Department	International College of Liberal Arts		
Semester	Fall 2023	Year Offered (Odd/Even/Every Year)	Every Year
Course Number	QREA102		
Course Title	College Algebra		
Prerequisites	None		
Course Instructor	JHINGAN Sanjay	Year Available (Grade Level)	1
Subject Area	Quantitative Reasoning & Natural Sciences	Number of Credits	3
Class Style	Lecture	Class Methods	Face to face

(NOTE 1) Class Methods are subject to change

(NOTE 2) Depending on the class size and the capacity of the facility, we may not be able to accommodate all students who wish to register for the course"

Course Description	The course covers a broad range of topics whose understanding is necessary for taking upper level courses. It does not require any previous knowledge (except elementary high school mathematics). The course covers all the topics of a standard College Algebra course: (i) sets and numbers; (ii) Equations and inequalities; (iii) Coordinates and graphs; (iv) Functions (polynomials, rational functions; logarithms; exponentials; etc.); (v) Systems of equations; (vi) Matrices and determinants.
Class plan based on course evaluation from previous academic year	Based on student feedback from previous offering of this course, there will be regular in-class quizzes. This will help students understand better their learning and over all progress.
Course related to the instructor's practical experience (Summary of experience)	Not applicable.
Learning Goals	At the end of this course, students should have gained basic literacy in mathematics and be able to: (i) solve algebraic equations and inequalities; (ii) plot the graph of a function, (iii) perform algebraic simplifications with functions (e.g.: factorization and simplification of functional expressions involving trigonometric functions, polynomials, logarithms, exponentials, etc.); (iv) solve systems of linear equations; (v) do basic operations with matrices. At the end of the course, the students should have enough preparation to follow more advanced courses (for example, statistics, calculus, and subjects requiring elementary quantitative skills.). The emphasis of the course will be on developing quantitative reasoning and critical thinking skills.

iCLA Diploma Policy	DP2

iCLA Diploma Policy

(DP1) To Value Knowledge - Having high oral and written communication skills to be able to both comprehend and transfer knowledge

(DP2) To Be Able to Adapt to a Changing World - Having critical, creative, problem-solving, intercultural skills, global and independent mindset to adopt to a changing world

(DP3) To Believe in Collaboration - Having a disposition to work effectively and inclusively in teams

(DP4) To Act from a Sense of Personal and Social Responsibility - Having good ethical and moral values to make positive impacts in the world

Active Learning Methods	Active learning method in this class requires students to work individually or in groups, to solve problems, propose solutions, and explain ideas in writing. Problem-Based learning.
Use of ICT in Class	UNIPA (LMS system), Office 365.
Use of ICT outside Class	UNIPA (LMS system), Office 365.
Expected study hours outside class	It is important to work each day, especially before and after the class. Plan to spend 6 to 8 hours per week for the class.
Feedback Methods	UNIPA, and Office 365 will be used for regular feedback to quizzes. Student can use office hours for discussion.

Grading Criteria		
Grading Methods	Grading Weights	Grading Content
In-class quizzes	100%	Eight quizzes will be conducted during the course.

Required Textbook(s)	Michael Sullivan: Algebra and Trigonometry, Pearson (all editions are ok) Robert Blitzer: College Algebra, Pearson (all editions are ok)
Other Reading Materials/URL	Any book on college algebra covering below mentioned topics is accepted for this course and students should feel free to choose any textbook they feel comfortable with. There are several books available online for free download. College Algebra, Jay Abramson (available for free download: https://openstax.org/details/books/college-algebra)
Plagiarism Policy	Plagiarism is the dishonest presentation of the work of others as if it were one's own. Duplicate submission is also treated as plagiarism. Depending on nature of plagiarism you may fail the assignment or the course. Repeated act of plagiarism will be reported to the University which may apply additional penalties.
Other Additional Notes	This class will be conducted primarily as an interactive lecture. Students are expected to participate in class discussions in an inquisitive, thoughtful, and constructive manner. We will follow the textbook reasonably closely and students should review the suggested study materials before joining the class. To have a better grade be regular in the course, be active and attentive in the class, do revision of classwork on a regular basis, and participate in class quizzes. Students will have a choice between a creative project that interprets the essence of a mathematical idea and a problem-solving project that uses techniques from the course to solve a problem that has not been considered in class. Project can be chosen freely based on student's field of interest, or from one of the topics in the textbook. Students are invited and encouraged to discuss all phases of the project with the instructor and among each other.

(NOTE 3) Class schedule is subject to change

Class Schedule	
Class Number	Content
Class 1	Lecture 1 Prerequisites: Basic mathematics, Sets, numbers, algebra essentials, polynomials etc.
Class 2	Lecture 2 Prerequisites: Sets.
Class 3	Lecture 3 Prerequisites: Numbers, algebra essentials, polynomials etc.
Class 4	Lecture 4 Prerequisites: Review. In-class quiz.
Class 5	Lecture 5 Equations and Inequalities: Linear, quadratic equations.
Class 6	Lecture 6 Equations and Inequalities: Complex numbers, inequalities.
Class 7	Lecture 7 Equations and Inequalities: Problem solving.
Class 8	Lecture 8 Equations and Inequalities: Review. In-class quiz.
Class 9	Lecture 9 Graphs: Connecting algebra and geometry using idea of coordinates.
Class 10	Lecture 10 Graphs: Graph of equation in two variables - straight lines.
Class 11	Lecture 11 Graphs: Graph of equation in two variables - circles.
Class 12	Lecture 12 Graphs: Review. In-class quiz.

Class 13	Lecture 13 Functions and Graphs: Functions: how to graph.
Class 14	Lecture 14 Functions and Graphs: Functions: Properties, graphing techniques (transformations).
Class 15	Lecture 15 Functions and Graphs: Review. In-class quiz.
Class 16	Lecture 16 Linear and Quadratic functions: Linear functions, linear models.
Class 17	Lecture 17 Linear and Quadratic functions: Quadratic functions, quadratic models.
Class 18	Lecture 18 Linear and Quadratic functions: Review. In-class quiz
Class 19	Lecture 19 Polynomial and Rational functions: Polynomial functions and its graphs.
Class 20	Lecture 20 Polynomial and Rational functions: Rational functions and its graphs.
Class 21	Lecture 21 Polynomial and Rational functions: Review. In-class quiz.
Class 22	Lecture 22 Transcendental functions: Logarithmic and Exponential functions.
Class 23	Lecture 23 Transcendental functions: Financial models.
Class 24	Lecture 24 Transcendental functions: Growth and Decay models.
Class 25	Lecture 25 Logarithmic and Exponential functions: Review. In-class quiz.

Class 26	Lecture 26 System of equations and inequalities: Method of Substitution and Elimination.
Class 27	Lecture 27 System of Equations: Matrices.
Class 28	Lecture 28 System of Equations: Determinants.
Class 29	Lecture 29 System of Equations: Matrix algebra.
Class 30	Lecture 30 System of equations: Review. In class quiz.