INTRODUCTION TO COLLEGE MATHEMATICS  
MATH 1030

Class Hours: 3.0  
Credit Hours: 3.0  
Laboratory Hours: 0.0  
Revised: Fall 2014

Catalog Course Description:

This course includes the study of quadratics and rational functions and their graphs, exponents, polynomial expressions and factoring, quadratic equations, rational expressions and equations, radical expressions, and related applications. The TI-83 or TI-84 Plus calculator is required and used throughout the course. This course is a prerequisite to MATH 1130, MATH 1710, and MATH 1730 for students with MATH ACT scores below 23.

Entry Level Standards:

Students must be able to read at the college level.

Prerequisites:

High school algebra I and algebra II and ACT math score of at least 19 or learning support math requirements or equivalent math placement score.

Textbook(s) and Other Course Materials:


Technology Requirements:

A non-symbolic graphing calculator is required; the TI-84 Plus is preferred. Accompanying software support as determined by the department.

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Classifying and defining polynomials; Adding, subtracting and multiplying polynomials; Laws of exponents</td>
</tr>
<tr>
<td>2</td>
<td>Special products; Polynomial in several variables; Dividing polynomials by a monomial</td>
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<tr>
<td>3</td>
<td>Negative exponents and scientific notation; Review; Test</td>
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<tr>
<td>4</td>
<td>Greatest common factor and factoring by grouping; factoring trinomials whose leading coefficient is 1; Factoring trinomials whose leading coefficient is not 1</td>
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<tr>
<td>5</td>
<td>Factoring special forms; A general factoring strategy; Solving quadratic equations by factoring</td>
</tr>
</tbody>
</table>
II. Course Goals*:

MATH 1030, Introduction to College Mathematics, will provide students with the algebraic skills essential for success in MATH 1130, MATH 1710 and MATH 1730 and support the achievement of their educational goals. Students will be introduced to various representations of algebraic relationships.

The course will

A. Extend student knowledge of the basic definitions and terms used when describing algebraic and mathematical concepts and procedures. VI.1, 4, 6

B. Build on the mathematical and algebraic skills needed to be successful in subsequent courses of mathematics and other courses where mathematical concepts and applications are taught. VI.1, 2, 3, 4, 5, 6

C. Enhance and expand student knowledge of the appropriate use of the graphing calculator and other technologies. VI.1, 5

D. Guide students towards a better understanding of underlying algebraic concepts when those concepts are applied to a variety of real-world applications and models. VI.1, 2, 3, 4, 5, 6

E. Develop and expand the problem solving skills of students when interpreting and modeling situations, choosing among many different strategies of solution, and presenting the solution to the problem using clear and concise language. VI.1, 2, 3, 4, 5, 6

*Roman numerals after course objectives reference goals of the general education program.

III. Expected Student Learning Outcomes*:

Students will be able to:

1. Identify polynomials and classify them by degree. A

2. Add, subtract, multiply and divide polynomials. A, B
3. Analyze a polynomial and choose the appropriate law of exponents to simplify the expression. A, B
4. Convert numbers in scientific notation to standard notation. A, B, C
5. Convert numbers in standard notation to scientific notation. A, B, C
6. Use scientific notation to model and find solutions for appropriate applications. C, D, E
7. Factor trinomials in quadratic form using trial-and-error or the ac method. B, C, E
9. Solve quadratic equations by a variety of factoring methods. B, C
10. Add, subtract, multiply and divide rational expressions and state their answers in simplest form. B, C, E
11. Determine the domain of a rational function. A, B, C, E
13. Create rational equations to describe applications, solve, and check solution(s) for validity. A, B, C, D, E
14. Add, subtract, multiply and divide radical expressions. A, B
15. Rationalize the denominator of a radical expression. A, B, E
17. Create equations that contain radicals to model applications, solve, and check solution(s) for validity. A, B, C, D, E
18. Add, subtract, multiply and divide expressions with terms containing rational exponents. B, E
19. Solve quadratic equations by the square root property and using the quadratic formula. A, B, C, E
20. Demonstrate and justify a complex solution to quadratic equations. A, B, C, E
21. Determine whether a relation represents a function. A, B, D
22. Evaluate a function at a given value. A, B, C
23. Analyze a given function and describe its domain and range using appropriate notation. A, B, C, D, E
24. Sketch the graph of quadratic equations and functions using appropriate techniques. A, B, C, D, E
25. Analyze and model graphs of real-world applications with quadratic equations and functions and defend the solutions. A, B, C, D, E
* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.
IV. Evaluation:

A. Testing Procedures:

Students are evaluated primarily on the basis of tests, quizzes and homework. A minimum of 4 major tests and a common final exam will be given.

B. Laboratory Expectations:

As assigned by instructor.

C. Field Work:

As assigned by instructor.

D. Other Evaluation Methods:

As assigned by instructor.

E. Grading Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93 - 100</td>
<td>A</td>
</tr>
<tr>
<td>88 - 92</td>
<td>B+</td>
</tr>
<tr>
<td>83 - 87</td>
<td>B</td>
</tr>
<tr>
<td>78 - 82</td>
<td>C+</td>
</tr>
<tr>
<td>70 - 77</td>
<td>C</td>
</tr>
<tr>
<td>Below 70</td>
<td>F</td>
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V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
- Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations for disabilities:

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. Disability Services may be contacted by sending email to disabilityservices@pstcc.edu, or by visiting Alexander 130. More information is available at http://www.pstcc.edu/sswd/.

D. Other Policies:

Make up work: Instructor discretion concerning make-up tests and/or assignments.

Cell phone policy: Cell phones are to be either turned off or put on vibration mode while in class. Instructor discretion as to the penalty.