# Southwest College
## Department of Mathematics

### Course Syllabus–Summer 2015
Math 0409: Foundations of Mathematics CRN: 57079

### West Loop Center - 8:00am – 10:30 am/ MoTuWeThFr

| **Instructor:** Adnan Said | **MyMathLab Course ID:** said72705 | **School Zip Code:** 77081 |
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## Contact Information
Please feel free to contact me concerning any problems that you are experiencing in this course.
I am available to hear your concerns, and to discuss course topics. You do not need to wait until
you have received a poor grade before asking for my assistance. Your performance in my class is
very important to me. My e-mail is: adnan.said@hccs.edu. I check my email every weekday. I will do
my best to reply within 24 hours. Always include your full name, course name, and course term. You
need to check your HCC email regularly, as I will be sending important announcements and updates.
You may visit my Learning Web page at **http://learning.hccs.edu/faculty/adnan.said**.

## Office hours and location
MoWeFr: 12:30 pm – 1:30 pm, (by appointment)**,** West Loop Center, Room C256.

## Textbook
Prealgebra and Introductory Algebra by Bittinger & Ellenbogen;
3rd Ed. Publisher: Addison Wesley, 2011,
ISBN -13: 9780321731630



The textbook is packaged together with the solutions manual
and the MyMathLab access code at the bookstores at HCC.
The access code can also be purchased separately online or
at the bookstore.
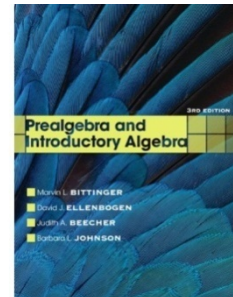
## Textbook Options
MyMathLab software contains an e-version of the textbook (i.e., e-book). It is your decision
to either purchase the MyMathLab access code **only** (and use the e-book), or purchase the
MyMathLab access code **and** the physical textbook.

## Reusing an user code or user name on *MML*
Students who (a) dropped or failed MATH 0306 or MATH 0409 <u>OR</u> (b) are taking MATH 0409 after
passing MATH 0306 may use their code again within a certain timeframe by logging in using the
same user name and password, and then selecting "Enroll in a new course" under "Courses you are
taking". However, students must have a new code for a course that uses a different textbook.

## Course Description
Foundations of Mathematics: Topics include real numbers, proportions, descriptive statistics, basic geometry, polynomials, factoring, linear equations, inequalities, linear models, percentage models, order of operations, set operations, and an introduction to other models which may include exponential, quadratic and/or rational models, quadratic equations and rational expressions. A departmental final examination must be passed with a score of 60% or more in order to pass the course. Prerequisite: MATH 0306 or equivalent test score.

## Prerequisites
TSIA Reading Score above 341 or GUST 0339 with a grade of C or higher; TSIA Math Score 336 – 347 with Elementary Algebra Score 5 – 15 and Intermediate Algebra Score 0 – 6; SAT: 450-499; ASSET: Numerical Skills Raw Score: 19+; Scaled Score 42+; ASSET Elementary Algebra Raw Score 0-13; Scaled Score: 23-44; Math 0106: Pass with "C" or better

## Course Intent and Audience
This course is intended for students who have either never been exposed to algebra or who have been away from the subject for quite some time. Particularly, this course is intended to prepare students for the study of Math 0312 or for a non−Calculus−based College Level Math course, specifically Math 1332 or Math 1333.

## Homework
Homework assignments have been developed that will enhance your learning. To better understand a topic, you will be given assignments on key information that you will need to remember for your success in your career. All homework and (or) major exams must be completed online using MyMathLab, an online learning and assessment system. To register for MyMathLab and to access the homework, go to www.pearsonmylabandmastering.com. Please see the MyMathLab registration overview that touches on each registration method and follow the instructions on how to register and use MyMathLab. You may use MyMathLab free for a certain number of days, but you will be required to purchase the access code to continue using MyMathLab. It is the student's responsibility to finish the homework before due dates. The score for any homework not attempted will be a zero (0). Upon logging into MyMathLab, run the link "Browser Check" located on the "Dashboard". That will ensure that all the necessary software is correctly installed. The "Study Plan exercises" and "Practice Test exercises" are optional.

## Exam Policy
Your instructor will conduct <u>four</u> in-class exams, and a final in-class exam to determine how successful you are at achieving the course learning outcomes (mastery of course content and skills) outlined in the syllabus. All exams must be taken in class during the scheduled testing dates.

## Make-up
Make-up will not be given. The <u>final</u> exam score replaces one <u>missed</u> exam score. If a second test is missed, the score for that missed test is zero.

## Final Examination
The final examination is departmental and consists of 25-33 Multiple-choice problems. The final exam will be taken in class. The problems cover all the material required in the course. Formula sheet and calculators are not allowed. <u>If you score less than 60% on the final exam, you are automatically given a course grade of F, as noted under the grading policy</u>. If your score on the final exam is 60% or higher, then your grades are averaged using the formula specified under grading policy. You must pass the final exam in order to pass the course.

## Grading Policy

For your final course average, the scores from the four exams, MyMathLab Homework, and the final examination will be taken into consideration as shown in the following formula:

Final Course Average is:

(Exams average)(0.55) + (MyMathLab Homework average)(0.20) + (Final exam)(0.25).

Students who score less than 60% on the Final Exam will be awarded a course grade of "F."

Assessments Weights

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|---|---|
| Four exams | 55% of your final grade |
| MyMathLab Homework | 20% of your final grade |
| Final Exam | 25% of your final grade |

A grade of "IP" (In Progress) or "I" (Incomplete) will not be given. The final grade will be determined as explained above. Your final course grade is based on the following standard HCC scale.

| Final Average | 90≤Avg≤100 | 80≤Avg<90 | 70≤Avg<80 | 60≤Avg<70 | Avg<60 |
|---|---|---|---|---|---|
| Final Course Grade | A | B | C | D | F or FX |

## FINAL GRADE OF FX

Students who stop attending class and do not withdraw themselves prior to the withdrawal deadline may either be dropped by their professor for excessive absences or be assigned the final grade of "FX" at the end of the semester. Students who stop attending classes will receive a grade of "FX", compared to an earned grade of "F" which is due to poor performance.

Please note that HCC will not disperse financial aid funding for students who have never attended class. Students who receive financial aid but fail to attend class will be reported to the Department of Education and may have to pay back their aid. A grade of "FX" is treated exactly the same as a grade of "F" in terms of GPA, probation, suspension, and satisfactory academic progress.

## Tests Schedule and Important Dates

| Test # 1 | 8.2, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 10.1, 10.2 | 6/15/2015 |
|---|---|---|
| Test # 2 | 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 11.1, 11.2, 11.3, 11.4, 11.7 | 6/22/2015 |
| Test # 3 | 12.1, 12.2, 12.3, 12.4, 12.5, 12.6,12.7, 12.8 | 6/29/2015 |
| Test # 4 | 13.1, 13.2, 13.5, 13.6, 14.1, 14.2, 14.6, 16.1 | 7/7/2015 |
| Final Exam | Cumulative | TBA |

| 4th of July Holiday | 7/3/2015 |
|---|---|
| Last Day to Drop Classes | 6/29/2015 |

## Instructional Methods

As an instructor, I want my students to be successful. I feel that it is my responsibility to provide you with knowledge concerning the field of mathematics, modeling good analytical problem solving strategies, and organizing and monitoring the success of each student with homework that allows you to connect the information that you learn in this course to applications in other course work and life in the real world.

As a student wanting to learn about the field of mathematics, it is your responsibility to read the textbook, complete and submit assignments on the due dates, study for the exams, participate in class activities, and enjoy yourself while experiencing the real world of mathematics**.**

As I believe that engaging the students in the learning is essential for teaching to be effective, you will spend a portion of class time involved in problem solving activities. You will be involved in discussions with your classmates and your instructor. As you will want to contribute to these discussions, you will need to come to class prepared to discuss, analyze and evaluate information from your text and other assigned readings.

## Technical Compliance
Students are expected to maintain a state of technical compliance, including (but not limited to) the following: up-to-date software as required by the instructor and a stable Internet connection. It is imperative that you have access to a personal computer over which you have administrator rights when working on online class assignments and(or) exams. Such assessments may require installing certain software programs. The instructor is not required to give consideration for lost, missing, or incomplete work stemming from technical non-compliance or end-user technical issues.

## Technical Support
If you experience technical difficulties during the semester, these problems are not under the control of the instructor. Such technical problems should be directed to technical support.
For MyMathLab tech support go to the site
**http://www.pearsonmylabandmastering.com/northamerica/students/support/index.html**
or call 1-800-677-6337 or 1-888-695-6577.

## Attendance Policy
It is important that you come to class. Attending class regularly is the best way to succeed in this class.  Research has shown that the single most important factor in student success is attendance. Going to class greatly increases your ability to succeed. You are expected to attend all lectures regularly. You are responsible for materials covered during your absences.  Class attendance is checked daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences.

If you are not attending class, you are not learning the information.  As the information that is discussed in class is important for your career, students may be dropped from a course after accumulating absences in excess of six (6) hours of instruction. The six hours of class time would include any total classes missed or for excessive tardiness or leaving class early.

Poor attendance records tend to correlate with poor grades. If you miss any class, including the first week, you are responsible for all material missed. It is a good idea to find a friend or a buddy in class who would be willing to share class notes or discussion or be able to hand in paper if you unavoidably miss a class. Class attendance equals class success.

## Withdrawal policy
If you feel that you cannot complete this course, you will need to withdraw from the course prior to the final date of withdrawal.   Before you withdraw from your course; please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course.  Your success is very important. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than Six total course withdrawals throughout their educational career in obtaining a certificate and/or degree.

To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor *may* "alert" you and HCC counselors that you might fail a class because of excessive absences and/or poor academic performance.  It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

If you plan on withdrawing from your class, you <u>Must</u> contact a HCC counselor or your professor prior to withdrawing (dropping) the class for approval and this must be done <u>Prior</u> to the withdrawal deadline to receive a "W" on your transcript.

**Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online registration calendars, HCC schedule of classes and catalog, any HCC Registration Office, or any HCC counselor to determine class withdrawal deadlines.  Remember to allow a 24-hour response time when communicating via email and/or telephone with a professor and/or counselor. Do not submit a request to discuss withdrawal options less than a day before the deadline.  If you do not withdraw before the deadline, you will receive the grade that you are making in the class as your final grade. If you wish to drop the class, then it is your responsibility to do that before the final drop date. ***Neither you nor your instructor will be able to perform the drop after the final drop date.***

## Repeat Course Fee
The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition.  The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate.  Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

## Course Reinstatement Policy
Students have a responsibility to arrange payment for their classes when they register, either through cash, credit card, financial aid, or the installment plan. Faculty members have a responsibility to check their class rolls regularly, especially during the early weeks of a term, and reconcile the official class roll to ensure that no one is attending class whose name does not appear on it. Students who are dropped from their courses for nonpayment of tuition and fees who request reinstatement after the official date of record (OE Date) can be reinstated by making payment in full and paying an additional/ per course reinstatement fee. A student requesting reinstatement should present the registrar with a completed **Enrollment Authorization Form** with the signature of the instructor, department chair, or dean who should verify that the student has been attending class regularly. Students who are reinstated are responsible for all course policies and procedures, including attendance requirements.

## Classroom Behavior
As your instructor and as a student in this class, it is our shared responsibility to develop and maintain a positive learning environment for everyone.  Your instructor takes this responsibility very seriously and will inform members of the class if their behavior makes it difficult for him/her to carry out this task.  As a fellow learner, you are asked to respect the learning needs of your classmates and assist your instructor achieve this critical goal.

## Academic Honesty

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty.  "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

    Copying from another students' test paper;
- Using  materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of a test not yet administered;
- Bribing another person to obtain a test that is to be administered

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. Refer to the DE Student Handbook.

## Student's Responsibilities

To be successful in this class, the student shall:
• Meet the course prerequisites by the time the course starts
• Visit the class sites online on Eagle Online and *MSL* at least 5 times per week to perform
   class activities, get updates on class announcements and complete class assignments on time
• Check your Email and all course announcements and calendar (on EO) daily
• Read the important information regarding the course that is provided in various documents
   located in the first topic listed on the Eagle Online course home page ("Course Basics")
• Read, while assuring comprehension, the sections in the textbook covered in the course
• Complete homework assignments *MSL* by the time they are due
• Keep up with the course progress to avoid falling behind
• Take all online term exams in the scheduled days and times
• Study (includes reading the textbook, completing homework assignments, watching the
   class videos and slides online, seeking help from the instructor or any other recognized
   authority in the subject, etc.) for as long as it takes to ensure understanding of the course
   material and successful performance in the course
• Take the final exam as scheduled
• Perform satisfactorily in all written assessment tools.
• Seek individualized help from appropriate sources when necessary to discuss any questions
   Or class-related issues.

## Resources and supplemental instruction

Free tutoring is available at the West Loop and Stafford campuses. Dates, times and room locations will be announced as soon as such information becomes available Additional help is also  available through http://m.se.hccs.edu/index.php and through Student Support Services.

Students can get free assistance, 24 hours a day, 7 days a week, in Math, English and other subjects, at www.hccs.askonline.net . Typically, posted questions are answered by an HCC tutor or faculty within 24 hours (usually under 6 hours).

By purchasing a MyMathLab access code, students can also receive free tutoring from the Pearson Tutor Center at http://digitalvellum.next.ecollege.com/postindexmixed.html?courseId=5734065 . Students can get tutoring either over the phone, fax, email, or interactive web.

You may also find free tutoring at various HCCS campuses by going to Find-A-Tutor at http://imc06.hccs.edu/alltutoring/FMPro?-db=alltutoring.fp5&-lay=info&-format=search.htm&-view.

There are also several online math resources that you can find with an internet search.
Some sample websites include:
http://sophia.hccs.edu/~douglas.bump/math        www.khanacademy.org
www.awl.com/tutorcenter/stinfo.html              www.Purplemath.com
www.harcourtcollege.com/math/nettutor/0030260264/    www.mhhe.com/barnett

## HCC Policy Statement – ADA
Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at his or her respective college at the beginning of each semester. Faculty members are authorized to provide only the accommodations requested by the Disability Support Services Office. Persons needing accommodations due to a documented disability should contact the ADA counselor for their college as soon as possible. For questions, please contact Dr. Becky Hauri at 713.718.7910. To visit the ADA Web site, please visit www.hccs.edu then click Future students, scroll down the page and click on the words Disability Information.

## Use of Camera and/or Recording Devices
As a student active in the learning community of this course, it is your responsibility to be respectful of the learning atmosphere in your classroom.  To show respect of your fellow students and instructor, you will turn off your phone and other electronic devices, and will not use these devices in the classroom unless you receive permission from the instructor.
Use of recording devices, including camera phones and tape recorders, is prohibited in classrooms, laboratories, faculty offices, and other locations where instruction, tutoring, or testing occurs. Students with disabilities who need to use a recording device as a reasonable accommodation should contact the Office for Students with Disabilities for information regarding reasonable accommodations.

## Personal Communication Device Policy
All personal communication devices (any device with communication capabilities including but not limited to cell phones, blackberries, pagers, cameras, palmtop computers, lap tops, PDA's, radios, headsets, portable fax machines, recorders, organizers, databanks, and electronic dictionaries or translators) must be muted or turned off during class. Such activity during class time is deemed to be disruptive to the academic process. Personal communication devices are to not be on the student desk during examinations. Usage of such devices during exams is expressly prohibited during examinations and will be considered cheating (see academic honesty section above).

## Sexual Harassment
It is a violation of HCC policy for an employee, agent, or student of the college to engage in sexual harassment as defined in the EEOC guidelines (EEO/AA Compliance Handbook 47).

## Course Outline

### GEOMETRY and SET OPERATIONS (Unit I)      (6 hours)

This unit presents the basic geometric figures, their relations, and basic set operations.  The instructor should emphasize the perimeter and area of triangles, quadrilaterals, and circles and set operations including union, intersection, and complement. Listed below are the subtopics covered in this unit:
- Perimeter
- Area
- Circles
- Introduction to Set Operations

### INTRODUCTION TO REAL NUMBERS & ALGEBRAIC EXPRESSIONS (Unit II)    (8 hours)

This unit presents an introduction to algebra and the real number system.  The instructor should emphasize addition, subtraction, multiplication and division of real numbers and the properties of real numbers.  This unit concludes with simplifying expressions and the order of operations. Listed below are the subtopics covered in this unit:
- Introduction to Algebra
- The Real Numbers
- Addition of Real Numbers
- Subtraction of Real Numbers
- Multiplication of Real Numbers
- Division of Real Numbers
- Properties of Real Numbers
- Simplifying Expressions; Order of Operations

### SOLVING EQUATIONS AND INEQUALITIES (Unit III)      (8 hours)

The major emphasis of this chapter is to teach solving linear equations.  A mastery of this chapter requires that the student have a thorough understanding of combining like terms and properties of equality.  The skills necessary for solving equations is extended to include working with the equality of two fractions and solving inequalities in a single variable. Listed below are the subtopics covered in this unit:
- Solving Equations: The Addition Principle
- Solving Equations: The Multiplication Principle
- Using the Principles Together
- Formulas
- Applications of Percent
- Applications and Problem Solving
- Solving Inequalities
- Applications and Problem Solving with Inequalities

### GRAPHS OF LINEAR EQUATIONS AND INEQUALITIES (Unit IV)      (6 hours)

This unit introduces plotting ordered pairs, rates of change (slopes), and sketching linear equations

of the form y = mx + b and linear inequalities. Listed below are the subtopics covered in this unit:
- ➤ Graphs Linear Equations
- ➤ More with Graphing and Intercepts
- ➤ Slope and Applications
- ➤ Graphing Using the Slope and the y-intercept
- ➤ Graphs Linear Inequalities in Two Variables

## POLYNOMIALS: OPERATIONS (Unit V)    (12 hours)

This unit begins with integer exponents and scientific notation.  The topics include the techniques to recognize a polynomial and find the degree of a polynomial; perform addition, subtraction, multiplication and division of polynomials. Listed below are the subtopics covered in this unit:
- ➤ Integers as Exponents
- ➤ Exponents and Scientific Notation
- ➤ Introduction to Polynomials
- ➤ Addition and Subtraction of Polynomials
- ➤ Multiplication of Polynomials
- ➤ Special Products
- ➤ Operations with Polynomials in Several Variables
- ➤ Division of Polynomials (Monomials Divisors Only)

## POLYNOMIALS: FACTORING (Unit VI)    (6 hours)

This unit covers factorization of polynomials. Listed below are the subtopics covered in this unit:
- ➤ Introduction to Factoring (GCF and Grouping)
- ➤ Factoring Trinomials (of the type $x^2 + bx + c$ only)
- ➤ Factoring Trinomial Squares and Differences of Squares
- ➤ Factoring : A General Strategy

## RATIONAL EXPRESSIONS AND EQUATIONS (Unit VII)    (4 hours)

This unit begins with multiplying and simplifying rational expressions.  The topics include the techniques to reduce or build–up fractions; perform addition, subtraction, multiplication and division of fractions. Listed below are the subtopics covered in this unit:
- ➤ Multiplication and Simplifying Rational Expressions
- ➤ Division and Reciprocals
- ➤ Rational Equations and applications (proportions only)

## RADICAL EXPRESSIONS AND EQUATIONS (Unit VIII)    (2 hours)

This unit covers finding the principal square roots, identifying radicands of radical expressions, identifying whether a radical expression represents a real number and simplifying radical expressions with a perfect-square radicand. Listed below is the subtopic covered in this unit:
- ➤ Introduction to Radical Expressions(Perfect Square Radicands Only)

## LINEAR, QUADRATIC, AND EXPONENTIAL MODELING (Unit IX)    (4 hours)

This unit covers includes matching scatter plots with tables of values and simple equations, knowing that a linear equation has a straight line, quadratic is U-shaped, and exponential either increases or decreases without bound in one direction and levels out in the other direction (without mentioning the term "asymptote.")  Listed below are the subtopics covered in this unit:
- ➤ Linear modeling
- ➤ Quadratic modeling
- ➤ Exponential modeling

## Foundations of Mathematics (Math 0409)

### Student Learning Outcomes (SLO)
**1.** Identify and apply properties of real numbers, and perform accurate arithmetic operations with numbers in various formats and number systems.
**2.** Demonstrate the ability to manipulate/simplify algebraic expressions, and to classify and solve algebraic equations with appropriate techniques.
3. Demonstrate the use of elementary graphing techniques.
4. Apply basic geometric theorems and formulas to rectangles, squares, parallelograms, triangles, trapezoids, and circles.
5. Apply "Proportional Reasoning" to solve related problems including ratios, rates, proportion, percent, and conversions of units.
6. Recognize, examine, and interpret the linear, quadratic, exponential, and/or rational models of equations

### Learning Objectives
1.  add, subtract, multiply and divide real numbers and manipulate certain expressions.
2.  solve problems using equations and inequalities.
3.  factor polynomials using the techniques of the greatest common factor, grouping, difference of two squares and trinomials of the form $x^2 + bx + c$.
4.  multiply, divide, and simplify rational expressions.
5.  plot ordered pairs and graph linear equations.
6.  find the perimeter and area of rectangles, squares, parallelograms, triangles, trapezoids, and circles.
7.  simplify algebraic expressions.
8.  solve problems using equations and inequalities.
9.  graph linear Inequalities.
10.  find the rate of change of a line & write its equation.
11.  model situations with linear, quadratic, or exponential functions.

### Math 0409: Tentative 5 Week Calendar

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| Week 1 | Geometry and Set Operations ; Introduction to Real Numbers and Algebraic Expressions |
| Week 2 | Introduction to Real Numbers and Algebraic Expressions ; Solving Equations and Inequalities |
| Week 3 | Polynomials: Operations ; Polynomials: Factoring |
| Week 4 | Polynomials: Factoring ; Rational Expressions and Equations |
| Week 5 | Graphs of Linear Equations; Graphs of Inequalities Linear ; Quadratic Modeling; Exponential Modeling; Final Exam |

### Disclaimer
The rules, policies, terms and guidelines of this syllabus are subject to change and may be updated, corrected, or modified by the instructor, at any time, due to unforeseen circumstances, and changing needs of the class. The student shall be notified of any such changes in the provisions of this document.