



# COURSE OUTLINE

## MTH181

Prepared: Mathematics Department    Approved: Sherri Smith

<b>Course Code: Title</b>	MTH181: MATH II FOR PCD				
<b>Program Number: Name</b>	3060: PRE-HEALTH CERT DIPL				
<b>Department:</b>	PRE-HEALTH				
<b>Semester/Term:</b>	18W				
<b>Course Description:</b>	By the end of this course, students will have demonstrated the ability to graph, describe, and evaluate linear, 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.				
<b>Total Credits:</b>	3				
<b>Hours/Week:</b>	3				
<b>Total Hours:</b>	45				
<b>Prerequisites:</b>	MTH180				
<b>Vocational Learning Outcomes (VLO's):</b>  Please refer to program web page for a complete listing of program outcomes where applicable.	#3. Solve basic numeric problems and interpret data related to health sciences and other science-related fields using mathematical concepts, including algebra, basic probability and descriptive statistics.				
<b>Essential Employability Skills (EES):</b>	#3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #10. Manage the use of time and other resources to complete projects.				
<b>Course Evaluation:</b>	Passing Grade: 50%, D				
<b>Evaluation Process and Grading System:</b>	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Tests</td> <td>100%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Tests	100%
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### Course Outcomes and Learning Objectives:

#### Course Outcome 1.

1. Quadratic Functions

#### Learning Objectives 1.

- 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.

2. Exponential and Logarithmic Functions

#### Learning Objectives 2.

- 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.

3. Statistics

#### Learning Objectives 3.

- 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.



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- 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.**

- 4. Organizing Data

### **Learning Objectives 4.**

- 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.**

- 5. Data Management

### **Learning Objectives 5.**

- 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 Calculate range, variance, and standard deviation.

### **Course Outcome 6.**

- 6. Scatter Plots and Correlation

### **Learning Objectives 6.**

- 6.1 Differentiate between independent and dependent variables.



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- 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.**

7. Probability

### **Learning Objectives 7.**

- 7.1 Explain the concept of probability.
- 7.2 Construct sample spaces and determine the probability of a simple event or random experiment.
- 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.

### **Course Outcome 8.**

8. Probability Distributions

### **Learning Objectives 8.**

- 8.1 Differentiate between discrete and continuous probability distributions.
- 8.2 Explain the concept of the standard normal distribution and its importance for inference.
- 8.3 Calculate event probabilities based on transforming raw scores to z-scores and percentiles and understand how they are applied to decision-making situations.
- 8.4 Transform z-scores into raw scores given an event probability.

**Date:**

Wednesday, August 30, 2017

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