MATH 181: INTRODUCTION TO PROBABILITY

1. Course Information

Subject
MATH - Mathematics

Course Number
181

School
Science, Technology, Engineering, Mathematics

Course Title
Introduction to Probability

2. Hours

Semester Hours
3

Lecture
3

3. Catalog Description

For display in the online catalog
This is a mathematics course for liberal arts students. Topics presented are selected from set theory, probability, binomial distributions, Markov chains, game theory, graphs and trees.

4. Requisites

Prerequisites
None

Corequisites
None

5. Course Type

Course Fee Code
1

Course Type for Perkins Reporting
non-vocational (not approved for Perkins funding)

6. Justification

Describe the need for this course
This course is designed to provide students with the mathematical knowledge
needed to successfully integrate mathematics into their chosen area of study or career path.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?
Yes

General Education Category
Mathematics

General Education Status
Approved

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	This course helps to prepare students to become intentional learners who will be able to understand and employ quantitative analysis to solve problems, and demonstrate intellectual agility in mathematics.

9. Related Courses at Other Institutions

Transferability of Course

Georgian Court University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
MA106 Modern Math Concepts II, 3	Gen Ed	

Kean University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
MATHX1006, Mathematics Free Elective, 3	Gen Ed	

Monmouth University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
MA001 (100 Level Math Elective, 3	Mathematics Elective	

Rowan University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
MATH0115 (Contemp Mathematics), 33	Gen Ed	

Stockton University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
TRCREC (elective trans credit), 3	Gen Ed	

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	This course helps to prepare students to become intentional learners who will be able to understand and employ quantitative analysis to solve problems, and demonstrate intellectual agility in mathematics.
CLO2	Use mathematical modeling for problem solving
CLO3	Use technology to explore probability distributions and compute probabilities
CLO4	Utilize mathematical concepts in set theory, probability, Bernoulli Trials and Markov Chains to solve problems

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	Sets	Homework	Quiz/Exam	CLO4
TO2	Counting techniques and their applications	Homework	Quiz/Exam	CLO1, CLO3
TO3	Probability including conditional probability, Bayes' formula, binomial probability, random variables, and their applications	Homework	Quiz/Exam	CLO1, CLO2, CLO3, CLO4

TO4	Bernoulli Trials	Homework	Quiz/Exam	CLO1, CLO2, CLO3, CLO4
TO5	Venn Diagrams	Homework	Quiz/Exam	CLO1, CLO4
TO6	Expected Value	Homework	Quiz/Exam	CLO1, CLO3, CLO4
TO7	Operations with Matrices	Homework	Quiz/Exam	CLO3, CLO4
TO8	Markov Chains	Homework	Quiz/Exam	CLO4
TO9	Game Theory	Homework	Quiz/Exam	CLO1, CLO44
TO10	Graphs and Trees	Homework	Quiz/Exam	CLO1, CLO2, CLO4

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?

o Lecture
o Class discussion
o Group activities and explorations
o Applications to current situations

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

_____

Quantitative Knowledge and Skills

Yes

Related Course Learning Outcome

All

Related Outline Component

All

Assessment of General Education Goal (Recommended but not limited to)

Exams

_____

_____

_____

_____

_____

_____

_____

_____

_____

14. Needs

Instructional Materials (text etc.):

Appropriate textbook and online resources

Technology Needs:

Access to statistical tools for instruction

Human Resource Needs (Presently Employed vs. New Faculty):

Presently Employed

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

16. Board Approval

History of Board approval dates

Revised: December, 1990
Revised: February 27, 1996
Revised: April 30, 1996
Revised: December, 1998
Revised: May 4, 2004
Revised: August 18, 2005
Revised: August 27, 2007
Revised: April 27, 2009
Revised: May 22, 2012
Board of Trustees Approval Date: November 3, 2016