

## ***Course Syllabus*** ***MATH 2312***

### **Summer 2009 Precalculus**

#### **Instructor Contact Information**

Instructor: Dr. Tommy Thompson

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If a personal situation arises that you feel I need to be aware of, send that information to:

[Tommy.Thompson@UTDallas.edu](mailto:Tommy.Thompson@UTDallas.edu) or leave a message at 972.860.8272.

#### **Course Pre-requisites, Co-requisites, and/or Other Restrictions**

*Prerequisite:* A test score of 480 on the SAT II Mathematics Level IC exam or a grade of at least a C in MATH 1314 or an equivalent course.

#### **Course Description**

The goal of this course is to provide the student with an understanding of algebraic, exponential, logarithmic, and trigonometric functions. Additionally, the successful student will gain proficiency in the algebraic manipulation required to succeed in Calculus.

#### **Student Learning Objectives/Outcomes**

- (1) Students will be able to formulate real world problems into mathematical statements.
  - Given a narrative description of a problem that lends itself to mathematical analysis, the student will clearly define any variable quantities introduced and provide an appropriate equation, function, or formula relating those variables.
- (2) Students will be able to develop solutions to mathematical problems at the level appropriate to each course.
  - Students will be able to explain the concept of a function and inverse of a function, and in particular be able to determine the domain.
  - Students will become familiar and able to work with the exponential and logarithmic functions, trigonometric and inverse trigonometric functions and identities.
  - Students will be able to use algebraic techniques for finding the roots of various types of equations. These include equations involving polynomial, rational, radical, exponential, logarithmic, and trigonometric expressions.
- (3) Students will be able to describe or demonstrate mathematical solutions either numerically or graphically.
  - Students shall provide a qualitative planar sketch, clearly labeling prescribed geometric features.

#### **Required Textbook**

Text: Precalculus, 7th Edition, Larson & Hostetler.

#### **Suggested Course Materials**

*Solutions manual:* The Student Solutions Manual is recommended and available in the bookstore.

*Calculator:* A scientific calculator is recommended. Graphing calculators, programmable calculators, or calculators with non-numeric displays are NOT ALLOWED on quizzes or exams.

#### **Additional Resources**

WebCT: <http://webct.utdallas.edu> requires your NETID and password to logon. Once logged in,

select this course. If successful, you will see a link to the course syllabus and a blue backpack which contains additional course material. You can view your grades, use the email tool, or utilize the discussion tool to communicate with your classmates. You will receive a notice via WebCT6 (either an announcement, or an email) if there is additional information, exam date/location change, etc, or an urgent message, class canceled, etc, that directly impacts this course. If a personal situation arises that you feel I need to be aware of, send that information to; [dlewis@utdallas.edu](mailto:dlewis@utdallas.edu). DO NOT send email to me via WebCT.

The UTD Math Lab is located in McDermott Library in Room 2.412 (phone: 972-883-6707) The hours are 10am until 8pm, Monday through Thursday; Friday and Saturday 10am until 2pm. The Math Lab provides free walk-in tutoring for students. In addition to the help available during normal operating hours, each registered student is entitled to a free, one-hour, individual tutorial per week. Individual tutorials require an appointment which are arranged via learning center personnel.

SWE-Society of Women Engineers, <http://swe.utdallas.edu/>

NSBE-National Society of Black Engineers, <http://www.utdallas.edu/orgs/nsbe/nsbehome.htm>

## **Academic Calendar**

### **Final Exam:**

#### **Course Schedule** (subject to change)

5/27 Introduction, syllabus, pretest, Section 1.2, 1.3, 1.4

6/1 Quiz 1 Sections: 1.5, 1.6, 1.7, 1.8

6/3 Quiz 2 Sections: 1.9, 2.1, 2.2, 2.3

6/8 Sections: 2.5, 2.6, A.8

6/10 Quiz 3, Review for Exam 1

#### **6/15 Exam 1**

6/17 Sections: 3.1- 3.3

6/22 Quiz 4, Sections: 3.4, 4.1, 4.2

6/24 Quiz 5, Sections: 4.3, 4.4

6/29 Sections: 4.5, 4.6

7/1 Quiz 6, Sections: 4.7, 4.8, 5.1

7/6 Quiz 7, Review for Exam 2

#### **7/8 Exam 2**

7/13 Sections: 5.2, 5.3, 5.4, 5.5,

7/15 Quiz 8, Sections: 6.1, 6.2, 6.5, 7.1

7/20 Sections: 7.2, 7.5

7/22 Quiz 9, Additional topics Sections: 10.2, 10.3, 10.4

7/27 Quiz 10, CH 10 Review

7/29 Review for Final Exam

## 8/10 Final Exam

### Assignments

Homework exercises generally consist of odd-numbered problems that have solutions in the back of the text. The assignments are intended to supply adequate practice for mastery of the concepts presented in each section. You should challenge yourself by attempting some of the even-numbered problems of like kind and checking your solutions where possible. Homework will not be collected, however, quizzes and exams may contain problems taken directly from the assigned problems.

An additional homework document is available in the backpack on Webct. These problems are referenced in the assignments below, and where possible, reflect concepts that are similar to the material in the section.

The problems in this document are taken directly from problems in calculus and are included here to give you the flavor of algebraic manipulation that is expected of you in a calculus course. The problems are optional, however, it behooves all of you that intend to take calculus at UTD to have a look.

Sections marked with an asterisk are optional and may not be covered in a given semester.

(Subject to change)

Sec 1.2 1-43 odds, 57-69 odds, 71, 73a,b,c,d (do c & d w/o a calculator), 76, 77, 81, 83, 85, 87, 89

Sec 1.3 1, 3, 5, 7, 9, 11, 13, 17, 21, 25, 27, 29, 33, 36, 37, 39, 43, 45, 47, 51, 55, 57, 59, 61, 65, 69, 71, 73, 75, 77, 79, 81, 83, 85, 89, 97, 99, 105, 109, 113, 115, 133, 235, 137

Sec 1.4 1, 2, 5, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 43, 45, 49, 51, 53, 55, 56, 57-73 odds, 79-91 odds, 92, 100, 101, 109, 111, 115 See Additional Homework

Sec 1.5 1, 4, 5, 7, 9, 10, 11, 12, 13, 15, 17, 19, 22, 23, 31, 33, 35, 37, 53, 55, 57, 63-83 odds, 88, 97, 99, 113, 115, See Additional Homework

Sec 1.6 1, 7, 29, 31, 35, 43, 45, 53, 54, 55, 57, 59, 61, 65, 71, 73, 75

Sec 1.7 1, 2, 3, 4, 9, 11, 13, 15, 17, 19-43 odds, 47, 49, 73, 77, 79, 81, 84, 85, 87

Sec 1.8 5, 9, 11, 15, 17, 21, 23, 31, 33, 35, 37, 41, 47, 49, 51, 53, 63, 69, 73, 75, 77

See Additional Homework

Sec 1.9 1, 3, 5, 7, 9, 10, 11, 12, 15, 47, 19, 21, 23, 27, 39, 43, 45, 47, 51, 55, 57, 61, 63, 65, 67, 69, 73, 75, 95, 97, 99, 104

Sec 2.1 1, 3, 5, 13, 19, 21, 23, 25, 57, 31, 33, 43, 47, 51, 57, 59, 61, 63, 65, 71, 73, 75a, 76a, b, c, 77, 79, 81, 83, 91, 93, 95, 97, 101, 102, 103

Sec 2.2 1-8 all, 9, 11, 13, 17, 21, 27, 29, 33, 37, 39, 41, 47, 51, 55, 59, 61, 63, 65, 67, 69, 73, 77, 79, 89a, b, 90a, b, 99, 100, 101, 105, 107, 109, 112, 114, 115, 117, 119

Sec 2.3 1, 5, 7, 9, 1, 13, 15, 17, 37, 39, 41, 57, 59, 61, 69, 71, 75, 76, 77, 87, 89, 91, 95

Sec 2.4\* 1-81 odds, 85, 91, 93, 95, 99, 100, 101, 102

Sec 2.5 1, 3, 8, 7, 9, 11, 15, 17, 37, 39, 43, 45, 47, 49, 55, 57, 59, 61, 65, 71, 103a, b, 107, 113, 115, 117, 126, 129, 131

Sec 2.6 1-25 odds, 29, 33, 37, 41, 45, 47, 49, 53, 57, 59, 69, 71, 75, 77, 81, 82, 85, 87, 89, 91, 92

Radical Functions

Appendix A8 1-15 odds, 19-27 odds, 29-35 odds w/o calculator, 39, 41, 43, 47, 49, 51, 53, 55, 57, 59, 62, 63, 65, 67, (See corrections at the bottom of this table).

Sec 3.1 1, 3, 5, 7, 8, 9, 10, 11, 21 odds, 27, 29, 31, 33, 37, 45, 47, 46, 51, 53, 55, 61, 71, 73, 75, 80, 81, 83, 84 See Additional Homework

Sec 3.2 1-43 odds, 45, 49, 55, 59-85 odds, 95, 97, 103, 105, 107

Sec 3.3 1-79 every other odd, 87, 89, 91, 93, 95, 97, 103-106, 109

Sec 3.4 1-102 every other odd, 109, 115, 119, 121, 122, 127, 129, 130, 133, 135, 137

Sec 4.1 1 - 81 every other odd, 87, 89, 91, 93, 101, 107, 109, 116, 117, 119, 121, 123

Sec 4.2 1-51 odds, 57a, 59, 63, 65, 67, 69

Sec 4.3 1-7 odds, 9-16 all, 17-26 all, 27-61 odd, 64, 65, 67, 73, 75, 77, 81, 86

See Additional Homework

Sec 4.4 1-27 odds, 29-36 all, 41, 43, 45-64 all, 81, 83, 85 odds, 93, 95, 97, 101, 103, 105

Sec 4.5 1-23 odds,27,31,35,37,39,43,49,51,55,67,68,79,85,91,92,93,95  
 Sec 4.6 1-6 all, 7,9,11,15,23,25,31,33,39-51 odds,57,61,75  
 Sec 4.7 1-16 all, 17-33 odds, 37-67 odds, 71,73,91,95 (see 94 for def of "angle of repose"),97,98,99,101,108a,e,113-116  
 Sec 4.8 1,5,9,11,13,15,47,49,21,23,24,25,29,31,33,35,37,41,43,45,47,49,61,69,71  
 Sec 5.1 1-53 odds,57,58,59,60,61,63,65,67,77,79,81,83,85,91,93,99,103,105,113,114,115,119  
 Sec 5.2 1,3,5,7,12,13,15,19,21,23,27,31,33,35,41,43,45,47,48,49,51,53,57,58,59,63  
 65,67 See Additional Homework document  
 Sec 5.3 1-43 odds,55,57,59,61,69,73,79,83,85,89, See Additional Homework  
 Sec 5.4 1-6 all, 7-41 odds, 45,46,47,51,53,57,61,63,69,71,77, 78,49,81,83  
 (hint: work right to left),87,101,103 See Additional Homework  
 Sec 5.5 1-49 odds,50,51,55,59,61,63,67,69,75,79,83,91,93,97,99,  
 101,102,107,115,117,120,121,139 See Additional Homework  
 Sec 6.1 1-21 odds, 29,31,35,37,39,43,47,49,51  
 Sec 6.2 1-19 odds,23,25,31,33,37,39,41,44a,b,45,47,59,61,63,65,67,69,71,73  
 Sec 6.5\* 1-17 odds, 21,31,33,35,37,47,49,53,55,59,61,71,75,79,80,91,93,95,97,103  
 Sec 7.1 1-15 odds,19,21,25,27,33,35,39,41,47,51,53,55,59,61,63,67,69,73,75,  
 77,80,85,89,91,93  
 Sec 7.2 1-41 every other odd, 43,45,47,51,73,77,78,81,83  
 Sec 7.4\* Partial Fractions (linear only) 1-31 odds,37,39,41,43,51,55,57,69,71,  
 72 (set up the function),73,76,85,87,89,91,92 See Additional Homework  
 Sec 7.5 1,5,9,11,(15,17,19,23 without a graphing utility),  
 31,35,37,43,45,47,55,57,58,59,60,71,85-88,89,91  
 Sec 10.1\* 1-47 every other odd, 51,53,55,59a,60a,61,63,64,67,69,71,75  
 Sec 10.2\* 1-23 odds, 31-57 odds  
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 Sec 10.3\* 1-21 odds, 27-53 odds  
 Sec 10.4\* 1-15 odds, 21-39 odds, 45-59 odds  
 Corrections to solutions in appendix A8. #1.  $(-\infty, 3]$  #7.  $(0, \infty)$   
 #39 domain of  $g(f(x))$  is  $[-5, \infty)$  #41 domain of  $g(f(x))$  is  $[-9, \infty)$   
 #63  $A(t)$  should read  $A(t) = 0.36\pi t^2$  #67 False,  $f(g(x)) = x, x \in \mathbf{R}$  and  
 $g(f(x)) = x, x \in [0, \infty)$ .

## Grade Policy

Course grade is determined on the following measures and according to the Grade Scale as listed:

Two major exams: 100 pts each

5 Quizzes: 25 pts each, one per week during non-exam weeks

Comprehensive Final Exam: 100 pts

Weights: 20% Quiz total, the best 8 quiz scores scaled to 100%.

50% Major exams, (the final exam score, if higher, will replace the lower score of the two major exams.)

30% Final Exam, comprehensive, not optional.

Each quiz will be administered during class time, generally on Monday. Each major exam will occur during regular lecture time but possibly in a different classroom. You will be notified in class of any change of venue prior to the date of the exam.

Grade Scale [97,100]...A+ [93,97).....A [90,93).....A-

[87,90).....B+ [83,87).....B [80,83).....B-

[77,80).....C+ [73,77).....C [70,73).....C-

[67,70).....D+ [63,67).....D [60,63).....D-

[0,60).....F

Example: Ex 1 = 85, Ex 2 = 74, Ex 3 = 95, Quiz% = 91, Final Exam = 88. Ex 2 is dropped,

Course % =  $0.2(\text{Quiz}\%) + 0.25(\text{Ex1} + \text{Ex3}) + 0.3(\text{Final Exam}) = 89.6$

Letter grade: B+

## **Course & Instructor Policies**

### *Attendance*

Attendance is not mandatory.

### *Citizenship*

Any action that disturbs your classmates or interrupts the lecture is unacceptable.

Examples of such actions are:

- (a) Entering the classroom late...be punctual.
- (b) Leaving the classroom before break or before the end of lecture.
- (c) Cell phones, ringers, buzzers, beepers, alarms ... turn them off unless you are a member of an emergency response team.

An apology is expected from anyone creating such a disturbance.

Student participation in class is desired, however, please raise your hand to speak and avoid

having side conversations with your classmates.

### *Extra credit*

No extra credit

### *Late work*

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Occasionally there may be an assignment that is to be completed outside the classroom. Any such assignment will have a specified deadline-- failure to meet the deadline will result in a 25% reduction per day late, of the point value for the assignment.

### *Exam/Quiz policies*

- (a) There will be no make-up quizzes.
- (b) There will be no make-up exams unless the circumstances are extraordinary.
- (c) Exams and quizzes are closed book, without notes, and without graphing calculators (unless otherwise instructed).
- (d) SHOW ALL WORK on quizzes and exams. Unsupported answers are considered miracles and, however inspirational, will receive little or no credit. Graded quizzes and major exams will be returned to you as soon as possible. Any document not picked up by the end of finals week will be destroyed.
- (e) Final exams are not returned to the student but are held for review for one year.

## **Intercollegiate Competitions**

Students involved in a UTD sanctioned competitive activity must supply the instructor with a letter certifying his/her eligibility to participate in such a competition. Said letter may be obtained from the Intercollegiate Compliance Officer. It is the students' responsibility to discern scheduling conflicts and to inform the instructor well in advance of a class, quiz, or exam that will be missed due to a competition. The instructor will make reasonable accommodation to resolve the conflict.

*General University policies on Academic Integrity, Incomplete Grades, and other important topics, form part of this Syllabus, and are to be found in the version of the Syllabus posted on the UTD Website.*

## **Field Trip Policies, Off-campus Instruction and Course Activities**

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address

[http://www.utdallas.edu/BusinessAffairs/Travel\\_Risk\\_Activities.htm](http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm). Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

## **Student Conduct & Discipline**

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern

student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

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A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

### **Academic Integrity**

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

### **Email Use**

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

### **Withdrawal from Class**

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

### **Student Grievance Procedures**

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the *Course Syllabus Page 8*

grievance originates (hereafter called “the respondent”). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent’s School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean’s decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

### **Incomplete Grade Policy**

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester’s end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

### **Disability Services**

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22

PO Box 830688

Richardson, Texas 75083-0688

(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student’s responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

### **Religious Holy Days**

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

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The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period

equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

***These descriptions and timelines are subject to change at the discretion of the Professor.***