

Math 1411 (4 credits)  
MW 12:30–1:20; TR 12:00–12:50  
QUIN 203 (MW); QUIN 103 (TR)

**CALCULUS I**  
**Syllabus**

Fall 2013

Instructor: **Dr. Art Duval**

office: **Bell Hall 303**

phone: **747-6846**/office (24hrs./day; if I'm not in, please leave a message)  
**747-6502**/fax (include a cover sheet with my name, please)  
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internet: [artduval@math.utep.edu](mailto:artduval@math.utep.edu)

<http://www.math.utep.edu/Faculty/duval/home.html>

Office hours: **Mon, Wed, 2:00–3:00; Tue, 10:00–11:00; Fri, 1:30–2:30.** Please feel free to stop by my office any time during scheduled office hours. You are welcome to visit at other times, but in that case you might want to make an appointment, just to make sure that I will be there then. You can make an appointment simply by talking to me before or after class, by calling me at my office or at home, or by sending e-mail.

I will also be available in the classroom after class on Tuesdays and Thursdays.

You may also ask any questions directly via phone or e-mail. If I'm not in when you call, please leave a message on the voice-mail or answering machine with your name, number, and a good time for me to call you back. I will try to respond to your phone or e-mail message as soon as possible.

Additional instructor: **Dr. Scott Starks**

office: **Engineering Annex 336**

phone: **747-8856**

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Office hours: **To be determined.**

Website: <http://www.math.utep.edu/Faculty/duval/class/1411/134/home.html>

Here you will find this syllabus with relevant links, including homework and reading assignments for the whole semester, as they are announced. Other resources may become available.

Prerequisites: MATH 1508, or an adequate score on a placement exam. This generally means you should be comfortable with the idea of functions, including how to graph them, finding inverse functions, and applying transformations. Specific functions you should be familiar with include polynomial and rational functions, exponential and logarithmic functions, and trigonometric functions.

**Engineering and Calculus:** The study of mathematics, including calculus, is fundamental to the education of future engineers. When confronted with a real world problem, an engineer will often define a mathematical model to represent the problem using equations that describe the relationships between the various physical quantities present in the problem. In many cases, these relationships are expressed using principles drawn from mathematics; quite often the models involve rates of change, and in this case the relationships are best expressed using calculus.

With this in mind, the instructors plan to show you how calculus can be applied to a variety of applications drawn from engineering. You will have an opportunity to see how what you are learning in calculus will later be used in your future engineering classes. This application-driven approach to Calculus instruction is expected to provide you an early exposure into the types of problems that engineers confront and solve. This approach is intended to increase student motivation and success in learning Calculus.

**COURSE OBJECTIVES:** Upon successful completion of the course, you will be able to represent functions and their derivatives and integrals numerically, graphically, and symbolically, and be able to determine which approach is most effective in a given situation. You will be able to explain the use of limits in derivatives and integrals, and the relation between limits and the precision of numerical answers.

You will recognize when it is appropriate to use technology, when a purely symbolic approach is more effective, and how to mix the two. You will be able to compute derivatives and simple integrals numerically, graphically, and symbolically. You will be able to apply the ideas of calculus to solve a variety of problems from several areas of engineering.

**Calculus Textbook: Calculus: Single Variable, 6th ed., Hughes-Hallett, Gleason, McCallum, et al., Chs. 1–6.** We will skip some sections, as announced in class.

**Required Reading:** Read each section that we cover in class, both before and after class. Skim the section before class, even if you don't understand it fully, to have some idea of what we'll be doing in class. Read it more carefully after class to clarify and fill in details you missed in class.

**Warning:** Sometimes, we will not "cover" all the material from a section in class, but instead focus on a particular aspect of the section. In such cases, instructors will point out in class (and on the course's website) which other parts of the section we expect you to read on your own.

**Engineering Textbook: Introductory Mathematics for Engineering Application, Rattan and Klingbeil.** This text is designed to help improve engineering student success through application-driven, just-in-time engineering math instruction. It emphasizes using math to solve engineering problems, and an applied approach to teaching math concepts that are essential to introductory engineering courses. This approach has been proven to improve the retention of students in engineering majors from the first to second year and beyond.

**Technology:** During class, we will make use of graphing technology, as appropriate. You are welcome to have a standalone graphing calculator, or graphing calculator application on a laptop or smartphone. Desmos (<https://www.desmos.com/calculator>) is a particularly good (and free) web-based graphing calculator, which we will use in class. You are also welcome to use such technology on homework, but **not** on exams.

#### GRADES:

**Online Homework (15%)** Individual homework from the calculus textbook will be assigned on a daily basis (with some exceptions). Homework is to be completed on the WileyPlus system. You are allowed to work together on homework (in fact, you are encouraged to do so), but, for maximum effectiveness, you must understand the solutions to all the problems. It is your responsibility to keep up with the homework, even when you have to miss class. Your four lowest homework scores will be dropped.

**Written Homework (10%)** Individual homework will also be assigned regularly from the engineering textbook. These problems should be solved, in writing, in a spiral-bound notebook, which will be turned in and graded throughout the semester.

**Exams (15% each)** There will be three in-class exams on the following days, approximately covering the following chapters:

Chs. 1, 2	Thu. 26	Sep.
Ch. 3	Thu. 24	Oct.
Chs. 4, 5	Tue. 26	Nov.

Makeup exams can be given only in extraordinary and unavoidable circumstances, and with advance notice.

**Final (30%)** The final exam will be comprehensive over all material we discuss in class, including Chapter 6. The final will be on

Tue. 10 Dec., 1:00–3:45 p.m.

All exams are closed-book; you may use only standalone scientific calculators (not a cellphone calculator) with no graphing capability, in line with policy on NCEES national engineering licensure exams.

## POLICIES:

**Academic dishonesty:** It is UTEP's policy, and ours, for all suspected cases or acts of alleged scholastic dishonesty to be referred to the Dean of Students for investigation and appropriate disposition. See Section II.1.2.2 of the Handbook of Operating Procedures.

**Attendance:** Daily attendance at class is required, although there is no particular grade penalty for missing class. Our goal is for class meetings and activities to complement, rather than echo, the textbooks, and thus for every class to be worth attending.

**Drop date:** The deadline for student-initiated drops with a **W** is Friday, November 1. After this date, you can only drop with the Dean's approval, which is granted only under extenuating circumstances.

We (the instructors) hope everyone will complete the course successfully, but if you are having doubts about your progress, we will be happy to discuss your standing in the course to help you decide whether or not to drop. You are only allowed three enrollments in this course, and students enrolled after Fall 2007 are only allowed six withdrawals in their entire academic career, so please exercise the drop option judiciously.

**Courtesy:** We all have to show courtesy to each other, and the class as a whole, during class time. Please arrive to class on time (or let an instructor know when you have to be late, and why); do not engage in side conversations when one person (an instructor, or another student) is talking to the whole class; turn off your cell phone (or, for emergencies, set it to not ring out loud), and do not engage in phone, email, or text conversations during class.

**Disabilities:** If you have, or suspect you have, a disability and need an accommodation, you should contact the Center for Accommodations and Support Services (CASS) at 747-5148, [cass@utep.edu](mailto:cass@utep.edu), or Union East room 106. You are responsible for presenting to an instructor any CASS accommodation letters and instructions.

**Exceptional circumstances:** If you anticipate the possibility of missing large portions of class time, due to exceptional circumstances such as military service and/or training, or childbirth, please let an instructor know as soon as possible.