evaluate and Graph linear, piecewise and some special form of an absolute value functions.
- Find the x and y intercepts and identify the intervals on which a function is increasing, decreasing or constant.
- Understand the concepts of odd and even functions, and determine whether a function is odd, even or neither.
- Perform algebraic operations on functions, and determine their domains.
- Find the composition of two functions and determine its domain.
- Determine whether a given function is one to one or not, and Find the inverse.
- Understand the concepts and Evaluate exponential and logarithmic functions .
- Sketch the graph of exponential and logarithmic functions.
- Understand and use some basic properties of exponential and logarithmic functions
- Understand the relationship between logarithmic and exponential functions.
- Solve exponential and logarithmic equations and applications.
- Understand the concept of angle, common units of measure for angles and Convert degrees into radians and vice versa.
- Know the definition of the six basic trigonometric functions and their graphs.
- Find the exact value of the trigonometric functions using a point on the unit circle or a point on any circle.
- Identify the period of each of the trigonometric functions.
- Evaluate the trigonometric functions at different angles.
- Understand the meaning of restricted domain as it applies to the inverses of the trigonometric functions.
- Evaluate the inverses of the trigonometric functions.
- Evaluate composite functions involving inverse trigonometric functions.
- Understand the concepts of linear equation in two variables and system of linear equations in two variables.
- Solve a system of linear equations in two variables by graphing, elimination and substitution.
- Understand the concepts of matrix and some special types of matrices
- Add, subtract, scalar multiply and multiply matrices.
- Find the determinant of a matrix.

Evaluation:

The evaluation of the students will be continuous during the course and depends on the following:

Mid Term Exam	30	
Quizzes & Activities	10	(4 Quizzes)
Home works	10	(4 home works)
Final Exam	50	

Course Schedule and Contents:

Chapter	Week	Section	Examples	Exercises for Students
Chapter one Equations and Inequalities	Week 1	1.1 Linear Equations in One Variable.	3,4,5,6,7,8,10,11, 13,14.	2,3,5,6,8,12,14,15,17,19,24,25,27, 30.
		1.2 Linear Inequalities.	3,4,6,7,9,10,11.	1,4,5,6,10,11,12,14,15,20,23,24,2 7,30.
	Week 2	1.3 Equations and Inequalities Involving Absolute value.	1,2,3,4,5,7,8, Exercises:12,26.	1,3,,4,6,8,12,13,18,19,22,24,26,27 ,31, 32,33.
		1.4 Complex Numbers.	1,2,3,4,5,6,8,9,11,12.	1,6,7,9,12,14,16,22,24,26,33,34,3 5,38, 40,41, 46,50.
Chapter Two Functions	Week 3	1.5 Quadratic Equations.	3,4,5,6,7,8,9,10,11,12, 14,15,16,17,19.	1,3,8,9,12,15,16,18, 19,20,22,25,27,30, 31, 33,35,37,38,39.
		2.1 Functions	1,2,3,4,6,7 Exercises: 14,36.	2,4,6,8,12,13,14,18,19, 29,33,34,35,36.
	Week 4	2.2 Graphing Functions	1,2,3,4,5,7 Exercises: 9,38.	1,2,5,9,12,19,31,37,38,39.
		2.3 Transformations of functions	9, 10,11 Exercises: 9.	1,2,3,6,7,9,11,12,33,34,35.
		2.4 Operations on Functions	1,2,3,4,5.	3,10,15,16,17,18,24,30,31,38,42,5 4,55,62.
		2.5 Inverse Functions	1,3,4,5,6,7	1,2,3,6,10,12,14,19,24,37,40,44,4 6,48
Chapter Three Exponential and Logarithmic functions	Week 5	3.1 Exponential Functions	1,2,3,4,5,6	4,5,7,11,12,14,16, 17.
		3.2 Logarithmic Functions	1,2,3,4(a.b),5,7,8,10, 12.	1,4,5,6,11,13,14,15,18,26,27,31,3 2,34, 35,36,39,40,42.
		3.3 Logarithmic and Exponential Equations	1,2(a,b,d),3,5.	2,4,5,6,9,10,12,15, 16,17
Chapter Four Trigonometric Functions	Week 6	4.1 Degree and Radian Measure	3,4,5,6,7,8.	5,10,11,14,32,33,34,42,46,51,52,5 9,64.
		4.2 Unit Circle Approach	1,2,3,4,5.	2,3,7,8,10,12,15,19,20,27,28,29.

Chapter	Week	Section	Examples	Exercises for Students
Chapter Five Linear System and introduction to Matrices		4.3 Right Triangle Approach	1,2,3,4,5,6. Exercises:15.	3,8,11,13,14,15,16.
		4.4 Evaluating Trigonometric Functions for General Angles	All Examples.	1,3,5,7,8,13,17,19, 20,25,27.
		4.5 Inverse Trigonometric Functions	1,2,3,5.	1,2,4,9,13,14,15,16, 18,21.
	Week 7	5.1 System of Linear Equations in Two Variables	2,4,5,6,7,8. Exercises: 17.	1,5,10,21,24,33,37,46,51.
	5.2 The Algebra of Matrices	1,2,3,4,5,6,7,8,9,10,12, 13. Exercises: 7,10(b).	1,2,4,5,6,7,8(a,b,c,e),9(c,d,e),10	

تعليمات مهمة:

1. الخطة التي بين أيديكم أبنائنا الطلاب هي خطة مختصرة تتضمن الأشياء المهمة في المقرر. الخطة التفصيلية والتي تتضمن جميع الأشياء المتعلقة بالمقرر موجود على موقع التحضيرية على الرابط
<http://py.ksu.edu.sa/ar/node/1049>
2. يوجد فيديوهات تعليمية مرافقة لجميع وحدات المقرر تتضمن شرحاً تفصيلياً يقدمه مدربون متميزون من القسم. وهي فيديوهات مهمة جداً تساعدك على تعميق فهمك للمادة. الفيديوهات التعليمية موجودة على الرابط:
<http://py.ksu.edu.sa/ar/node/1055>
3. يحتسب الغياب منذ اليوم الأول من الفصل الدراسي إلى آخر يوم قبل الاختبارات النهائية.
4. في حال تأخر الطالب عن المحاضرة عشر دقائق يعتبر غائباً، وفي حالة حضوره خلال العشر دقائق الأولى يسجل متأخراً.
5. يحرم الطالب من المقرر إذا تجاوزت غيابه 25% من ساعات الحضور.