Math 150 Functions, Trigonometry, and Linear Systems

Course Description: Math 150: Functions, Trigonometry, and Linear Systems. (3-2). Credit 4. Graphs, functions, college algebra and trigonometry, linear systems and vectors.

Learning Outcomes
This course is focused on quantitative literacy in mathematics in order to prepare students for calculus. Upon successful completion of this course, student will be able to

- Perform operations (adding, subtracting, multiplying, dividing) on real numbers, complex numbers, functions, exponents, radicals and vectors
- Graph relations, functions, and vectors
- Solve an equation, a system of equations, and inequalities
- Identify characteristics of a particular function
- Comprehend and solve an application problem (time-to-do work, distance = rate\times time, mixtures)
- Understand the importance of domain and be able to find the domain
- Apply exponential functions and logarithmic functions
- Understand and apply basic trigonometry

Core Objectives

Critical Thinking
The following critical thinking skills will be assessed on in-class quizzes and exams. Students will

- Think creatively to discern what technique is needed to simplify an expression, or solve an equation or application.
- Analyze functions and their inverses, if they exist.
- Use inquiry to determine if they need to check the domain or check for extraneous solutions after solving an equation.
- Synthesize inverse functions and unique triangles to solve for all of the sides and angles of a triangle
- Translate movement into a resulting vector

Communication Skills
The following communication skills will be assessed on in-class quizzes, exams and in lecture. Students will

- Transform functions through shifts, stretches, shrinks, and reflections
- Interpret graphs and be able to identify their basic parent functions
- Create a sign-chart model to solve non-linear inequalities
- Interpret a solution, including any units, to an application problem
- Be required to answer questions during class concerning topics discussed in class
- Discuss with others approaches and solutions to problems in the required recitation

Empirical and Quantitative Skills
The following empirical and quantitative skills will be assessed on in-class quizzes and exams. Students will

- Solve application problems and draw conclusions regarding the mathematical answer.
- Logically prove if a function is a one-to-one function or not, if a relation is even, odd or neither, or if a trigonometric equation is an identity or not.
- Identify the domains, range, intercepts, symmetries, zeros, and asymptotes of a function or graph.
- Analyze an exponential or logarithmic application, including half-life problem, to determine what technique is needed to solve the problem.
- Transform numerical data into a functional model.
- Understand and apply the difference quotient to various types of functions.
Instructor: Dr. Sherry Scarborough  
Office: 209 Blocker  
Email Address: sherry.scarborough@math.tamu.edu  

Emails: In all correspondence, please include your name, your course number, and your section number in the subject line. Please regularly check your TAMU email, as I often send the class emails.  

Web Site: http://www.math.tamu.edu/~Sherry.Scarborough/  
Dr. Sherry’s Office Hours: Mondays 3 – 4:30pm, Wednesdays 3 – 4pm, Thursdays 10:30am – 12pm  
Textbook: Online Textbook: PreCalculus (WebAlg) - 1e by David Manuel, Michael Stecher, and Patti Wells, which will be accessed via WebAssign, your online homework system.  

Class Notes: Class notes are found in Howdy → eCampus → Math 150  
Calculator: No calculators are allowed on quizzes or exams. In-class calculator demonstrations will be done with a TI-83/84. It is recommended that you do as much of your online homework without the use of a calculator as you can.  

Class Times  
- Sections 501-506: MWF 10:20 – 11:10am BLOC 169  
- Sections 507-512: MWF 11:30am – 12:20pm BLOC 169  
- Sections 525-530: MWF 1:50 – 2:40pm BLOC 166  

Recitation: Attendance in your recitation section is required, and you must attend the recitation section in which you are enrolled. Recitation sessions are led by a teaching assistant (TA) and meet once a week, every week, including the first week, depending upon your section number. You will be meeting in small sections to ask math questions of the TA, take quizzes, and take individual exams. You will be assigned to a group during the second week’s recitation.  

Exam Schedule  

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<thead>
<tr>
<th>ODD SECTION NUMBERS</th>
<th>EVEN SECTION NUMBERS</th>
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<tbody>
<tr>
<td>Exam I September 23 and 24</td>
<td>Exam I September 24 and 25</td>
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<td>Exam II October 21 and 22</td>
<td>Exam II October 22 and 23</td>
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<td>Exam III November 18 and 19</td>
<td>Exam III November 19 and 20</td>
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Comprehensive Final Exam Schedule  
- Sections 501-506: Tuesday December 16 from 8 – 10am BLOC 169  
- Sections 507-512: Wednesday December 17 from 10:30am – 12:30pm BLOC 169  
- Sections 525-530: Tuesday December 16 from 3:30 – 5:30pm BLOC 166  

Make-Up Exams: According to the student rules, "If an instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse." The Math 150 exam makeup dates are the dates that the math department offers that are less than a week from the date of the missed exam. The TAMU math department makeup exam schedule is found at http://www.math.tamu.edu/courses/makeupexams.html.

Grading: The average of your 3 regular exams (15% each) will count as 45% of your grade, your quiz average 15%, your online homework 15%, and your comprehensive final 25%. Due to confidentiality, grades will not be discussed via phone or email, only in person. Grade cutoffs: A is 90 – 100%, B is 80 – 89%, C is 70 – 79%, D is 60 – 69%, and F is 0 to 59%.  

Exams: You will need to bring to your exams your Texas A&M student ID, a #2 pencil and an eraser. You will also need a standard Aggie Scantron form for your recitation exams and for your comprehensive final exam. For your 3 regular exams, you will be taking part of your exam in recitation and part of your exam in lecture. The regular lecture exams will be work-out. The recitation exams will be multiple-choice. The comprehensive final exam will be multiple choice and taken in the lecture room. No calculators, cameras or recording devices allowed.  

Quizzes: Quizzes may be given in lecture or in recitation, and may or may not be announced ahead of time. Individual quizzes and group quiz worksheets may be in class or out of class. Most quizzes, in the form of worksheets will be done in assigned groups. Your note-card quiz-assignment, which is due on or before your third recitation (September 16th or 18th), is found at the following web site: http://www.math.tamu.edu/~scarboro/150fall2014welcome.pdf. There will be no makeup quizzes, since at the end of the semester when final grades are calculated your 2 lowest quiz grades are dropped.
Student ID: You will need to have your Texas A&M student ID with you for ALL classes.

WebAssign: All online homework will be based in the online system WebAssign.
- Everything you will need to know about creating an account and logging in is available here: http://www.math.tamu.edu/courses/eHomework/. Notice the important links on this web site: WebAssign Login Page, Student Help Request Form (this is where you go if you are having any trouble with WebAssign), Student Information Page and FAQ. Now go to the Student Information Page and read the Math 150 link and ALL the links under Student Help Links.
- A WebAssign account has an access fee and you will need to “purchase access online” during the first two weeks of school. After that, you risk being locked out of the system and missing important assignments.
- There will be no makeup homework assignments, since at the end of the semester when final grades are calculated your 2 lowest homework grades are dropped.

Grade Disputes: Once you leave class with any graded paper you accept its grade, unless there is a totaling error. All grade disputes must be dealt with at the time you receive them. If the grade was not totaled correctly, you have one week from when the paper was first returned to the class to get the correction made.

Help Sessions: Help Sessions are a place to see homework-type problems worked and a place to get online homework help. Help Sessions usually start about the second week of school. Help session information can be found at http://www.math.tamu.edu/courses/helpsessions.html.

Week-In-Reviews (WIR): Weekly reviews will be given by Math 150 instructor Dr. JD Kim. These include an exam review on the week of your exam. WIR is not held the week immediately after an exam week. On my Math 150 web page are links to Week-In-Reviews for this semester as well as in the past. The WIR starts the second week of school. See http://www.math.tamu.edu/~jdkim/math150fall2014week_in_review/ for this semester's WIR.

Policies: Policies pertaining to absences, scholastic dishonesty and final examinations are identical to TAMU regulations. Students with an official excused absence are permitted to make up exams only for the dates of the absence. All other assigned work, even that assigned on the excused date, is due as assigned.

Make-Up Policy: No make-up examinations will be given without a university approved excused absence (See the Texas A&M University Student Rules). An absence for a non-acute medical service or regular check-up does not constitute an excused absence. To be excused you must notify Dr. Sherry by email prior to date of absence if such notification is feasible. Please note that all make-ups must go through me, though you are welcome to copy in your TA. Consistent with Texas A&M Student Rules, students are required to notify their instructor (Dr. Sherry) by the end of the second school day after missing an examination. For injury or illness too severe or contagious to attend class, you must provide confirmation of a visit to a health care professional affirming date and time of visit. The Texas A&M University Explanatory Statement for Absence from Class Form will NOT be accepted. It is the student's responsibility to schedule a makeup! Attendance is required in this course.

Late Policy: No late work will be accepted and no extensions on online homework problem sets will be granted.

Copyright: All exams, printed handouts, class notes, assignments, online homework problems, quizzes, worksheets, and web-materials are protected by U.S. Copyright Laws. No multiple copies can be made without my written permission. No exams, quizzes, or assignments may be shared with anyone outside of this class. Class notes, online material, online homework problems, exams, quizzes, worksheets, handouts, or subsets thereof may NOT be posted on Facebook, Twitter, Yahoo!Answers, YouTube, blogs, wikis, forums, videos, podcasts, or any other social media.

Plagiarism: As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. Class notes, online material, online homework problems, exams, quizzes, worksheets, handouts, or subsets thereof may NOT be posted on Facebook, Twitter, Yahoo!Answers, YouTube, blogs, wikis, forums, videos, podcasts, or any other social media.
Academic Integrity Statement: Aggie Honor Code: “An Aggie does not lie, cheat, or steal or tolerate those who do.” You are an Aggie and so am I! Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit http://aggiehonor.tamu.edu/. Students may work together on their suggested practice homework problems. Online homework, individual quizzes, and examinations are to be taken individually. You may not discuss the contents of an exam until they are returned, to do so violates the Aggie Honor Code. The final exam contents are confidential forever since the final exam is property of the mathematics department and will not be returned.

Aggie Honor Code Violations (cheating): All Aggie Honor Code and copyright violations will be reported. Violations include copying someone else’s work, acquiring answers from an unauthorized source, allowing someone to copy your work, continue writing on an exam or quiz after time is called, violating copyright laws, having someone else do your assignments, posting class material on any social media, etc. Common sanctions include getting a zero for the assignment, getting an F for the course, not being allowed to drop the course, getting a star by your grade on your transcript indicating academic dishonesty, not graduating with honors, getting expelled, dismissed, or suspended from the university, and/or completing an Honor Council Academic Integrity Development Program course, etc.

Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu .

Personal Requests: You are always welcome to come to my office hours; you do not need an appointment. I encourage you to come, ask questions, as often as you would like. Students who come to office hours can get personal attention and help. If you smoke, please ‘air out’ before visiting. As a courtesy to all, please turn your cell phones and pagers off during all classes and office hours. Thanks!

Please Note: While it is critical that you attain the correct answer to a question, you must show correctly, precisely, and accurately its solution (all the steps, labels, explanations, equal signs, models, etc.) in an orderly, clear, concise manner. Where appropriate, circle your final answer. You are responsible for your own learning.

Emergencies: On-campus phones: 9-911 Off-campus and cell phones: 911
Tentative Schedule

Week 1: Introduction, Sections 1A – 1C: real numbers, exponents, radicals, polynomials
Week 2: Sections 1C – 2A: polynomials, rational expressions, complex numbers, solving equations
Week 3: Sections 2A – 2B: solving equations, solving inequalities
Week 4: Review, EXAM 1 (1A – 2B), Sections: 3A rectangular coordinate system
Week 5: Sections 3A – 4A: graphs of equations, linear equations and inequalities in two variables, functions
Week 6: Sections 4B – 4E: graphs of functions, transformations of functions, extreme function values, combinations of functions
Week 7: Sections 4E – 5A: combinations of functions, inverse functions, polynomial functions
Week 8: Review, EXAM 2 (3A – 5A), Sections 5B: rational functions
Week 9: Sections 5B – 5D: rational functions, exponential functions, logarithmic functions
Week 10: Sections 5D – 7B: logarithmic functions, exponential and logarithmic equations, applications of exponentials and logarithms, systems of linear and non-linear equations
Week 11: Sections 8A – 8D: angles and circles, trigonometric functions and their graphs, trigonometric identities
Week 12: Review, EXAM 3 (5B – 8D), Sections: 8E – 8F inverse sine functions, inverse trigonometric functions
Week 13: Sections 8G – 8H: law of sines and cosines, solving trigonometric equations
Week 14: Sections 8H – 9D: solving trigonometric equations, vectors, scalar multiplication, vector addition, vector length
Week 15: 9D – 9E: vector length, dot product; Review

Help:

- Bookmark my web page so you will know where to find all important information [http://www.math.tamu.edu/~Sherry.Scarborough/](http://www.math.tamu.edu/~Sherry.Scarborough/)
- Bookmark my Math 150 web page [http://www.math.tamu.edu/~sherry.scarborough/150topics.html](http://www.math.tamu.edu/~sherry.scarborough/150topics.html)
- Read the first day handout and the welcome note found on my Math 150 web page
- Read my class notes (found on elearning.tamu.edu) and skim the online book before class
- Attend all classes, including all recitations
- Bring your class notes, pencil, and TAMU student ID to every class
- Do all your graded online homework
- Ask questions
- Do all your text homework
- Attend Dr. Sherry’s office hours
- Attend help sessions [http://www.math.tamu.edu/courses/helpsessions.html](http://www.math.tamu.edu/courses/helpsessions.html)
- Attend Math 150 Fall 2014 Week-In-Review (WIR) and do the problems before going to WIR or looking at the solutions: [http://www.math.tamu.edu/~jdkim/math150fall2014week_in_review/](http://www.math.tamu.edu/~jdkim/math150fall2014week_in_review/)
- Work on the WIR problems from the Fall of 2013: [http://www.math.tamu.edu/~scarboro/150fall2013wir.html](http://www.math.tamu.edu/~scarboro/150fall2013wir.html)
- Watch the special topic streaming videos found on my Math 150 web page
- Ask me for help with homework problems during office hours
- Keep up with the course
- Form study groups and get together regularly
- Get a personal tutor (a list is available outside Blocker 227)
- Contact the Learning Skills Center (845-4427)
- Contact [http://tutor.tamu.edu/](http://tutor.tamu.edu/)
- Contact Services for Students with Disabilities, if needed, at 845-1637
- Read How is College Different from High School? by TAMU Student Counseling Service at [http://www.math.tamu.edu/~scarboro/howiscollegedifferentfromhighschool.pdf](http://www.math.tamu.edu/~scarboro/howiscollegedifferentfromhighschool.pdf)
- Read Self Help-Math Study Skills by TAMU Student Counseling Service at [http://scs.tamu.edu/?q=node/92](http://scs.tamu.edu/?q=node/92)
- See TAMU Student Counseling Service Self Help Guides at [http://scs.tamu.edu/?q=node/88#academic](http://scs.tamu.edu/?q=node/88#academic)
- Register for TAMU Student Counseling Services at [http://scs.tamu.edu/](http://scs.tamu.edu/)
- Read the PreCalc Chronicles found at [http://www.math.tamu.edu/~sherry.scarborough/150topics.html#ebook](http://www.math.tamu.edu/~sherry.scarborough/150topics.html#ebook)