

INFO 3100: Automating Business Processes

<p><u>Term and Credits:</u></p> <p>Fall 2021</p> <p>4 Credit Hours</p>	<p><u>Time and Location:</u></p> <p>CRN 3029</p> <p>T/R 8 – 9: 50 AM DCB 110</p> <p>CRN 4291</p> <p>T/R 2-3:50 PM DCB 130</p>
<p><u>Instructor:</u></p> <p>Name: Scott Toney</p> <p>Department: Business Information & Analytics</p> <p>Office Location: DCB 580 or zoom https://udenver.zoom.us/j/7202192815</p> <p>Office Hours: T/W/TH 1 to 1:45 PM and By Appointment</p> <p>Email: stoney@du.edu</p> <p>Cell Phone: 720-219-2815</p> <p>Graduate Assistant: TBA</p> <p>Office Hours: TBA</p>	<p><u>Communication Conduct:</u></p> <p>Feel free to refer to me as Mr. Toney, Professor, or Scott as you feel comfortable.</p> <p>Email is usually the best way to contact me. If I haven't responded in 36 hours, feel free to resend your message.</p> <p>I will send class level communications via Canvas announcements. I will typically initiate communication with individual students directly through your DU email or through Canvas email.</p> <p>My open office hours times are first come first served. If you need to meet at another time that can usually be arranged. Office Hour meetings will be online.</p>

COURSE DESCRIPTION:

This course focuses on using Microsoft Excel and Python to support decision making for managers. This course will cover advanced Excel functions and menu options along with basic spreadsheet modeling design and good practices. It will also cover automating tasks in Excel using VBA. We will then transition into using Python to create programs outside of the Microsoft Office environment. In both platforms the focus is on using basic programming logic to automate reading and writing data, creating data summaries, and basic statistical tests.

PREREQUISITE: INFO 2020

LEARNING OUTCOMES

By the end of this course, students will be able to

- Create spreadsheet models with good design principles.
- Employ appropriate functions such as IF, lookups, index, text manipulation, date/time formats, and small/large/rank in Excel.



- Plan for and create programs in both VBA and Python using appropriate programming logic concepts such as sequences, conditional statements, and loops.
- Automate tasks in Excel and Python such as reading/writing in data; cleaning data; formatting, deleting, and rearranging/summarizing data; graphing; and basic statistical tests by using programming techniques.
- Describe and use the concepts of functions, objects, properties/attributes, and methods for both Excel and Python.
- Compare and contrast the uses of Excel VBA and Python and be able to collaboratively use the programs together.

REQUIRED MATERIALS:

- Software
 - Microsoft Windows OS and Microsoft Excel 2013/2016 or Office365.
 - Anaconda for Python 3.8 for Windows or Mac. See Canvas page: Python Resources for Installation Instructions.
 - Top Hat – Polling Software (\$30) – look for email inviting you to course
- Optional Textbooks: *VBA for Modelers: Developing Decision Support Systems* with Microsoft® Office® Excel, 5th Edition, Albright, South-Western, Cengage Learning, 2016 and *Python for Data Analytics*, Wes McKinney (link on Canvas).

GRADING STRUCTURE, SCALE, AND POLICIES:

GRADING STRUCTURE:

Requirement	Amount
Excel VBA Test	10%
Python Test	10%
Course Project (multiple deliverables)	35%
Mini Assignment and Top Hat In Class Polling	10%
Tutorials/Homework Problems	25%
PreClass Quizzes	10%
Total	100%

GRADING SCALE:

A: 93-100%; A-: 90-92.9%; B+: 87-89.9%; B: 83-86.9%; B-: 80-82.9%; etc.

LATE WORK:

Late work will be accepted with a **penalty of 15 percent per day**. Do not bother turning in things that are more than a week old, as after a week I will no longer accept them.

ASSESSMENTS:

You may talk with others and get advice about the approaches to solve the problems, but **DO NOT SHARE COMPUTER FILES** – this work should be completed on your own. If I feel you turn in work that is not your own, I will turn you in to the DU Honor Code office.

Course Project: Over the course of the quarter you will complete a project using both Excel VBA and Python. Information will be distributed through Canvas throughout the course. The project will include a final presentation to the class. **Late work will be accepted with a penalty of 15 percent per day. Do not bother turning in things that are more than a week old, as after a week I will no longer accept them.**

Informal In-Class Assessments: these are items that are COMPLETED DURING CLASS.

- **Mini Assignment:** Short problems will be assigned for each lesson. These can be completed in groups or individually. You will submit your progress on the problem at the end of class EVEN IF YOU ARE NOT FINISHED. Once you submit your version, you will be able to see my solution to the assignment. You can then continue to work on the problems and grade your work. Your score for this will be based on effort put in during class rather than actual correctness, so make sure to self-grade your work for your own understanding as you move through the material.
 - No Late Assignments Accepted. For an Excused Absence (university activity, job interview, illness; max of 2) to miss class, you can complete this outside of class. You must formally request approval from the Canvas class home page. The assignment is due during the next class.
- **Top Hat** – must be in class to get credit and complete web-based quiz questions during class.
 - No Late Assignments Accepted. For an Excused Absence (university activity, job interview, illness; max of 2) to miss class, you can complete this outside of class. You must formally request approval from the Canvas class home page. The assignment is due during the next class.

Homework/Tutorials: These will be assigned throughout the course. You may submit them late for a penalty of 15 percent a day. After a week, they are no longer good for a grade.

Pre Class Reading/Lecture Quizzes: There will be quizzes to be completed before each class (except the first week) that will cover the reading material and the video lectures. No late submissions will be accepted.

COURSE POLICIES:

Class is not optional. We will work together in our classroom on new materials every single class day. This will be the time you get to try things with your peers, get feedback from me and your peers, and ask questions. It is a critical part of what we will do in this class. Programming requires practice...This is where you get that practice.

Outside of Class Video Lectures. There is very little reading required for this course. The lectures will be delivered via video outside of class. You are expected to watch the videos before class and there will be quizzing to insure you are prepared for class.

Technology Use in the Classroom. Technology use in the classroom is strictly limited to that for educational purposes. Be respectful to those around that might be distracted by your extraneous use of technology.

Attendance Policy. I will take "attendance" by way of the Top Hat polling questions. If you need to miss class, you should confer with a classmate to see what you might have missed. There will likely be recordings of class if you need to miss class. Check on canvas after the fact.

Class Preparation and Participation Policies. Being able to create computer programs is a "hands on" activity. We will be putting what you read and watch before class as well as the lecture during class to use during class time so you need to be prepared to "dig in and work" during class. That means having your equipment ready (computer and software) and being prepared to practice the materials for the day by having read/watched the material beforehand.

Extra Credit. The syllabus reflects a fair and accurate assessment of your skills in the class. Under no circumstances will you be given the option to complete extra credit to make up for missing assignments and/or to raise your grade.

Bug Bounty. This class has a lot of moving parts. I have done my best to get everything copied over and updated from the past versions of the class. It is pretty easy to miss a link or have a wrong date in here. If you find problems with the course, please email so I can fix it. If I fix a problem you find, I will give you some extra credit points. Thanks in advance for your help...

UNIVERSITY EXPECTATIONS, POLICIES, AND RESOURCES:

Inclusive Learning Environments.

- In this class, we will work together to develop a learning community that is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and myriad other social identities and life experiences.
- The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment.
- A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication.
- Both speaking up and listening are valuable tools for furthering thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative and excellent learning community.
- Our core commitment shapes our core expectation for behavior inside and outside of the classroom. Office of Diversity, Equity, and Inclusion website (<https://www.du.edu/diversity-inclusion/index.html>).

Students with Disabilities. A student who qualifies for academic accommodations because of a disability must submit a Faculty Letter to the instructor from the DU Disability Services Program (DSP) in a timely manner, so that the needs of the student can be addressed. Accommodations will not be provided retroactively, e.g., following an exam or after the due date of a project. DSP determines eligibility for accommodations based on documented disabilities. DSP is located in Ruffatto Hall, 1999 E. Evans Ave. (303-871-2278).

University Expectations. Please review the University Expectations on the Daniels College of Business syllabus webpage (<http://daniels.du.edu/university-expectations/>)

- University of Denver Honor Code
- Policy Concerning Official Communication



- Students with Disabilities
- Policy Concerning Religious Accommodations
- Policy Concerning Emergency Procedures
- Policy Concerning Conflicts of Interest, Including Gifts from Students

Special COVID – 19 policies

This course will comply with University of Denver's COVID-19 Protocols for Personal Protective Equipment (PPE) and Social Distancing in accordance with state and local orders and federal guidelines. See [here](#) for the complete policy. It is the expectation that students attending physically shall wear a face covering that:

- Cover the nose and mouth at all times
- Fit snugly but comfortably against the face
- Include multiple layers of fabric
- Allow for breathing without restriction
- Be disposable or be washable and machine dryable without being damaged or changing shape
- Be looped around the ears or tied behind the head and neck
- Remain in place until taken off safely
- Be replaced with one that does not need to be frequently adjusted if the initial face covering moves during work
- Be replaced when they become dirty, wet, and/or difficult to breathe through.

Failure to comply with DU's protocols for face coverings constitutes a violation of the honor code. If you are not wearing a face covering, the professor will ask you to do so. Refusal will result in the professor asking you to leave the classroom.

Safe Behavior in this Class

Teaching and learning have always required safe classroom environments, so the current requirements in light of Covid-19 simply extend some principles of behavior long established in higher education. But these requirements are vital extensions, given the debilitating and deadly threat of the Coronavirus, not only for you personally but for those around you. In choosing to attend the University of Denver, you've chosen to join a larger Community of Care, which means you've chosen specific responsibilities—including in this class. By enrolling in the University of Denver and in this course, you have agreed

- Not to attend class when you're sick.
- Not to attend class when you've been exposed to people who have or may have Covid-19.
- To practice social distancing always, keeping at least six feet from everyone else.
- To wear a mask—and wear it effectively—at all times
- No Eating or Drinking in the classroom

Social Distancing

- This course will adhere to social distancing guidelines outlined in University of Denver's COVID-19 Protocols for Personal Protective Equipment (PPE) and Social Distancing in accordance with state and local orders and federal guidelines. See [here](#) for the complete policy.
- All university personnel, students, and visitors shall maintain social distancing at all times while on campus to help prevent the spread of disease. This policy impacts in-person attendance as well as faculty-student interactions out of class such as during office hours. It is the expectation that social distancing measures include:
 - Maintain 6-foot distancing from other individuals whenever possible.
 - Classroom seating and workspace should be at least 6 feet apart.



- Office hours will be accomplished through online conferencing, email or phone.
- Unavoidable in-person meetings should be short in length and in a room where participants can keep a distance of six feet apart.
- Social distancing should also be practiced as you enter and exit the classroom.

Failure to comply with DU's protocols for social distancing constitutes a violation of the [honor code](#).

Attendance In a COVID -19 quarter

As communicated by the registrar's office on August 3, 2020, "Students should note that in-person courses at the University of Denver for Fall 2020 were specifically designed to have an in-person component due to the high impact qualities of the course. Students who are able to attend in-person class sessions should do so in order to have an optimized experience. If a student is scheduled for an in-person class but would prefer to take the class in a fully online modality, it may be possible to work with the instructor to secure this arrangement; however, this option is not guaranteed, and in most cases the student experience will be best served by finding a class taught in the preferred modality from the outset."

If you have opted to join this course, it is the expectation that you attend class in person as required unless you have made alternative arrangements with me prior to the start of class due to illness, medical reasons, or the need to isolate or quarantine due to COVID-19. As in any in-person course, attendance and participation are crucial for a complete understanding of course material.

In the event that you find yourself experiencing COVID-19 related symptoms, I request that you do the following:

- Stay home! This is best way to prevent spreading COVID-19 as supported by scientific evidence.
- Please provide a screen shot of the symptom monitoring response that asks you to quarantine and let me know of your absence.
- If you are self-quarantining/isolating, you can attend class virtually by attending the zoom meeting synchronously or by watching the video of class afterwards. If you attend the live zoom session I will do what I can to make you part of the class, but I cannot insure an optimal participation experience.





Class Schedule

Tuesday		Thursday	
9/14	Intros VBA1.Good Spreadsheet Modeling Concepts/ Excel Basics/ Built-In Functions	9/16	VBA2.Date and Lookup Functions / Visual Basic Editor/ Creating Your Own Functions
9/21	VBA3.Control Logic (Sequence, Condition, Loop) / Using Buttons / Message and Input Boxes / Structured Programming Tips / Pseudocoding	9/23	VBA4. Reproducibility / Calling other subroutines / Pseudocoding
9/28	VBA5.Objects, Properties, and Methods / Range Properties and Methods	9/30	VBA6.Range Properties and Methods / Manipulating Worksheets / Creating Summaries
10/5	VBA7.Working with Arrays	10/7	Project Work Day
10/12	VBA8.Working with Charts	10/14	VBA Test
10/19	PY1.Python Variable Types	10/21	PY2.Basic Control Logic Using Python
10/26	PY3.Reading in Data / Pandas DataFrames	10/28	PY4.Functions, Cleaning and Creating Summaries
11/2	PY5.Creating Summaries and Grouping Data	11/4	PY6.DataFrame Audit and Creating Graphs
11/9	PY7.Basic Statistics (t tests, ANOVA, Regression)	11/11	PY8. Python writing to Text/Excel
11/16	Project work Day Optional: PY9.Combining Python and Excel	11/18	Python Test
11/22	In Class Presentations		