



## COURSE OUTLINE: MTH181 - MATH II

Prepared: Mathematics Department

Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

|   |   |
|---|---|
| <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>Semesters/Terms:</b>   | 20W   |
| <b>Course Description:</b>  | 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. |
| <b>Total Credits:</b>   | 3   |
| <b>Hours/Week:</b>  | 3   |
| <b>Total Hours:</b>   | 45  |
| <b>Prerequisites:</b>   | MTH180  |
| <b>Corequisites:</b>  | There are no co-requisites for this course.   |
| <b>Vocational Learning Outcomes (VLO's) addressed in this course:</b> | <b>3060 - PRE-HEALTH CERT DIPL</b><br>VLO 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) addressed in this course:</b> | EES 3 Execute mathematical operations accurately.<br>EES 4 Apply a systematic approach to solve problems.<br>EES 5 Use a variety of thinking skills to anticipate and solve problems.<br>EES 10 Manage the use of time and other resources to complete projects.  |
| <b>Course Evaluation:</b>   | Passing Grade: 50%, D   |
| <b>Books and Required Resources:</b>                                  | Mathematics for Health Sciences by Lee<br>Publisher: Vretta Inc.<br>ISBN: 9781927737095<br><br>Statistics for Health Sciences by Lee<br>Publisher: Vretta Inc.<br>ISBN: 9781927737248<br><br>Calculator -<br>Sharp EL-520XTB (available in the bookstore)   |



SAULT COLLEGE | 443 NORTHERN AVENUE | SAULT STE. MARIE, ON P6B 4J3, CANADA | 705-759-2554

**Course Outcomes and Learning Objectives:**

|  |   |
|--|---|
| <b>Course Outcome 1</b>                  | <b>Learning Objectives for Course Outcome 1</b>   |
| 1. Quadratic Functions                   | 1.1 Recognize functions as quadratic.<br>1.2 Solve quadratic equations using the quadratic formula.<br>1.3 Sketch the graph of a quadratic function using the vertex, x-y intercepts, and axis of symmetry.<br>1.4 Interpret and solve application problems involving optimization, finding original values, and evaluating the independent variable when the dependent variable is zero.   |
| <b>Course Outcome 2</b>                  | <b>Learning Objectives for Course Outcome 2</b>   |
| 2. Exponential and Logarithmic Functions | 2.1 Identify the graph of basic exponential and logarithmic functions.<br>2.2 Rewrite equations in exponential or logarithmic form.<br>2.3 Solve exponential and logarithmic equations.<br>2.4 Apply exponential equations to solve exponential growth, decay, and isotope half-life application problems.<br>2.5 Use logarithmic equations to determine solution pH and hydrogen ion concentration.  |
| <b>Course Outcome 3</b>                  | <b>Learning Objectives for Course Outcome 3</b>   |
| 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.<br>3.2 Describe the difference between descriptive and inferential statistics.<br>3.3 Define and explain the differences between a population and a sample, a population parameter, and sampling statistic.<br>3.4 State and explain the differences and similarities between different sampling methods. |
| <b>Course Outcome 4</b>                  | <b>Learning Objectives for Course Outcome 4</b>   |
| 4. Organizing Data                       | 4.1 Differentiate between qualitative and quantitative data.<br>4.2 Construct and interpret common graphical representations of data, including histograms, bar charts, and pie charts.<br>4.3 Define the term frequency and calculate a frequency distribution, relative frequency distribution, and cumulative frequency distribution.<br>4.4 Construct and interpret frequency tables for nominal and ordinal data.  |
| <b>Course Outcome 5</b>                  | <b>Learning Objectives for Course Outcome 5</b>   |
| 5. Data Management                       | 5.1 Explain why central tendency and dispersion are important.<br>5.2 Calculate the mean, median, and mode for a set of data and explain what these measures represent.<br>5.3 Calculate range, variance, and standard deviation.   |
| <b>Course Outcome 6</b>                  | <b>Learning Objectives for Course Outcome 6</b>   |
| 6. Scatter Plots and Correlation         | 6.1 Differentiate between independent and dependent variables.<br>6.2 Construct scatter plots and determine whether a correlation is significant.<br>6.3 Predict the value for the dependent variable based on a given equation.  |



|   | <b>Course Outcome 7</b>  | <b>Learning Objectives for Course Outcome 7</b>  |                   |       |      |
|---|--|--|-------------------|-------|------|
|   | 7. Probability   | 7.1 Explain the concept of probability.<br>7.2 Construct sample spaces and determine the probability of a simple event or random experiment.<br>7.3 Describe simple, mutually exclusive, and non-mutually exclusive probability.<br>7.4 Determine the complement of an event.<br>7.5 Use the additive and multiplicative rules of probability.   |                   |       |      |
|   | <b>Course Outcome 8</b>  | <b>Learning Objectives for Course Outcome 8</b>  |                   |       |      |
|   | 8. Probability Distributions   | 8.1 Differentiate between discrete and continuous probability distributions.<br>8.2 Explain the concept of the standard normal distribution and its importance for inference.<br>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.<br>8.4 Transform z-scores into raw scores given an event probability. |                   |       |      |
| <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% |
| Evaluation Type                               | Evaluation Weight  |  |                   |       |      |
| Tests   | 100%   |  |                   |       |      |
| <b>Date:</b>                                  | June 19, 2019  |  |                   |       |      |
| <b>Addendum:</b>                              | Please refer to the course outline addendum on the Learning Management System for further information.   |  |                   |       |      |