



## CIS 310 – Business Data Visualization

Sections SLN 83333-83332: (Fall 2023)

**Instructor:** Andrés Díaz López, PhD.  
**Contact info:** BAC 656 (Phone 480 965 4581)  
Email [adiazlop@asu.edu](mailto:adiazlop@asu.edu) or via Canvas Course site  
**Office Hours:** Online Availability by appointment

### Course Materials

- Storytelling with data: a data visualization guide for business professionals by Cole Nussbaumer Knafllic (Nov 2, 2015; published by WILEY), ISBNs: 9781119002253 – Paperback, 9781119002260 – ePDF, 9781119002062 – ePub (any format is acceptable). Consult with the ASU library for a [Free online version for ASU students](#)
- Online videos, readings, notes, and slides posted on Canvas
- Software Tools: Microsoft Excel 2016 (Windows/PC version) and Tableau 2019.1 or later

### Course Description

Students learn how to build data visualizations that provide insight into the nature of the relationships of interest within the data, as well as how to build visualizations to effectively convey the insights they discover, using contemporary tools. These techniques will enable them to create knowledge that empowers data-based decision making. Visualizations will use data drawn from business operations and business-relevant societal contexts and include temporal and geospatial data.

In many ways, it can be useful to think of this course as a data-visualization-centric communication class which leverages business, data, design, and communication concepts at their intersection.

Note: Some course content or students' interventions may be deemed offensive by you or other students. Please, bring this to my attention in a respectful and well supported manner, so I can take appropriate measures.

### Course Learning Outcomes

Upon completing this course, the student should be able to:

- Identify when and what visual communication is appropriate to convey a message
- Identify enhancer and obstructer elements of good visualizations
- Recognize the fundamental characteristics of data for visual analysis
- Recognize different techniques for visually exploring and explaining data-based observations
- Use data visualizations to facilitate and enable decision making
- Build effective data visualizations in Excel and Tableau

## Course Objectives

The Undergraduate Program of the W.P. Carey School of Business has established the following learning goals for its graduates:

- 1. Critical Thinking**
- 2. Communication**
- 3. Discipline Specific Knowledge**
- 4. Ethical Awareness and Reasoning**
- 5. Global Awareness**

All of the items in bold have significant coverage in this course. Critical thinking will be built around how we identify goals and the choices of how we consider and convey the data to accomplish them.

Communication will center around how we convey results to ourselves through exploratory activities and to others through explanatory activities. The knowledge of techniques we acquire is custom to the computer information systems discipline. We will make ethical choices in how we choose to consider and present our analysis as we endeavor to create visuals that are both compelling and responsible. Finally, our data sources and consequently the questions we consider will draw from an awareness of our global society.

## Topics Schedule

The course schedule is provided in a calendar on the course Canvas site. The professor may deviate from the schedule if necessary; however, any such changes will be posted on the Canvas site.

Module	Topics
1	Introduction to the course, tools, and fundamentals
2	Introducing common chart (visualization) types
3	Methods for decluttering visuals and creating focus
4	Applying design principles
5	Identifying and constructing the elements of a story
6	Bringing it all together: building a story using all covered principles
7	Telling your story: finding your story and building it

## Course Grading

Grades will be assigned based on the following scale:

Grading Scale		
A+	>	294
A	270	293
B+	260	269
B	240	259
C+	230	239
C	210	229
D	180	209
E	<	179

## Course Weights

Course assignments will be weighted towards the final grade as follows:

Grading Weights		
Homework Assignments (16)	96	32.00%
Application Tests (3)	110	36.67%
Knowledge Quizzes (7)	40	13.33%
Reflective Questions (7)	54	18.00%
Total	300 Points	100%

Note: Bonus points for Involvement are available. See details in the Deliverables Guide page of our Canvas site.

## Deliverables

The following five categories of deliverables are used to determine your performance in this class. These deliverables are discussed in detail in the Deliverables Guide area of the course Canvas site.

1. **Assignments:** Assignments include the creation of graphics/diagrams and responding to methodological and conceptual questions covering assigned lectures for the current module as well as material from prior lectures and assignments.
2. **Application Tests:** In hands-on Application Tests, you build visualizations like those learned up to that point and answer questions that test your correct interpretation of those visualizations.
3. **Knowledge Quizzes:** Time-limited quizzes are mostly based on the textbook.
4. **Reflective Questions:** You participate individually and as part of groups in discussions that foster critical thinking and awareness of the wide diversity of issues affecting and being affected by data visualizations. The ability to effectively work in groups in an online environment is fostered, tested, and rewarded.
5. **Bonus for Involvement:** This deliverable is optional for students who want or need to compensate for eventual mishaps. These points are earned by asking or answering good questions and actively sharing useful information with the class.

Deliverables require students to apply the knowledge of the material they are currently studying. Students must do their own work to ensure mastery of the course materials. Unless explicitly stated otherwise, all assignments must be created digitally, using the appropriate software application, and **submitted on our Canvas learning platform by 11:59 pm on the due date**. This means that seeing 11:59 pm as the submission time likely translates into a late submission because the seconds that follow are not shown. **Only at 11:58 pm or earlier you can be sure the submission is on time.**

Please note that while sometimes you can submit an unlimited number of times, **only your final submission will be evaluated.**

Each student is expected to submit his/her own assignment. **Do not give your assignment to another student to submit it. This will result in a ZERO for both students involved as well as academic dishonesty charges.**

**Do not post solutions to any assignment on Discussion boards.** Doing so will be considered a violation of the university's academic integrity policy and will merit the appropriate consequences.

## Grading Policies

All assignments will be graded based on, but not limited to, the following:

1. **Completeness:** Degree of completion of all assigned work

2. **Correctness:** The accuracy of the submission according to instructions, proper documentation, and format
3. **Grammar and Spelling:** Although right grammar and spelling won't give you points, wrong grammar and spelling will cost you points, so set yourself to the highest level of professionalism when producing your deliverables

Please note that your professor **does not round nor curve grades**. The score you earn is the score you receive.

To be fair to everyone, a student must submit all assigned course work on time as denoted on the course schedule, for it to be accepted. **Assignments will not be accepted late.** This policy will be strictly enforced.

This course is structured to reinforce personal responsibility. As such, for the most part, **grades in the course are under your control.**

Y grade options to replace satisfactory grades will only be used in very rare circumstances after consultation with the instructor before attempting the last test. Any requests must be made and resolved prior to the course's final assessment. Once a request is granted it is irreversible.

### **Grade Appeals**

Grades may be appealed within 24 hours of grades being posted for their assignment. Your professor and/or TA(s) will not notify you of these postings. It is your responsibility to regularly monitor your grades.

For all grade appeals please write a short memo outlining why you believe your grade should be re-evaluated. Your case will be strengthened by responding to comments given in graded assignments, incorporating them into your response. If your appeal for reconsideration merits a further examination, I will be happy to do so.

Please be advised: I am often too generous rather than too stingy. As such, it is possible that when I re-evaluate your work the grade you received may be lowered.

### **Email, Discussion Forum, and Office Hours**

**Before emailing me any question related to an assignment or course concepts/materials, please post to the appropriate channel on the course discussion board.** Before responding to any email related to these items, I will check our discussions board first, and refer you there if you have not already posted your question.

I will answer all requests in a timely fashion, generally the next working day. If you have waited more than 24 hours for a reply, please feel free to re-send or contact me via an alternative medium (Email or Canvas) to be sure I received the original request.

**Always use your asu.edu email address** when communicating with me. I may not even read emails from other email accounts.

### **The "No Hand-Holding" Rule**

You are officially on the path in the W. P. Carey undergraduate program from which you segue into graduate school and/or into a career. Either way, you are now at a stage in your academic career where professionalism is not demanded of you as much as it is expected.

A fundamental rule of professionalism is that professionals follow instructions. **If you are unable to follow the instructions stated here (or elsewhere on assignments, quizzes, or tests) then you will not receive credit.** We practice good faith and assume, until proven otherwise, that other professionals are also practicing good faith. We know that everyone drops the ball from time to time. We will not judge you or hold it against you or think any less of you if you fail on this account once. Humans occasionally fail and there is nothing in failure worth personalizing when we know a colleague is doing his or her best. Nevertheless, you will not receive credit for the relevant assignment as doing so is unfair to everyone who has done their due diligence and followed instructions.

### **Expected Behavior and Academic Dishonesty**

Students are expected to abide by the highest standards of ethical conduct and the W.P. Carey School of Business Student Academic Integrity Policy. The business curriculum is structured primarily to produce graduates who possess the knowledge and skills necessary for success in their professional careers. These skills include the ability to reason through a situation involving an ethical dilemma. Applying appropriate professional behavior as a student will develop into professional integrity when you enter your profession.

You are assumed to oblige with the terms and conditions of the ASU [Academic Integrity](http://provost.asu.edu/academicintegrity) and those specified in the web site: <http://provost.asu.edu/academicintegrity>.

All students assume, as part of their obligation to the University, the responsibility to exhibit in their academic performance the qualities of honesty and integrity. All forms of student dishonesty, including cheating, fabrication, facilitating academic dishonesty, and plagiarism are subject to disciplinary action. The *Code of Conduct* and *Student Disciplinary Procedures* as adopted by the Arizona Board of Regents applies.

Specifically, the following actions are considered inappropriate conduct in this class:

- Providing or accepting assistance on quizzes and examinations (cheating by any method or means, including sharing information between class sections).
- Behaviors which are disruptive, which are insensitive, or which directly or indirectly inhibit others from working toward their academic goals.
- Submitting work derived by another student or preparing work for another that is to be used as that person's own work. Using work of another constitutes plagiarism. Evidence of shared work will result in a grade of zero for all parties involved and subject to immediate removal and failure of the course.
- Lying to your instructor to receive a better grade, or allowance for a late assignment is considered an ethical breach of conduct.
- Uploading or posting inappropriate material or content to class online sites.
- Downloading copyrighted material from class online sites.
- When in-person or synchronous online interactions occur, behaviors which are disrespectful to classmates or to the instructor. This includes but is not limited to the following behaviors:
  - Showing up late for meetings.
  - Doing homework for another class during the meeting.
  - Using your laptop or cellphone for anything other than the meeting-related business.
  - Talking during inappropriate times.
  - Listening audio or viewing video not related to the meeting affairs.
  - Allow cell phones and other devices to interrupt the meeting.

- Sleeping, yawning or showing peevishness with others' contributions.
- Using any materials that are not related to the meeting affairs, e.g., newspapers, crossword puzzles, etc.
- Any other behavior that is not related to the constructive flow of the course.

In summary, students are expected to make an ethical and moral commitment to act appropriately in all academic activities and to not tolerate any dishonorable behavior on the part of other students.

The W. P. Carey School takes academic integrity very seriously. Therefore, unless otherwise specified, it is imperative that you do your own work. **Any suspected violations of academic integrity will be taken seriously and result in the following sanctions:**

- **A minimum of zero on the assignment AND**
- **A reduced grade in the course OR**
- **A failure in the course OR**
- **An XE which denotes failure due to academic dishonesty on the transcript OR**
- **Removal from the W. P. Carey School of Business**

This policy relates to all homework, projects, exams, and deliverables for this course. Do not give your completed homework to anyone else and do not share answers for homework questions unless explicitly allowed. Please, be forewarned that your instructor strongly agrees with this policy, will strive to actively enforce it, and will support the harshest punishment for those who violate it.

Protect your projects and homework assignments. Do not leave files on the hard drives of school computers, do not share your disks or printouts with others, and pick up printouts as soon as they come off a printer used by others.

What you can share: Anything printed in your textbook and any information given handed out in class. Expect to be interviewed if your deliverable looks similar to anyone else's in the class.

### **W. P. Carey School of Business Undergraduate Student Honor Code**

The mission of the W. P. Carey School of Business is to change lives through delivering a business education, while adhering to the highest standards of academic and personal integrity. To achieve this, the W. P. Carey School of Business is committed to fostering an atmosphere of personal responsibility, trust, honor, and academic excellence for its students both on and off campus. Please, refer to the [Honor Code](#) and the [Professionalism Policy](#) to understand the principles to which you abide, including:

1. *Honesty and Faithful Representation*
2. *Thoughtfulness and Consideration for Others*
3. *Commitment to the W. P. Carey Mission*

### **Absences & Religious Holiday**

Accommodations will be made for students with religious holidays and students who miss class related to university-sanctioned activities according to ACD 304-02. When class is missed:

- Students will not be penalized for missing class (i.e. there will be no penalty to an attendance or participation score, and make-ups for graded in-class only activities will be granted).
- Make-ups must be scheduled and concluded within one business week of the missed class.
- The student will be expected to complete any deliverables (except in-class exams and quizzes) due on missed day prior to that missed day. In cases where the student has concerns about having sufficient time for the assignment, the student may request that the details of the deliverable be made available sooner.

The following link contains a calendar of official religious holidays. Each holiday noted with two asterisks denotes a holiday whose observance precludes working:

<https://provost.asu.edu/index.php?q=religious-holiday-calendar>.

All requests for Religious Accommodation must be submitted by the end of the day of the 4th class session.

### **University-Sanctioned Activities**

Accommodations will be made for students who miss class related to university-sanctioned activities according to ACD 304-02.

If you are participating in a university-sanctioned activity, please let your instructor know as early in the course as possible (48 hours minimum) so that accommodations can be made.

*Please note: the Department of Intercollegiate Athletics will provide a staff member to proctor exams on the road according to the faculty members' instructions. Please contact the senior associate athletics director for student-athlete development at (480) 965-8054 for more information.*

COVID-based illness documentation supporting a special accommodation request for this cause can be obtained through [ASU free COVID testing service to students](#).

### **Tutoring Support**

W. P. Carey School of Business provides free tutoring in BA 201 for a number of undergraduate business classes. Assistance with writing is also provided. Information regarding courses offered and hours are available here: <https://students.wpcarey.asu.edu/resources/student-success-centers>.

The W. P. Carey School of Business provides a variety of support services to our international students at the Global Education Center in BAC 119. More information can be found here: <https://students.wpcarey.asu.edu/resources/international-students/cultural-events>.

In addition to the W. P. Carey Student Success Center, Arizona State University provides writing assistance through multiple platforms. Information can be found here: <https://tutoring.asu.edu/student-services/writing-centers>.

More details of Tutoring Support available is provided on the Canvas course site.

### **Discrimination and Threatening Behavior Policy**

**Discrimination based on race, origin, gender, sexual preference, socio-economic status or any other condition beyond the control of the discriminated person is unacceptable and disciplined in this class.**

ASU has a policy on sexual discrimination described in [ACD 401](#), "Prohibition Against Discrimination, Harassment, and Retaliation". The instructor is a mandated reporter and therefore obligated to report any information regarding alleged acts of sexual discrimination.

The university takes threatening behavior very seriously. These situations will be handled in accordance with the Student Services Manual, [SSM 102-02](#) <http://www.asu.edu/aad/manuals/ssm/ssm104-02.html>.

### **Title IX**



Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling> is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, <https://goto.asuonline.asu.edu/success/online-resources.html>.

### **Student Accessibility and Inclusive Learning Services (SAILS)**

If you need an accommodation for a disability, you must register with Student Accessibility and Inclusive Learning Services ([SAILS](https://eoss.asu.edu/accessibility) - formerly called the DRC). Accommodation will not be provided prior to successful registration and specific accommodation guidance being provided through SAILS. <https://eoss.asu.edu/accessibility>

In alignment with ASU's Charter to be "measured not by whom it excludes, but by whom it includes and how they succeed," the new title (announced in August 2020) represents the office's mission of ensuring that every program, service, event and experience at the university is fully accessible and inclusive to all students, not just those who identify as having a disability.

### **Copyright Material**

Students must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the students first comply with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

All material provided for this course is considered copyrighted and the property of the author. You may not redistribute these materials without permission. A limited license is granted for your use for the purposes of this class. This includes but is not limited to class slides, class notes, and other written artifacts on the Canvas course site and any other platforms used during the class.

**Information contained within this syllabus (except grading and absence policies) is subject to change.**