

**Course Information**

<b>Course Title</b>	College Algebra
<b>Course Prefix, Num. and Title</b>	MATH 1314
<b>Division</b>	Math & Physical Sciences
<b>Department</b>	Math/College Readiness Math
<b>Course Type</b>	Academic WCJC Core Course
<b>Course Catalog Description</b>	In-depth study and applications of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included.
<b>Pre-Requisites</b>	Meet TSI college-readiness standard for Mathematics; or concurrently enrolled in NCBM 0314
<b>Co-Requisites</b>	None

**Semester Credit Hours**

<b>Total Semester Credit Hours (SCH): Lecture Hours:</b>	3:3:0
<b>Lab/Other Hours</b>	
<b>Equated Pay Hours</b>	3
<b>Lab/Other Hours Breakdown: Lab Hours</b>	0
<b>Lab/Other Hours Breakdown: Clinical Hours</b>	0
<b>Lab/Other Hours Breakdown: Practicum Hours</b>	0
<b>Other Hours Breakdown</b>	0

**Approval Signatures**

<b>Title</b>	<b>Signature</b>	<b>Date</b>
<b>Prepared by:</b>		
<b>Department Head:</b>		
<b>Division Chair:</b>		
<b>Dean/VPI:</b>		
<b>Approved by CIR:</b>		

## Additional Course Information

**Topical Outline:** Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

### Unit 1: Equations

- 1.1 – Linear Equations and Rational Equations
- 1.2 – Applications of Linear Equations
- 1.3 – Complex Numbers
- 1.4 – Quadratic Equations
- 1.5 – Applications of Quadratic Equations
- 1.6 – Other Types of Equations

### Unit 2: Inequalities, Absolute Value and the Rectangular Coordinate System

- 1.7 – Inequalities
- 1.8 – Absolute Value
- 2.1 – Functions and Function Notation
- 2.2 – The Rectangular Coordinate System and Graphing Lines
- 2.3 – Linear Functions and Slope
- 2.4 – Writing and Graphing Equations of Lines
- 2.5 – Graphs of Equations and Circles

### Unit 3: Functions

- 3.1 – Graphs of Functions
- 3.2 – Transformations of the Graphs of Functions
- 3.3 – More on Functions; Piecewise-Defined Functions
- 3.4 – Operations on Functions
- 3.5 – Inverse Functions

### Unit 4: Polynomial and Rational Functions

- 4.1 – Quadratic Functions
- 4.2 – Polynomial Functions
- 4.3 – The Remainder Theorem; Synthetic Division
- 4.5 – Zeros of Polynomial Functions
- 4.6 – Rational Functions

### Unit 5: Exponential and Logarithmic Functions; Systems of Equations; Matrices

- 5.1 – Exponential Functions and their graphs
- 5.3 – Logarithmic Functions and their graphs
- 5.5 – Properties of Logarithms
- 5.6 – Exponential and Logarithmic Equations
- 6.1 – Systems of Linear Equations
- 6.3 – Matrix Algebra
- 6.4 – Matrix Inversion
- 6.5 – Determinants

## Course Learning Outcomes:

### Learning Outcomes – Upon successful completion of this course, students will:

1. Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses.
2. Recognize and apply polynomial, rational, radical, exponential and logarithmic functions and solve related equations.
3. Apply graphing techniques.
4. Evaluate all roots of higher degree polynomial and rational functions.
5. Recognize, solve and apply systems of linear equations using matrices.

### Methods of Assessment:

Final Exam (Required)

Other Methods of Assessment:

- Hour Exams
- Homework
- Quizzes
- Short Answer
- Discussion Board
- Participation
- Projects

## Required text(s), optional text(s) and/or materials to be supplied by the student:

"College Algebra" by Gustafson and Hughes, Cengage, 12th edition

Students must have computer access to the WCJC website, their WCJC student email and online accounts. WCJC has open computer labs, with internet access, on all campuses for students to use.

## Suggested Course Maximum:

35

**List any specific or physical requirements beyond a typical classroom required to teach the course.** None

**Course Requirements/Grading System:** Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

- A. Final Exam 15-30%  
B. Other Course Requirements 70-85%

A = 90-100  
B = 80-89  
C = 70-79  
D = 60-69  
F = 59 or below

## Curriculum Checklist:

- Administrative General Education Course** (from ACGM, but not in WCJC Core) – No additional documents needed.
- Administrative WCJC Core Course.** Attach the Core Curriculum Review Forms
  - Critical Thinking
  - Communication
  - Empirical & Quantitative Skills
  - Teamwork
  - Social Responsibility
  - Personal Responsibility
- WECM Course** -If needed, revise the Program SCANS Matrix and Competencies Checklist



**Foundational Component Area:** Core 020: Mathematics

**Course Prefix & Suffix:** MATH 1314 – College Algebra

**Core Objective:**

**Critical Thinking Skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

**Student Learning Outcome Supporting Core Objective:**

For each core objective, there must be at least two different methods of assessment.

<b>SLO Status</b>	<b>Student Learning Outcome (SLO)</b>	<b>Learning Activity</b>	<b>Assessment</b>
State Mandated	Recognize and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses. (SLO #2)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result, including a brief paragraph explaining what was done.	A quiz, test, or discussion board artifact showing the student’s written answer. Grading for correctness and the rubric for critical thinking will assess this objective.
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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Date: 11/14/2019



**Foundational Component Area:** Core 020: Mathematics

**Course Prefix & Suffix:** MATH 1314 – College Algebra

**Core Objective:**

**Communication Skills**—to include effective development, interpretation and expression of ideas through written, oral and visual communication

**Student Learning Outcome Supporting Core Objective:**

For each core objective, there must be at least two different methods of assessment.

<b>SLO Status</b>	<b>Student Learning Outcome (SLO)</b>	<b>Learning Activity</b>	<b>Assessment</b>
State Mandated	Recognize and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses. (SLO #2)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result, including a brief paragraph explaining what was done.	A quiz, test, or discussion board artifact showing the students written answer. Grading for correctness and the rubric for communication skills will assess this objective.
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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Date: 11/14/2019



**Foundational Component Area:** Core 020: Mathematics

**Course Prefix & Suffix:** MATH 1314 – College Algebra

**Core Objective:**

**Empirical and Quantitative Skills**—to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

**Student Learning Outcome Supporting Core Objective:**

For each core objective, there must be at least two different methods of assessment.

<b>SLO Status</b>	<b>Student Learning Outcome (SLO)</b>	<b>Learning Activity</b>	<b>Assessment</b>
State Mandated	Recognize and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses. (SLO #2)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result, including a brief paragraph explaining what was done.	A quiz, test, or discussion board artifact showing the student’s written answer. Grading for correctness and the rubric for EQS will assess this objective.
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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Date: 11/14/2019