Wake Technical Community College	Mathematics and Physics Dept. Mathematics and Sciences Division	Fall 2007

Course Syllabus

Course		LECTURE	LAB	CREDIT
MAT 161 & 161A	**COLLEGE ALGEBRA**	3	2	4

Description

This course provides an integrated technological approach to algebraic topics used in problem solving. Emphasis is placed on equations and inequalities; polynomials, rational, exponential and logarithmic functions, and graphing and data analysis/modeling. Upon completion, students should be able to choose an appropriate model to fit a data set and use the model for analysis and prediction. *This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural sciences mathematics.*

Lab Description

This course is a laboratory for MAT 161. Emphasis is placed on experiences that enhance the materials presented in class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively.

Allocation of Lab Time

The two hours designated for lab activities in College Algebra will be integrated seamlessly within the five hours of contact time.

Pre/Corequisites

MAT 080 or a satisfactory score on the mathematics placement instrument. MAT 161A is a laboratory and a *required corequisite* for MAT 161. *You **must** be registered for the **same** sections of MAT 161 and MAT 161A in order to receive credit.* You will receive the same grade for both MAT 161 and MAT 161A.

Students who have not met the prerequisite(s) may not remain registered for this course. Talk with the instructor about possible issues.

Required Textbook(s)		Required Technology
Functions and Change A Modeling Approach to College Algebra, 3rd Edition Crauder, Evans, Noell Houghton Mifflin ISBN 0-618-81028-5	MAT 161 LAB MANUAL 3rd Edition Published by the M&P Department, WTCC Strongly recommend Excel Made Easy CD	A ***graphics calculator*** is required for this course. The TI-83 , **TI-84** or TI-86 graphics calculator is recommended and will be used for classroom teaching and demonstrations. Students will also be required to use a spreadsheet (EXCEL).

In keeping with the college's mission statement, this course will promote Wake Tech's five institutional values.

- **Respect** – Instructor and students will foster an environment that is respectful of all.
- **Responsibility** – Instructor and students will foster an environment that promotes taking responsibility for one's actions and obligations.
- **Critical Thinking** – Instructors and students will strive to improve the critical thinking skills of analysis, synthesis, and evaluation.
- **Communication –** Instructor and students will strive to ensure that both written and oral communications are clearly understood.
- **Collaboration** – Instructor and students will strive to develop collaborative skills.

Students with Disabilities

Disability Support Services is available for students who require academic accommodations due to any physical, psychological, or learning disability. To determine disability eligibility, contact the office at 108-S Holding Hall or call 662-3405 (TDD 779-0668).

For the Student:

Instructor's Name	Office Number	Office Hours	Phone #	Email address

Instructor's Web Page:		Eagle Cruiser Page	eagle.waketech.edu	
Department's Web Site: http://www.waketech.edu/math	For the Department:	July 5, 2006 (Date Revised)		MDP (Author)

Additional Learning Resources

1. Course instructors are available during office hours.
2. The Individualized Learning Center (ILC) provides tutors free of charge.
3. Videos are available in the ILC that cover topics in MAT 161.
4. Peers are a good source of help. Study groups are encouraged and can meet regularly in the mathematics lab in the ILC.
5. The instructor's webpage may be used to provide students with information and supplemental material.

Attendance

The college attendance policy, as stated in the General Catalog, will be followed. October 26, 2007 is the last day to withdraw from the course with a grade of W. If you stop attending after the last day to withdraw without penalty, you will receive a grade of "WF". In cases of extenuating circumstances (usually in the event of documented medical problems) an instructor may give a grade of "WP".

Tests and Exams

There will be four one-hour tests and a comprehensive final exam. **No make-up tests or quizzes will be given.** The final exam percentage score may be used to replace the lowest test grade.

Homework, Quizzes, and Labs

Assignments will be made based upon topics covered as indicated on the course schedule found below. These assignments will be considered a minimum amount of work that students should do daily. Completing each assignment will be crucial for success in the course. Homework may be collected and graded at the discretion of the individual instructor. Also, quizzes may be given during the semester. There will be **no** make-ups for quizzes.

There will be five Excel Labs which count 50% of your Excel Grade and an in-class Excel Final which counts for the other 50% of your Excel Grade.

Late Work and Test Time

In general, **no late work will be accepted**. All Lab activities and Projects are due the **beginning** of class. Any Lab activity or Project turned in after it is due but **before the next class period** will be accepted with a penalty of 20% reduction in points.

Students will be given a designated amount of time to complete all tests. The time will begin when tests have been passed out. Students who come in tardy will not be given additional time. Other arrangements may be made if the student is able to call the instructor ahead of time.

Grading System

The four tests will count 100 points each and the final exam will count 100 points. Homework, quizzes covering the homework, and problem sets will combine for 100 points. Projects (3, which will require team work outside of class) will combine for 100 points. Excel work will be worth 100 points, making the course total 800 points. Grading will be on a "10-point scale".

Goals of the Course

1. Students will master the material outlined in the syllabus.
2. Homework and class work activities will increase the problem solving skills of the students.
3. Students will appreciate the applications found in material covered in this course.
4. Students will learn to communicate their thoughts and ideas regarding mathematics.

Benchmarks

After completing the course, students should be able to:

1. solve linear, exponential, logarithmic, rational, quadratic, power, and piece-wise functions,
2. graph linear, exponential, logarithmic, rational, quadratic, power, and piece-wise functions,
3. state the period, amplitude, median and phase shift given periodic data, function, or graph,
4. solve real-data applications,
5. employ the appropriate technology to solve problems as well as investigate and model data.

Other Notes

The last date for withdrawing from the course without penalty is October 26, 2007. Students who attend class after that date will receive a grade of A, B, C, D, WF, WP, or F.	In addition to teaching the student to apply mathematical skills, this course will also strengthen the student's ability to work in a team, utilize technology as a tool, and to communicate mathematically. Therefore, students will be required to work collaboratively and to work on team-assignments outside of class.	This course has been listed as a web-assisted course. The instructor may utilize email and/or the Internet to provide students with material necessary for success in this course.

Additional information for the student can be found at: www.waketech.edu/math/syllabus/

Schedule of Instruction

****Changes in this schedule will be announced in class.**

****The material in the review should be mostly review for MAT 161 students. Students who do not know this material should take the prerequisites for MAT 161 before taking MAT 161.**

Week	SECTION	TOPIC	HOMEWORK
1	Intro	Review Problems	Review Sheet
	1.2	Functions Given by Tables	SB: 1-7 odd, 11 Ex: 1,3,7,9,11,13,19
	2.1	Tables and Trends	SB: 1-11 odd Ex: 1,3,9,11a,21
	Excel Lab 1	Introduction to Excel	Lab due on _____
2	Another Look	Limits (p. 101 – 103)	Worksheet in Lab Manual Enrichment Ex: E-3 & E-5
	1.3	Functions Given by Graphs	SB: 1-11 odd Ex: 1,3,5,7,9
	2.2	Graphs	SB: 1-11 odd; Ex: 1,3,5,7,17,19
3	Excel Lab 2	Formulas and Graphs	Lab due on _____
		Transformations	Worksheets in Lab Manual
	2.3	Solving Linear Equations	SB: 1-9 odd; Ex: 1,5,15,17
	2.4	Solving Nonlinear Equations	SB: 1,3,5; Ex: 1,5,7,13a,15
4	2.5	Optimization	SB: 1-9 odd Ex: 1,3,17,19,21
		Review	pg 91-94 & 181-183
		Test 1	Grade: _____
5	3.1	The Geometry of Lines	SB: 1-11 odd Ex: 7,9,13,15
	3.2	Linear Functions	Enrichment Ex: E-3 pg 210 SB: 1-13 odd Ex: 1,3,9,11
		Linear Modeling – Interpreting Graphs	Worksheet in Lab Manual
	3.3	Modeling Data with Linear Functions including Another Look	Enrichment E-1; SB: 1,2,3,4,7,11 Ex: 1.3 ab,7,9,11a.b.c
6	3.4	Linear Regression	SB: 1-9 odd Ex: 1,3,5,9
	Project 1	Bungee Jump Data Collection	Worksheet in Lab Manual
		Linear Modeling – Line of Best Fit	Worksheet in Lab Manual
	Excel Lab 3	Least Squares Regression	Lab due on _____
		Linear Inequalities	Worksheet in Lab Manual
7	5.3 (pg 386)	Piecewise Functions	Worksheets in Lab Manual
	3.5	Systems of Equations	Enrichment Ex: E-1 SB: 3,5; Ex: 3,15,17
		Problem Session Day	
		Review	pg 266-268
		Test 2	Grade: _____
8	Project 2	The First Taste of Exponentials	Worksheet in Lab Manual
	4.1	Exponential Growth with Conversions	SB: 1,2,4-12; Worksheet in Lab Manual
	4.1	Exponential Growth with Conversions	Ex: 1,3,4,5abc,7,13;

9	4.2	Modeling Exponential Data	Ex: 1,3,4,7,9
	4.3	Modeling Nearly Exponential Data	Ex: 1,3,7ab,9,15
	Excel Lab 4	Exponential Functions	Lab due on _____
10		Exponent Rules	Worksheet in Lab Manual
		Laws of Logarithms	Worksheet in Lab Manual
		Logarithm and Exponential Equations	Worksheet in Lab Manual
		Exponential Function Facts	Worksheet in Lab Manual
11	4.4	Logarithmic Functions	SB: 1,2; Ex: 1,2
	4.4	Logarithmic Functions	SB: 5,6,7; Ex: 7,9,10
		Problem Session Day	
12		Review	pg 345-347
		Test 3	Grade: _____
	5.1	Power Functions	SB: 1-10, Ex: 1,3,4,5,12 Worksheet in Lab Manual
13		The Great Pendulum Experiment	Worksheet in Lab Manual
	Project 3	Data Collection	Project due on _____
	5.2	Modeling Data with Power Functions	Ex: 1b,c; 5, 10
	5.4	Quadratic Functions and Parabolas	SB: 3,9,11; Ex: 1,6,7,8,9,11,13
14	Excel Lab 5	Quadratic and Power Function Applications	Lab due on _____
		Quadratic Applications	Worksheet in Lab Manual
		Quadratic Inequalities	Worksheet in Lab Manual
	5.5	Higher-degree polynomials and Rational Functions	SB: 5-12; Ex: 1,3,9,11,13 Worksheet in Lab Manual
15		Periodic Functions	Worksheets in Lab Manual
		Modeling Periodic Functions	Worksheets in Lab Manual
		Space Shuttle Activity	Worksheet in Lab Manual
16		Review	pg 434-436
		Test 4	Grade: _____
		Review	
		Excel Exam	
17	6.2	Rates of Change	Ex: 1,3,5
	6.3	Rates of Change	Ex: 5,7,9
		Review	
		Final Exam	