

MATH 151: A SURVEY OF MATHEMATICS

1. Course Information

Subject

MATH - Mathematics

Course Number

151

School

Science, Technology, Engineering, Mathematics

Course Title

A Survey of Mathematics

2. Hours

Semester Hours

3.00000

Lecture

3

Lab

0

Practicum

0

3. Catalog Description

For display in the online catalog

This is a mathematical course for liberal arts students. This course is a study of some of the fundamental concepts in mathematics. Topics include: sets, probability, logic systems of numeration, groups, and mathematical systems. Applications of these topics in various fields of study are included in the course.

4. Requisites

Prerequisites

MATH 012 or MATH 023 with grade of C or higher, or Mathematics placement requiring no remediation.

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

Comparable Courses at NJ Community Colleges

Institution

Brookdale CC

Course Title

Advanced Topics in Mathematics for the Liberal Arts

Course Number

MATH 146

Number of Credits

3

Institution

Mercer County CC

Course Title

Mathematics for Liberal Arts

Course Number

MATH 146

Number of Credits

3

Institution

Atlantic Cape CC

Course Title

Applications of Mathematics

Course Number

MATH 121

Number of Credits

3

Transferability of Course

Georgian Court University

| Course Code, Title, and Credits | Transfer Category | If non-transferable; select status |
|-----------------------------------|-------------------|------------------------------------|
| MA 105, Modern Math Concepts I, 3 | GE | |

Kean University

| Course Code, Title, and Credits | Transfer Category | If non-transferable; select status |
|-----------------------------------|-------------------|------------------------------------|
| MATH 1010, Foundations of Math, 3 | GE | |

Monmouth University

| Course Code, Title, and Credits | Transfer Category | If non-transferable; select status |
|--|-------------------|------------------------------------|
| MA 105, Mathematical Modeling in the Social, 3 | GE | |

Rowan University

| Course Code, Title, and Credits | Transfer Category | If non-transferable; select status |
|-----------------------------------|-------------------|------------------------------------|
| MATH 01201, Structures of Math, 3 | GE | |

Rutgers - New Brunswick, Mason Gross School of the Arts

| Course Code, Title, and Credits | Transfer Category | If non-transferable; select status |
|---|-------------------|------------------------------------|
| Math 103, Topics in Mathematics for the Liberal Arts, 3 | GE | |

Stockton University

| Course Code, Title, and Credits | Transfer Category | If non-transferable; select status |
|---------------------------------|-------------------|------------------------------------|
| TRCREC, Transfer Elective, 3 | Elective | |

10. Course Learning Outcomes

Learning Outcomes

| Students who successfully complete this course will be able to: | |
|---|--|
| CLO1 | Appreciate an authentic image of the art of mathematics in the liberal arts curriculum |
| CLO2 | Understand an overall perspective of mathematics with an insight into the intrinsic nature of mathematics as human enterprise |
| CLO3 | Appreciate the history of the mathematical topics discussed, thus giving the student a perspective on mathematics' role in the development of civilization |
| CLO4 | Describe the meaning of the word set |
| CLO5 | Use the proper terminology and symbols associated with the study of sets |
| CLO6 | Use Venn diagrams to sort information and analyze problems |
| CLO7 | Use the proper terminology and symbols associated with the study of logic |
| CLO8 | Write compound verbal statements in symbolic form |
| CLO9 | Use truth tables to analyze compound statements |
| CLO10 | Determine whether an argument is valid or invalid by means of a truth table |
| CLO11 | Determine the probability of a single event or a series of events |
| CLO12 | Use a tree diagram to determine the sample space for an experiment |
| CLO13 | Determine the odds in favor of or against an event |

| | |
|-------|---|
| CLO14 | Determine the mathematical expectation of an event |
| CLO15 | Perform mathematics operations using clock arithmetic |
| CLO16 | Identify the characteristics of a mathematics system |
| CLO17 | Perform the mathematical operation in modular systems |
| CLO18 | Perform mathematical operations with various ancient number systems |
| CLO19 | Perform mathematical operation in various bases |
| CLO20 | Use technology correctly to solve mathematical problems |
| CLO21 | Utilize various reasoning, problem-solving and critical thinking techniques to solve applications |

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) |
|------|---|--|--|----------------------------|
| T01 | Art of mathematics in the liberal arts curriculum | Writing Assignment | Writing Assignment | CLO1 |
| T02 | Insight into nature of mathematics as a human enterprise | Writing Assignment | Writing Assignment | CLO2 |
| T03 | History of mathematical topics and perspective on mathematics role in the development of civilization | Writing Assignment | Writing Assignment | CLO3 |
| T04 | Meaning of the word "set" | Textbook hw | Test | CLO4 |
| T05 | Terminology and symbols related to Sets | Textbook hw | Test | CLO5 |
| T06 | Sorting information and analyzing problems using Venn Diagrams | Textbook hw | Test | CLO6, 20, 21 |
| T07 | Terminology and symbols related to Logic | Textbook hw | Test | CLO7 |
| T08 | Compound verbal statements written in symbolic form | Textbook hw | Test | CLO8 |
| T09 | Truth tables used to analyze compound statements | Textbook hw | Test | CLO9, 21 |
| T010 | Truth tables used to determine validity of arguments | Textbook hw | Test | CLO10, 21 |
| T011 | Probability of a single event or series of events | Textbook hw | Test | CLO11,20,21 |
| T012 | Tree diagrams used to determine sample space of an experiment | Textbook hw | Test | CLO12 |
| T013 | Odds in favor of or against an event | Textbook hw | Test | CLO13,20,21 |
| T014 | Mathematical expectation of an event | Textbook hw | Test | CLO14,20,21 |
| T015 | Mathematical operations using clock arithmetic | Textbook hw | Test | CLO15 |
| T016 | Characteristics of a mathematical system | Textbook hw | Test | CLO16,21 |
| T017 | Mathematical operations in modular systems | Textbook hw | Test | CLO17,21 |
| T018 | Mathematical operations in various ancient number systems | Textbook hw | Test | CLO18 |

T019 Mathematical operations in various bases Textbook hw Test CLO19,20,21

12. Methods of Instruction

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

- o Lecture
- o Group Work/Handouts
- o On-line access
- o Videos available in the library and shown on cable television

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)

Writing Assignments, Test

Independent/Critical Thinking

Yes

Related Course Learning Outcome

CLO4-19

Related Outline Component

4-19

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

Writing Assignment, Tests

14. Needs

Instructional Materials (text etc.):

Contact the department for current adoptions.

Technology Needs:

Computer Software in the Mathematics Computer Lab_

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

Presently Employed

Facility Needs:

None

Library needs:

None

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

Reviewed/Revised: December 1990; February 27, 1996; April 30, 1996; December 1998;

May 4, 2004; December 2004; July 2005; February 28, 2006; March 8, 2006; June 2006

Board of Trustees Approval Date: November 6, 2006

Board of Trustees Approval Date: March 26, 2012

Board of Trustees Approval Date: November 3, 2016