Common Course Outline

A. **Course Prefix, Number, and Title:** Math 1200 College Algebra I  
   MNTO: Goal Areas 4B

**Semester Credit Value:** 3

B. **Prerequisites:** Math 0210 (or equivalent course) with a grade of C or better, or an appropriate score on the math placement test.

C. **Recommended Skills, Abilities, or Coursework:** n/a

D. **Catalog Description:**
   Topics include functions and function inverses; exponential and logarithmic functions; polynomial and simple rational functions; introduction to linear programming; systems of equations and inequalities; sequences and series; probability; and modeling. The completion of two years of high school algebra and one year of high school geometry is recommended.

E. **Course Information**
1. Total classroom hours per week: 3 hours
2. Total laboratory hours per week: 0 hours
3. Total clinical hours per week: 0 hours
4. Other (rehearsals, studio, etc.) hours per week: 0 hours
5. Additional fee to student: No
6. Course is required for which of the following: AA and AS
7. Specific degree or certificate name: Transfer or Career
   Accounting (AS Degree); Accounting Practitioner (AAS Degree), Applied Engineering/Biomedical Device (AS Degree), Biological Sciences (AS Degree) – Prerequisite to MATH 1201, Biomedical Technologist (AS Degree), Business (AS Degree), Business Industry & Technology (AS Degree), Community Health (AS Degree), Computer Help Desk Specialist (Certificate) – some electives have as a prerequisite, Computer Networking & Telecommunications (AS Degree), Computer Programming (Certificate) – prerequisite for all required MATH courses, Computer Science (AS Degree), Environmental Science (AS Degree), Human Resources Associate (AS Degree), Network Support & Administration (Certificate) – prerequisite for electives, Pre-Engineering (AS Degree) – prerequisite for MATH 1400 & 1401, Sales Management (AS Degree)

F. **Learner Outcomes**
   At the conclusion of the course, the student should be able to:
1. Identify, transform, and/or produce the graph for a given function (including constant, linear, polynomial, parabolic, cubic, square root, absolute value, logarithmic, exponential and the rational function $y=1/x$).
2. Identify, transform, and/or produce the graph of a circle.
3. Find an equation of a line given sufficient information.
4. Translate an applied problem into an equation or inequality and provide a solution through algebraic manipulation.
5. Interpret an expression, equation, or inequality by utilizing a graph, table, or diagram.
6. Define a function along with its domain and range.
7. Combine functions through the operations of addition, subtraction, multiplication, division, and composition.
8. Determine the inverse for a given function.
9. Solve any equation of first or second degree.
10. Solve an exponential equation.
11. Solve a logarithmic equation.
12. Solve a system of linear equations in two or three variables.
13. Solve a system of inequalities.
15. State the definition of an infinite sequence.
16. Find a particular term or sequence of terms for a particular infinite sequence.
17. State the definition of an arithmetic sequence and give examples thereof.
18. State the definition of a geometric sequence and give examples thereof.
19. Work back and forth readily between expanded and closed forms of summation notation.
20. Expand a binomial raised to natural number power less than six.
21. Apply the definition(s) of the Fundamental Counting Principle, a permutation and a combination to counting problems as appropriate.
22. Apply the concepts of experiment, outcome, and sample space to a given model.
23. State the definition of probability of an event for a given sample space and apply such to simple problems.
24. Determine if a mathematical argument is valid using definitions, field properties, and theorems.
25. Create, analyze, and discuss the validity of a mathematical model for a set of data.
26. Use a graphing utility and interpret the results where applicable in the above outcomes.
27. Solve problems involving direct, inverse and joint variation.

G. Minnesota Transfer Curriculum area 4B

<table>
<thead>
<tr>
<th>Goal Area—if you have more than one goal area, list each in its own cell</th>
<th>Competencies—list the letter of each Goal Area competency taught in this course</th>
<th>Learner Outcomes—list the numbers of the learner outcomes from G that relate to each of the competencies listed in the adjacent column</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B</td>
<td>A</td>
<td>1-27</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1-27</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>7, 8, 24, 27</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>4, 5, 8-14, 21-23, 25-27</td>
</tr>
</tbody>
</table>

H. Major Areas of Course Content

These areas should be covered by everyone teaching this course.
1. Functions (Linear, Polynomial, Rational, Exponential, Logarithmic)
2. Systems of equations and inequalities
3. Linear Programming
4. Sequences, Series, and Probability
5. Modeling

I. Procedure for Credit by Examination: Yes (If “Yes” please describe procedure below)
1. The student should contact the Dean
2. The Dean will inform student of the division faculty member who has agreed to administer the Credit by Examination for the specified course. The faculty member administering the exam will contact the student to set up a date and time for the exam.
3. The student is to bring the Credit by Exam form to the scheduled exam.
4. The faculty member will notify the student and Records office of the results.

J. Proposed Implementation Date: Fall 2011

K. Common Course Outline Review

Courses should be reviewed on a rotating basis every three years. Please document review dates below.

<table>
<thead>
<tr>
<th>Reviewed by</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Spring 2006</td>
</tr>
<tr>
<td>Department</td>
<td>Spring 2011</td>
</tr>
</tbody>
</table>