SPECIAL TOPICS IN ACCOUNTING
Data Analytics
Fall 2021 ACCT 5370

Instructor	Eva Liang
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Preferred means of communication

The best way to reach me is through email or my office hours. I will make every attempt to reply to your email timely. If you did not receive a respond after 2 days, please feel free to send me a reminder. Thank you!

You are also encouraged to utilize the Discussion tool in Canvas for course-related questions.

Office Hours
MTW 4:00 – 5:00 PM, or by appointment.

Location: Office COB 305.06 / Zoom

Course Description

This course introduces basic tools and techniques needed to complete common data analytic tasks in accountancy and business, aiming at building a practical foundation for data analytics. Specifically, we review the use of spreadsheets and SQL (Structured Query) and introduce tools for visual analytics and statistical programming. Students will also learn to develop data analytic scripts by using the Python programming language and the standard Python modules, including Pandas and Matplotlib. In addition, we discuss and practice applying how to apply these skills to business, auditing, managerial accounting, and tax areas. We also survey topics such as machine learning and XBRL (eXtensible Business Reporting Language) and consider the impact of analytics in industry. The course includes several projects and assignments to practice and demonstrate data analysis skills.

Course Materials

Canvas
I'll use Canvas to disseminate course materials and information. In addition, class announcements will be sent via Canvas and you are responsible for reading these announcements (make sure your Canvas settings are enabled for receiving emails). I assume all of you are familiar, but don't hesitate to ask if you have questions.

Lecture Notes
Lecture notes, including slides, handouts, and practice problems, will be posted on Canvas. During class we will cover the materials in the lecture notes. You are not required to read the lecture notes or solve any of its exercises before coming to class.

Suggested Readings
- Al Sweigart, *Automate the Boring Stuff with Python, 2nd Edition: Practical Programming for Total Beginners (2015)*
- Thomas H. Davenport, Jeanne G. Harris, and Robert Morison, *Analytics at Work: Smarter Decisions, Better Results* (2010)

- John W. Foreman, *Data Smart: Using Data Science to Transform Information Into Insight* (2013)

Other Useful Resources
- Google (the most useful resources)
- https://docs.python.org/3/
- https://www.stackoverflow.com
- https://www.learnpython.org
- https://learnpythonthehardway.org/book/appendixa.html
- http://www.pythontutor.com/visualize.html#mode=edit

Software
The course will require the following software:

- Microsoft Excel
- Tableau (academic license)
- Notepad++ or equivalent text editor (open source)

General Course Information

Learning Outcomes
As you work through this course, you will:

- Demonstrate knowledge of terms, methods, and tools for data management and analysis
- Demonstrate how to acquire, transform, analyze, and visualize data
- Demonstrate how to solve problems in accounting using data and analytics
- Demonstrate ability to write effective data analytic scripts by using the Python programming language

Prerequisites
Students in this class are expected to have the basic knowledge in

- Excel (e.g., saving and opening a Workbook, managing Worksheets)
- Accounting (e.g., auditing and financial accounting)
- Statistics (e.g., variables, distributions, regressions)

Please talk to the instructor if you are not familiar with the concepts mentioned above.

Commitment to an inclusive learning environment
Please feel free to let me know how to improve the course for you personally or for other students or student groups. Your suggestions and feedbacks are encouraged, valued, and appreciated.

Course Policies

Grades and Grading
Grades will be calculated based on this point break down.

Assignment	Points	Percentage
In-Class Activities	10	3.3%
8 homework, drop the lowest two (10 points each)	60	20%
3 quizzes, drop the lowest one (30 points each)	60	20%
Comprehensive quiz (Quiz #4)	30	10%
Individual Programming Project	70	23.3%
Group Activities (2 Projects & Presentation)	70	23.3%
Total	300	100%

	Pts From	Pts To	Grade
90% and above	270	300	A
80% to 89.99%	240	269	B

70% to 79.99%	210	239	C
60% to 69.99%	180	209	D
59.99% and below	0	179	F

Recommended study approach

To help you adequately prepare for class before we discuss the assigned material, I recommend the following study approach:

- The best strategy for learning the course material is to attend the class and practice with in-class practice problems during the class. If you don't understand the material, please ask questions in class, see me after class, post a question in the question/answer discussion forum, send me an email, or visit my office before class.
- After we discuss the material in class:
  - o Review your notes.
  - o Practice the in-class assignment, individual programming project, and homework problems.
  - o If you have remaining questions about the material, use the question/answer discussion forum, send an email, or visit me in my office.

This class is interactive and involves with lots of practice. Please be ready to get your hands dirty. Programming could be difficult at the beginning. Be Patient. Having a positive mindset and having fun during the process are important for you to master the materials.

Attendance & Participation

It's probably important to note, however, that it's mostly impossible to pass the class without attending at least sometimes (quiz days, for instance). Attendance also will almost surely make grasping the concepts in the course an easier task. I'll always do my best to make you feel like attendance is or was worth your while.

Participation viewed positively include: contributing to class discussion (both quantity and quality); participating in group discussion; summarizing and clarifying course materials; asking relevant questions; making constructive suggestions; responding to questions during the class. Each student will have an equal opportunity to participate. If you have any concern about participation, please don't hesitate to talk to me about it.

In-Class Activities (10 points)

These are multiple in-class short "assignments" that are designed to allow you to practice the methods and concepts we go over in class. These should give you a chance to apply what you are learning in class as well as to ask thoughtful questions before getting home and realizing you're more lost than you suspected. In-class exercise will involve solving problems that are similar to the examples I demonstrate during each session, either independently or with your group.

No submission is needed for the in-class exercise, so this portion of grade will be mainly based on my observation of student engagement during the exercise. For example, I might randomly call on someone to share the problems they encounter during the coding and how the problems are eventually resolved, or I might check on students' coding progress.

Homework (60 points)

As a way to motivate additional practice on your own time (remember? Practice makes perfect!) and to really cement each topic into your mind, you will complete short (20-60 minutes) homework assignments to be submitted via Connect. There will be 8 of these during the semester and you may drop 2 lowest ones and receive full credit.

I accept HW submitted through Connect only. I will not accept HW submitted as email attachment or in any other form. They are due by 2PM on the day of the next class meeting. Since I allow everyone to drop the 2 lowest scores from our 8 assignments, there will be no makeups for missed assignments. No late assignment will be accepted.

Individual Programming Project (60 points)

There is no better way to learn programming than hands-on practice. Thus, I design 4 individual programming projects for you to taste the joy (and pain) of process. You can work with your classmates for this assignment, but everyone needs to submit his or her own code.

I accept assignments submitted through Connect only. I will not accept solutions submitted as email attachment or in any other form. They are due by 11:59 PM on the day of the next class meeting. Solutions for these problems that asking for writing a program must include full working code to get full credits.

More details (due dates, deliverables, grading) will be elaborated in each assignment.

Quizzes (120 points)
Throughout the semester, we will have 3 in-class, written quizzes (Quiz #1-3). You are free to drop 1 of these.

At the end of our class, we will have 1 comprehensive quiz (Quiz #4).

All quizzes are closed book, closed notes. These will be similar to in-class exercises and your homework problems—if you can handle the in-class practice and homework, the quizzes will be a cakewalk.

Dispute policy: If you wish to dispute the grade assigned to a quiz, you must do so IN WRITING within two weeks after the grades has been posted. You must include a specific rationale for why your answer is correct, or why the quiz/exam deserves a higher grade.

There will be no makeups for missed quizzes, unless you have legitimate absences (e.g., a religious holiday) allowed by university policies and arranged in advance.

Group Activities (70 points)
You will be assigned into a team of 3-5 students to tackle some challenges together.

➢ 2 Group Projects: 30 points each
More details (due dates, deliverables, grading) will be elaborated in each assignment.

➢ Presentation: 10 points
➢ Within Group Evaluation
At the end of semester, every student will evaluate the group members' performance. If more than half of the group members report that a student does not contribute to the group activities, the student will only receive 50% of the group activities points. If you have any concern about your group activities, please don't hesitate to talk to me about it.

Electronics in the Classroom
We're all adults. We all know what's appropriate. I'm not going to call you out in class for sending a text or checking the time, but if you're going to bury your face in your phone or laptop for the entirety of a class session, why come in the first place? You'll also do *much better* if you don't "multitask" with non-class related things during class—you all know it, and extensive research agrees with this sentiment.

If you happen to find that someone else's use of electronics is distracting you, please don't hesitate to let me know. I will deal with the issue accordingly. Common sense should help us to avoid any problems.

Copyrights
Unauthorized distribution of copyrighted material may subject students to civil and criminal penalties under the Federal Copyright law. The University of Texas System maintains its copyright policy at UTS107, "Use of Copyrighted Materials." If you are a member of a UT institution community (faculty, staff, or student), click the appropriate link to view frequently-used copyright agreements, courseware agreements, and software standard agreements. Because copyright law is fluid, evolving, and fact-specific, contact an attorney for assistance on particular issues. UT institution community members may contact the Office of General Counsel for guidance.

Format
This course is delivered in a face-to-face format. However, we must be prepared for possible changes based for University Guidelines and Policies.

University Policies and Additional Information

Please refer the course canvas site for full information of Course Information, Student Resources, and University Policies and Information. Please also see the information available at https://www.uttyler.edu/academic-affairs/files/syllabuspolicy.pdf for further explanation and updated information.

COVID Guidance
Information for Classrooms and Laboratories: Students are expected to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code (https://www.uttyler.edu/center-for-ethics/) and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, digestive issues (e.g. nausea, diarrhea), or a higher than normal temperature should stay at home and are encouraged to use the UT Tyler COVID-19 Information and Procedures (https://www.uttyler.edu/coronavirus/) website to review protocols, check symptoms, and report possible exposure. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

Recording of Class Sessions
Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

Withdrawing from Class
Students you are allowed to withdraw (https://www.uttyler.edu/registrar/registration/withdrawals.php) from this course through the University's Withdrawal Portal. Texas law prohibits students who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at other 2-year or 4-year Texas public colleges and universities. Make sure to consider the impact withdrawing from this class has on your academic progress as well as the financial implications. We encourage you to consult your advisor(s) and financial aid for additional guidance. CAUTION #1: Withdrawing before census day does not mean you get a full refund. Please see the Tuition and Fee Refund Schedule . CAUTION #2: All international students must check with the Office of International Programs before withdrawing. All international students are required to enroll full-time for fall and spring terms.

Final Exam Policy
Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members are required to maintain student final examination papers for a minimum of three months following the examination date.

Incomplete Grade Policy
If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in lieu of a grade only when all of the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all course work or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor; and (c) the student presents these reasons prior to the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average for a student.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to complete all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has not been assigned within one year, then the Incomplete will be changed to an F, or to NC if the course was originally taken under the CR/NC grading basis.

Grade Appeal Policy
UT Tyler's Grade Appeal policy requires the completion of a Grade Appeal form for this action to take place. The grade appeal begins with the instructor of your course. If you do not agree with the decision of the instructor, you may then move your appeal to the department chair/school director for that course. If you are still dissatisfied with the decision of the chair/director, you may move the appeal to the Dean of the College offering that course

who has the final decision. Grade appeals must be initiated within sixty (60) days from the date of receiving the final course grade. The Grade Appeal form is found on the Registrar's Form Library.

Disability/Accessibility Services

The University of Texas at Tyler has a continuing commitment to providing reasonable accommodations for students with documented disabilities. Students with disabilities who may need accommodation(s) in order to fully participate in this class are urged to contact the Student Accessibility and Resources Office (SAR) as soon as possible to explore what arrangements need to be made to ensure access. If you have a disability, you are encouraged to visit the SAR Portal (https://hood.accessiblelearning.com/UTTyler/ (Links to an external site.)) and complete the New Student Application. For more information, please visit the SAR webpage or call 903.566.7079.

Military Affiliated Students

UT Tyler honors the service and sacrifices of our military affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with me if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make me aware of any complications as far in advance as possible. I am willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. Campus resources for military affiliated students are in the Military and Veterans Success Center. The MVSC can be reached at MVSC@uttyler.edu, or via phone at 903.565.5972.

Academic Honesty and Academic Misconduct

The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the Student Conduct and Discipline policy in the Student Manual Of Operating Procedures (Section 8).

FERPA

UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in University Policy 5.2.3.The course instructor will follow all requirements in protecting your confidential information.

Absence for Official University Events or Activities

This course follows the practices related to approved absences as noted by the Student Manual of Operating Procedures (Sec. 1 -501 (https://www.uttyler.edu/mopp/documents/1-general-policies.pdf)).

Absence for Religious Holidays

Students who anticipate being absent from class due to a religious holiday are requested to inform the instructor by the second class meeting of the semester.

Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php

UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

Course Schedule

Lec	Date	Module	Topic to be covered	Group Project	Quiz	Homework	Programming Project
1	24-Aug	#1 – Excel	Analytics Mindsets & Getting started with Excel				
2	31-Aug	#2 – SQL	SQL			HW 1 due (2pm)	
	3-Sep	Census Date					
3	7-Sep	#3 – Visualization	Data Visualization			HW 2 due (2pm)	#1 due (11:59pm)
4	14-Sep	#4 – Python Programming	Getting started with with Python		1	HW 3 due (2pm)	
5	21-Sep		Python Programming - Foundation I			HW 4 due (2pm)	
6	28-Sep		Python Programming - Foundation II			HW 5 due (2pm)	
7	5-Oct	Practice	Applications - analytics in auditing	Intro - Project I	2	HW 6 due (2pm)	#2 due (11:59pm)
8	12-Oct		Applications - Practice	Practice Project I			
9	19-Oct	#5 – Advanced Python Skills	Automation	Project I due (11:59pm)			
10	26-Oct		Artificial Intelligence and Statistical Programming			HW 7 due (2pm)	
11	2-Nov		Machine Learning for Accounting	Intro – Project II	3	HW 8 due (2pm)	#3 due (11:59pm)
	1-Nov	Last day to withdraw					
12	9-Nov	Practice	Applications - analytics in taxation	Practice Project II			
13	16-Nov		Applications - analytics in managerial accounting	Practice Project II			
			Thanksgiving break				
14	30-Nov	#6 – XBRL	XBRL and Financial Reporting	Practice Project II	4		#4 due (11:59pm)
				Project II due (Dec 4th 11:59pm)			