Course Descriptor

ADD COURSE CODE & COURSE TITLE

Proposed Academic Year	2020/2021	**Last Reviewed Academic Year**	2019/2020
Course Code	FPBM001	**Course Title**	FALL
Credit hours	0	**Level of study**	FOUNDATION
College / Centre	CLFS	**Department**	MATH
Co-requisites		**Pre-requisites**	

1. COURSE OUTLINE

Basic Math Course includes Fundamentals that is the ideas about the Real numbers, Exponents and Radicals, Algebraic and Fractional Expressions, Equations and Inequalities, Coordinate Geometry and Lines. It contains Algebra of Polynomials and Rational Functions. It also describes the graphical and geometric properties of the Trigonometric Functions.

2. AIMS

Learning Outcomes *(Definitive)*

Upon successful completion of this course, students will be able to:

1. a) Describe the set of real numbers, all its subsets and their relationship.

    b) Identify and use the arithmetic properties of subsets of integers, rational, irrational, and real numbers.

2. a) Demonstrate an understanding of the exponent laws, and apply them to simplify expression and manipulate fraction, ratios, decimals, and percentages.

    b) Perform operations on polynomials and manipulate numerical and polynomial expressions.

    c) Simplify rational expressions and rationalize numerators or denominators.

    d) Recognize the concept of measurements and conversion from one unit to

    another.

3. a) Solve linear equations, equation involving radicals, fractional expression.

    b) Solve Quadratic Equation using Quadratic Formula.

    c) Solve the inequalities.

    d) Translate worded problems into mathematical expression and model simple real life problems with equations and inequalities.

4. a) Use coordinate plane to solve algebraic and geometric problem.

	b) Understand geometric concepts such as equation of a circle, perpendicular, parallel and tangent line.
5.	a) Identify the relationship between degree and radian measure of an angle and find the length of a circular arc and the area of a sector. b) Explain trigonometric and circular functions and use the fundamental trigonometric identities in various problems. c) Solve a right angle triangle using angle of elevation and depression. d) Apply knowledge of basic algebra and trigonometry in real life problems.
6.	a) Manage Time and accept responsibility by working in groups, following class room rules, meeting deadlines, using a variety of study techniques and maintaining portfolio with required information. b) Carry out research skills by using the library system or internet facility in assignments and for reference in studies. c) Take notes in an organized way by including learning outcomes, main ideas, formulas, equations, process and solving techniques, lesson wise information, daily reflection and summary of the lessons and glossary. d) Develop presentation skills by outlining and defining main concepts, enhancing mode of presentation, addressing questions from audience and inviting constructive feedback.

3.   LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes *(Definitive)* Upon successful completion of this course, students will be able to:	Teaching and Learning methods *(Indicative)*	Assessment *(Indicative)*
5. 1.a) Describe the set of real numbers, all its subsets and their relationship. b) Identify and use the arithmetic properties of subsets of integers, rational, irrational, and real numbers.	Lectures and seminars Distance learning using Microsoft teams program	In-class tests, quizzes Using MOODLE
6. a) Demonstrate an understanding of the exponent laws, and apply them to simplify expression and manipulate fraction, ratios, decimals, and percentages.	Group work, presentations, lab work, CALL, etc Distance learning using Microsoft teams program	Self-reflective journal In-class tests, quizzes Using MOODLE

	b) Perform operations on polynomials and manipulate numerical and polynomial expressions. c) Simplify rational expressions and rationalize numerators or denominators. d) Recognize the concept of measurements and conversion from one unit to another.		
7.	a) Solve linear equations, equation involving radicals, fractional expression. b) Solve Quadratic Equation using Quadratic Formula. c) Solve the inequalities. d) Translate worded problems into mathematical expression and model simple real life problems with equations and inequalities.	Group work, presentations, lab work, CALL, etc Distance learning using Microsoft teams program	Class Presentation, Written Examination In-class tests, quizzes Using MOODLE
8.	a) Use coordinate plane to solve algebraic and geometric problem. b) Understand geometric concepts such as equation of a circle, perpendicular, parallel and tangent line.	Group work, presentations, lab work, CALL, etc Distance learning using Microsoft teams program	Case Study report In-class tests, quizzes Using MOODLE
5.	a) Identify the relationship between degree and radian measure of an angle and find the length of a circular arc and the area of a sector. b) Explain trigonometric and circular functions and use the fundamental trigonometric identities in various problems. c) Solve a right angle triangle using angle of elevation and depression.	Group work, presentations, lab work, CALL, etc Distance learning using Microsoft teams program	In-class tests, quizzes Using MOODLE

	d) Apply knowledge of basic algebra and trigonometry in real life problems.		
6.	a) Manage Time and accept responsibility by working in groups, following class room rules, meeting deadlines, using a variety of study techniques and maintaining portfolio with required information. b) Carry out research skills by using the library system or internet facility in assignments and for reference in studies. c) Take notes in an organized way by including learning outcomes, main ideas, formulas, equations, process and solving techniques, lesson wise information, daily reflection and summary of the lessons and glossary. d) Develop presentation skills by outlining and defining main concepts, enhancing mode of presentation, addressing questions from audience and inviting constructive feedback.	Group work, presentations, lab work, CALL, etc Distance learning using Microsoft teams program	In-class tests, quizzes Using MOODLE

4.   ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Final Examination	40
Mid Term Examination	20
Quizzes	15
Assignments	10
Portfolio	10

Participation	5
TOTAL	**100%**

5.   ACHIEVING A PASS

Students will achieve **xx** credit hours for this course by passing **ALL** of the course assessments *[alternatively, list the compulsory pass assessments*]* and achieving a **minimum overall score of xx%**

*NB *Ensure that ALL learning outcomes are taken into account*

6.   COURSE CONTENT (Indicative)

Course Delivery Plan	Basic Math	
Week	**Lecture Topics**	**Learning outcomes**
1	**Introduction (Basic concepts of Mathematics)**	
2	**Fundamentals: -** Real Numbers: Different types of real numbers & Properties.	1a
	Properties of negatives, properties of fraction.	1b
3	Arithmetic operations using LCD, The Real Line, Conversion between Decimals, Fractions and Percentage.	1a,b, 2a
	Exponents & Radicals: Integer exponents, Rules for working with Exponents.	2a
4	Scientific Notation, Radicals and Rational exponents; Radical form and rational exponential form.	2a
	Unit conversion. (**Quiz 1**) **(Learning outcome 1)**	2d
5	Polynomials, Arithmetic Operations on Polynomials, Foil Method **Assignment 1 (Learning outcome 2)**	2b
	Special Product Formulas , Factoring by special factoring formulas	2b
5	Factoring the trinomial.	2b
	Revision, (Learning outcomes 1,2) **Mid – Term Test (Learning outcomes 1,2)**	1,2
6	Long division, Rational expressions; Simplifying rational expression. Multiplying and dividing Rational expressions.	2b, c
	Adding and subtracting Rational expressions, Rationalizing the numerator and denominator.	2c
6	**Equations & Inequalities: -** Equations: solving linear equations, Solving quadratic equations by factoring. Solving quadratic equations by quadratic formula.	3a, b

	Modeling with equations. Inequalities; Solving linear inequalities, Application problems. **Assignment 2 (Learning outcomes 3)**		3c,d
7	**Coordinate Geometry**: The coordinate plane, Graph of equations in two variables, Finding intercepts graphically.		4a
	Distance and Midpoint Formulas and its application in real life, Equation of a Circle.		4a, b
8	Lines: slope of a line, point-slope form, slope intercept form, vertical and horizontal line, Parallel, perpendicular and tangent lines.		4b 5a
	Trigonometric Functions: Angle measure; Relationship between degree and radian, Length of a circular arc and area of a circular sector, Application questions. **(Quiz 2) (Learning outcome 4)**		5a
8	Trigonometry of right triangles; Finding trigonometric ratios, values of the trigonometric ratios.		5a
	Solving a right triangle , Applications of trigonometry of right triangles using Angle of elevation & angle of depression.		5c, d
9	Trigonometric functions of angles; Signs of trigonometric functions, Trigonometric Identities.		5b
	Evaluating trigonometric functions, Application problems.		5d
9	**(Quiz 3) (Learning outcomes 5)**		3,4,5
10	**Review and Practice (Learning outcomes 1,2,3,4,5)**		1,2,3,4,5
11	**Final Examination (Learning Outcomes 1,2,3,4,5)**		1,2,3,4,5

TOTAL HOURS	
Plus **RECOMMENDED INDEPENDENT STUDY HOURS 30**	
TOTAL COURSE HOURS 30	

7.   RECOMMENDED REFERENCES

Core text/s:

Pre-calculus Mathematics for Calculus, Authors: JAMES STEWART, LOTHAR REDLIN AND SALEEM WATSON.

Library + online resources:

Library Resources:

1. **Title of book: Active Mathematics, Authors: B. V. HONY AND D. A. TURNER.**
2. **Title of book: Mathematics for the Future, Authors: JIM MILLER AND GRAHAM NEWMAN.**
3. **Title of book: Extended Mathematics, Author: COLIN NYE.**
4. **Title of book: Applied Calculus 11th – edition, Authors: HOFFMANN, BRADLEY, SOBECKI AND PRICE.**

1) http://www.purplemath.com/modules/index.htm
2) http://en.wikipedia.org/wiki/Portal:Mathematics#Topics_in_mathematics
3) http://www.coolmath.com/precalculus-review-calculus-intro/index.html
4) http://www.freemathhelp.com/
5) http://www.intmath.com/
6) http://www.mathsisfun.com/index.htm
7) http://patrickjmt.com/
8) http://hotmath.com/hotmath_help/topics/index_hotmath_review.html
9) http://www.brightstorm.com/math/precalculus/
10) http://www.khanacademy.org/math/algebra/algebra-functions

Open Educational Resources:
Pre-calculus Mathematics for Calculus, Authors: JAMES STEWART, LOTHAR REDLIN AND SALEEM WATSON.