TEXAS A&M UNIVERSITY

Mays Business School

ANLY 615 Course Syllabus

Course Information

Course Number:	ANLY 615
Course Title:	Data Wrangling Tools and Techniques
Section:	600 & 700
Time:	Tuesdays 6:00 – 9:00 p.m. (Central)
Location:	Houston City Centre and Synchronously via Zoom
Credit Hours:	3
LMS:	[Canvas](#)

Instructor Details

Instructor:	Dr. `Jon (Sean) Jasperson
Office:	WCBA 440G
Phone:	979-845-7946
E-Mail:	jon.jasperson@tamu.edu
Consultations:	Mondays 5:30 to 6:30 p.m. (Central) and by appointment
Bio and Research:	[Dr. Jasperson's Profile on the Mays Directory](#)
Contact Method:	The preferred method of contacting Dr. Jasperson is via email.

Course Description

The primary objective of the course is to familiarize students with Python and Structured Query Language (SQL) as general data management tools. The course introduces students to the principles of computer coding using the Python programming language to manipulate data. Students also learn how to use a few Python data analysis libraries. In

addition, students use SQL to manage data in a relational database management system (SQL Server).

Course Prerequisites

Enrollment in Master of Science in Analytics Program.

Course Learning Outcomes

By the end of the semester, students will be able to:

1. Apply basic logical control structures while writing code to wrangle data.

2. Employ debugging techniques to identify and correct errors in code.

3. Design, develop, and execute computer code to solve problems.

4. Design, develop, and execute computer code to wrangle and prepare a data set for further analysis.

Textbook and Resource Materials

Required Learning Resources

- McCoy, S. 2024. _Murach's Python for Data Science_. 2nd Edition. Fresno, CA: Mike Murach & Associates, Inc. (ISBN = 978-1-943873-17-3).

- Syverson, B. and Murach, J. 2023. _Murach's SQL Server 2022 for Developers_. Fresno, CA: Mike Murach & Associates, Inc. (ISBN = 978-1-943873-06-7).

- Urban, M. and Murach, J. 2021. _Murach's Python Programming_. 2nd Edition. Fresno, CA: Mike Murach & Associates, Inc. (ISBN = 978-1-943872-74-9).

Note: I do not expect you to read every page of the required learning resources. Think of these books as essential guides on your coding adventure. You'll often revisit key chapters or sections, while other parts may only need a quick skim or a brief browse. Use these resources strategically to support your learning and focus on the content that will most enhance your coding skills.

Suggested Materials

- Davies, S. 2020. The Crystal Ball Instruction Manual – Volume One: Introduction to Data Science. University of Mary Washington. (ISBN 13: 978-1-71-532004-1) **NOTE**:

This PDF book is available for free from the [Open Textbook Library](). You can optionally purchase a [bound copy]() from Blurb.com.

- Davies, S. 2020. [The Crystal Ball Instruction Manual – Volume Two: Introduction to Data Science. University of Mary Washington](). (ISBN 13: 978-1-03-406466-4)

Software

- [Python]() (64-bit, latest version)

- [Anaconda Distribution]() (64-bit, latest version)

- [Microsoft SQL Server 2022 Express]()

- [Microsoft SQL Server Management Studio]() (latest version)

- [Notepad++]() (64-bit, latest version)

Publisher's Programs and Exercises

Students will need to download the book exercises and solutions for the textbook from the publisher's website. See Appendix A (Windows) or Appendix B (macOS) in the textbook for how to install and use these files.

Additional Resources

I curated a [LinkedIn Learning collection]() featuring two courses that cover the fundamentals and principles of computer coding. This resource is ideal for students with little or no prior coding experience, and it also serves as an excellent refresher for those who haven't coded in a while.

You'll need to use your TAMU LinkedIn Learning account to access these resources. To get started, visit the [TAMU LinkedIn Learning website]() for more information. Please do not purchase any LinkedIn Learning courses—Texas A&M provides full access to this content for all students at no additional cost.

The required and suggested materials for this course are not exhaustive. I encourage you to search the internet to find additional resources that will aid in developing your information systems. You'll need to use various web-based tools and references beyond the provided materials to fully support your learning and project development.

From time to time, I may recommend or require additional resources from other sources. These may include recent articles from newspapers, business journals, monographs, or

various online resources. I will communicate any additional materials through the course website, so be sure to check it regularly.

Grading Policy

Table 1 summarizes the course requirements and the weight assigned to each graded learning activity.

Learning Activity	Weight
Python Homework	20%
Python Project	10%
Python Exam (Midterm)	25%
SQL Homework	20%
SQL Exam (Final)	25%
Total	**100%**

Table 1 – Assignment Groups and Grade Weights

Table 2 outlines the letter grades corresponding to each numeric grade range. At the end of the semester, your final letter grade will be determined based on the weighted average of your scores across all graded activities. In calculating the final grade, I will round the weighted average to the nearest whole percent. For example, a score between 89.5 and 89.9 will round up to 90 (A), while a score between 89.1 and 89.4 will round down to 89 (B).

Percent	Grade
89.45 – 100.00	A
79.45 – 89.44	B
69.45 – 79.44	C
59.45 – 69.44	D
00.00 – 59.44	F

Table 2 - Letter Grading Scale

Learning Activities

In this course, you engage in a range of learning activities designed to develop your coding skills in both Python and SQL. These activities are structured to provide hands-on experience, reinforce key concepts, and ensure you can apply what you've learned to real-world scenarios. Participation in class exercises, completion of homework assignments, and collaboration on team projects are all critical components of your learning journey.

You'll be expected to actively contribute to class discussions and coding exercises, work diligently on weekly homework tasks, and collaborate effectively with your peers on team projects. Exams will challenge you to demonstrate your proficiency in writing and understanding code, applying the techniques covered in class to solve complex problems.

Python Homework

We'll engage in various coding exercises during class sessions, where your active participation and contribution are essential. Weekly homework assignments will range from setting up your Python coding environment to solving coding challenges.

It's crucial that every team member not only completes their portion of the assignments on time but also fully understands how to code Python solutions for each task. This ensures that everyone is equipped to contribute effectively to both individual and team success.

Python Project

The Python project offers an opportunity to gain hands-on experience in using Python to manipulate data. This project will be completed as a team, allowing you to collaborate and apply the skills you've learned collectively.

Python Exam

The Python exam will test your ability to apply the concepts and techniques you've learned throughout the course. You'll be required to write code snippets and possibly develop small programs, demonstrating your proficiency in coding and problem-solving.

SQL Homework

You will work on a variety of SQL coding exercises during class sessions, with an expectation of active participation and contribution. Weekly homework assignments will focus on tasks such as setting up your SQL coding environment and solving SQL-related

challenges. Each team member should develop a solid understanding of SQL coding techniques, ensuring that everyone can contribute effectively to the team's overall success.

SQL Exam

The SQL exam will evaluate your ability to use Structured Query Language (SQL) to assess the quality of a dataset.

Late Work Policy

The following late submission policy applies to each course assessment category:

1. Homework – Late homework submissions are not accepted. Any homework deliverables submitted after the deadline will receive a grade of zero and will not be reviewed.

2. Project – Late project deliverables are accepted, with a penalty of 10% off the grade for each 24-hour period after the deadline, up to a maximum of 72 hours. Project deliverables submitted more than 72 hours after the deadline will not be reviewed and will receive a grade of zero.

3. Exams – Late exam submissions are accepted, with a penalty of 10% off the grade for every 15-minute period after the deadline, up to a maximum of 60 minutes. Exam deliverables submitted more than 60 minutes after the deadline will not be reviewed and will receive a grade of zero.

EXCEPTION: Work submitted as makeup for an excused absence is not considered late and is exempt from this policy. Per Student Rule 7, I will give students with excused absences adequate time and opportunities to complete missed work. Students must provide documentation and notice as specified in TAMU student rules. (See the Makeup Policy below for additional details.)

Course Schedule

Table 3 provides an overview of the course schedule. The Date column indicates the class date. The day column shows the day of the week. The Discussion Topic and Course Materials column shows the textbook content to read for that class session.

In Table 3, the three required textbooks are referenced using the following abbreviations:

- PYP = Python Programming
- PDA = Python for Data Analysis
- SQL = SQL Server 2022 for Developers

Date	Module	Discussion Topic and Course Materials
Aug 20	0	Course Introduction • Get to know Canvas • Review the Syllabus • PYP Appendix A: How to set up Windows for this book
Aug 20	1	Python Environment and Program Control • PYP 1: An introduction to Python programming • PYP 2: How to write your first programs • PYP 3: How to code control statements
Aug 27	2	Functions, Modules, Debugging, and Exceptions • PYP 4: How to define and use functions and modules • PYP 5: How to test and debug a program
Sep 3	3	Collections and Files • PYP 6: How to work with lists and tuples • PYP 7: How to work with file I/O
Sep 10	4	Numbers and String • PYP 9: How to work with numbers • PYP 10: How to work with strings
Sep 17	5	Dates, Times, and Dictionaries • PYP 11: How to work with dates and times • PYP 12: How to work with dictionaries • Python Project Kick-Off

Date	Module	Discussion Topic and Course Materials
Sep 24	6	Exploring the Power of Python • PDA Appendix A: How to set up Windows for this book • PDA (p. 16 – 27): How to use JupyterLab as your IDE • PDA 2: The Pandas essentials for data analysis • PDA 4: The Seaborn essentials for data visualization
Oct 1	7	Python Assessment • Python exam review • Python practice exam
Oct 8		TAMU Fall Break (not a class day)
Oct 15	7	Python Assessment (in class) • Python exam
Oct 22	8	SQL Coding Environment • SQL 2: How to use the SQL Server Management Studio • SQL 12: How to create … with the Management Studio
Oct 29	9	Retrieve Data • SQL 3: How to retrieve data from a single table • SQL 4: How to retrieve data from two or more tables
Nov 5	10	Aggregate and Filter Data • SQL 5: How to code summary queries • SQL 6: How to code subqueries

Date	Module	Discussion Topic and Course Materials
Nov 12	11	CRUD and Data Types • SQL 7: How to insert, update, and delete data • SQL 8: How to work with data types
Nov 19	12	Functions and Creating Tables • SQL 9: How to work with functions • SQL 11: How to create … with SQL Statements • SQL 12: How to create … with the Management Studio
Nov 26	13	SQL Assessment • SQL exam review • SQL practice exam
Dec 3	13	SQL Assessment (in class) • SQL exam

Table 3 - Course Schedule

Table 4 outlines the schedule for all course deliverables, sorted chronologically by due date for your convenience. The corresponding learning module for each deliverable is also listed in the third column for easy reference.

All course deliverables are due by 11:55 p.m. (Central) on Mondays (except Exams). You will have course deliverables due each Monday.

In Canvas, the detailed specifications page for each learning activity page includes the deliverable date at the top for easy reference. Additionally, you can view all due dates by selecting the "Calendar" in Canvas or by visiting the "Syllabus" section from the course navigation menu.

Date	Module	Learning Activity
Aug 26	0	PY HW 1

Date	Module	Learning Activity
Aug 26	1	PY HW 2
Sep 2	2	PY HW 3
Sep 9	3	PY HW 4
Sep 16	4	PY HW 5
Sep 30	6	PY HW 6
Oct 14	7	PY Practice Exam
Oct 15	7	PY Exam (completed during class time)
Oct 21	5	PY Project
Oct 21	8	SQL HW 1
Oct 28	8	SQL HW 2
Nov 4	9	SQL HW 3
Nov 11	10	SQL HW 4
Nov 18	11	SQL HW 5
Dec 2	13	SQL Practice Exam
Dec 3	13	SQL Exam (completed during class time)

Table 4 - Course Deliverable Schedule

Instructor Policies

Exam Procedures

1. The midterm and final exams will be timed exams during the class session. You will have three hours to complete each exam.
2. For each exam, I will provide a list of resources that are allowed as reference materials during the exam (e.g., your textbook).
3. For each exam, I will provide a list of resources that are <u>NOT</u> allowed as reference materials during the exam (e.g., another person).

Student Consultation Availability

All student consultations will be conducted live online via Zoom.

Open Student Consultation Sessions

I hold regular student consultation sessions every Monday from 5:30 to 6:30 p.m. (Central Time), starting on Monday, August 26. If you plan to attend, please join the Zoom meeting by 5:45 p.m. If no students have joined by 5:45 p.m., I will conclude the session at that time.

To attend the scheduled consultation hours, click on "Zoom Pro 1.3" in the course navigation menu and select the meeting link for the current date under the "Upcoming Meetings" tab.

These sessions are designed to help you with any questions you have about the course material or to provide feedback on your coding challenges. Take advantage of this opportunity to clarify concepts and get assistance with your work.

If you are not able to attend the scheduled consultation sessions or if you need to discuss grades or other matters privately, please email me. We can arrange a one-on-one consultation at a mutually convenient time via Zoom.

Zoom Recordings of Regular Student Consultation Sessions

When appropriate, I will record our regular consultation sessions. You can access these recordings by selecting the "Zoom Pro 1.3" link in the course navigation menu and navigating to the "Cloud Recordings" tab.

Difficulty Connecting to Zoom

If you encounter difficulties connecting to the Zoom session, ensure that you are logged into your Zoom desktop app with your TAMU Zoom account. For help, refer to the "How to Activate your TAMU Zoom Account" video at minute 1:19.

Electronic Course Support

The course website on the Texas A&M University (TAMU) Canvas system is your primary resource for electronic course support. It contains the syllabus, class notes, data sets, homework assignments, project details, and more. Regularly checking the course website will ensure you stay informed about course updates and materials. You can access Canvas at canvas.tamu.edu using your NetID and password.

Additionally, the university provides Zoom, Microsoft 365, and Google Tools for all students. These tools will be particularly useful for your group and team projects. You can access them with your NetID credentials using the provided links.

Statement on Plagiarism

Plagiarism is the act of presenting someone else's ideas, words, or work as your own. This includes copying the work of another person and submitting it as your own, even with their permission. Plagiarism is a serious academic offense that undermines trust within the academic community.

If you have any questions about what constitutes plagiarism, please refer to TAMU Student Rule 20 and the "Plagiarism" section of the TAMU Honor System Rules.

In your coding journey, you may encounter various online forums and resources, such as StackOverflow, Chegg, Code Review, or Google searches, that provide assistance with coding challenges. While these resources can be valuable learning tools, it is crucial that any code you submit for course deliverables—whether homework or projects—is your original work.

Submitting a solution that you found online without significantly modifying it to reflect your understanding and effort is considered plagiarism and a violation of the Aggie Honor Code. For example, if you were assigned to write a Python program to convert a string into Pig Latin, directly submitting code from sources like Codecademy, Stack Overflow, Stack Exchange Code Review, or Chegg without meaningful changes would be a breach of academic integrity.

Statement on Outside Resources for Exams

Unless otherwise specified, your work on exams must be completed independently. Using work created by someone else during an exam constitutes academic dishonesty. This means you may not submit another person's work as your own, including content generated by artificial intelligence (AI), or obtained through any form of communication or media. This includes, but is not limited to, work from generative AI tools, face-to-face conversations, phone calls, text messages, instant messages, chats, Slack exchanges, email messages, social media posts, tutoring sites, discussion forums, blogs, and similar sources.

Statement on Outside Resources for Homework and Projects

In this course, you will work on homework and projects both individually and with your team. I encourage you to use a variety of resources—such as coding forums (e.g., Stack Overflow), tutoring sites, blogs, and generative AI tools—to enhance your coding skills. Leveraging external resources is a common practice in the industry, as all professional coders rely on these tools to solve coding challenges.

However, the challenge for students is learning how to use these resources as guides to understand and solve problems, rather than as shortcuts to simply obtain answers.

The rise of generative artificial intelligence (AI), particularly since the launch of ChatGPT in November 2022, has revolutionized how we learn to code. It's important to note that tools like ChatGPT can generate code for virtually any problem you encounter in this course.

I encourage you to discuss the use of outside resources, including generative AI tools, within your teams. Establish norms and ground rules in your team charters for how these resources will be used during weekly coding exercises and the coding project.

Consider the following questions:

- When is it appropriate to use outside resources for course-related activities? How should these resources be used to ensure they enhance learning rather than replace it?

- Should the use of outside resources be cited in code documentation and project reports? If so, how should this be done?

- What percentage of the effort should come from the student versus the outside resources when submitting a course deliverable for grading?

- How can you uphold the Aggie Core Values of Respect, Integrity, and Excellence while utilizing outside resources in your work?

- Should team members receive course credit for submitting work that heavily relies on outside resources?

There isn't a one-size-fits-all answer to how you should use outside resources, including generative AI tools, for your homework and projects in this course. I will often remind you that the only way to truly learn to code is by writing code. From a learning perspective, it's in your best interest to develop your own coding solutions for homework and projects, using outside resources as a guide rather than a crutch.

Students who submit code directly from outside sources with minimal or no effort to revise or understand it miss out on valuable learning opportunities. Additionally, they may hinder their team's progress by lacking the skills and knowledge needed to contribute effectively.

The key is to use these resources responsibly—to guide your learning and enhance your skills, not to bypass the work that will ultimately make you a better coder.

Additional Course Notices

Seeking Help

If you're having trouble with the course material, please reach out as soon as possible. You can contact me during consultation hours or send me an email. If you're doing the work and need assistance, don't hesitate to ask—I'm here to help, but I can only assist if I know there's a problem.

Privacy of Grades

Your scores and grades will be posted on the course website, where you can view them privately. I do not discuss grades over the phone or via email to ensure your privacy. If you would like to discuss your scores or grades, please schedule a Zoom consultation with me.

Schedule Changes

The course schedule, including topics and dates, is subject to change. Any necessary adjustments will be announced in class and posted on the course website. It's your responsibility to stay informed about these changes.

University Policies

This section outlines university-level policies as established by the TAMU Faculty Senate.

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reasons deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below).

Disabilities may include but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Resources and their instructors as soon as possible.

Texas A&M at College Station

Disability Resources is in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media posts.

Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Texas A&M at College Station

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](#) (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services available through [Counseling & Psychological Services](#) (CAPS).

Students who need someone to talk to can call the [Texas A&M Helpline](#) (979-845-2700) from 4:00 p.m. to 8:00 a.m. on weekdays and 24 hours on weekends. 24-hour emergency help is also available through the [National 988 Suicide and Crisis Lifeline](#) (Dial 988).

College and Program Policies

This section details program policies established by the MS Analytics program staff.

MS Analytics Program – Attendance Policy

The MS Analytics program requires attendance at all class sessions. Program staff will take attendance for each session, and students are allowed a maximum of five unexcused absences across all courses in the two-year program. Exceeding this limit may result in dismissal from the program. All assignments must be submitted by their stated due dates.

Arriving late or leaving class early is considered an absence. If an emergency prevents you from participating in an entire class session, you must notify the faculty member, Program Director, and Assistant Director as soon as possible.

MS Analytics Program – Recording Class and Student Consultations in Zoom

The MS Analytics program staff will record class sessions and student consultations, making them available to the class via the course website (Canvas). These recordings will be accessible only to students registered for the course at the time of distribution and will not be used in future semesters. Students are prohibited from distributing the recordings to anyone.

Class recordings may include:

- Students' faces if their camera is on.
- Students' verbal responses.
- Any chat comments shared with the entire class.

Zoom provides a notification at the top of the screen when a session is being recorded. If you join a session after the recording has started, you will be required to opt-in to the recording.

Generative AI Disclosure

In keeping with my commitment to leverage advanced technology for enhanced efficiency and accuracy in my work, I use generative artificial intelligence tools to assist in drafting course materials.