SINCLAIR COMMUNITY COLLEGE
DAYTON, OHIO

DEPARTMENT SYLLABUS FOR COURSE IN

MAT 0200 - ALGEBRA II
(3 CREDIT HOURS)

1. COURSE DESCRIPTION: Factoring; operations with polynomials and rational expressions; solving second degree equations by factoring; solving equations with rational expressions. Traditional testing (proctored or in Testing Center) is used in all online sections. Note: Courses that begin with a zero are developmental in nature. Credit earned in developmental courses will not apply to the overall program hours.

2. COURSE OBJECTIVES: This course is designed to build upon the concepts of MAT 0100 and to introduce further topics that the student will need to continue the study of mathematics.

3. PREREQUISITE: Grade of "C" or better in MAT 0100 or sufficient score on Sinclair Community College Mathematics Placement Test.

4. ASSESSMENT: In addition to required exams as specified in the syllabus, instructors are encouraged to include other components in computing final course grades such as homework, quizzes, and/or special projects. However, 80% of the student's course grade must be based on in-class proctored exams.

5. TEXT: **Introductory and Intermediate Algebra**
Fifth Edition
by Robert Blitzer
Pearson/Prentice Hall; 2017

MyMathLab is a required component of this course.

6. CALCULATOR: The required calculator for MAT 0200 is the TI-30XIIS. Any calculator may be used on homework, quizzes, and during class but the TI-30XIIS must be used on tests. (The math department can supply this calculator for tests.)

7. PREPARED BY: Algebra II Group
Richard Uchida – Chair, Wendy Cheng, Brian Cafarella
Effective: Fall Semester 2017

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CLASS SCHEDULE FOR COURSE IN

MAT 0200 - ALGEBRA II
(3 CREDIT HOURS)

CLASSES MEETING TWO TIMES A WEEK

Lecture	Sections	Topics
1	Introduction 5.1 – 5.3	Introduction/ Adding and Subtracting Polynomials Multiplying Polynomials/ Special Products
2	5.4 – 5.5	Polynomials in Several Variables/ Dividing Polynomials
3	5.6 – 5.7	Long Division of Polynomials*/ Negative Exponents**
4	5.7	Negative Exponents** Review
5	 6.1	**Exam 1 over 5.1 – 5.7** The Greatest Common Factor and Factoring by Grouping
6	6.2 – 6.3	Factoring Trinomials whose Leading Coefficient is 1/Factoring Trinomials whose Leading Coefficient is not 1
7	6.4 – 6.5	Factoring Special Forms/ A General Factoring Strategy
8	6.6	Solving Quadratic Equations By Factoring/ Review
9	 7.1 – 7.2	**Exam 2 over 6.1-6.6** Rational Expressions and Their Simplification Multiplying and Dividing Rational Expressions
10	7.3 – 7.4	Adding and Subtracting Rational Expressions with the Same Denominator Adding and Subtracting Rational Expressions with Different Denominators
11	7.5 – 7.6	Complex Rational Expressions/Solving Rational Equations
12	7.7	Applications Using Rational Expressions and Proportions
13	7.8	Modeling Using Variation/ Review
14		Catch-up Day
15		Review for the Final Exam
16		**Comprehensive Final Exam*** **

*The Instructor may choose to cover Synthetic Division if time permits, but this is not a required topic.

**The Instructor may choose to cover Scientific Notation if time permits, but this is not a required topic.

*** In face to face sections and online sections: MAT 0200 will have 10 multiple choice questions on the departmental portion of the final exam. The instructor portion of the final exam (which will consist of material from sections 7.1 – 7.8) will consist of about 20 questions. The instructor portion will count as 2/3 of the final exam score (20% of the course grade) while the departmental portion will count as 1/3 of the final exam score (10% of the course grade.) The final exams in Academy sections will include the 10 multiple choice questions from the department but will also include additional comprehensive questions.

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CLASS SCHEULDE FOR COURSE IN

MAT 0200 - ALGEBRA II
(3 CREDIT HOURS)

CLASSES MEETING THREE TIMES A WEEK

Lecture	Sections	Topics
1	Introduction 5.1 5.2	Introduction/ Adding and Subtracting Polynomials Multiplying Polynomials
2	5.2 5.3 5.4	Multiplying Polynomials/ Special Products/ Polynomials in Several Variables
3	5.5	Dividing Polynomials
4	5.6	Long Division of Polynomials*
5	5.7	Negative Exponents**
6		Review for Exam 1
7		**Exam 1 over 5.1 – 5.7**
8	6.1	The Greatest Common Factor and Factoring by Grouping
9	6.2	Factoring Trinomials whose Leading Coefficient is 1
10	6.3	Factoring Trinomials whose Leading Coefficient is not 1
11	6.4 – 6.5	Factoring Special Forms/ A General Factoring Strategy
12	6.6	Solving Quadratic Equations By Factoring
13		Review for Exam 2
14		**Exam 2 over 6.1-6.6**
15	7.1 7.2	Rational Expressions and Their Simplification Multiplying and Dividing Rational Expressions
16	7.3 7.4	Adding and Subtracting Rational Expressions with the Same Denominator Adding and Subtracting Rational Expressions with Different Denominators
17	7.4 7.5	Adding and Subtracting Rational Expressions with Different Denominators Complex Rational Expressions
18	7.6	Solving Rational Equations
19	7.7	Applications Using Rational Expressions and Proportions
20	7.8	Modeling Using Variation
21		Catch-up Day
22		Catch-up Day
23		Review for the Final Exam
24		**Comprehensive Final Exam*** **

*The Instructor may choose to cover Synthetic Division if time permits, but this is not a required topic.

**The Instructor may choose to cover Scientific Notation if time permits, but this is not a required topic.

***The final exam will be in two parts. The departmental portion will be a 10 question, 25 minute, multiple choice test. It will be sent to the instructor in the mail. Another part is to be prepared by the instructor. The instructor portion of the final exam should consist of 12-20 free response questions and should be 40 minutes in length. The instructor should count the departmental portion as 40% of the final exam score and the instructor portion as 60%. The total final exam score should count for 30% of the final course grade. The other two exams should count for 25% each, and the homework and quizzes should count for 20% total. The instructor will be asked to report the scores on the departmental part and the final course grades back to the department.

TO THE INSTRUCTOR

To ensure consistency, at some minimum level, regarding which formulas students are required to learn in each of its courses, the Mathematics Department has developed the attached list for this course.

Course formulas are those that students are required to learn (and required to demonstrate that they have learned) as the formulas are presented in the course. Requiring students to learn more than those listed is the instructor's option.

Please note that only formulas are listed. Students are also expected to learn definitions, theorems and procedures that will allow them to meet course objectives. If you have questions regarding this matter, please contact your course coordinator.

Please refer to the mathematics department handbook for general policies.

Math 0200 Formulas

Prerequisite Formulas

Formulas of special importance that students are expected to know upon entering this course:

- Geometric Formulas

	Area	Perimeter
Square	$A = s^2$	$P = 4s$
Rectangle	$A = lw$	$P = 2l + 2w$
Triangle	$A = \frac{1}{2}(bh)$	$P = a + b + c$

- Sum of the Angles in a Triangle $A + B + C = 180°$

- Pythagorean Theorem $a^2 + b^2 = c^2$

Course Formulas

Formulas that students are required to memorize in this course:

Chapter 5

- Properties of Exponents

Zero Exponent $a^0 = 1, \quad a \neq 0$

Negative Exponent $a^{-n} = \frac{1}{a^n}, \quad a \neq 0$

Product Rule $a^m \cdot a^n = a^{m+n}$

Quotient Rule $\frac{a^m}{a^n} = a^{m-n}, \quad a \neq 0$

Power Rules

$$(a^m)^n = a^{mn}$$

$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, \quad b \neq 0$$

$$\frac{a^{-m}}{b^{-n}} = \frac{b^n}{a^m}, \quad a \neq 0, b \neq 0$$

$$\left(\frac{a}{b}\right)^{-m} = \left(\frac{b}{a}\right)^m, \quad a \neq 0, b \neq 0$$

- Dividing a Polynomial by a Monomial $\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c} \quad (c \neq 0)$

Math 0200 Formulas - *continued*

Chapter 6

- Difference of Squares $x^2 - y^2 = (x + y)(x - y)$

- Sums and Differences of Cubes $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$
  $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

Chapter 7

- Multiplying and Dividing Rational Expressions

$\frac{P}{Q} \cdot \frac{R}{S} = \frac{PR}{QS}$ $(Q \neq 0, S \neq 0)$ $\frac{P}{Q} \div \frac{R}{S} = \frac{P}{Q} \cdot \frac{S}{R} = \frac{PS}{QR}$ $(Q \neq 0, R \neq 0, S \neq 0)$

- Adding and Subtracting Rational Expressions

$\frac{P}{Q} + \frac{R}{Q} = \frac{P+R}{Q}$ $(Q \neq 0)$ $\frac{P}{Q} - \frac{R}{Q} = \frac{P-R}{Q}$ $(Q \neq 0)$

- Distance, Rate, Time

  - Rate = $\frac{\text{Distance}}{\text{Time}}$
  - Time = $\frac{\text{Distance}}{\text{Rate}}$
  - Distance = Time $\times$ Rate

- Rate of Work

  If a job can be completed in t units of time, then the rate of work is $\frac{1}{t}$ job per unit of time.

- Variation Formulas
  - y varies directly with x: $y = kx$
  - y varies indirectly with x: $y = \frac{k}{x}$
  - z varies jointly with x and y: $z = kxy$