# Course Syllabus –Algebra for Scientists and Engineers(Q) (MAT 1073-01E) – Summer 2017
### *Flawn Sciences Building (FLN) 2.02.10 – MTWR 8:30-9:45am*      *(THIS IS A Q-COURSE)*

I. **Instructor Contact Information**
   a. **Name:** Jonathan Brucks, M.S.
   b. **Cell:** 210-831-8173 (Text with name, course, and section)
   c. **E-mail:** jonathan.brucks@utsa.edu
   d. **Office Location:** Flawn Sciences (FLN) 4.01.50
   e. **Office Hours:** MTW 10:00am-12:00pm *(If I'm not in my office, then I'm in the lab.)*

II. **Course Structure:** This course will utilize inquiry, analysis, and synthesis to explore and comprehend mathematical concepts and solve mathematical problems. An emporium approach will be used in the delivery of topics. This means that students will primarily learn material by doing the mathematics, rather than simply watching an instructor do mathematics. The instructor will provide the necessary introduction to the topics including definitions, theorems, examples, etc. The students will then complete a set of problems accompanied by guided notes and video lessons provided through the online WeBWorK platform during the mandatory lab time as well as for homework.

III. **Required Materials**
   a. **Software:** The *FREE* online program WeBWorK will be used to work homework, quizzes, and online portions of exams in this course. Students are automatically enrolled in the program, which will be accessible through Blackboard, or via the link http://webwork.math.utsa.edu/webwork2/. The required login information for WeBWorK is the myUTSA ID (abc123) and the student's passphrase.
   b. **Textbook:** The *FREE* online textbook, titled *College Algebra*, available on the OpenStax website, https://openstax.org/details/college-algebra, will be used in this course. A link to this site, as well as a PDF copy of the text, will be available on Blackboard, and students may also choose to purchase a hard copy of the text, through Amazon.
   c. A scientific calculator is required to perform operations with logarithmic and exponential functions. ***Neither graphing calculators nor any type of mobile device are allowed on quizzes or tests.***

IV. **Course Description:** MAT 1073. Algebra for Scientists and Engineers. (3-0) 3 Credit Hours. (TCCN = MATH 1314) Prerequisite: Satisfactory performance on a placement examination. This course is designed to prepare the student for MAT 1093 Precalculus and MAT 1214 Calculus I. Topics may include algebraic expressions; equations; inequalities over the real numbers; relations; functions; polynomial and rational functions; logarithmic and exponential functions; systems of linear equations and inequalities; matrices and determinants; complex numbers; sequences; series binomial expansion; mathematical induction; permutations, and combinations. (Formerly MTC 1073. Credit can be earned for only one of the following: MAT 1073, MTC 1073, MAT 1063, MTC 1023, or MAT 1023.) May apply toward the Core Curriculum requirement in Mathematics.

V. **Grading Scheme**
   a. **Attendance & Lab Hours** *(10%)*: Punctual attendance of daily class meetings; completion of Guided Notes and required tutoring lab hours.
   b. **WeBWorK Homework** *(10%)*: Average of WeBWorK homework assignments.
   c. **WeBWorK Quizzes** *(10%)*: Average of weekly quizzes in WebWorK.
   d. **Core Communication Assignments** *(10%)*: Three written assignments to fulfill core communication objective.
   e. **Exams** *(35%)*: Average of three midsemester exams.
   f. **Final Exam** *(25%)*: Comprehensive final exam.
   g. Letter grades will be assigned as follows *(__NO +/- Scale, NO Curves__)*:
           < 59.5 = F     59.5-69.4 = D    69.5-79.4 = C    79.5-89.4 = B    > 89.4 = A

VI. **Class Policies**
   a. **Attendance:** Daily attendance is required to succeed in this course. Class meeting attendance and completion of weekly lab hours comprise 5% and 10%, respectively, of your overall course grade.
   b. **Makeups:** Any makeups must be discussed prior to the due date or testing date, and will only be considered for valid, clearly documented reasons.

      c. **Electronic Devices:**
          i. Any use of cell phones during lecture is strictly prohibited.
          ii. Students should bring a scientific calculator to use in class daily.
          iii. All other electronic devices are prohibited in the classroom.  Any use of electronic devices that is deemed to be disruptive to class is strictly prohibited.
      d. **Student Conduct:**  Students are strongly encouraged to participate in class by asking questions at any time during lecture. However, students should show respect for their classmates by remaining quiet until recognized by the instructor.
      e. **Academic Integrity:**  Students should obtain any help necessary to complete homework, and are encouraged to work together on lab assignments, but exams must be taken without any outside assistance.  A student caught cheating on an exam will be given a zero on that assignment, and may be reported to the college for academic dishonesty.

VII.   **Common Syllabus Information:**  http://utsa.edu/syllabus  *(Follow link for university-wide policy information.)*

**Important Information**

1. **Lab Attendance:** *FLN 3.02.01 (Learning Lab I)  &  FLN 3.02.08 (Learning Lab II)*
In addition to the scheduled class times, students will be required to complete a number of hours of lab time each week. These hours *(minimum of 6 per week)* may be completed at any time the Learning Labs are open. A schedule for the labs will be posted in class and on Blackboard. Students may work individually, but are encouraged to study in groups.

2. **Homework:** Homework will be assigned for each section discussed in lecture, and will be due at regular intervals, clearly labeled in the WeBWorK program.

3. **Quizzes:** One timed quiz will be assigned each week in WeBWorK, covering the material discussed in lecture.

> *WARNING:*  While most students find online programs such as WeBWorK to be an integral and useful part of the learning process, some students have identified a potential pitfall to be avoided:
> *WeBWorK only asks for the correct answer to a problem, occasionally even in multiple choice format.  All in-class assessments will be graded on* **correct work shown and correct notation,** *as well as the correct answer.  For this reason, students should always work homework problems correctly on paper before inputting answers in WeBWorK.*

4. **Communication Assignment:** Students are required to fulfill a core curriculum communication objective. This will be accomplished by the student communicating their understanding of a concept in written and visual form. More information regarding this assignment will be provided by the instructor during the semester.

5. **Exams:**  Each midsemester exam will consist of a combination of online and written, free response questions.
    a. **Online:** Part of each exam will be taking online, via WeBWorK. More information on the process for registering and completing these online exams will be given as the semester progresses.
    b. **Written:** Each exam will also have a free response, written component that will be administered in class. (See the attached schedule for specific dates.) More information on studying for these exams, along with other expectations, will be given as the semester progresses.

6. **Final Exam:**
    a. The final exam in this course will also consist of both online and written questions. It will be comprehensive, covering all material from the semester.
    b. The written portion of the final will be given in the lecture hall at the following date/time:
        Wednesday, August 9th, 8:30-9:45am
    c. The online portion of the final will be proctored in the Learning Lab. Details on time and date options will be made available by the instructor.

## MAT 1073-01E - Tentative Course Schedule

| Day | Date | Topic |
|:---:|:---:|:---|
| M | 6/12 | Orientation / Pretest |
| T | 6/13 | 2.1  The Rectangular Coordinate System and Graphs |
| T | 6/13 | 2.2  Linear Equations in One Variable |
| W | 6/14 | 2.3  Models and Applications |
| R | 6/15 | 2.4  Complex Numbers |
| R | 6/15 | 2.5  Quadratic Equations |
| M | 6/19 | 2.6  Other Types of Equations |
| M | 6/19 | 2.7  Linear Inequalities and Absolute Value Inequalities |
| T | 6/20 | 3.1  Functions and Function Notation |
| T | 6/20 | 3.2  Domain and Range |
| W | 6/21 | 3.3  Rates of Change and Behavior of Graphs |
| R | 6/22 | 3.4  Composition of Functions |
| M | 6/26 | 3.5  Transformations of Functions |
| M | 6/26 | 3.6  Absolute Value Functions |
| T | 6/27 | Exam 1  (2.1-3.4) |
| W | 6/28 | 3.7  Inverse Functions |
| R | 6/29 | 4.1  Linear Functions |
| R | 6/29 | 4.2  Modeling with Linear Functions |
| M | 7/3 | NO CLASS - University Holiday |
| T | 7/4 | NO CLASS - Independence Day Holiday |
| W | 7/5 | 5.1  Quadratic Functions |
| R | 7/6 | 5.2  Power Functions and Polynomial Functions |
| M | 7/10 | 5.3  Graphs of Polynomial Functions |
| T | 7/11 | 5.4  Dividing Polynomials |
| W | 7/12 | 5.5  Zeros of Polynomial Functions |
| R | 7/13 | 5.6  Rational Functions |
| M | 7/17 | 5.8  Modeling Using Variation |
| T | 7/18 | Exam 2  (3.5-5.6) |
| W | 7/19 | 6.1  Exponential Functions |
| R | 7/20 | 6.2  Graphs of Exponential Functions |
| M | 7/24 | 6.3  Logarithmic Functions |
| T | 7/25 | 6.4  Graphs of Logarithmic Functions |
| W | 7/26 | 6.5  Logarithmic Properties |
| R | 7/27 | 6.6  Exponential and Logarithmic Equations |
| M | 7/31 | 6.7  Exponential and Logarithmic Models |
| T | 8/1 | Exam 3  (5.4-6.6) |
| W | 8/2 | 7.1  Systems of Linear Equations: Two Variables |
| W | 8/2 | 7.2  Systems of Linear Equations: Three Variables |
| R | 8/3 | 7.5  Matrices and Matrix Operations |
| R | 8/3 | 7.7  Solving Systems with Inverses |
| M | 8/7 | Review |
| T | 8/8 | Posttest |
| W | 8/9 | Final Exam - Written Part (8:30-9:45am) |