

CS 1173 (Q) Data Analysis and Visualization Syllabus

We live in an [information society](#) --- no matter what major you choose or what you do after you graduate, you will be asked to make sense of and draw conclusions based on data. This course is designed to help you acquire the knowledge and skills that you will need to analyze information and, more importantly, draw conclusions from your analysis. This course is not about using advanced mathematics to solve problems. It's about learning to use computer technology, especially visualization (graphs, histograms, pie charts), to look at and understand data in a more intuitive and visual manner. Most sections of this course use MATLAB, a sophisticated programming and data analysis environment, as the vehicle for helping you develop the basic computing skills you will need to work with data in your later science, mathematics, and statistics courses.

Specific course objectives:

- Students should be able to display data using appropriate visualization techniques (e.g., x-y line plots, bar charts, pie charts, scatter plots, histograms).
- Students should be able to understand and use basic statistical indicators (e.g., mean, median, standard deviation, maximum, minimum, tests of significance).
- Students should be able to apply built-in functions (e.g., sum, difference, log, exponential) appropriately and in context.
- Students should be able to use variables, conditionals, loops, functions, and logical indexing in scripts to analyze data.
- Students should be able to choose appropriate methods to solve problems.
- Students should be able to draw conclusions and formulate hypotheses from data presented graphically.
- Students should be able to write scripts that handle different types of data.
- Students should use models to generate data to study scientific questions.
- Students should be able to communicate their results in a clear and correct manner.



Course website: <http://www.cs.utsa.edu/~cs1173>.

Instructors and TAs: <http://www.cs.utsa.edu/~cs1173/instructorsSpring2020.html>

Textbook: There is no formal textbook for the course. The course material will be presented in lesson modules that are available on the course Blackboard site.

Prerequisite: MAT 1023 College Algebra with Applications (or an equivalent course)

Traditional class: grading policy: 1000 total points

- 200 pts (20%) One in-class exam
- 150 pts (15%) Writing - abstract (30 pts), recorded presentation (100 pts), and reviews (20 pts)
- 220 pts (22%) Lesson turnin, Homeworks (HW), and participation exercises (HWP)
- 250 pts (25%) Laboratories (5 labs)
- 200 pts (20%) Final exam

Online class: grading policy: 1000 total points

- 200 pts (20%) One in-class exam
- 150 pts (15%) Writing - abstract (30 pts), recorded presentation (100 pts), and reviews (20 pts).
- 150 pts (15%) Lesson turnin
- 80 pts (8%) Homeworks (pre-test and sleep diary) and Wiki
- 250 pts (25%) Laboratories (5 labs)
- 200 pts (20%) Final exam

Schedule of assignments and due dates can be found on Blackboard. The BB calendar is kept up to date.

- **Lesson turnins:** The traditional sections will turn in 6 lessons for grading. Online sections must turn in all of the lessons as part of the lesson modules.
- **Lesson modules (Online sections only):** The lesson modules are available in BB and consist of videos and other material explaining and demoing the material. These lesson modules have embedded quizzes. As you work through each module, you should answer the quiz questions. Your grades for these embedded questions are recorded in the BB gradebook and incorporated into the lesson module component. You can retake these quizzes three times and they are used for self-assessment only.
- **Homework (HW):** There are two homework assignments --- the pretest and the sleep diary.
- **Homework participation (HWP)(Traditional sections only):** These exercises (approximately 8 of them) are mostly done during the class period --- often with a partner or in groups.
- **Wikis (Online sections only):** Students will be assigned to small groups to work on short projects, approx 5 over the course of the semester. More details to follow.

As you will notice, each individual item counts a very small amount of your overall grade. You cannot ace both exams and ignore the other assignments and get a passing grade. The idea is to give you lots of opportunity for practice, feedback and reinforcement. The more you do, the more you learn. There are severe penalties for late submissions for all assignments. See the course webpage for details, under Grading policy.

Drop Date: The last day for undergraduates to drop the course is Monday, March 30 and receive an automatic "W".

Instructor-initiated Drops: This course uses instructor-initiated drops for students who exceed the missed assignment limit. Therefore, up to the last day for students to withdraw from an individual course (Monday, March 30), you will be dropped for exceeding the missed assignment limits: 50% overall or 2 consecutive weeks. For the traditional sections (1 and 2), you must not miss more than 2 consecutive assignments. For the online sections (3 and 4), you must not be more than 2 weeks late in completing course modules.

Students will receive at least one courtesy warning when approaching the missed assignment limit. Notification will be sent via ASAP to the student's preferred email address. A subsequent absence or missed assignment will result in being dropped from the course. Notification of being dropped will also be sent via ASAP to the student's preferred email address. *This drop does not affect enrollment in other courses.*

After consultation with the instructor, you may appeal the drop using the Course Reinstatement Petition available on Blackboard, at <https://studentforms.its.utsa.edu>, and on the Registrar's website <http://www.utsa.edu/registrar/forms.html>. You must appeal the drop within 3 business days from the date the notification was sent. *An appeal will be upheld and the student reinstated into the course only when the student provides compelling evidence that the instructor's analysis is in error.* Once an appeal is filed the student will be allowed to attend the course and maintain Blackboard Learn access until the appeal is adjudicated. The student must be informed of the decision within three business days of submitting the appeal. Students will be sent email notice to their preferred email address informing them of the decision.

The final examination (Exam II) is scheduled is as follows:

- Section 1 (TR 10:00 - 11:15am): Tuesday, May 2, 2020 from 10:00am to 11:15am (in class)
- Section 2 (TR 6:00 - 7:15pm): Tuesday, May 2, 2020 from 6:00pm to 7:15pm (in class)
- Section 3 (online): Saturday, May 2, 2020 at a time and location to be determined
- Section 4 (online): Saturday, May 2, 2020 at a time and location to be determined

Pretest and posttest The course will have a pretest and a posttest keyed to educational objectives so that we can evaluate course effectiveness. Both tests will be multiple choice tests administered on Blackboard.

The **pretest** will be available for the first week of the class. The pretest will count as the first 10-point homework assignment. You will receive points for the number of questions answered but will not be penalized for incorrect answers. It is important to complete the test giving the best answers that you can so that we can effectively evaluate what works.

The **post test** will be administered in the last week of class and dead days (again on Blackboard). You will receive up to 6 points of extra credit on the final examination based on the number of correct answers. The post test is an excellent tool for studying for the final. The responses for the pretest and post test will also be extracted and all identifying information removed for further item analysis and research.

Computer accounts: As part of this course you will have a CS 1173 account. You can access the desktop for this account on any of the machines in the CS labs or classrooms. You can also access your CS 1173 desktop from any machine off campus through a web browser or a VDI client. We recommend that you install the VDI client on your personal machines as the performance is better than through the web browser. This account will be removed at the end of finals week, so be sure to save to another location anything you want to keep.

Your user name for your CS 1173 account is your UTSA abc123 name. You will be asked to change your password on your first login. The passwords must be at least 14 characters long, so be sure to pick something that you can remember. We recommend you use your UTSA passphrase. These virtual accounts do not preserve personal settings. However, your account has a V: drive on which you can save all your work. You should ALWAYS create your projects on the V: drive or they will disappear when you log out. You can (and should) also backup your files on a USB or on a cloud resource such as google drive, sky drive, or dropbox.

Home access: You can access your account from home through the link <http://vdi.cs.utsa.edu>. You will see two different icons on this page:

- Install VMware Horizon View Client (the recommended access): Just click on this to install this free client. Once you have installed it, you can connect directly to your account through the VMWare icon from your desktop. You will have USB access and sound. This option also runs faster. The connection server when you click the icon is vdi.cs.utsa.edu.
- VMWare Horizon View HTML Access (can access from anywhere): When you want to access your account from any computer use this option.

Purchasing MATLAB software: The University has a site license for MATLAB and you can download it from from ASAP for free. If you decide to purchase MATLAB (unnecessary for the course), you should get it from the MATHWORKS (<http://www.mathworks.com/academia/>) so that you are sure to have the latest version. We will be running version R2017a in the laboratories and classroom.

CS 1173 tutors and the CS LAB: You can also do your laboratories/lessons in room 2.118 NPB (the CS Lab), which has computers and software similar to that found in the teaching classrooms. Tutors are available in this room to help you work the laboratories. You are encouraged to work your laboratories/lessons in this room where help is available. **You may not use the computers in 2.118NPB for anything other than CS 1173 course work. Sharing your account information with other students can result in loss of all university computer privileges.** The tutoring schedule is available at [here](#). This semester we are testing a virtual tutoring desk and details will be provided as soon as they are available.

Virtual Tutoring: CS1173 has a Discord room set up to where students can ask for assistance and get help. The link is <https://discord.gg/BMB8UMW>. The first time, you will log in with your abc123, and an email will be sent to your utsa.edu email account. You must use that email to verify who you are. After that, you do not have to verify. Only students in this semester's course are allowed in this room, and both instructors and tutors are in this room frequently to assist. Everything in this virtual tutoring room is recorded, both to ensure correct responses and ensure civility. You can access this from a web browser or the Discord ap. If the CS 1173 tutors have students in the CS Student Lab and the Discord room asking for assistance, they are to help those in the CS Student Lab first.

Course expectations for professional conduct: Students will treat their classroom obligations as they would any serious professional engagement. These obligations include:

- Preparing thoroughly for each session in accordance with the course calendar and instructor's request.
- Notifying the instructor in advance if missing a class.
- Being set up to begin work (logged in and set-up) for each class period at the time the class starts.
- Staying on task during work sessions.
- Participating fully and constructively in all course activities and discussions.

- Adhering to deadlines and timetables established by the instructor.
- Displaying appropriate courtesy to all involved in the class sessions.
- Providing constructive feedback to the instructor regarding the class.

Note: Turn off and put away all cell phones, ipods, and other electronic devices. You should only have class materials on your desk. You should only have the course web pages and MATLAB up on your screen. The instructor and TAs can observe and will record incidents of inattention, which will seriously impact the Homework/Participation portion of your grade. **Unauthorized electronic devices in use or on the desktop during class are subject to confiscation.**

Midterm grades: Midterm grades must be reported for all students, except in Summer classes. Your midterm grade will be calculated based on Labs 1 and 2 (40%) and Exam 1 (60%). Midterm grades are for advising purposes only. These grades give you an indication of how you are doing in the course and whether you need to improve. Your final grade, which appears on your transcript, will be calculated based on the percentages listed under **Grading policy**. You can always view your current grades in the **My Grades** section in Blackboard. If you notice any discrepancies in your grades, please tell your instructor right away so that the problem can be corrected.

BlackBoard: The course uses Blackboard Learn, which is available at (<http://utsa.blackboard.com>). You will take submit all laboratories and projects using Blackboard. You will also submit some homework assignments on BlackBoard. Blackboard also provides internal class email, a course discussion page, a course chat page, and the course calendar.

Homework and in-class activities: These activities are designed to reinforce and help you integrate your knowledge. Most of them will be very short. Often they will be used during subsequent class periods. The policy on late submissions is on the course homepage (not BB).

Labs: This course is very hands-on. Although there will be short lecture presentations and demos, you will be spending most of your class time working on problems. You are expected to do most of your work on the laboratories outside of class. The more you practice and solve problems, the more you will learn. You may discuss the laboratories with other students, **but the writing and script code should be entirely in your own words.**

Writing: A goal of this course is to improve your technical writing skills and many activities will integrate writing. **Major writing assignments will be checked electronically for plagiarism via BlackBoard Safe Assign.**

Handing in laboratories, lessons and projects: You will submit your labs, lessons and projects by uploading them to Blackboard under the Assignments section. Zip up your lab or project directory by opening a File Explorer window and then right clicking on the directory. Choose the Send to option with compressed zip. Email submissions will not be accepted.

Academic Dishonesty While group work is allowed in developing your lab programs, the instructors/TAs/graders will be using software similar to SafeAssign, but specifically for code, looking for plageurism. Any code you submit must be YOUR OWN WORK, and distinct from anyone else's. If too much overlap is found (>90%), all students involved could be charged with academic dishonesty (see link below).

Make-up exams: No make-up exams will be given except for university sanctioned excused absences and documented medical emergencies. If you must miss an exam (for a good reason), it is your responsibility to contact the instructor BEFORE the exam.

UTSA Services and Policies

- Counseling Services - <http://utsa.edu/counsel>
- Student Code of Conduct and Scholastic Dishonesty - <http://utsa.edu/infoguide/appendices/b.html#sd>
- Students with Disability Services - www.utsa.edu/disability
- Transitory/Minor Medical Issues - <http://provost.utsa.edu/syllabus.asp>
- The RoadRunner Creed - <https://utsa.edu/about/creed>
- Tomas Rivera Center - <http://www.utsa.edu/trcss/la/>
- The Writing Center - <http://utsa.edu/twc>

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