# Description: CSU_Logo_maroon

***Service, Protocol, Civility™***

**Course Syllabus**

**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**COLLEGE OF SCIENCE AND ENGINEERING**

### Course Information:

**Document Date:** Fall 2016

**Course Name**: College Algebra

**Course Number & Course Section**: MTH 1750 – 05

**Course Description:** Topics include functions, rational expressions, systems of linear equations, Factor and Remainder Theorem, operations on functions, radical equations, inequalities, matrices, variations, exponential and logarithmic functions, sequences, series, and the binomial theorem. Equivalent to TAG TMM001

**Course Prerequisite(s)**: N/A

Classroom Location: J. I. Smith Center 126

Class Time and Day: MWF 1-1:50PM

### Instructor information:

Name: Dr. Jean-Jacques Medastin

Office: Top of Ward Center Room# 205

Office Telephone: 937-376-6302

E-mail: jmedastin@centralstate.edu

Office hours: MW 5:00pm-7:00pm, or by appointment

**Required Texts And Materials:**

1. Beecher, Judith, Judith Penna, Marvin Bittinger. *College Algebra-4th ed*. Pearson, 2012. Print.

**Students are required to purchase an access code for MyMathLab**. These codes may be purchased through the campus bookstore. An electronic copy of the course text is available through the online platform. This class ID is: **medastin85842**

1. A scientific calculator is required and can be purchased for under $15. Graphing calculators are also permitted. You may also download free tools such as Microsoft Mathematics and GeoGebra to your personal computer or tablet. **Cell phones are not permitted and their use may result in a failing grade on graded activities.**

**Instructional Methods:**

This course will be taught using direct instruction, online learning, and supplemental instruction.

### Course Objectives, Topics, and other content:

### Functions: Polynomial, rational, root/radical, piecewise, exponential and logarithmic

### Graphs of functions and graph transformations

### Equations and inequalities

### Systems of equations

### Applications related to functions, equations, inequalities, models, etc.

**CENTRAL STATE UNIVERSITY’S INSTITUTIONAL LEARNING OUTCOMES:**

While this class has specific learning outcomes which are described below, the following CSU institutional learning outcomes will also be reinforced through activities and assignments:

* Effective Communication Skills, Written and Verbal.
* Critical Thinking Skills
* Application of the Scientific Process
* Awareness of Social and Cultural Factors Affecting Learning
* Competency in the Field of Study

**SPECIFIC LEARNING OUTCOMES FOR THIS COURSE**:

|  |  |
| --- | --- |
| **Learning Outcomes** | **Assessment** |
| Represent various types of functions verbally, numerically, graphically and algebraically. | Homework, quizzes, exams |
| Analyze the algebraic structure and graph of a function in order to determine various characteristics including intercepts, domain and range, asymptotes, symmetry, and intervals on which the function is increasing, decreasing or constant. | Homework, quizzes, exams |
| Determine whether a function is one-to-one and, when possible, define an inverse function. | Homework, quizzes, exams |
| Solve various types of equations including polynomial, rational, root/radical, exponential, and logarithmic equations. | Homework, quizzes, exams |
| Apply functions, equations, and inequalities to various real-world problems. | Homework, quizzes, exams |
| Determine when an algebraic relation or given graph represents a function | Homework, quizzes, exams |
| Perform operations with functions | Homework, quizzes, exams |
| Find inverses of functions and understand the relationship of the graph of a function and that of its inverse | Homework, quizzes, exams |
| Understand the difference between an algebraic equation in one, two, or more variables and a function, and the relationship among the solutions of an equation in one variable, the zeros of the corresponding function, and the coordinates of the x-intercepts of the graph of that function. | Homework, quizzes, exams |
| Solve a system of linear equations graphically and algebraically | Homework, quizzes, exams |
| Solve polynomial and rational inequalities | Homework, quizzes, exams |

**COURSE SCHEDULE/CALENDAR:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Chapter/Section** | **General Topic** | **Readings and Assignments** |
| Aug 17 | -- | Course Syllabus and Expectations | * Read text and watch video tutorials for section R.1 |
| Aug 18 | R.1 | The real numbers, intervals, and properties of real numbers | * Homework: Online and Written * Read text and watch video tutorials for sections R.2-R.3 |
| Aug 19 | R.2-R.3 | Integer exponents, scientific notation, order of operations, and operations on polynomials | * Homework: Online and Written * Read text and watch video tutorials for sections R.4-R.5 |
| Aug 21 | R.4-R.5 | Factoring polynomials and equation solving techniques | * Homework: Online and Written * Read text and watch video tutorials for section R.6 |
| Jan 20 | R.6 | Domain or rations expressions and operations on rational expressions | * Homework: Online and Written * Read text and watch video tutorials for section R.7 |
| Jan 21 | R.7 | Radical expressions, rational exponents, and rationalizing the numerator/denominator | * Homework: Online and Written * Begin Chapter R Review (Online) |
| Aug 24 | Chapter R | Review | * Continue Chapter R Review |
| Aug 25 | Chapter R | **Exam 1** | * Read text and watch video tutorials for section 1.1 |
| Aug 26 | 1.1 | Graphs, distance, midpoint, and circles | * Homework: Online and Written * Read text and watch video tutorials for section 1.2 |
| Aug 28 | 1.2 | Functions, function notation, and graphs of functions | * Homework: Online and Written * Review notes for section 1.2. |
| Aug 31 | 1.2 | Domain, range, and applications of functions | * Homework: Online and Written * Read text and watch video tutorials for section 1.3 |
| Sep 1 | 1.3 | Linear functions, slope, and applications | * Homework: Online and Written * Read text and watch video tutorials for section 1.4 |
| Sep 2 | 1.4 | Slope-intercept equations, point-slope equations, parallel and perpendicular lines, and linear models | * Homework: Online and Written * Read text and watch video tutorials for section 1.5 |
| Sep 4 | 1.5 | Linear equations and their applications | * Homework: Online and Written * Read text and watch video tutorials for section 1.6 |
| **September 7: Labor Day- No Classes** | | | |
| Sep 8 | 1.6 | Solving linear inequalities | * Homework: Online and Written * Begin Chapter 1 Review (Online) |
| Sep 9 | Chapter 1 | Review | * Continue Chapter 1 Review |
| Sep 11 | Chapter 1 | **Exam 2** | * Read text and watch video tutorials for section 2.1 |
| Sep 14 | 2.1 | Increasing, decreasing, and constant functions, relative maxima and minima. | * Homework: Online and Written * Review notes on section 2.1 |
| Sep 15 | 2.1 | Applications of functions and piecewise functions | * Homework: Online and Written * Read text and watch video tutorials for section 2.2 |
| Sep 16 | 2.2 | Operations on functions | * Homework: Online and Written * Read text and watch video tutorials for section 2.3 |
| Sep 18 | 2.3 | Composition of functions | * Homework: Online and Written * Review notes on section 2.3 |
| Sep 21 | 2.3 | Decomposing a function | * Homework: Online and Written * Read text and watch video tutorials for section 2.4 |
| Sep 22 | 2.4 | Graph symmetry, even and odd functions | * Homework: Online and Written * Review notes on section 2.4 |
| Sep 23 | 2.4 | Transformations of functions | * Homework: Online and Written * Begin Chapter 2 Review (Online) |
| Sep 25 | Chapter 2 | Review | * Continue Chapter 2 Review |
| Sep 28 | Chapter 2 | **Exam 3** | * Read text and watch video tutorials for section 3.1 |
| Sep 29 | 3.1 | The complex numbers, operations on complex numbers, complex conjugation | * Homework: Online and Written * Read text and watch video tutorials for section 3.2 |
| Sep 30 | 3.2 | Quadratic functions and equations, completing the square | * Homework: Online and Written * Review notes on section 3.2 |
| Oct 2 | 3.2 | Quadratic formula, equations reducible to a quadratic, applications of quadratics | * Homework: Online and Written * Read text and watch video tutorials for section 3.3 |
| Oct 5 | 3.3 | Analyzing quadratics and quadratic applications | * Homework: Online and Written * Read text and watch video tutorials for section 3.4 |
| Oct 6 | 3.4 | Solving rational equations | * Homework: Online and Written * Review notes on section 3.4 |
| Oct 7 | 3.4 | Solving radical equations | * Homework: Online and Written * Read text and watch video tutorials for section 3.5 |
| **October 9-12: Fall Break** | | | |
| Oct 13 | 3.5 | Solve equations and inequalities involving the absolute value | * Homework: Online and Written * Begin Chapter 3 Review (Online) |
| Oct 14 | Chapter 3 | Review | * Continue Chapter 3 Review |
| Oct 16 | Chapter 3 | **Exam 4** | * Read text and watch video tutorials for section 4.1 |
| Oct 19 | 4.1 | The Leading Term Test, finding zeros of polynomials | * Homework: Online and Written * Review notes on section 4.1 |
| Oct 20 | 4.1 | Polynomial Models | * Homework: Online and Written * Read text and watch video tutorials for section 4.2 |
| Oct 21 | 4.2 | Graphing polynomials and the Intermediate Value Theorem | * Homework: Online and Written * Read text and watch video tutorials for section 4.3 |
| Oct 23 | 4.3 | Polynomial Division and Synthetic Division | * Homework: Online and Written * Review notes on section 4.3 |
| Oct 26 | 4.3 | The remainder theorem and finding factors of polynomials | * Homework: Online and Written * Read text and watch video tutorials for section 4.4 |
| Oct 27 | 4.4 | Finding polynomials with given zeros, rational roots | * Homework: Online and Written * Read text and watch video tutorials for section 4.5 |
| Oct 28 | 4.5 | Rational functions and their domains | * Homework: Online and Written * Review notes on section 4.5 |
| Oct 30 | 4.5 | Asymptotes and applications of rational functions | * Homework: Section 4.5 (Online) * Read text and watch video tutorials for section 4.6 |
| Nov 2 | 4.6 | Polynomial inequalities | * Homework: Section 4.6 (Online) * Review notes on section 4.6 |
| Nov 3 | 4.6 | Rational inequalities | * Homework: Section 4.6 (Online) * Begin Chapter 4 Review (Online) |
| Nov 4 | Chapter 4 | Review | * Continue Chapter 4 Review |
| Nov 6 | Chapter 4 | **Exam 5** | * Read text and watch video tutorials for section 5.1 |
| Nov 9 | 5.1 | Inverse functions, one-to-one functions, restricting a domain | * Homework: Online and Written * Read text and watch video tutorials for section 5.1 |
| Nov 10 | 5.2 | Exponential functions, graphing exponential functions | * Homework: Online and Written * Review notes on section 5.2 |
| **November 11: Veterans Day – No Classes** | | | |
| Nov 13 | 5.2 | Applications of exponential functions | * Homework: Online and Written * Read text and watch video tutorials for section 5.3 |
| Nov 16 | 5.3 | Logarithmic functions, calculating logarithms, converting between logarithmic form and exponential form | * Homework: Online and Written * Review notes on section 5.3 |
| Nov 17 | 5.3 | Exponential and logarithmic equations, Change of base formula, graphs of logarithmic functions | * Homework: Online and Written * Read text and watch video tutorials for section 5.4 |
| Nov 18 | 5.4 | Properties of logarithms | * Homework: Online and Written * Read text and watch video tutorials for section 5.5 |
| Nov 20 | 5.5 | Solving exponential and logarithmic equations. | * Homework: Online and Written * Read text and watch video tutorials for section 5.6 |
| Nov 23 | 5.6 | Growth and decay models; compound interest | * Homework: Section 5.6 (Online) * Read text and watch video tutorials for section 6.1 |
| Nov 24 | 6.1 | Systems of equations in two variables; solving a system of equations using substitution | * Homework: Online and Written * Review notes on section 6.1 * Begin Final Exam Review |
| Nov 30 | 6.1 | Solving a system of equations using elimination | * Homework: Online and Written * Continue Final Exam Review |
| Dec 1 | All | Final Review | Study for final exam |
| Dec 2 | All | Final Review | Study for final exam |
| Dec 4 | All | Final Review | Study for final exam |
| **December 5, 2015 - Final Exam at 9:00am- 11:00am (location TBA)** | | | |

**Performance Evaluation in this Course:**

The following activities/methods of evaluation will be used to assess the performance of every student enrolled in the course:

1. **Chapter Exams**: There will be 5 chapter exams throughout the course of the semester. Chapters R-4 will be covered on the chapter exams. These exams will be written. Alternate exams will not be given without *prior* approval by the course instructor.
2. **Final Exam**: There will be a cumulative final exam on December 5, 2015 at 9a.m. This will be a written exam. No alternate final exams will be given.
3. **Homework and Assignments**: It is essential that students get consistent practice while learning mathematics. Working daily with the concepts allows students to recognize strengths and provides adequate time to address challenging topics. In this course there will be online homework assigned for each learning outcome covered. Students are expected to complete these assignments by the posted due dates. Written work will be assigned occasionally and must be completed by the due date provided by the instructor.
4. **Attendance**: Regular attendance is important in all courses, especially mathematics. Students who attend class with minimal absences generally perform better on homework assignments and exams. Students are expected to attend all scheduled class days. Attendance will be taken at the beginning of each class. Students who arrive late will receive no attendance credit for the day.
5. **Class** **Demeanor**: Student behavior in class will also be evaluated as part of the final grade. The student is expected to behave and perform in a professional manner. This includes being punctual, dressing appropriately, and being attentive. Students who are not behaving professionally will be required to leave the class. Non-professional behavior includes, but is not limited to, talking, using mobile devices during class, using the classroom computers for activities not related to the class, arguing, and disrespecting the instructor or classmates. Students are expected turn off or silence all devices that could cause a disturbance during class. Negative behavior patterns in class will result in a reduction of up to 5% of a student’s final grade.
6. **Projects and In-Class Work**: Projects and In-Class work will be assigned to incorporate practical applications of the course content. Engaging in classroom activities and discussions is an important part of the learning process.

**GRADING POLICY:**

|  |  |  |
| --- | --- | --- |
| **Evaluation Methods.**  **Activities, Demeanor** | **Type** | **Percentages**  **(or Points)** |
| Chapter Exams | Individual | 35 % |
| Written Homework | Individual and/or Group | 15% |
| Online Homework | Individual | 15 % |
| Final Exam | Individual | 15% |
| Projects & In-class Work | Individual and/or Group | 10% |
| Attendance | Individual | 5% |
| Demeanor | Individual | 5% |
|  |  |  |
| **Total** |  | **100%** |

The final letter grade will be based on the following scales:

|  |  |  |
| --- | --- | --- |
| **Percentages**  **(or Points)** | **Letter**  **Grade** | Interpretation |
| 90 – 100 | A | Superior (Very High) |
| 80 – 89 | **B** | Above Average (High) |
| 70 – 79 | **C** | Average (Satisfactory) |
| 60 – 69 | **D\*** | Below Average (Low/Poor Work) |
| Below 60 | **F\*\*** | Failure |

**ACADEMIC SUPPORT:**

Those students whose grades fall below 70% will be required to meet with a tutor (Department of Mathematics and Computer Science, Center for Student Opportunities, or Learning Skills Center) for 1 hour per week until performance improves.

Those students whose grades fall below 60% will be required to meet with a tutor (Department of Mathematics and Computer Science, Center for Student Opportunities, or Learning Skills Center) for 2 hours per week until performance improves.

**INCOMPLETE GRADE POLICY:**

Please see the CSU Course Catalog page 39 for university policies regarding incomplete grades.

**ATTENDANCE POLICY:**

Regular attendance is important in all courses, especially mathematics. Students who attend class with minimal absences generally perform better on homework assignments and exams. Students are expected to attend all scheduled class days. Attendance will be taken at the beginning of each class. Students who arrive late will receive no attendance credit for the day.

While it is important that students participate in activities outside of the classroom, it is more important that they excel academically. Students are allowed to miss 3 class days. This includes absences for campus activities, illness, court attendance, and emergencies. Once the number of class absences has exceeded three, the student’s final grade may be dropped a full letter grade.

**TARDINESS/LATENESS POLICY:**

It is important that students arrive to class in a timely manner. While there may be occasional instances when a student will be late to class, it is expected that students arrive on time to class. Attendance will be taken at the beginning of the class and students who arrive late will not receive attendance credit for the day. The door will be closed after roll has been taken. Students who arrive late to class are not permitted to enter until the instructor has reached an appropriate stopping point in the lecture or class activity.

**ACADEMIC INTEGRITY/HONESTY POLICY:**

Written or other work submitted by a student must be the product of his or her own efforts. Academic dishonesty is unacceptable. This includes cheating on exams and plagiarism, which is a deliberate attempt to deceive by presenting someone else's work or ideas as one's own, or through creating the impression of being one's own by not giving proper credit for the work or ideas. Taking credit for a research paper written by another or using electronic communications devices for help on in-class exams will not be tolerated. Students engaging in any form of academic dishonesty will receive a failing grade on assigned work or exam and may even receive a failing grade in the course itself. Academic dishonesty may be reported to the Dean of Students for adjudication and disciplinary action. (Cf. The Student Handbook, 'Academic Honesty'.)

**AMERICANS WITH DISABILITIES ACT (ADA) POLICY:**

Central State University is committed to including students with disabilities as full participants in its programs, services, and activities through compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. Students with disabilities requiring accommodations to participate in class activities or meet course requirements should contact the Office of Student Disability Services at If you are a student with a documented disability please contact the Central State Office of Disability Services at 937-376-6479 to discuss course accommodations. It is the student’s responsibility to obtain and present the accommodation letter to the instructor at the beginning of the semester.

**AMENDMENTS TO SYLLABUS:**

This syllabus provides a general plan for the course. The instructor reserves the right to amend the syllabus. Any such changes will be announced in class and distributed in writing to each student. As with all other class requirements, the student is responsible for being present to receive such changes.

**COURSE AND FACULTY EVALUATION:**

Every student will be given the opportunity to evaluate the course and instructor at the end of the semester. The evaluation form will assist the instructor, the academic program, and the university in improving the effectiveness of teaching and the enhancement of learning. Students are strongly urged to participate.