IAC **New Course** Proposal

Rowan College of Burlington County

Date: 2/9/2018 **Division**: STEM

Originator: Jianene Meola **Course Prefix/Number:** MTH 211

Course Title: Structures of Mathematics I **Number of Credits:** 3

Contact: Jmeola@rcbc.edu

STEP 1: Initiate proposal and discuss with Division Dean

Co-requisite(s): None. **Prerequisite(s)**: MTH075

Co-requisite/Prerequisite: None

Course description (indicate lab information): This course concerns the development of number systems and algebraic structures, including the natural numbers, the integers, rational numbers, real and complex numbers. Students will be required to reason mathematically, solve problems, and communicate mathematics effectively at different levels of formality, using a variety of representations of mathematical concepts and procedures.

Course will be offered: x **Fall** x **Spring** ☐ **Summer**

Proposed Course Fee (if known):

Relationship to Curriculum: General Education Requirement

Sem/yr course will first be offered: Fall 2018

Default Course Capacity: 30

Minimum Enrollment (per course)

Instructor Consent Required for Registration:

Textbook:

Reason for adding this course: This course is planned as a general education mathematics course for Education majors.

Complete this table:

Instructional Mode	Number of Credits	Number of Contact Hours
Lecture	3	3
Laboratory	0	0
Studio/Performance	0	0
Clinical/Practicum/Co-Op/Internship/Field Study	0	0

Credit Hours Distribution (i.e. 3/0/0): 3/0/0

Has this course been offered experimentally? No

If no, estimate initial enrollment:

If yes, complete this table.

Offering	*Course number*	*Semester & Year*	*Enrollment*
First:			
Second:			

If other colleges and universities offer this course, complete this table. Give New Jersey data, if available:

College/University	*Course number/name*	*Contacted about course?*
Rowan University	MTH01.201 Structures of Mathematics 1	Yes
Camden County College	MTH 105: Mathematical Systems: Structures	No

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The College of New Jersey	MAT 105: Mathematical Structures and Algorithms for Educators I	Yes
Monmouth University	MA203 Foundations of Elementary Mathematics I	Yes
Montclair State University	MTHM201 Mathematics in Elementary Schools I	No
St. Peter's University	MA108 Mathematics for Educators I	No

Course Learning Outcomes:

Course Learning Outcomes
Upon completion of this course, students should be able to:
1. Practice and explain the content from the operations and algebraic thinking, and number and operations strands included in the elementary mathematics curriculum 2. Reason mathematically and solve various types of problems using appropriate strategies for content from the operations and algebraic thinking, and number and operations strands 3. Utilize and reflect on the educational value of manipulatives/technology when working with concepts from operations and algebraic thinking and number and operations included in the mathematics curriculum, Pre-K through grade 5 4. Communicate mathematics effectively though multiple representations of concepts and at different levels of formality 5. Relate mathematics to other subjects, its applications in society, and to other mathematical topics

Core Course Content:

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Operations and Algebraic Thinking:
Numbers and Operations in Base Ten
Fractions
Ratio and Proportions
Number Systems
Number Theory

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General Education Outcomes

Please select the RCBC outcome(s) below that apply to this course. Students will:

(Check all that apply.)

Written and Oral Communication

- ☐ Logically and persuasively support their points of view or findings.
- X☐ Communicate meaningfully with a chosen audience while demonstrating critical thought.
- ☐ Conduct investigative research which demonstrates academic integrity, originality, depth of thought, and master of an approved style of source documentation.

Quantitative Knowledge & Skills: Mathematics

- X Analyze data to solve problems utilizing appropriate mathematical concepts.
- X Translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations.
- X Logically solve problems using the appropriate mathematical technique.

Scientific Knowledge & Reasoning: Science

- ☐ Understand and employ the scientific method of inquiry to draw conclusions based on verifiable evidence.
- ☐ Explain the impact of scientific theories, discoveries, or technological changes on society.
- ☐ Demonstrate critical thinking skills in the analysis of scientific data.

Society & Human Behavior: Social Science

- ☐ Demonstrate a general knowledge of political, social and economic concepts and systems and their effects on society.

Technological Competency or Information Literacy: Technology

- ☐ Demonstrate competency in office productivity tools appropriate to continuing their education.
- ☐ Use critical thinking skills for computer-based access, analysis, and presentation of information.
- ☐ Exhibit competency in library online tools appropriate to accessing information in reference publications, periodicals, and bibliographies.
- ☐ Demonstrate the skills required to find, evaluate, and apply information to solve a problem.

Humanistic Perspective: Humanities

- ☐ *Art:* Demonstrate an understanding of a variety of renderings.
- ☐ *Art:* Identify the movement, period, and their effect on the culture.
- ☐ *Theatre & Music:* Be able to articulate and analyze works of the performing arts and their effect on historical or cultural perspective as well as the values of the society.
- ☐ *Philosophy:* Demonstrate an understanding of fundamental philosophical questions and the contributions of major philosophers to resolve them.
- ☐ *Foreign Language:* Be able to demonstrate listening, speaking, reading and writing skills of the target language consistent with American Council on the Teaching of Foreign Languages (ACTFL) proficiency standards for the level being studied.
- ☐ *Foreign Language:* Be able to demonstrate cultural norms necessary to communicate effectively in the target language.
- ☐ *Literature:* Recognize and assess the contributions of people from various nations and/or cultures.
- ☐ *Literature:* Analyze the changing significance of social constructions of religion, race, class, and/or gender in cultural artifacts (music, art, literature) throughout time.

Historical Perspective: History

- ☐ Demonstrate knowledge of the nature, origins, central events and significant institutions of major civilizations.

Global & Cultural Awareness: Diversity

- ☐ Be able to compare and contrast cultural norms from diverse populations.
- ☐ Be able to explain how communication and culture are interrelated.
- ☐ Be able to examine how multicultural societies and people help engender a richer understanding of diverse life experiences

Ethical Reasoning & Action

- ☐ Analyze and evaluate the strengths and weaknesses of different perspectives on an ethical issue or a situation.
- ☐ Take a position on an ethics issue or a situation and defend it.