COURSE OUTLINE : MATH 30
D Credit – Degree Applicable
COURSE ID 010376
Created: October 2018
Revision: March 2021 & September 2021

COURSE DISCIPLINE : MATH

COURSE NUMBER : 30

COURSE TITLE (FULL) : Intermediate Algebra and Pre-Statistics

COURSE TITLE (SHORT) : Inter Alg & Pre-Stats

ACADEMIC SENATE DISCIPLINE: Mathematics

CATALOG DESCRIPTION

MATH 30 is a one-semester course to prepare students for success in transfer-level Statistics and Liberal Arts Math (SLAM) courses. Students will explore curve plotting, linear equations and inequalities, radicals, functions, exponential and logarithmic functions, descriptive statistics, graphical and numerical statistics for quantitative and categorical data, modeling bivariate data with linear, exponential, and logarithmic functions, introductory set theory, and introductory probability.

CATALOG NOTES

Note: This course is optional for students who place into transfer-level SLAM courses.

Total Lecture Units:5.00

Total Laboratory Units: 0.00

Total Course Units: 5.00

Total Lecture Hours:90.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 90.00

Total Out-of-Class Hours: 180.00

Prerequisite: Placement is based on an academic background.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	MATH	15	Foundations of Algebra	Add, subtract, multiply, and divide real numbers;	Yes
2	MATH	15	Foundations of Algebra	convert between percents, decimals and fractions;	Yes
3	MATH	15	Foundations of Algebra	solve introductory linear equations and inequalities;	Yes
4	MATH	15	Foundations of Algebra	simplify introductory exponential expressions;	Yes
5	MATH	15	Foundations of Algebra	add, subtract, multiply and divide polynomials;	Yes
6	MATH	15	Foundations of Algebra	graph introductory linear equations and inequalities;	Yes
7	MATH	15	Foundations of Algebra	find the equation of a line;	Yes
8	MATH	15	Foundations of Algebra	solve linear systems using graphing, substitution and elimination methods;	Yes
9	MATH	15	Foundations of Algebra	use algebra to solve applied problems;	Yes
10	MATH	15	Foundations of Algebra	factor polynomials;	Yes
11	MATH	15	Foundations of Algebra	demonstrate knowledge of test-taking strategies and study skills.	Yes

EXIT STANDARDS

1 Solve equations with one radical;
2 solve absolute value equations and inequalities;
3 solve linear equations and inequalities;
4 find the equation of a line and interpret the slope and intercept;
5 solve applied problems;
6 solve equations with one logarithmic or exponential expression;
7 graph functions (linear, exponential, logarithmic);
8 compute basic statistics for a variable, including mean, median, mode, quartiles, range, variance and standard deviation;
9 describe the distribution of a quantitative variable in terms of its shape, center and spread, using graphical techniques;
10 apply addition and multiplication rules of probability in problem solving including computing expected value;
11 identify probability models and compute their areas;
12 graph and interpret bivariate data through the use of scatterplots, regression, and correlation.

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STUDENT LEARNING OUTCOMES

1 Simplify expressions, solve various types of equations, inequalities, and probability problems, and produce and analyze graphs of one or two variables, including various types of algebraic and transcendental functions and bivariate data;
2 Use statistical methods and technological tools to formulate and analyze mathematical models for a variety of real-world phenomena, using data that has been collected from a population and organized in an appropriate visual manner.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Descriptive Statistics Basic Statistics • Simple random samples and sampling bias • Measures of center: mean, median, and mode • Measures of spread: standard deviation, variance, interquartile range, and range • Summation notation Graphs of one variable • Histograms • Stem plots • Box plots • Bar chart • Pie chart Graphs of two variables • Linear equations and inequalities with one and two variables, including absolute values • The rectangular coordinate system • Scatterplots • The slope of a line • Equations of lines • Regression lines • Applications using systems of equations • Correlation	24	0	24
2	Exponents and radical equations • Exponents and scientific notation • Solving equations with one radical	6	0	6

3	Exponential and logarithmic functions Exponential functions Logarithmic functions Common and natural logarithms Applications of exponential and logarithmic functions • Simple vs. compound interest • Annuities • Applications (Investing: long term vs short term, Borrowing: short vs long term; cost and benefits, Credit cards, Loans: payoff and monthly payments, Student loans, Mortgages, Richter Scale) Curved quantitative relationships • Exponential relationships with technology • Logarithmic relationships with technology	20	0	20
4	Basic set theory and probability Set theory • The real number system • Subsets • Complements • Unions and intersections • Counting techniques, permutations, and combinations Probability rules • Addition and multiplication rules • Conditional probability, dependent and independent events • 2-way tables • Expected Value • Applications (cards, dice, lottery, odds) Probability models • General discrete probability models • Normal and uniform distributions	24	0	24

5	Affective Domain and Metacognition • Information vs knowledge (concept maps) • Study plans • Mindset (growth, resilience, hardiness, and grit) • Reading and cognitive techniques • Study and test taking skills	16	0	16
				90

OUT OF CLASS ASSIGNMENTS

1 homework (e.g. problems sets related to course content);
2 project(s) using datasets and technology culminating in a written report (e.g. analyze data provided involving price and quantity of soda and construct a scatter plot and linear regression model using Excel).

METHODS OF EVALUATION

1 quizzes;
2 five to eight examinations are required;
3 a comprehensive final examination is required.

METHODS OF INSTRUCTION

- [x] Lecture
- [ ] Laboratory
- [ ] Studio
- [x] Discussion
- [x] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [x] Collaboratory Learning
- [ ] Demonstration
- [ ] Field Activities (Trips)
- [x] Guest Speakers
- [x] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Intermediate Algebra and Pre-Statistics, Custom Published for GCC	Required	Pearson	1	Print	Lehmann, Jay	1323942416	2019