ITT Technical Institute

MA1310

College Mathematics II

Onsite and Online Course

SYLLABUS

Credit hours: 4.5

Contact/Instructional hours: 45 (45 Theory Hours)

Prerequisite(s) and/or Corequisite(s):

Prerequisites: MA1210 College Mathematics I or equivalent

Course Description:

This course includes the following concepts: exponential and logarithmic equations and functions, graphs of trigonometric functions, trigonometric equations, polar coordinates, oblique triangles, vectors and sequences.

COURSE SUMMARY

COURSE DESCRIPTION

This course includes the following concepts: exponential and logarithmic equations and functions, graphs of trigonometric functions, trigonometric equations, polar coordinates, oblique triangles, vectors and sequences.

MAJOR INSTRUCTIONAL AREAS

1. Logarithmic and exponential functions
2. Trigonometric functions
3. Applications of trigonometry
4. Systems of linear equations
5. Conic sections
6. Sequences

COURSE LEARNING OBJECTIVES

By the end of this course, you should be able to:

1. Solve sequence problems.
2. Solve problems involving trigonometric functions of any angle.
3. Interpret the graphs of logarithmic, exponential, sine and cosine functions by constructing the graphs from their equations.
4. Evaluate the graphic characteristics of other trigonometric functions from their equations.
5. Solve problems involving oblique triangles and the area of a triangle.
6. Solve problems involving complex numbers and polar coordinates.
7. Solve problems requiring the use of vectors.
8. Solve and graph systems of equations with two or three variables.
9. Apply matrix methods to solve a linear system of equations.
10. Interpret the graphs of conic sections by constructing the graphs from their equations.

COURSE OUTLINE

MODULE 1: SEQUENCES

COURSE LEARNING OBJECTIVES COVERED

- Solve sequence problems.

TOPICS COVERED

- Sequences and Summation Notation
- Arithmetic Sequence
- Geometric Sequence

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Blitzer, Chapter 11, Sections 11.1-11.3, pp. 968-1003.	No	3 hr
Lesson: Study the lesson for this module.	No	1.5 hr
Discussion: Participate in the discussion titled "Errors in Sequences Problems."	Yes	N/A
Lab: Complete the lab titled "Sequences and Notations."	Yes	3 hr
Quiz: Prepare for Quiz 1.	No	2 hr

Total Out-Of-Class Activities: 9.5 Hours

MODULE 2: TRIGONOMETRIC, EXPONENTIAL, AND LOG FUNCTIONS

COURSE LEARNING OBJECTIVES COVERED

- Solve problems involving trigonometric functions of any angle.
- Interpret the graphs of logarithmic, exponential, sine and cosine functions by constructing the graphs from their equations.

TOPICS COVERED

- Trigonometric Functions
- Exponential Functions
- Logarithmic Functions
- Periodic Functions

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Blitzer, Chapter 4, Sections 4.1-4.5, pp. 412-473 and Chapter 5, Sections 5.3-5.5, pp. 513-557.	No	11 hr
Lesson: Study the lesson for this module.	No	2 hr
Discussion: Participate in the discussion titled "The Best Method to Solve Functions."	Yes	N/A
Practice Quiz: Take Practice Quiz 1.	No	1 hr
Lab: Complete the lab titled "Angles of Trigonometric Functions and Graphs of Sine and Cosine."	Yes	3 hr
Exercise: Submit the exercise titled "Exponential and Logarithmic Equations and Properties."	Yes	3 hr
Quiz: Take Quiz 1.	Yes	N/A
Quiz: Prepare for Quiz 2.	No	2 hr

Total Out-Of-Class Activities: 22 Hours

MODULE 3: GRAPHS OF OTHER TRIGONOMETRIC FUNCTIONS

COURSE LEARNING OBJECTIVES COVERED

- Evaluate the graphic characteristics of other trigonometric functions from their equations.

TOPICS COVERED

- Graphs of Other Trigonometric Functions
- Inverse Trigonometric Functions
- Applications of Trigonometric Functions

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Blitzer, Chapter 5, Sections 5.6-5.8, pp. 558-597.	No	5 hr
Lesson: Study the lesson for this module.	No	2 hr
Discussion: Participate in the discussion titled "Experience of Solving Problems on Graphs of Trigonometric Functions."	Yes	N/A
Practice Quiz: Take Practice Quiz 2.	No	1 hr
Lab: Complete the lab titled "Trigonometric and Periodic Functions."	Yes	3 hr
Exercise: Submit the exercise titled "Graphs of Inverse Trigonometric Functions."	Yes	3 hr
Quiz: Take Quiz 2.	Yes	N/A
Quiz: Prepare for Quiz 3.	No	2 hr

Total Out-Of-Class Activities: 16 Hours

MODULE 4: COMPLEX NUMBERS AND POLAR COORDINATES

COURSE LEARNING OBJECTIVES COVERED

- Solve problems involving oblique triangles and the area of a triangle.
- Solve problems involving complex numbers and polar coordinates.

TOPICS COVERED

- The Laws of Sines and Cosines
- Polar Coordinates
- Complex Numbers in Polar Forms

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Blitzer, Chapter 7, Sections 7.1-7.3, pp. 664-695 and Section 7.5, pp. 706-718.	No	5 hr
Lesson: Study the lesson for this module.	No	2 hr
Discussion: Participate in the discussion titled "Experience of Solving Complex Number and Polar Coordinate Problems."	Yes	N/A
Practice Quiz: Take Practice Quiz 3.	No	1 hr
Lab: Complete the lab titled "Laws of Sines and Cosines and the Area of a Triangle."	Yes	3 hr
Exercise: Submit the exercise titled "Polar Coordinates and Complex Numbers."	Yes	3 hr
Quiz: Take Quiz 3.	Yes	N/A
Quiz: Prepare for Quiz 4.	No	2 hr

Total Out-Of-Class Activities: 16 Hours

MODULE 5: VECTORS AND CONIC SECTIONS

COURSE LEARNING OBJECTIVES COVERED

- Solve problems requiring the use of vectors.
- Interpret the graphs of conic sections by constructing the graphs from their equations.

TOPICS COVERED

- Vectors and Dot Products
- The Ellipse
- The Hyperbola
- The Parabola

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Blitzer, Chapter 7, Sections 7.6-7.7, pp. 718-741 and Chapter 10, Sections 10.1-10.3, pp. 890-925.	No	6.5 hr
Lesson: Study the lesson for this module.	No	2 hr
Discussion: Participate in the discussion titled "Identify Expert and Non-Expert on Vectors."	Yes	N/A
Practice Quiz: Take Practice Quiz 4.	No	1 hr
Lab: Complete the lab titled "Vectors and the Dot Product."	Yes	3 hr
Exercise: Submit the exercise titled "Graphs of Conic Sections."	Yes	3 hr
Quiz: Take Quiz 4.	Yes	N/A
Final Exam: Prepare for the final exam.	No	5 hr

Total Out-Of-Class Activities: 20.5 Hours

MODULE 6: MATRIX SYSTEMS, EQUATIONS, AND INEQUALITIES

COURSE LEARNING OBJECTIVES COVERED

- Solve sequence problems.
- Solve problems involving trigonometric functions of any angle.
- Interpret the graphs of logarithmic, exponential, sine and cosine functions by constructing the graphs from their equations.
- Evaluate the graphic characteristics of other trigonometric functions from their equations.
- Solve problems involving oblique triangles and the area of a triangle.
- Solve problems involving complex numbers and polar coordinates.
- Solve problems requiring the use of vectors.
- Solve and graph systems of equations with two or three variables.
- Apply matrix methods to solve a linear system of equations.
- Interpret the graphs of conic sections by constructing the graphs from their equations.

TOPICS COVERED

- Linear Equations
- Systems of Inequalities
- Matrix Solutions to Linear Systems

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
Reading: Blitzer, Chapter 8, Sections 8.1-8.5, pp. 748-805 and Chapter 9, Section 9.1, pp. 822-833.	No	8hr
Lesson: Study the lesson for this module.	No	2 hr
Lab: Complete the lab titled “Equations, Inequalities, and Matrix Methods.”	Yes	3 hr
Final Exam: Take the final exam.	Yes	N/A

Total Out-Of-Class Activities: 13 Hours

EVALUATION AND GRADING

EVALUATION CRITERIA

The graded assignments will be evaluated using the following weighted categories:

CATEGORY	WEIGHT
Discussion	10%
Exercise	20%
Lab	30%
Quiz	20%
Final Exam	20%
TOTAL	100%

GRADE CONVERSION

The final grades will be calculated from the percentages earned in the course, as follows:

GRADE		PERCENTAGE
A	(4.0)	90-100%
B+	(3.5)	85-89%
B	(3.0)	80-84%
C+	(2.5)	75-79%
C	(2.0)	70-74%
D+	(1.5)	65-69%
D	(1.0)	60-64%
F	(0.0)	<60%

LEARNING MATERIALS AND REFERENCES

REQUIRED RESOURCES

COMPLETE TEXTBOOK PACKAGE

- Blitzer, R. (2010). *Algebra & trigonometry (Custom 4th ed.). Upper Saddle River, NJ:* Prentice Hall Publishing.
- Blitzer, R. (2010). *Student solution manual (Custom 4th ed.). Upper Saddle River, NJ:* Prentice Hall Publishing.

OTHER ITEMS

- Blitzer, R. (2010). *Algebra & trigonometry chapter test prep video CD (Custom 4th ed.).* Upper Saddle River, NJ: Prentice Hall Publishing. http://media.pearsoncmg.com/pcp/itt_media/1256386677/index.html
- Recommended Equipment:
  Scientific calculator (Texas TI-30)
  OR
- Web2.0calc
  http://web2.0calc.com/

RECOMMENDED RESOURCES

- Professional Associations
  - American Mathematical Society: www.ams.org
  - Association for Women in Mathematics: www.awm-math.org
  - Mathematical Association of America: www.maa.org
- ITT Tech Virtual Library(accessed via Student Portal | https://studentportal.itt-tech.edu)
  - Basic Search>
    - Immergut, B., & Smith, J. B. (n.d). *Arithmetic and algebra--again. leave math anxiety behind forever. [electronic resource]. New York McGraw-Hill c2005.*

- School of Study> General Education Information>
  - Recommended Links
    - MathGV
    - Paul's Online Math Notes
    - Practical Algebra Lessons from Purplemath
    - The Math Page
  - Research Guides
    - Tips for Math Success
  - Tutorial Links
    - MathTV.com

- Other References
  - Graph 4.3

    http://www.padowan.dk/graph/

    This Web page contains an open-source graphing tool. You can copy graphs and put them into Microsoft Word documents.
  - InterAct Math

    http://interactmath.com/

    A Web site that contains exercises that accompany the end-of-section exercise in your textbook

INSTRUCTIONAL METHODS AND TEACHING STRATEGIES

The curriculum employs a variety of instructional methods that support the course objectives while fostering higher cognitive skills. These methods are designed to encourage and engage you in the learning process in order to maximize learning opportunities. The instructional methods include but are not limited to lectures, collaborative learning options, use of technology, and hands-on activities.

To implement the above-mentioned instructional methods, this course uses several teaching strategies, such as practice quizzes, chapter videos, and lesson. Your progress will be regularly assessed through a variety of assessment tools including discussion, exercise, lab, quiz, and final exam.

OUT-OF-CLASS WORK

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a “time-based option” for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the “Course Outline” section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

ACADEMIC INTEGRITY

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct. For more information on the academic honesty policies, refer to the Student Handbook and the School Catalog.

INSTRUCTOR DETAILS

Instructor Name	
Office Hours	
Contact Details	

(End of Syllabus)