



Science, Technology, Engineering, and Mathematics (Stem) Division  
1400 Tanyard Road, Sewell, NJ 08080  
856-468-5000

## **MAT 105: Intermediate Algebra**

Syllabus

Lecture Hours/Credits: 4/4

### **Catalog Description**

*Prerequisite: RDG 099 and grade of C or higher in MAT 050 or MAT 051 or equivalent*

This is a systematic study of topics in intermediate algebra, commencing with the development of the real number system and its properties. Topics include special factoring methods, solutions of linear and quadratic equations, rational expressions, absolute values, inequalities, graphing, radicals, exponents, and functions.

### **Textbook and Course Materials**

It is the responsibility of the student to confirm with the bookstore and/or their instructor the textbook, handbook, and any other materials required for their specific course and section.

Click here to see current textbook prices at [rcgc.bncollege.com](http://rcgc.bncollege.com).

### **Evaluation Assessment**

#### **Online Proctoring**

All courses offered at RCSJ, whether they are web-enhanced, hybrid, or fully online, may include assessments that make use of Online Proctoring. To find out more about Online Proctoring, and to learn about the minimum technical requirements, visit [rcsj.edu/elearning/online-proctoring](http://rcsj.edu/elearning/online-proctoring).

### **Grading Distribution**

Individual instructors may include the following assessment(s):

- Exams
- Quizzes
- Class Discussions
- Written Assignments
- Attendance and Participation

### **Grading**

The grading scale for each course and section will be determined by the instructor and distributed the first day of class.

## Rowan College of South Jersey Core Competencies

(Based on the NJCCC General Education Foundation - August 15, 2007; Revised 2011; Adopted 2014)

This comprehensive list reflects the core competencies that are essential for all RCSJ graduates; however, each program varies regarding competencies required for a specific degree. Critical thinking is embedded in all courses, while teamwork and personal skills are embedded in many courses.

1. **Written and Oral Communication:** Students will communicate effectively in both speech and writing.
2. **Quantitative Knowledge and Skills:** Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems
3. **Scientific Knowledge and Reasoning:** Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.
4. **Technological Competency:** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals
5. **Society and Human Behavior:** Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.
6. **Humanistic Perspective:** Students will analyze works in the fields of art, history, music, or theater; literature; philosophy and/or religious studies; and/or will gain competence in the use of a foreign language
7. **Historical Perspective:** Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.
8. **Global and Cultural Awareness:** Students will understand the importance of a global perspective and culturally diverse peoples.
9. **Ethical Reasoning and Action:** Students will understand ethical issues and situations.
10. **Information Literacy:** Students will address an information need by locating, evaluating, and effectively using information.

### MAT 105 CORE COMPETENCIES

This course focuses on one of RCSJ's Core Competencies:

- Quantitative Knowledge and Skills

## Student Learning Outcomes: Intermediate Algebra

Successful completion of MAT 105 will help students:	RCSJ Core Competencies	Evaluation / Assessment (Additional means of evaluation may be included by individual instructors)
Identify and solve linear and non-linear equations and inequalities including: <ol style="list-style-type: none"> <li>a. Linear</li> <li>b. Quadratic</li> <li>c. Rational</li> <li>d. Polynomial</li> <li>e. Square Root</li> </ol> Absolute Value	Quantitative Knowledge and Skills	Homework, Quizzes, Assignment, Exams
Identify and analyze functions including: <ol style="list-style-type: none"> <li>a. Linear</li> <li>b. Quadratic</li> <li>c. Rational</li> <li>d. Polynomial</li> <li>e. Square Root</li> </ol>	Quantitative Knowledge and Skills	Homework, Quizzes, Assignment, Exams
Communicate accurately using mathematical terminology and notation in written and oral form to identify function models, solve problems and interpret found solutions.	Quantitative Knowledge and Skills	Homework, Quizzes, Assignment, Exams

### Topical Outline

#### Review of Basic Algebraic Concepts

- Sets of Number and Interval Notation
- Operations on Real Numbers
- Simplifying Algebraic Expressions

#### Linear Equations and Inequalities in One Variable

- Linear Equations in One Variable
- Applications of Linear Equations in One Variable
- Applications of Geometry and Literal Equations
- Linear Inequalities in One Variable
- Compound Inequalities
- Absolute Value Equations
- Absolute Value Inequalities

#### Linear Equations in Two Variables and Functions

- Linear Equations in Two Variables
- Slope of a Line and Rate of Change
- Equations of a Line
- Applications of Linear Equations and Modeling
- Introduction to Relations
- Introduction to Functions
- Graphs of Basic Functions

#### Systems of Linear Equations

- Solving Systems of Linear Equations by the Graphing Method

- Solving Systems of Linear Equations by Using the Substitution Method
- Solving Systems of Linear Equations by Using the Addition Method
- Applications of System of Linear Equations in Two Variables

#### Polynomials

- Properties of Integer Exponents and Scientific Notation
- Addition and Subtraction of Polynomials and Polynomial Functions
- Multiplication of Polynomials
- Division of Polynomials
- Greatest Common Factor and Factoring by Grouping
- Factoring Trinomials
- Factoring Binomials
- Solving Equations by Using the Zero Product Rule

#### Rational Expressions and Rational Equations

- Rational Expressions and Rational Functions
- Multiplication and Division of Rational Expressions
- Addition and Subtraction of Rational Expressions
- Complex Fractions
- Solving Rational Equations

#### Radicals and Complex Numbers

- Definition of an nth-Root
- Rational Exponents
- Simplifying Radical Expressions
- Addition and Subtraction of Radicals
- Multiplication of Radicals
- Division of Radicals and Rationalization
- Solving of Radical Equations
- Complex Numbers

#### Quadratic Equations and Functions

- Square Root Property and completing the Square
- Quadratic Formula
- Equations in Quadratic Form
- Graphs of Quadratic Functions
- Vertex of a Parabola: Applications and Modeling

#### Conic Sections

- Distance Formula, Midpoint Formula and Circles

## **Affirmative Action Statement**

The Board of Trustees is committed to providing a work and academic environment that maintains and promotes affirmative action and equal opportunity for all employees and students without discrimination on the basis of certain enumerated and protected categories. These categories are race, creed (religion), color, national origin, nationality, ancestry, age, sex (including pregnancy and sexual harassment), marital status, domestic partnership or civil union status, affectional or sexual orientation, gender identity or expression, atypical hereditary cellular or blood trait, genetic information, liability for military service, or mental or physical disability, including AIDS and HIV related illnesses.

For questions concerning discrimination, contact Almarie J. Jones, Special Assistant to the President, Diversity and Equity/Title IX and Compliance, 856-415-2154 or [ajones@rcsj.edu](mailto:ajones@rcsj.edu) or (Cumberland) Nathaniel Alridge, Jr., JD, Director, Diversity and Equity/Title IX and Judicial Affairs, 856-691-8600, ext. 1414 or [nalridge@rcsj.edu](mailto:nalridge@rcsj.edu). For disability issues or any barriers in the learning or physical environment related to a document condition/disability please contact: Gloucester campus – Dennis M. Cook, Director, Department of Special Services, ADA/504 Officer at 856-415-2265 or [dcook@rcsj.edu](mailto:dcook@rcsj.edu); or Cumberland Campus – Meredith Vicente, Senior Director, Physical & Learning Disabilities, Center for Academic & Student Success (CASS) at 856-691-6900 ext. 1282 or [mvicent1@rcsj.edu](mailto:mvicent1@rcsj.edu)

## **Department of Special Services**

The Department of Special Services is located in the Instructional Center, room 425A. The Special Services Department is committed to providing support services and ensuring equal access to eligible students with documented disabilities as outlined by the Americans with Disabilities Act (ADA) and the Americans with Disabilities Act with Amendments. If you are an eligible student with a documented disability please visit our website at [RCSJ.edu/SpecialServices](http://RCSJ.edu/SpecialServices) or call the office at 856-415-2265 or 856-415-2247 to speak to the Assistant Director Carol Weinhardt, [cweinhar@rcsj.edu](mailto:cweinhar@rcsj.edu)

## Reporting Allegations of Sexual Assault and Resource Referrals (8/2020) Gloucester Campus

There are multiple safe places for students to report allegations of sexual assault, both on and off campus. Reports of sexual assault can be made to any of the following offices listed in the chart below.

All students are encouraged to report alleged crimes on campus. Crimes that pose a threat to the campus community must be reported to 9-1-1, Security, the Sheriff's Office or the Deptford Township Police Department. All employees, including Security staff, must report incidents of discrimination, harassment or sexual misconduct to the Title IX Officer.

Service	Resource	Phone Number/Location/Website
<b>Non-Confidential Reporting</b>  Local Law Enforcement	Gloucester County Sheriff's Office Deptford Township Police Dept. Gloucester Co. Prosecutor's Office Sexual Assault Response Team	856-681-2200 856-845-2220 856-384-5500 856-384-5555
<b>Non-Confidential Reporting 9-1-1 and Campus Security</b>	9-1-1 Gloucester County Emergency Management Dispatch  Campus Security <b>Blue Light Emergency Phones OR ext. 4444 from any campus desk phone</b>	9-1-1 or push <b>RED</b> button on Campus <b>Blue Light</b> Emergency Phones  856-681-6287
<b>Non-Confidential On-Campus Reporting Support Services</b>	Almarie J. Jones Special Assistant to the President <b>Diversity and Equity/Title IX and Compliance</b>  John F. Ryder Director <b>Student and Veteran Affairs</b>	856-415-2154 College Center, Room 116 <a href="mailto:ajones@rcsj.edu">ajones@rcsj.edu</a>  856-468-5000, ext. 6456 College Center, room 202 <a href="mailto:jryder@rcsj.edu">jryder@rcsj.edu</a>
<b>Confidential On-Campus Counseling and Support Services</b>	Lois Y. Lawson-Bridgell, Ph.D. MSW, LSW, Director <b>Counseling &amp; Wellness Services Center</b>  William Leonard, Ph.D. <b>Intervention Teams Consultant</b>  Crystal Noboa, LSW, MSW Director, The Center for <b>People in Transition (PIT)</b>  Diane Mussoline, EdS, LMFT <b>Director of Behavioral Services</b>	856-464-5236 <a href="mailto:llawsonb@rcsj.edu">llawsonb@rcsj.edu</a> College Center, Room 206  <a href="tel:856-415-2119">856-415-2119</a> <a href="mailto:wleonard@rcsj.edu">wleonard@rcsj.edu</a> <a href="http://CollegeCenter.STEMOfficeC-168">College Center, STEM Office C-168</a>  856-415-2264 <a href="mailto:cnoboa@rcsj.edu">cnoboa@rcsj.edu</a> Workforce Development Bldg., room 809  856-494-5665 <a href="mailto:dmussoli@rcsj.edu">dmussoli@rcsj.edu</a> College Center, Room 200A
<b>Confidential Off-Campus Full-Service Support</b>	<b>Center for Family Services/ Services Empowering Rights of Victims (SERV)</b>	1-866-295-7378 Camden and Gloucester counties <a href="http://centerffs.org/serv">centerffs.org/serv</a>
<b>Hospitals with Sexual Assault Nurse Examiners</b>	Inspira Medical Center  Jefferson Washington Township Hospital	700 Mullica Hill Rd. Mullica Hill, NJ · 856-508-1000  435 Hurffville-Crosskeys Rd., Turnersville, NJ · 856-582-2500