Deanship of the Preparatory Year
Preparatory Math Program

Course description of PMAT 102

Course Information
Course Name: Preparatory Mathematics-2
Course Code: PMAT-102
Text Book Name: Preparatory Mathematics
Text Book Edition: 1st Edition
Text Book Author(s): Cynthia Y. Young.
Credit Hours: 4
Contact Hours: 4
Lab Hours: 0

Course Description:

PMAT 102 is a theoretical course designed to provide basic knowledge of Functions and Relations, Domain, Range and Graphs of Functions, Transformations of Functions, Operations on Functions, Composition of Functions, Inverse Functions, Equations of Lines, Quadratic Functions, Polynomial Functions of Higher Degree, Rational Functions and Their Asymptotes, Exponential Functions and Their Graphs, Logarithmic Functions and Their Graphs, Properties of Logarithmic Functions, Exponential and Logarithmic Equations, angles, types of angles & their conversion from degree to radian and vice versa, triangles, special triangles, similar triangles and Pythagorean theorem & identities. In addition, the course covers graphs of sine, cosine and tangent functions. Simplification of trigonometric expression using Pythagorean, double angle, half angle identities is included in the course along with the inverse of sine, cosine and tangent functions.

Course Objectives:

The course objectives are listed as follows:

1. Understanding of the concept of a function and a relation and how to determine the domain and range of a function of different kinds of functions.
   Understanding of how to graph a function using different transformation techniques.
2. How to perform different operations on functions, i.e. how to find sum, difference, product and quotient of functions, and how to find their domain and range.
3. To find composition of functions and their domain and range.
4. To find inverse function, domain, range and graphing of inverse function.

5. Finding slope, x-intercept, y-intercept of a line and finding equation of a line using a point and slope, using a point and y-intercept. Finding equation of a line that passes through a point and is parallel and perpendicular to a given line.
6. Graphing a quadratic function in standard form, graphing a quadratic function in general form. Finding equation of parabola using vertex, axis of symmetry and observing if it opens up or opens down.
7. Identifying a polynomial functions and to determine its degree. Identifying the real zeroes of a polynomial function and their multiplicities. Determining the end behavior of a polynomial function.
8. Finding the domain of a rational function. Finding horizontal asymptotes, vertical asymptotes, x-intercept and y-intercept of a rational function.
9. Evaluating an exponential function, graphing an exponential function and finding the domain and range of an exponential function.
10. Writing exponential expressions to logarithmic expressions and writing logarithmic expressions to exponential expressions. Evaluating logarithmic expressions exactly. Giving concept of common and natural logarithms. Graphing of a logarithmic functions. Determining the domain and range of a logarithmic function.
11. Writing a single logarithmic as a sum or difference of logarithms. Writing a logarithmic expression as a single logarithm. Evaluating logarithms of a general base.
12. Solving logarithmic and exponential equations.
13. To understand the concept of angles, triangles and similar triangles.
14. To solves the trigonometric expression using Pythagorean, double and half angle identities.
15. To identify and distinguish between the graphs of sine, cosine and tangent.
16. To find the equation of the graph of sine, cosine and tangent.
17. To know the basic of trigonometric identities, and how are they derived.
18. To find the value of trigonometric expressions involving inverse trigonometric functions.
19. To comprehend the relation of the angles in a triangle, similarity of the triangles.
20. To verify the trigonometric identities and use these identities for verifying the given trigonometric expression.
21. To correlates the equation involving trigonometric function with its graphs.
22. To understand the properties of sine, cosine and tangent functions.
23. To solve the trigonometric function to find the amplitude, vertical asymptotes and the behavior of the function.

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Grading policy :

Assessment	Assessment task	Proportion of Final Assessment
1	Eight homework	5%
2	Eight Quizzes	15%
3	Class participation	5%
4	Midterm Examination	25%
5	Final Examination	50%
	Total	100%

Syllabus

Preparatory Year Program
Mathematics Department
PMAT 102 – Syllabus
Second Semester 2016-2017

Pre-Requisite	**PMAT 101**
Textbook	**Preparatory Mathematics by Cynthia Y. Young.**
Objectives	**The students are expected:** To comprehend the material of this course, to improve their computational skills and Trigonometry and to demonstrate their writing ability in Mathematics with logical steps. ***Please note that the medium of instruction will be strictly ENGLISH from the first day of classes.***

Week #	Date	Quizzes	Text Sections	Topic	Written Homework Pro
1	Feb 5 –Feb 9		5.1	Functions.	1, 3, 7, 9, 13, 16, 19, 22, 23, 32, 40, 4
			5.2	Graphs of functions.	3, 5, 7, 12, 17, 22, 24, 35, 37, 57
2	Feb12 –Feb16	Quiz 1	5.3	Graphing Techniques: Transformations. (Stretching & Shrinking not Included)	13, 15, 19, 22, 25, 29, 34, 50, 59, 64
			5.4	Operations on Functions.	1, 7, 9, 24, 28