# Clackamas Community College

## Online Course/Outline Submission System

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### Section #1 General Course Information

**Department:** Mathematics

**Submitter**

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**Course Prefix and Number:** MTH - 111

**# Credits:** 5

**Contact hours**

Lecture (# of hours): 55
Lec/lab (# of hours):
Lab (# of hours):
Total course hours:  55

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

**Course Title:** College Algebra

**Course Description:**

A transfer course designed for students preparing for trigonometry, statistics, or calculus. The focus is on the analysis of piecewise, polynomial, rational, exponential, logarithmic, power functions and their properties. These functions will be explored symbolically, numerically and graphically in real life applications and mathematical results will be analyzed and interpreted in the given context. The course will also include transformations, symmetry, composition, inverse functions, regression, the binomial theorem and an introduction to sequences and series.

**Type of Course:** Lower Division Collegiate

**Is this class challengeable?**

**Yes**

**Can this course be repeated for credit in a degree?**

**No**

**Is general education certification being sought at this time?**

**Yes**

**Check which General Education requirement:**

✓ **Mathematics**

**Is this course part of an AAS or related certificate of completion?**

**No**

**Are there prerequisites to this course?**

**Yes**

**Pre-reqs:**MTH-095 with a C or better or placement in MTH-111

**Have you consulted with the appropriate chair if the pre-req is in another program?**

**No**

**Are there corequisites to this course?**

**No**

**Are there any requirements or recommendations for students taken this course?**

**Yes**

**Recommendations:**Pass RD-090 or placement in RD-115; pass WR-095 or placement in WR-121

**Requirements:**None

**Are there similar courses existing in other programs or disciplines at CCC?**

**No**

**Will this class use library resources?**

**No**

**Is there any other potential impact on another department?**

**No**

**Does this course belong on the Related Instruction list?**

**Yes**

**Area:**Computation

**GRADING METHOD:**

A-F or Pass/No Pass

## Audit:Yes

**When do you plan to offer this course?**

✓ **Summer**
✓ **Fall**
✓ **Winter**
✓ **Spring**

**Is this course equivalent to another?**

If yes, they must have the same description and outcomes.

## No

**Will this course appear in the college catalog?**

## Yes

**Will this course appear in the schedule?**

## Yes

**Student Learning Outcomes:**

Upon successful completion of this course, students should be able to:

1. compute the average rate of change,
2. describe how the average rate of change applies to a relative application,
3. compute the difference quotient and explain its application in real life,
4. identify properties of piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic functions;
5. evaluate and graph piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic functions;
6. solve equations involving piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic functions;
7. apply the solving of piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic equations within real life applications and effectively describe the results in the proper context;
8. analyze and describe differences in behaviors of different types of functions both graphically and numerically,
9. demonstrate the ability to use the appropriate regression model to answer real-life questions and make predictions when given a dataset,
10. apply transformations to functions,
11. demonstrate the ability to factor polynomial functions from a graphical perspective and write equations of polynomials given a graph,
12. determine the composition of functions and demonstrate the ability to use the composition function to answer questions pertaining to a real life application,
13. compute inverses of functions represented algebraically, graphically, and numerically; (MA1)
14. use proper notation to define and evaluate of sequences and series, (MA1) (MA2)
15. solve applications involving sequences and series, particularly financial applications; (MA1) (MA2)
16. apply Pascal's Triangle and Binomial Theorem.(MA1)

## AAOT/ASOT GENERAL EDUCATION OUTCOMES
## COURSE OUTLINE MAPPING CHART

**Mark outcomes addressed by the course:**

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

*As a result of completing the AAOT/ASOT general education requirements, students will be able to:*

**WR: Writing Outcomes**

1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.

2. Locate, evaluate, and ethically utilize information to communicate effectively.

3. Demonstrate appropriate reasoning in response to complex issues.

**SP: Speech/Oral Communication Outcomes**

1. Engage in ethical communication processes that accomplish goals.

2. Respond to the needs of diverse audiences and contexts.

3. Build and manage relationships.

**MA: Mathematics Outcomes:**

**C** 1. Use appropriate mathematics to solve problems.

**C** 2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

**AL: Arts and Letters Outcomes**

1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.

2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

**SS: Social Science Outcomes**

1. Apply analytical skills to social phenomena in order to understand human behavior.

2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

**SC: Science or Computer Science Outcomes**

1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.

2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.

3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

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**Outcomes Assessment Strategies:**

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**Major Topic Outline:**

1. Rates of change and difference quotient.
2. Piecewise-defined functions.
3. Transformations of functions.
4. Polynomial, Rational, Power, and Radical Functions.
5. Exponential and logarithmic functions.
6. Combination, composition, and inverse of functions.
7. Sequences, series, and the binomial theorem.

**Does the content of this class relate to job skills in any of the following areas:**

| | |
|---|---|
| 1. Increased energy efficiency | **No** |
| 2. Produce renewable energy | **No** |
| 3. Prevent environmental degradation | **No** |
| 4. Clean up natural environment | **No** |
| 5. Supports green services | **No** |

Percent of course:0%

## Section #2 Course Transferability

Concern over students taking many courses that do not have a high transfer value has led to increasing attention to the transferability of LDC courses. The state currently requires us to certify that at least one OUS school will accept a new LDC course in transfer. Faculty should communicate with colleagues at one or more OUS schools to ascertain how the course will transfer by answering these questions.

1. Is there an equivalent lower division course at the University?
2. Will a department accept the course for its major or minor requirements?
3. Will the course be accepted as part of the University's distribution requirements?

If a course transfers as an elective only, it may still be accepted or approved as an LDC course, depending on the nature of the course, though it will likely not be eligible for Gen Ed status.

**Which OUS schools will the course transfer to? (Check all that apply)**

**Identify comparable course(s) at OUS school(s)**

**How does it transfer? (Check all that apply)**

:
                                                                          5/5/2014

**Provide evidence of transferability: (minimum one, more preferred)**

**First term to be offered:**

## Next available term after approval
: