# Course Outline – Seattle Central Community College

<table>
<thead>
<tr>
<th>Course Prefix &amp; No.:</th>
<th>Title:</th>
<th>Credits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH &amp;141</td>
<td>Precalculus I</td>
<td>5</td>
</tr>
</tbody>
</table>

### Division: Science & Math  
Program/Department: Mathematics

<table>
<thead>
<tr>
<th>Maximum Class Size:</th>
<th>Course length:</th>
<th>Prerequisite(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>11 weeks</td>
<td>MATH098 with 2.5 or Placement Test Score in the last 3 years</td>
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<tr>
<th>Total Contact Hours:</th>
<th>Mode(s) of Delivery:</th>
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| 55                   | On campus self-contained  
Correspondence  
Tele-course  
Online instruction  
Hybrid (e.g., online and on campus)  
Other (please describe): |

### Course Description
A study of elementary functions including polynomial, rational, exponential and logarithmic functions, viewed numerically, graphically and algebraically. Emphasis on the basic unifying concept of function. Provides review and extension of basic algebraic methods for solving equations and inequalities. Emphasizes applications of functions in a problem-solving context. Graphing calculator will be used. This course is intended for students planning to take Calculus with Analytic Geometry.

### Learning Outcomes
As a result of taking this course, students will be able to:
- Manipulate algebraic, power, exponential, logarithmic, rational and polynomial expressions and functions, using the properties specific to each type of function.
- Determine whether a function is one-to-one, define and find the inverse of a one-to-one function, find the composition of two functions.
- Solve algebraic, power, exponential, logarithmic, rational and polynomial equations.
- State and apply the Remainder theorem, Factor theorem and other related theorems to analyze the roots of a polynomial function.
- Analyze and graph algebraic, power, exponential, logarithmic, rational and polynomial functions. Use graph of a function to determine range and domain, solve equations, determine roots, find asymptotic behavior.
- Define, manipulate and use complex numbers and their conjugates to find zeroes of quadratic and polynomial equations.
- Recognize the common types of linear, direct and inverse variation, quadratic and polynomial, rational, exponential and logarithmic and power models, and use them to set up, analyze and solve application problems, and interpret the solutions and the proper units.

### Program/Degree Outcomes
This course addresses the following program or degree outcomes:
- Develop and use skills in critical thinking, quantitative analysis
- Develop and use skills for in-person interactions with individuals and within groups.
- Use methods and modes of inquiry specific to mathematics
- Demonstrate effective oral and written communication, teamwork and collaboration in mathematical settings
- Demonstrate academic honesty and ethical behavior

### Topical Outline and/or Major Divisions

This course covers the following topics:

1. Concept of relation and its special cases: function, 1-1 function, inverse functions and relations with emphasis on graphical as well as algebraic interpretations.
2. Functions and their applications from graphical, numerical and algebraic perspectives. Analysis includes consideration of local and global behavior.
   - linear functions - brief review
   - absolute value function
   - power functions
   - polynomial functions
   - rational functions
   - exponential functions
   - logarithmic functions
3. Optional topics as time permits.

### Distribution Area

Natural World

### Additional Information

Use of the graphing calculator and/or computer algebra system will support conceptual learning as well as applications that are from the "real world".

### CAC Use Only Special Designation(s)

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<thead>
<tr>
<th>QSR</th>
<th>IS</th>
<th>C</th>
<th>GS</th>
<th>US</th>
<th>None</th>
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</thead>
</table>

**Outline Prepared by:** Tesfaye Terefe, Mimi Aragaye, and John Knudson  
**Date:** April 14, 2011