# MATHEMATICAL SCIENCES
## Institutional (ILO), Program (PLO), and Course (SLO) Alignment

| Program: **Math (Prospective Elementary School Teachers)** | **Number of Courses:** 4 | **Date Updated:** 09.21.2014 | **Submitted by:** Susanne Bucher, ext. 3221 |
|---|---|---|---|

| **ILOs** | **1. Critical Thinking** *Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.* | **2. Communication** *Students effectively communicate with and respond to varied audiences in written, spoken or signed, and artistic forms.* | **3. Community and Personal Development** *Students are productive and engaged members of society, demonstrating personal responsibility, and community and social awareness through their engagement in campus programs and services.* | **4. Information Literacy** *Students determine an information need and use various media and formats to develop a research strategy and locate, evaluate, document, and use information to accomplish a specific purpose. Students demonstrate an understanding of the legal, social, and ethical aspects related to information use.* |
|---|---|---|---|---|

**SLO-PLO-ILO ALIGNMENT NOTES:**

*Mark boxes with an 'X' if: SLO/PLO is a major focus or an important part of the course/program; direct instruction or some direct instruction is provided; students are evaluated multiple times (and possibly in various ways) throughout the course or are evaluated on the concepts once or twice within the course.*

*DO NOT mark with an 'X' if: SLO/PLO is a minor focus of the course/program and some instruction is given in the area but students are not formally evaluated on the concepts; or if the SLO/PLO is minimally or not at all part of the course/program.*

| **PLOs** | **PLO to ILO Alignment** *(Mark with an X)* | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| **PLO #1 Solving Application Problems** Students will be able to determine an appropriate strategy to solve an application problem, complete the solution of the problem, describe the procedures used to solve the problem, and explain the underlying mathematical concepts using written and oral means. | X | X | | |
| **PLO #2 Explaining Mathematical Concepts** Students will be able to demonstrate and explain mathematical concepts using a variety of methods. | | X | | |
| **PLO #3 Analyzing Mathematical Problems and their Solutions** Students will be able to analyze a solution to a mathematics problem, determine the appropriateness of the solution, and if errors are made, explain the misconceptions or errors made and how to solve the problem correctly using written and oral means. | X | X | | |

| SLOs | SLO to PLO Alignment *(Mark with an X)* | | | COURSE to ILO Alignment **FOR OFFICE USE ONLY** | | | |
|---|---|---|---|---|---|---|---|
| | P1 | P2 | P3 | 1 | 2 | 3 | 4 |
| **MATH 110 Structures and Concepts in Mathematics: SLO #1 Perform and Interpret Basic Operations**<br>Students will be able to demonstrate/perform the four basic operations with real numbers and interpret the results. | X | | X | | | | |
| **MATH 110 Structures and Concepts in Mathematics: SLO #2 Explain Mathematical Concepts**<br>Students will be able to explain the underlying mathematical concepts of the binary operations using written and oral means. | | X | | X | X | | |
| **MATH 110 Structures and Concepts in Mathematics: SLO #3 Solve Application Problems**<br>Students will be able to solve an application problem and design an application when parameters are given. | X | | | | | | |
| **MATH 111 Mathematics for Elementary School Teachers - Geometry, Probability and Statistics: SLO #1 Compute Probability**<br>Students will be able to compute the probability of an event. | X | | X | | | | |
| **MATH 111 Mathematics for Elementary School Teachers - Geometry, Probability and Statistics: SLO #2 Analyze Statistical Graphs**<br>Students will be able to draw and interpret statistical graphs. | | | X | | | | |
| **MATH 111 Mathematics for Elementary School Teachers - Geometry, Probability and Statistics: SLO #3 Central Tendency and Dispersion**<br>Students will be able to compute and interpret measures of central tendency and dispersion. | X | | X | X | | | |
| **MATH 111 Mathematics for Elementary School Teachers - Geometry, Probability and Statistics: SLO #4 Solving Congruence Problems**<br>Students will be able to solve problems involving congruence and similarity of geometric figures. | X | | X | | | | |
| **MATH 111 Mathematics for Elementary School Teachers - Geometry, Probability and Statistics: SLO #5 Converting Measurements**<br>Students will be able to convert between American and metric units of measurement. | X | | X | | | | |

| SLOs | SLO to PLO Alignment *(Mark with an X)* | | | COURSE to ILO Alignment **FOR OFFICE USE ONLY** | | | |
|---|---|---|---|---|---|---|---|
| | **P1** | **P2** | **P3** | **1** | **2** | **3** | **4** |
| **MATH 115 Probability and Statistics for Prospective Elementary School Teachers: SLO #1 Research Study**<br>Students will be able to design a research study, develop an appropriate assessment instrument, collect and analyze data using appropriate methods, and draw statistical inferences from the data in written form. | X | X | X | | | | |
| **MATH 115 Probability and Statistics for Prospective Elementary School Teachers: SLO #2 Analyze Statistical Procedure**<br>Given a particular set of data, students will be able to determine the appropriate statistical procedures to analyze and display the data, complete the statistical methods, and explain the mathematical concepts in written and oral forms. | | X | X | | | | |
| **MATH 115 Probability and Statistics for Prospective Elementary School Teachers: SLO #3 Explain Statistics and Probability Concepts**<br>Given a particular set of data, students will be able to explain statistics and probability concepts and use appropriate methodologies for elementary or middle school teachers. | X | X | | X | X | | |
| **MATH 115 Probability and Statistics for Prospective Elementary School Teachers: SLO #4 Solve and Interpret Experimental and Mathematical Probability**<br>Students will be able to solve, explain, and interpret informal, experimental, and mathematical probability concepts and application problems both in written and oral forms. | X | X | X | | | | |
| **MATH 116 Geometry and Measurement for Prospective Elementary School Teachers: SLO #1 Identify Geometric Shapes**<br>Students will identify two- and three-dimensional geometric shapes, explain their attributes and discuss the relationships among the geometric shapes. | | X | X | | | | |
| **MATH 116 Geometry and Measurement for Prospective Elementary School Teachers: SLO #2 Use Geometric Tools**<br>Students will use geometric tools (compass, protractor, straightedge, and dynamic geometry software) to construct geometric figures. | X | | X | | | | |
| **MATH 116 Geometry and Measurement for Prospective Elementary School Teachers: SLO #3 Solve and Interpret Geometric Application Problems**<br>Students will use the concepts of measurement to solve geometric application problems, determine the appropriateness of a solution, and if errors are made, explain the misconceptions or errors made and how to solve the problem correctly using written or oral means. | X | X | X | X | X | | |
| **MATH 116 Geometry and Measurement for Prospective Elementary School Teachers: SLO #4 Explain Geometric Formulas**<br>Students will use words and diagrams to explain the derivation of geometric formulas. | | X | X | | | | |