Abilene Christian University

Spring 2011

MATH 124.02: Precalculus II
MWF: 1:00-1:50
Foster Science Building 205

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Course Blog: blogs.acu.edu/1120_MATH12402

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Required Text(s): The following text(s) are required for this course and may be purchased in the campus book store, or ordered online at the student's discretion. Please bring these text(s) everyday to class.

1. *Precalculus,* Sullivan, Michael, 8th edition, Prentice Hall, Upper Saddle River, New Jersey, 2008.

Course Material(s): The TI-83, TI-84, or TI-84 plus calculators are required for this course. You should bring your calculator everyday to class. Students should have access to a calculator for use on tests, quizzes, and homework. Calculators will not be loaned out during class and cannot be exchanged between students during tests or quizzes.

Course Description: The ACU course catalog describes the course as follows:

> **MATH 124 Precalculus II** (3-0-3), An introduction to rational, trigonometric, exponential, logarithmic, and inverse functions with emphasis on graphical techniques. Further topics may include analytic geometry, polar coordinates, mathematical induction, and the binomial theorem. Requires a graphing calculator. Prerequisites: MATH 109 or COMPASS placement. A student may not receive credit for this course after receiving credit for MATH 185 or 186.

This course will introduce and develop the models of mathematics that arise as a result of exponential, logarithmic, logistic, and trigonometric functions.   The student who is successful in this course will be able

- to derive equations of populations relating to exponential and logistic growth from measured data and/or physical laws
- to demonstrate an understanding of the connection between models involving angles, oscillations and trigonometric functions
- to develop geometric visualization and intuition about mathematical processes involving oscillations, periodicity, amplitudes, and trigonometric inverses.
- to utilize polar, complex representations of numbers to simplify, or extend mathematical models.
- to solve applied problems using properties of the right triangle, law of sines and cosines.
- to develop geometric visualization of conic sections and their connections with analytic formulae.

Mission Statement: This course supports ACU's mission statement of preparing students for Christian service and leadership throughout the world by providing students a foundational understanding of the mathematical principles such as problem solving and decision making, as well as exposing students to the role of mathematics in a Christian world view.

Departmental Mission: The mission of the Department of Mathematics is to educate students to be quantitative and analytical thinkers in preparation for Christian service and leadership throughout the world.

Grading Components: This course employs a standard grading scale of, $A = 90 – 100, B = 80 – 89, C = 70 – 79, D = 60 – 69, F = 0 – 59.$ The specific grading components and associated percentages are described below.

Daily Work (20%): Daily work assignments will consist of homework, quizzes, and small modeling projects assigned over the course of the semester. All work assigned is designed to prepare students for in-class quizzes and exams. Some sort of work will be assigned each class period, and will either be quizzed over in the next class period or turned in for a grade. **Homework will not be accepted late except at the discretion of the instructor and under extraordinary circumstances. In class quizzes cannot be made up.** At the end of the semester, I will drop your three lowest daily grades.

Exams (4 @ 15%) : There will be four exams this semester. Each of the exams is announced in the course schedule included with this syllabus. Each exam will cover material from lectures, assigned homework problems, and quizzes. Each exam is worth 15% of the course grade.

Final Exam (20%): The final exam is scheduled for **2:00 – 3:45 PM, Thursday May 12.** The final exam will be comprehensive and cannot be given early under any circumstance. Please make your end of semester plans accordingly.

Attendance Policy: Your regular attendance is both necessary and expected. You are responsible for all material covered while absent and will be expected to take regularly scheduled exams at their designated times except under extraordinary circumstances at the discretion of the instructor. You will be notified each time you are absent. Tardiness of more than 15 minutes is considered an absence and will be recorded as such. Should your number of absences exceed 25% of the scheduled course dates you can be dropped from the course at the instructor's discretion. Please make every effort to attend class prepared and ready to participate.

There are some situations for which a student absence will be excused. It is the student's responsibility to document such absences so they are removed from your record. Among the reasons absences are considered excused are the following:

1. Participation in a university sponsored activity. If you miss class for a university sponsored activity, I must have seven (7) days advanced written notice and you must make arrangements to complete your assignments before leaving. The sponsor of the activity is responsible for giving you a signed form on time. If I do not have the appropriate form in advance, the absence will be considered unexcused. This is university policy.

2. Death or major illness in your immediate family. Immediate family includes parents, siblings, grandparents, spouse, child, and other as deemed appropriate by the instructor.

3. Illness of a dependent family member.

4. Injury or illness that is too severe or contagious for you to attend class.

   a. Injury or illness of three or more consecutive days. For injury or illness that requires you to be absent from classes for three consecutive days, you should obtain a medical confirmation note from your medical provider. A health care professional may provide written confirmation only if he/she is involved in your

medical care. The medical confirmation note must contain the date and time of the illness and medical professional's confirmation of needed absence.

    b. Injury or illness less than three consecutive class days. These will be evaluated on a per case basis at the discretion of the instructor. These must be brought to the instructor's attention through email or written note of explanation within a week of the last date of absence in order to be considered.

    c. An absence for any other non-acute illness or medical service does not constitute an excused absence.

5. Mandatory admission interviews for professional or graduate schools which cannot be rescheduled. Receiving advising from another department or signing up for classes should never be scheduled during class time and do not constitute an excused absence.

Should an excused absence cause you to miss a test, the instructor will provide an opportunity for the test to be taken at a time that works for all parties involved. If an absence is excused and you miss a daily assignment or quiz, I will replace the grade on the assignment with the average of the previous assignment and the next assignment. This will not require the student to turn in such assignments, but it should be noted that the student is responsible for all material covered during the absence.

Homework Policy: Homework sets will be assigned periodically throughout the semester. It is the expectation of the course that you will be working on homework every day. You should form the habit of doing the relevant problems between successive lectures and not try to do the whole set the night before they are due. Solutions will be available on the afternoon of the day they are due, **so late homework is not acceptable**. I encourage collaboration in this course, but I insist on honesty about it. If you do your homework in a group, be sure it works to your advantage rather than against you. **Good grades for homework you have not thought through will translate to poor grades on exams.** You must turn in your own write-ups of all problems, and, if you do collaborate or use outside resources, you should reference them on your solution sheet. Failure to do so constitutes an act of academic dishonesty.

Make-up Policy: **After an exam has been graded and handed back in class, it will not be accepted for a grade under any circumstance.** In the case of a university excused absence, it is the student's responsibility to make arrangements with the instructor regarding due dates. **Exams cannot be made up if missed except under extraordinary circumstances at the discretion of the instructor.** There will not be any work accepted for extra credit.

Academic Integrity Policy: The university policy regarding academic integrity is available online at http://www.acu.edu/campusoffices/provost. Students found guilty of an act of academic dishonesty will be subject to the following disciplinary actions in this course.

    First Occurrence: A first violation will result in no credit for that particular assignment (even if it is an exam). No makeup will be allowed.   The appropriate campus office(s) will be notified of the incident, and a notice of the incident will accompany your university records.

    Second Occurrence: A second violation will result in your withdrawal from the course with a grade of F. A recommendation for suspension from the university will be made by the department.

Electronic Devices Policy: Please turn off all cell phones, beepers, pagers, alarms, .mp3 players, etc… unless such devices are being used for class purposes as indicated by your instructor. Headphones, listening to music, texting, and other uses of these devices not for class purposes are strictly prohibited during class. Frequent disruptions or failure to abide by this policy will be viewed as disruptive behavior and are subject to being dismissed from class and being counted absent. If the disruptions continue you will be dropped from the course.

Disability Accommodations: If you have a documented disability and wish to discuss academic accommodations, please feel free to contact me. The ACU Student Disability Services Office (a part of Alpha Academic Services) facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, you must be registered with Disability Services and you must complete a specific request for each class in which you need accommodations. Contact Disability Services at 674-2667 for further information or to set up an appointment.

Office Hours, Spring Schedule: Below is my schedule for the spring 2011 semester. The times marked "Office Hours" represent the times I will make myself available to work with you on homework, understanding lectures, or for any other questions you might have. Please take advantage of these opportunities. If you find that none of these times work for you, feel free to email me at jee99a@acu.edu or call me at 674-2162 to set up an alternate appointment. No appointment is needed if you attend regularly scheduled office hours. This schedule is posted on the front of my office door as well.

Spring 2010	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 – 8:30					
8:30 – 9:00					
9:00 – 9:30	MATH 131.01 FSB 239	Office Hours	MATH 131.01 FSB 239	Office Hours	MATH 131.01 FSB 239
9:30 – 10:00	MATH 131.01 FSB 239	Office Hours	MATH 131.01 FSB 239	Office Hours	MATH 131.01 FSB 239
10:00 – 10:30	MATH 361.01 FSB 239	Office Hours	MATH 361.01 FSB 239	Office Hours	MATH 361.01 FSB 239
10:30 – 11:00	MATH 361.01 FSB 239	Office Hours	MATH 361.01 FSB 239	Office Hours	MATH 361.01 FSB 239
11:00 – 11:30			Lunch		
11:30 – 12:00					
12:00 – 12:30					
12:30 – 1:00					
1:00 – 1:30	MATH 124.03 FSB 205		MATH 124.03 FSB 205		MATH 124.03 FSB 205
1:30 – 2:00	MATH 124.03 FSB 205		MATH 124.03 FSB 205		MATH 124.03 FSB 205
2:00 – 2:30	Office Hours		Office Hours		
2:30 – 3:00	Office Hours		Office Hours		
3:00 – 3:30	Office Hours		Office Hours		
3:30 – 4:00					

Course Schedule: A tentative course schedule for the semester is detailed in the table below.

Week 1	Jan 19	Syllabus, Review of exponential law (5.3)
	Jan 21	Review of logarithmic functions (5.4)
Week 2	Jan 24	Exponential growth and decay models (5.8)
	Jan 26	Logistic growth and decay models (5.8)
	Jan 28	Dynamical systems, iterative methods
Week 3	Jan 31	Exponential, logarithmic, and logistic interpolation methods (5.9)
	Feb 2	Angles and Measures (6.1)
	Feb 4	The Unit Circle (6.2)
Week 4	Feb 7	Review
	Feb 9	**Test 1**
	Feb 11	Trigonometric functions, sine, cosine, tangent (6.3)
Week 5	Feb 14	Trigonometric functions, cosecant, secant, cotangent (6.3)
	Feb 16	Geometric view of trigonometric functions (6.4, 6.5)
	Feb 18	Sinusoidal functions, phase shift, amplitude (6.6)
Week 6	Feb 21	Inverse sine, cosine, and tangent functions (7.1)
	Feb 23	Inverse cosecant, secant, and cotangent functions (7.2)
	Feb 25	Pythagorean identities, sum, difference formulas (7.3-7.4)
Week 7	Feb 28	Double angle, half angle, product to sum formulas (7.5-7.6)
	Mar 2	Applications
	Mar 4	Review
Week 8	Mar 7	**Test 2**
	Mar 9	Solutions of linear trigonometric equations (7.7)
	Mar 11	Solutions of trigonometric equations with identities (7.8)
Spring Break	Mar 14	**Spring Break – no class**
	Mar 16	**Spring Break – no class**
	Mar 18	**Spring Break – no class**
Week 9	Mar 21	Solving trigonometric equations graphically (7.8)
	Mar 23	Applications involving right triangles (8.1)
	Mar 25	The law of sines (8.2)
Week 10	Mar 28	The law of cosines (8.3)
	Mar 30	Simple harmonic motion and damping (8.5)
	Apr 1	Review
Week 11	Apr 4	**Test 3**
	Apr 6	Polar coordinates, polar equations (9.1-9.2)
	Apr 8	Complex variables, DeMoivre's formula (9.3)

Week 12	Apr 11	Euler's formula, complex exponentials
	Apr 13	Parabolas (10.2)
	Apr 15	Ellipses (10.3)
Week 13	Apr 18	Hyperbolas (10.4)
	Apr 20	Applications of conics
	Apr 22	**Easter Holiday – no classes**
Week 14	Apr 25	Polar equations of conics (10.6)
	Apr 27	Parametric equations (10.7)
	Apr 29	Applications
Week 15	May 2	Review
	May 4	**Test 4**
	May 6	Review