Region 2
COLLEGE PREPARATORY MATHEMATICS
Course Syllabus
2020-21

I. **COURSE DESCRIPTION**

The College Preparatory Mathematics Course (CPMC) is a full credit course designed for students in Grade 12 whose performance on an end-of course assessment instrument or coursework, a college entrance examination, or a Texas Success Initiative assessment instrument, indicate the student is not ready to perform entry-level college coursework. In accordance with TAC, 74.26 and local district policy, students who successfully complete only one semester of a two-semester course can be awarded credit proportionately. Consequently, a student may be awarded a half credit for successful completion of half of the college preparatory course. This half credit, when paired with another half credit from the list of allowable advanced mathematics courses, may satisfy the advanced mathematics requirement for students pursuing an endorsement.

II. **PREREQUISITES**

To be eligible for CPMC participation, students must demonstrate successful completion of Algebra I, Geometry, one additional foundation mathematics credit, **and** meet the passing standard on the Algebra I EOC. With principal approval, Grade 11 students who have met the above requirements may enroll in the CPMC.

III. **RESOURCES:**

Recommended resources:

Open Stax for Pre-Algebra and Algebra (free) - https://openstax.org/subjects/math

Knewton (about $35 per student) - https://www.knewton.com

> For educators who have a Knewton account, use the following link for a copy of the Region 2 CPMC course in Knewton: https://knerd.me/c/copy/6da6246d-d857-42c6-bbb2-baacb516a53e Additional information can be obtained from Chris Zajac at chris.zajac@knewton.com.

Desmos Scientific Calculator (free) - https://www.desmos.com/scientific

> Use of a scientific calculator is required for assessments.

Suggested technology resources:

Khan Academy (free)
MyLabsPlus
ALEKS
Math XL (Pearson Education)
My Math Lab (Pearson)
Agile Mind

Suggested textbooks:

Developmental Mathematics – Elayn Martin-Gay
Beginning & Intermediate Algebra –Lial, Hornsby, McGinnis
Elementary and Intermediate Algebra –Bittenger, Ellenbogen, and Johnson
Introductory & Intermediate Algebra for College Students –Blitzer

IV. COURSE OBJECTIVES BY SEMESTER

The required semester exams will assess the following learning objectives:

Semester 1

1.		**Elementary Algebra:**
	a.	Perform basic operations with real numbers.
	b.	Round numbers to a given place value.
	c.	Convert between decimal numbers, fractions, and percentages.
	d.	Evaluate expressions using the order of operations.
	e.	Solve word problems using a variety of techniques.
	f.	Relate properties of real numbers to algebraic expressions (zero, ones, commutative, associative, inverse, distributive, and identity properties).
	g.	Simplify algebraic expressions using addition, subtraction, multiplication, and division.
2.		**Intermediate Algebra and Functions:**
	a.	Write equations in one or two variables to solve or model application problems including mixture and motion problems.
	b.	Use exponential equations to solve problems and represent situations.
	c.	Solve inequalities and report solutions as graphs, sets or intervals
3.		**Geometry, Measurement, and Proportional Reasoning:**
	a.	Use ratios, scaling, and dimensional analysis.
	b.	Set up and solve algebraic proportions.
	c.	Convert measurements within the metric and customary systems.
	d.	Convert between scientific and standard notation and use scientific notation in problem solving.
	e.	Evaluate formulas for area, perimeter, circumference or volume for triangles, rectangles, squares, parallelograms, circles, composite figures, pyramids, prisms, spheres, and cylinders.
	f.	Apply the Pythagorean theorem and its converse to solve real-life problems.
	g.	Apply Pythagorean triples and special right triangle relationships to solve problems.
4.		**Data Analysis and Probability:**
	a.	Create, interpret, and use Venn diagrams.
	b.	Make lists, tables, and tree diagrams to represent all possible outcomes in determining specifics of the sample space.
	c.	Compute the probability of compound events using tree diagrams, tables, and other methods.
	d.	Determine the number of ways an event may occur using the Fundamental Counting Principle.
	e	Compute and interpret the theoretical probability of a simple event and its complement.
	f.	Compare the empirical and theoretical probabilities of an event (e.g., experimental probabilities converge to theoretical probability as the number of trials increases). Recognize and describe the differences between quantitative and qualitative data.
	g.	Construct and interpret graphical displays of data (e.g., line plots, bar graphs, histograms, box plots, scatter plots) to generally describe the center spread and shape of the distribution of data.
	h.	Calculate, describe, and use the appropriate measure of center (e.g., mean, median, mode) and spread (e.g., range, IQR).
	i.	Analyze and describe similarities and differences by comparing graphical distributions (e.g., parallel box plots, back-to-back stem-leaf plots) within and between data sets.
	j.	Describe the effect of outliers on summary statistics.
	k.	Describe relationship and trend of paired data observed from scatter plots in the context of the situation.
	l.	Identify and explain misleading uses of data.
	m.	Justify decisions using probability measures from a given data set, in real-world contexts.
	n.	Interpret given probability measures in a problem.

Semester 2

1.	**Elementary Algebra:**	
	h	Factor numbers and algebraic expressions: determine GCF and LCM.
	i.	Recognize and graph vertical and horizontal lines.
	j.	Give the slope of a line given two points on a graph.
	k.	Determine if a point is a solution given the equation of a line.
	l.	Interpret and simplify integral and rational exponents.
	m.	Use the properties of exponents to simplify algebraic expressions.
	n.	Use addition, subtraction, multiplication, and division with order of operations to simplify monomials, binomials, and polynomials.
	o.	Use properties to simplify radicals, including rationalizing the denominator.
	p.	Use properties of fractions and factoring to simplify rational expressions.
	q.	Solve linear equations and inequalities, which include real numbers, parenthesis, multiple-terms with the variable and have conditional, no solution or infinite solutions.
	r.	Solve equations that are classified as rational, radical, or absolute value.
	s.	Represent graphically the solution(s) of equations and inequalities in one and two variables.
	t.	Solve systems of linear equations in two variables using elimination, substitution, and graphing.
	u.	Understand the relationship between the slopes of two equations and the intercepts to determine if lines are parallel, perpendicular, or intersecting
	v.	Write equations for lines.
	w.	Solve problems with direct and inverse variation.
	x.	Name and graph points in a plane or on a number line.
2.	**Intermediate Algebra and Functions:**	
	d.	Use factoring techniques and the zero principle or the quadratic formula to solve quadratic equations for real or complex solutions.
	e.	Write equations for lines that are parallel or perpendicular to a given equations and passing through a specific point using point slope formula.
	f.	Convert from standard form to slope-intercept form and vice versa.
	g.	Find the linear, rational, radical, or quadratic equations to model or solve application problems including age problems, consecutive number problems, area problems, and motion problems.
	h.	Given a graph or a quadratic equation determine the x- and y- intercepts, vertex, maximum/minimum.
	i.	Represent functions in multiple ways (tabular, graphical, symbolic, verbal). Determine domain and range of functions.
	j.	Factor binomials and trinomials having integral coefficients and rational roots, including differences of squares and sums/differences of cubes.
3.	**Geometry, Measurement, and Proportional Reasoning.**	
	h.	Relate geometric and algebraic representations of lines, parabolas, and segments.
4.	**Data Analysis and Probability:**	
		(assessed in Semester 1)

V. EVALUATION AND GRADE ASSIGNMENT:

Semester 1 Exam	15%
Semester 2 Exam	15%

Semester exams provided by the college preparatory course team are **not optional** and must count as 15% of the fall semester grade and 15% of the spring semester grade. Semester exams will be sent to school district contacts in early December and early May. The Semester 2 Exam will be comprehensive. A scientific calculator is required for the exams.

Grading Scale

A = 90 – 100	C = 70 – 79.99	F = below 59.99
B = 80 – 89.99	D = 60 – 69.99	

VI.   DATA REPORTING
In accordance with the Region 2 Memorandum of Understanding, **data generated from the college preparatory course and semester exams must be reported to the contact persons designated below** within two weeks of the completion of the exam and/or course.

VII.   FOR MORE INFORMATION:
Course resources:
For general information about the course:
http://hb5.esc2.net/
https://www.e2epartners.org/college-readiness-prep-course/

For the mathematics syllabus, list of objectives, course sequence, and other information: https://sites.google.com/esc2.us/mrmendoza/college-prep-math

Contact information:
Education to Employment Partners (Regional P-16 Council)
Director Jeffrey West, jwest@edexcellence.org 361-906-0703

Education Service Center Region 2
Secondary Math Specialist, Steven Mendoza, steven.mendoza@esc2.us,
361-561-8400