

Area II Course Level Outcomes: College Algebra

Core Competency	Emerging	Developing	Proficient	Assessment Suggestions
<p>GRAPHICAL REPRESENTATIONS Construct and analyze graphs and/or data sets.</p>	<p>Sketch the graphs of linear, quadratic, higher-order polynomial, rational, absolute value, exponential, logarithmic, and radical functions.</p>	<p><i>Emerging skill description plus</i></p> <p>Determine the key features of a function such as domain/range, intercepts, and asymptotes.</p>	<p><i>Emerging and Developing skill descriptions plus</i></p> <p>Construct graphs using a variety of techniques including plotting points, using properties of basic transformations of functions, and by using key characteristics of functions such as end behavior, intercepts and asymptotes.</p>	<ul style="list-style-type: none"> • Pre/post test • Test/quiz questions • Routine use of an accepted Classroom Assessment Technique (CAT) • Oral presentation by student • Written presentation by student • Student-created portfolio • Capstone project • Peer review • Student self-assessment • Group research and presentation on a real-life problem analyzed/solved by using algebra
<p>EXPRESSIONS & EQUATIONS Evaluate expressions. Use and solve various kinds of equations.</p>	<ul style="list-style-type: none"> • Solve quadratic equations using techniques such as factoring, completing the square, the square root method, and the quadratic formula. • Solve equations algebraically to answer questions about graphs, and use graphs to estimate solutions to equations. 	<p><i>Emerging skill descriptions plus</i></p> <p>Solve equations using inverse operations for powers/roots, exponents/logarithms and other arithmetic operations.</p>	<p><i>Emerging and Developing skill descriptions plus</i></p> <p>Use the equation of a function to determine its domain, to perform function operations, and to find the inverse of a function.</p>	
<p>MATHEMATICAL & STATISTICAL LANGUAGE Write mathematical explanations using appropriate definitions and symbols.</p>		<p>Communicate mathematical information using proper notation and verbal explanations.</p>	<p><i>Developing skill description plus</i></p> <p>Describe the implications of key features of a function with respect to its graph and/or in relation to its real world context.</p>	
<p>PROBLEM SOLVING Solve problems in mathematical contexts.</p>	<ul style="list-style-type: none"> • Memorize key features of commonly used functions including domain, range, and graphical representation. 	<p><i>Emerging skill description plus</i></p> <ul style="list-style-type: none"> • Solve application problems, including those requiring maximization or minimization, of quadratic functions and exponential growth & decay problems. • Apply knowledge of functions to identify an appropriate type of function to solve application problems. 	<p><i>Emerging and Developing skill descriptions plus</i></p> <ul style="list-style-type: none"> • Interpret the results of application problems in terms of their real world context. • Solve contextual problems by identifying the appropriate type of function given the context and by creating a formula based on the information given. 	

Area II Course Level Outcomes: Liberal Arts Math

Core Competency	Emerging	Developing	Proficient	Assessment Suggestions
<p>GRAPHICAL REPRESENTATIONS Construct and analyze graphs and/or data sets.</p>	<ul style="list-style-type: none"> Gather and organize information. Understand the purpose and use of various graphical representations such as tables, line graphs, tilings, networks, bar graphs, etc. 	<p><i>Emerging skill descriptions plus</i></p> <p>Interpret results through graphs, lists, tables, sequences, etc.</p>	<p><i>Emerging and Developing skill descriptions plus</i></p> <p>Draw conclusions from data or various graphical representations.</p>	<ul style="list-style-type: none"> Test/quiz questions Routine use of an accepted Classroom Assessment Technique (CAT) Oral presentation by student Written presentation by student
<p>EXPRESSIONS & EQUATIONS Evaluate expressions. Use and solve various kinds of equations.</p>	<ul style="list-style-type: none"> Understand the purpose of formulas. Use appropriate formulas within a mathematical application. 	<p><i>Emerging skill descriptions plus</i></p> <p>Solve equations within a mathematical application.</p>	<p><i>Emerging and Developing skill descriptions plus</i></p> <p>Check answers to problems and determine the reasonableness of results.</p>	<ul style="list-style-type: none"> Student-created portfolio Capstone project Peer review Student self-assessment Group research and presentation on a real-life problem analyzed/solved by using mathematics
<p>MATHEMATICAL & STATISTICAL LANGUAGE Write mathematical explanations using appropriate definitions and symbols.</p>	<p>Show an understanding of a mathematical application both orally and in writing.</p>	<p><i>Emerging skill description plus</i></p> <p>Describe solutions of mathematical problems in the context of the problems.</p>	<p><i>Emerging and Developing skill descriptions plus</i></p> <p>Define mathematical concepts in the student's own words.</p>	<ul style="list-style-type: none"> Student journal Individual or group projects
<p>PROBLEM SOLVING Solve problems in mathematical contexts.</p>	<p>Translate mathematical information into symbolic form.</p>	<p><i>Emerging skill description plus</i></p> <p>Gather and organize relevant information for a given application.</p>	<p><i>Emerging and Developing skill descriptions plus</i></p> <ul style="list-style-type: none"> Draw conclusions and communicate the findings. Create an effective problem solving strategy. 	<ul style="list-style-type: none"> Cooperative learning activities Pre/post test

Area II Course Level Outcomes: Statistics

Core Competency	Emerging	Developing	Proficient	Assessment Suggestions
GRAPHICAL REPRESENTATIONS Construct and analyze graphs and/or data sets.	Organize data and display in frequency distribution	<i>Emerging skill description plus</i> Find percentile points and ranks for a frequency distribution.	<i>Emerging and Developing skill descriptions plus</i> Graph data distributions using the correct format for graphs, to include: histograms, frequency polygons, box plots and scatter plots and draw appropriate inferences.	<ul style="list-style-type: none"> • Pre/post test • Test/quiz questions • Routine use of an accepted Classroom Assessment Technique (CAT) • Oral presentation by student • Written presentation by student • Student-created portfolio • Capstone project • Peer review • Student self-assessment • Group research and presentation on a real-life problem analyzed/solved by using statistics
EXPRESSIONS & EQUATIONS Evaluate expressions. Use and solve various kinds of equations.	<ul style="list-style-type: none"> • Compute mean, median, mode, and standard deviation. • Determine basic probabilities and probabilities associated with the standard normal curve. 	<i>Emerging skill descriptions plus</i> <ul style="list-style-type: none"> • Calculate and interpret the least squares regression equation and the linear correlation coefficient. • Compute sampling distributions of sample means. • Compute the mean and standard deviation of sample means. • Calculate test statistics. • Calculate probabilities using the standard normal distribution and relate them to areas under the curve. 	<i>Emerging and Developing skill descriptions plus</i> <ul style="list-style-type: none"> • Calculate probabilities using compound probability rules and the binomial distribution and its properties. • Calculate margin of error given sample size and sample size given margin of error. • Construct confidence intervals for population means and proportions. 	
MATHEMATICAL & STATISTICAL LANGUAGE Write statistical explanations using appropriate definitions and symbols.	<ul style="list-style-type: none"> • Use Z-scores appropriately. • Construct probability distributions. • Write confidence intervals. • Define parameters and statistic. • Distinguish between population and samples, and parameters and statistics. • Use statistical vocabulary appropriately. • Distinguish between qualitative and quantitative data. • Give examples of independent and dependent variables. 	<i>Emerging skill descriptions plus</i> <ul style="list-style-type: none"> • Understand the Central Limit Theorem and when to apply it. • Write null and alternate hypotheses. • Understand the concept of significance level and P values. • Explain and evaluate statistics used in the real world (from a news article, research project, etc.) • Distinguish between descriptive and inferential statistics. • Explain the difference between correlation and causation. 	<i>Emerging and Developing skill descriptions plus</i> <ul style="list-style-type: none"> • Apply the steps for inference/hypothesis testing. • Describe the basic elements of sampling and experimental design. • Describe the relationship between the sampling distribution and the population distribution. • Use the Central Limit Theorem to approximate the probability distribution and calculate probabilities. • Explain why a test can lead us to reject the null hypothesis. 	
PROBLEM SOLVING Solve problems in statistical contexts.	<ul style="list-style-type: none"> • Determine appropriate methods to display data. • Compare measures using Z-scores. • Identify and analyze outliers. • Determine whether a statistical test is appropriate under stated conditions. 	<i>Emerging skill descriptions plus</i> <ul style="list-style-type: none"> • Use least-square regression equations to predict values. • Select appropriate sampling techniques. • Interpret basic probabilities. • Identify null and alternative hypotheses. • Interpret the meaning of the coefficient of determination. 	<i>Emerging and Developing skill descriptions plus</i> <ul style="list-style-type: none"> • Determine if random variables are continuous or discrete. • Choose and construct appropriate hypothesis tests for population means and proportions. • Determine if the binomial distribution can be approximated with the normal distribution. • Perform and interpret statistical tests and determine whether data is statistically significant. 	