



ACCY 575
Data Analytics Applications in Accountancy
Spring 2018

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INSTRUCTOR INFORMATION

Name	Vic Anand, Ph.D.
Office	Wohlers 206
Phone	(217) 300-3109
E-mail Address	vanand@illinois.edu (preferred contact method)
Office Hours	Monday 12:20 – 1:50 PM, and by appointment

COURSE DESCRIPTION

In this course, you will learn to use data to solve business problems, particularly those from accounting and finance. You will apply the skills you learned in ACCY 570 and ACCY 571 to cases and to a final project. You will develop and improve your written and oral communication skills. My goal is to make you a more *useful* businessperson. This will increase your market value and ultimately give you more options in whatever career you choose.

Each case and your final project will start with a question. For example, “*Is there potential fraud in this setting?*” or “*Product X appears unprofitable. If we stop making it, will profits increase?*” To answer such questions, you will start with data. You will decide which analyses and visualizations to perform. In order to perform those analyses, you will have to clean and transform the data. The goal in each analysis will be to transform data into information that can be used to inform a business decision.

Accountants and finance professionals are clamoring for students with data analytics skills. I have had numerous conversations with partners from Big 4 firms who essentially begged me to impart analytics skills to students. I have also spoken with junior professionals at Big 4 firms, all of whom wish they had learned these skills as a student. Finance professionals at other companies also tell me they strongly value analytics skills. Thus, the skills you will learn are timely and will increase your market value.

Prerequisites

All students must have taken ACCY 570 and ACCY 571. No exceptions. You should have a working knowledge of Python and Excel.

COURSE TOPICS AND SCHEDULE

As this is a relatively new course, please note that *the following schedule is likely to change*. In the following table, (T) means Tuesday and (R) means Thursday.

#	Date	Topics	Activities	Case
1	Jan 16 (T)	Intro / Syllabus		
2	Jan 18 (R)	Analytics in Accounting	- Guest Speaker - Form Groups	Analytics in Accounting
3	Jan 23 (T)	- Analytics in Accounting - Analytic Mindset	Group Presentations	Analytics in Accounting
4	Jan 25 (R)	- Managerial Accounting - Excel - Basic Statistics	Case Background	Region Fly
5	Jan 30 (T)	- Managerial Accounting - Excel	Case Discussion	Region Fly

		- Basic Statistics		
6	Feb 1 (R)	- Financial Accounting - Data Visualization - Tableau	Case Background	DuPont
7	Feb 6 (T)	- Financial Accounting - Data Visualization - Tableau	Work on Case	DuPont
8	Feb 8 (R)	- Financial Accounting - Data Visualization - Tableau	Work on Case	DuPont
9	Feb 13 (T)	- Financial Accounting - Data Visualization - Tableau	- Presentations - Discussion of Solution	DuPont
10	Feb 15 (R)	- Internal Audit - Python / Excel	Case Background	P-Card
11	Feb 20 (T)	- Internal Audit - Python / Excel	Work on Case	P-Card
12	Feb 22 (R)	- Internal Audit - Python / Excel	Work on Case	P-Card
13	Feb 27 (T)	- Internal Audit - Python / Excel	- Group Presentations - Discussion of Solution	P-Card
14	Mar 1 (R)	Midterm Project	Work on Case	Midterm Project
15	Mar 6 (T)	Midterm Project	Work on Case	Midterm Project
16	Mar 8 (R)	Midterm Project	Work on Case	Midterm Project
17	Mar 13 (T)	- Fraud - Natural Language Processing - Machine Learning	Case Background	Conference Call Deception
18	Mar 15 (R)	- Fraud - Natural Language Processing - Machine Learning	Work on Case	Conference Call Deception
	Mar 20 (T)	Spring Break		
	Mar 22 (R)	Spring Break		
19	Mar 27 (T)	- Fraud - Natural Language Processing - Machine Learning	Work on Case	Conference Call Deception
20	Mar 29 (R)	- Fraud - Natural Language Processing - Machine Learning	Group Presentations	Conference Call Deception
21	Apr 3 (T)	- Intro to Stock Trading - Market Microstructure Basics - Working with Big Data	Case Background	TAQ Data Case
22	Apr 5 (R)	- Intro to Stock Trading	Work on Case	TAQ Data Case

		- Market Microstructure Basics - Working with Big Data		
23	Apr 10 (T)	- Intro to Stock Trading - Market Microstructure Basics - Working with Big Data	Work on Case	TAQ Data Case
24	Apr 12 (R)	- Intro to Stock Trading - Market Microstructure Basics - Working with Big Data	Group Presentations	TAQ Data Case
25	Apr 17 (T)	Final Project	Work on Case	Final Project
26	Apr 19 (R)	Final Project	Work on Case	Final Project
27	Apr 24 (T)	Final Project	Work on Case	Final Project
28	Apr 26 (R)	Final Project	Group Presentations	Final Project
29	May 1 (T)	Final Project	Group Presentations	Final Project

COURSE MATERIALS

All materials will be distributed in class, via Compass, or via other electronic means.

We will use one Harvard Business School case (RegionFly) that you must purchase directly from Harvard Business Publishing. The cost of the case is \$4.25, and can be purchased from <http://cb.hbsp.harvard.edu/cbmp/access/73829309>.

ASSIGNMENTS AND DELIVERABLES

This course is a hands-on application of data analytic tools to business problems that will be presented through case studies. The course will culminate in a final project in which you will demonstrate your ability to apply the material. There will be no exams. 😊

Cases

Each case will consist of a business problem, one or more datasets, and a set of questions that you need to answer. Typically, I will introduce a case in class and teach you (or refresh your memory of) the relevant background material. The next one or two class days will typically be open sessions in which you work on the case with your group and can consult with me. Most cases will conclude with a class day in which you (or your group) present your findings and conclusions. Many cases will also include one or more deliverables, such as a dataset or written assignment. However, requirements for individual cases will vary substantially.

It is your responsibility to carefully read and comply with the different requirements for each case. Deliverables will be due at the *beginning* of the class on the day listed in the [course schedule](#), unless I tell you otherwise. Groups or individuals will occasionally be called on (usually without warning) to present certain points of the assignment in class. One of the key

goals of the cases is to have a lively in-class discussion and to learn from each other. Thus, everyone should be prepared to discuss the cases and assignments in class.

Cases will often be messy, without clear answers. You will likely feel frustrated and lost. Of course, that is how problems are in real life, frustrating and ill-defined. And that's why you will be paid the big bucks to solve them! My suggestion is to embrace the ambiguity and dig in. Get your hands dirty and learn by trial and error.

Final Project

This course will culminate in a final project that you will perform in a group. You will have to identify a business problem and obtain data that you can use to address the problem. You will start working on the final project in the middle of the semester (see [course schedule](#)). Your midterm project will be a proposal for your final project. You will receive feedback on your proposal from me and from the rest of the class. You will then use that feedback to refine your proposal. You will then have half of the semester to collect data and analyze it.

Start working on your final project as early as you can! I will give you examples of past final projects and possible datasets early in the semester.

COMMUNICATION

I will use *Compass* as the primary means of communicating with the class. You are responsible for ensuring that you have access to the Compass site for this course. *You are expected to check Compass for announcements on a daily basis.* I will post electronic copies of course materials, such as my lecture notes, and other handouts on Compass.

If I need to communicate with you individually, I will send an email to your official University email address. Therefore, you should check your University email regularly, or have it forwarded to your preferred email address.

Getting Help

For most inquiries, contact me (the professor). You can also contact Linden Lu (zllu2@illinois.edu), our teaching assistant for the course.

GRADING AND EVALUATION

Overall Grade

At the end of the semester, I will assign letter grades using the + and - system. I will begin by determining your letter grade using the qualitative definitions below. I will then adjust that letter grade upwards or downwards using a + or – if necessary.

Grade	Criteria
A	You impressed me and far exceeded my expectations. You distinguished yourself with particularly strong performance.
B	You met my expectations. "B" will be the most frequently assigned grade.
C	You did not meet my expectations and only demonstrated a basic understanding of the material.
D	Your performance is unsatisfactory. You demonstrated a rudimentary understanding of the material, barely enough to pass the course.
F	You demonstrated essentially no understanding of the material and did not contribute to class.

Components of Your Grade

The following table shows the *total value* of each component of your grade.

Component	Points	(%)
Analytics in Accounting case	40	4%
Region Fly case	70	7%
DuPont case	110	11%
P-Card case	110	11%
Midterm Project	100	10%
Conference Call Deception case	130	13%
TAQ Data case	130	13%
Final Project	200	20%
Participation	100	10%
Research via the ARL Subject Pool	10	1%
Overall Total	1,000	100%

Case Grades

Each case will be graded on multiple dimensions. For example, the total grade for a case might be the sum of the grades for a written assignment and a presentation. Since each case will have a different format and different deliverables, I will provide you with the components of the grade for each case when I assign the case.

Midterm and Final Projects

This course will culminate in a final project. Your group will (1) identify a business problem, (2) identify a dataset, (3) obtain the dataset, (4) clean the dataset, (5) perform analyses and visualizations on the dataset, (6) distill your findings into insightful conclusions and

recommendations, (7) write a document describing the business problem, data, and your analyses, and (8) present your findings.

Since I want you to start your final project as early as possible, your group will perform steps 1 and 2 (and possibly 3) in the first half of the semester. Your midterm project will be a proposal of your idea for your final project. You will have to present *and defend* your idea to the class and to me as part of your midterm project.

Your grades for the midterm and final projects will be a sum of your grades for writing, presentation, and participation. I will provide you with the details of the grading criteria in the first few weeks of the course.

Participation

Professional jobs in business, accounting, and auditing are intensely verbal in nature. You cannot be a successful manager or auditor unless you learn to work well with others, listen to others, and express your ideas effectively to others. Further, social learning is one of the primary ways you will gain knowledge once you graduate.

I realize that participating in class and in groups is often very difficult for some. I am sympathetic to this difficulty because it was (is) not easy for me either. However, this is a critical skill, and the sooner you work to overcome your fears, the better off you will be.

Your participation grade will have two components, (1) peer evaluation of group participation and (2) instructor evaluation of in-class participation.

(1) Peer Evaluation

Peer evaluation will constitute 50% of your participation grade. Most of the assignments in class will be done in groups. After each case, group members will evaluate each other. Be accurate and honest in your peer evaluations.

(2) Instructor Evaluation

I will assess your participation in each class session. Good participation is more than just showing up for class. Good participation is coming to class prepared and offering *high-quality* comments that add to the collective learning of the class session. I want to emphasize that I care about *quality*, not quantity. You are not required to contribute in each class session. You are required to make good contributions in multiple class sessions. Passive attendance alone (even perfect attendance) is not good participation and will result in a low participation grade (at best a C).

Good classroom citizenship is also a component of your participation grade. For example, showing interest in others' presentations, helping others when you can, staying off your phone and irrelevant websites on your computer, and helping us maintain an enjoyable and professional classroom environment.

Participation Grading Rubric

Outstanding Contributor (A):

- Extremely knowledgeable about and well prepared for the issues discussed.
- Ideas offered were usually substantive, provided good insights and sometimes also provided a new direction to consider.
- Played a role as a kind, constructive leader without being pushy or domineering.
- If this person had not been present, the quality of work would have been diminished significantly.

Good Contributor (B):

- Good knowledge and preparation regarding several issues.
- Ideas offered were usually substantive, generally provided useful insights, and occasionally offered a new direction to consider.
- May have played a role as a kind, constructive leader without being pushy or domineering.
- If this person had not been present, the quality of work would have been diminished.

Marginal Contributor (C):

- Some knowledge and preparation regarding several issues.
- Ideas offered were occasionally substantive, but seldom provided clear insights or offered new directions.
- If this person had not been present, the quality of work would have been diminished only slightly.
- This grade is warranted for those who participate only in small-group activities with no large-group contributions.

Non-participant (D):

- Maintained attendance but has said little or nothing in class.
- No demonstrated knowledge of the relevant issues.
- If this person were not present, the quality of the discussions would be unchanged.

Disruptive Contributor (F):

- If present in class at all, contributions to discussions reflect inadequate preparation.
- Ideas offered are rarely substantive, provide few, if any, insights, and never offer a constructive direction. Integrative comments and effective arguments are absent.
- At best, contributions are obscure, confused, and indicate a lack of familiarity with the facts of the issues under discussion. At worst, comments demonstrate disrespect for others. If this person were not present, valuable airtime would be saved.

Participation in the Accountancy Research Lab (ARL) Subject Pool

The Accountancy Research Lab (ARL) subject pool (<https://uiuc-accountancylab.sona-systems.com>) is an opportunity for students to participate as research subjects in accounting experiments. Ten points, 1%, of your grade is given for participation in research studies. You will be enrolled automatically, and will receive an email with more information. The administrators at ARL, and not the instructor, handle everything related to this program (AccyResearchLab@illinois.edu). When you participate in a study, 0.5% of course credit is provided for (a) 1 completed study lasting an hour or less, or (b) each hour of a completed study that lasts more than one hour. Thus, each significant part of an hour of a completed study = 0.5 Research Study Credits = Class Credit of 0.5% of the total points available in this course.

Also, some studies pay cash. If you would rather not participate in a research study, you can do alternative activities of similar duration and similar effort as the research.

COURSE POLICIES AND EXPECTATIONS

- **Compass / Class Announcements:** Each student is responsible for checking the course website for announcements, changes, and assignments.
- **Preparation:** You are expected to read and complete all assigned materials before the class period for which they are assigned. One of the principal ways we learn in this class is interaction, discussion, and active doing (rather than only passive listening). As a result, this class will not work properly unless everyone comes to class prepared.
- **Effective Group Work:** Many cases and projects (as well as any in-class exercises) will be performed in groups. You are expected to contribute *more* than your share to each group assignment. Every group member should take ownership of the assignment and not free-ride on the others. Many groups divide assignments into (seemingly) separate components and paste together individual efforts at the last minute. You should know that this often results in ineffective and inefficient performance. Instead, I recommend that group members discuss the entire assignment, even if some individuals spend more time on some components than others.
- **Class Visitors:** We will occasionally have professionals visit our class. These visits will be of great benefit to you since they give you a view of how auditing works in the real world and give you exposure to potential employers. Attendance will be taken on the days we have visitors. Thoughtful and appropriate questions asked to these visitors will be given extra weight in your participation grade.
- **Missed Assignments:** In general, medical emergencies are the only permissible reasons for missing a graded assignment. You must contact the Student Assistance Center to receive an excused absence if an assignment is missed. If you are granted an excused absence, I will decide the best make-up alternative on a case-by-case basis. Excused absences for documented, University-approved purposes do not affect the deadlines imposed for exercises and assignments. If you expect to miss an assignment for an approved reason, you are expected to deliver the assignment *before* it is due. Please make arrangements with me as soon as you are aware of any scheduling issue.
- **Grading Disputes:** While the TAs and I will make every effort to grade your work accurately, grading errors can occur. If you believe there is an error, you may request regrading of the assignment or exam. However, if you request a regrade, I reserve the right to regrade your entire assignment and correct any other grading errors I observe. To request a regrade, submit a written request to me within one week from the class period in which the assignment was first returned. The request must be accompanied by the graded original and must state the area of dispute, your recommendation for change in grade, and an explanation or justification for your recommendation.

- **Syllabus Change Policy:** This syllabus is a guide for the course and is subject to change. I will try to communicate all material changes to you, but it is good practice to periodically check Compass for new versions.

HONOR POLICY

The University (http://admin.illinois.edu/policy/code/Full_Code_web.pdf) and Department of Accountancy (http://www.business.uiuc.edu/accountancy/programs/honor_code.pdf) both have honor codes that students are expected to follow. The following parameters should be followed for assignments in this course. *Group Assignments:* Group work must never be discussed with anyone *other than* members of your group, the instructor, or TA, unless specifically allowed. This prohibition includes classmates not in your group, students not in this class, tutors, other instructors or professors, friends, parents, etc. *Individual Assignments:* All work submitted to fill the requirements of individual assignments must represent your independent effort. You may discuss your ideas with your fellow students. However, you must not plagiarize anyone else's work. *Case analysis:* Obtaining and using a case analyses / key / solution from any other sources is cheating, whether you copy the authors' exact words or not.

BUSINESS INSTRUCTIONAL FACILITY (BIF) EMERGENCY PROCEDURES

In the event of a tornado warning please seek shelter in the Wohlers Hall basement or the Armory, or in the BIF basement between 8 am and 4:30 pm weekdays (the nearest designated University tornado shelters). If a tornado is imminent, the BIF basement stairwells also can be used on an emergency basis. In the event of a fire in BIF, exit BIF and proceed to 141 Wohlers Hall. In the event of threat from a shooter on campus, lock down the classroom and move to a place of safety within the classroom. If you encounter a suspicious package, do not touch the package, alert campus security, and refrain from cell phone usage until the situation is resolved. More detailed information and action instructions are available in the BIF Building Emergency Action Plan.

Run > Hide > Fight

Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with almost any kind of emergency – like severe weather or if someone is trying to hurt you – we have three options: Run, hide or fight. Please be aware of people with disabilities who may need additional assistance in emergency situations. Run: Leaving the area quickly is the best option if it is safe to do so. Take time now to learn the different ways to leave your building. Leave personal items behind. Assist those who need help, but consider whether doing so puts yourself at risk. Alert authorities of the emergency when it is safe to do so. Hide: When you can't or don't want to run, take shelter indoors. Take time now to learn different ways to seek shelter in your building. If severe weather is imminent, go to the nearest indoor storm refuge area. If someone is trying to hurt you and you can't evacuate, get

to a place where you can't be seen, lock or barricade your area if possible, silence your phone, don't make any noise and don't come out until you receive an Illini-Alert indicating it is safe to do so. Fight: As a last resort, you may need to fight to increase your chances of survival. Think about what kind of common items are in your area, which you can use to defend yourself. Team up with others to fight if the situation allows. Mentally prepare yourself – you may be in a fight for your life. Other resources: police.illinois.edu/safe for more information on how to prepare for emergencies, including how to run, hide or fight and building floor plans that can show you safe areas. emergency.illinois.edu to sign up for Illini-Alert text messages. Follow the University of Illinois Police Department on Twitter and Facebook to get regular updates about campus safety.

SPECIAL ACCOMMODATIONS

If you are a student with a disabilities needing academic accommodation please let me know as soon as possible so that accommodations can be arranged.