MIDDLESEX COUNTY COLLEGE
EDISON, NJ
MASTER SYLLABUS

Course ID and Name: MAT 114, Mathematical Structures II
Department: Mathematics
Prerequisites: MAT 113
Co-requisites: None

Course Description: This course will continue to enhance students' problem solving skills through studying the mathematical topics of numeration, algebra, geometry, measurement, and statistics. The content of the MAT-113 and MAT-114 course sequence is representative of topics covered on the Praxis Core Academic Skills for Educators Mathematics Test.

General Education Status: GE MST

Credits: 3 **Lecture Hours**: 3 **Lab Hours**: 0

E-book(s) and Other Course Materials:

E-book: A Survey of Mathematics, 10th Edition by Angel, Abbott, and Runde
Required Software: MyMathLab (E-Book included)

Policies:

Disability Support

Students with disabilities, whether physical, learning or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disability Services as soon as possible to ensure that the accommodations are implemented. Please meet with the Disability Services staff in Edison Hall, Room 100, (732) 906-2546.

Code of Student Conduct

To foster a productive learning environment, the College requires that all students adhere to the Code of Student Conduct which is published in the college catalog and website.

Core Learning Outcomes*

Upon successful completion of the course, students will be able to:

1. Use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

    a. Translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations.

    b. Construct graphs and charts, interpret them, and draw appropriate conclusions.

2. Communicate accurate mathematical terminology and notation to explain strategies to solve problems and interpret solutions.

3. Utilize various reasoning, problem-solving, and critical thinking techniques to solve applications among the laws of probability, the normal curve, and confidence interval inferences.

4. Understand the language and concepts of Mathematical Structures as well as the formal mathematical definitions that accompany them.

*Imported from the NJCCC GE Learning Goals (2011), NJCCC (2011), and AMATYC (2008)

Content Strands and Content Objectives

Content Strand	Students will be able to…
Numeration (CLO 1a, 2, 3, 4)	▪ Differentiate between the concepts of number and numeral. ▪ Express Hindu-Arabic numerals in ancient cultural systems, such as Egyptian hieroglyphs, traditional Chinese characters, Babylonian Cuneiform, and etc. ▪ Express and perform operations on Hindu-Arabic numerals in bases other than 10.
Algebra Skills (CLO 1a, 1b, 2, 3, 4)	▪ Evaluate algebraic expressions. ▪ Solve linear and quadratic equations. ▪ Solve linear inequalities and represent their solution sets graphically. ▪ Graph linear equations and inequalities in two variables. ▪ Solve systems of linear equations and inequalities in two variables. ▪ Understand the function concept and produce the graph of a function.
Geometry and Measurement (CLO 1a, 2, 3, 4)	▪ Illustrate properties of angles. ▪ Illustrate properties of polygons. ▪ Find the perimeter and area of plane figures. ▪ Find the surface area and volume of solids. ▪ Convert between different units of physical measurement in the US and SI systems.
Statistics (CLO 1a, 1b, 2, 3, 4)	▪ Construct appropriate graphs for data sets. ▪ Build a frequency distribution and construct its histogram. ▪ Find statistical measures for data sets, such as mean and variance. ▪ Compare data values using z-Scores. ▪ Construct boxplots for data sets. ▪ Find area under the standard normal density curve. ▪ Solve probability problems surrounding normal distributions. ▪ Find and interpret the correlation coefficient in a bivariate data set. ▪ Find a linear regression model for a bivariate data set and use it to predict future values of a response variable.