COURSE OUTLINE: MTH191 - MATH II

Prepared: Mathematics Department
Approved: Karen Hudson, Dean, Community Services and Interdisciplinary Studies

Course Code: Title	MTH191: MATH II FOR PADD
Program Number: Name	3065: PRE-HEALTH DIP DGR
Department:	PRE-HEALTH
Academic Year:	2024-2025
Course Description:	By the end of this course, students will have demonstrated the ability to graph, describe, and evaluate quadratic, exponential, and logarithmic functions. Critical thinking and problem-solving skills will continue to develop through exposure to application problems including exponential growth, radioactive decay, and pH. Students will use numerical methods along with graphs, charts, and tables to effectively describe data, calculate the empirical and theoretical probability of simple events using key rules of probability, and apply descriptive and inferential statistics to applications from the health care fields.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	MTH190
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**3065 - PRE-HEALTH DIP DGR** VLO 3 Solve numeric problems and interpret data related to health sciences and other science-related fields using mathematical concepts, including algebra and probability, along with descriptive and inferential statistics.
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 10 Manage the use of time and other resources to complete projects.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Books and Required Resources:	Calculator - Sharp EL-531 (available in the bookstore)
Course Outcomes and Learning Objectives:	

Course Outcome 1	Learning Objectives for Course Outcome 1

1. Quadratic Functions.	1.1 Recognize functions as quadratic. 1.2 Solve quadratic equations using the quadratic formula. 1.3 Sketch the graph of a quadratic function using the vertex, x-y intercepts, and axis of symmetry. 1.4 Interpret and solve application problems involving optimization, finding original values, and evaluating the independent variable when the dependent variable is zero.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Exponential and Logarithmic Functions.	2.1 Identify the graph of basic exponential and logarithmic functions. 2.2 Rewrite equations in exponential or logarithmic form. 2.3 Solve exponential and logarithmic equations. 2.4 Apply exponential equations to solve exponential growth, decay, and isotope half-life application problems. 2.5 Use logarithmic equations to determine solution pH and hydrogen ion concentration.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Statistics.	3.1 Describe the meaning of the term statistics, why statistics are important in the health sciences, and the role of statistics in the research process. 3.2 Describe the difference between descriptive and inferential statistics. 3.3 Define and explain the differences between a population and a sample, a population parameter, and sampling statistic. 3.4 State and explain the differences and similarities between different sampling methods.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Organizing Data.	4.1 Differentiate between qualitative and quantitative data. 4.2 Construct and interpret common graphical representations of data, including histograms, bar charts, and pie charts. 4.3 Define the term frequency and calculate a frequency distribution, relative frequency distribution, and cumulative frequency distribution. 4.4 Construct and interpret frequency tables for nominal and ordinal data.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Data Management.	5.1 Explain why central tendency and dispersion are important. 5.2 Calculate the mean, median, and mode for a set of data and explain what these measures represent. 5.3 Identify the types of variables that the mean, median, and mode are most appropriate. 5.4 Discribe skewness and how it affects the mean. 5.5 Define the term outlier and its impact on central tendency and dispersion. 5.6 Calculate range, inter-quartile range, variance, standard deviation, and percentiles.
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Scatter Plots and	6.1 Differentiate between independent and dependent

	Correlation.	variables. 6.2 Construct scatter plots and determine whether a correlation is significant. 6.3 Predict the value for the dependent variable based on a given equation.
	Course Outcome 7	**Learning Objectives for Course Outcome 7**
	7. Probability.	7.1 Explain the concept of probability. 7.2 Construct sample spaces and determine the probability of a simple event. 7.3 Describe simple, mutually exclusive, and non-mutually exclusive probability. 7.4 Determine the complement of an event. 7.5 Use the additive and multiplicative rules of probability. 7.6 Determine event probabilities by constructing and interpreting contingency tables.
	Course Outcome 8	**Learning Objectives for Course Outcome 8**
	8. Probability Distributions.	8.1 Differentiate between discrete and continuous probability distributions. 8.2 Determine event probabilities for a given discrete probability distribution. 8.3 Explain the concept of the standard normal distribution and its importance for inference. 8.4 Calculate event probabilities based on transforming raw scores to z-scores and percentiles and understand how they are applied to decision-making situations. 8.5 Transform z-scores into raw scores given an event probability. 8.6 Apply the central limit theorem for means and proportions. 8.7 Estimate the confidence interval for means and proportions.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Tests	100%

Date: October 9, 2024

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.