

DSCI 5260/Business Process Analytics

Sections 003 & 501

Instructor Contact

Name: Javier Rubio-Herrero, Ph.D.

Office Location: 357 E - BLB

Phone Number: (940) 565 – 3345

Class Format: face-to-face

Class Meetings: Thursdays 6:30 pm – 9:20 pm @ BLB 270 (Denton)

Office Hours: Thursdays 2:30 pm – 5:30 pm in my office. Eventually, I might offer them via [Zoom](#).

E-mail: javier.rubioherrero@unt.edu

Communication Expectations: The instructor will communicate with students via, in-class announcements, e-mails, Canvas, and office hours. The students will communicate with the instructor via e-mails and office hours.

It is the instructor's aim to answer e-mails within 48 hours of their receipt during business days. Please, be courteous and professional when communicating with your instructor and follow the provided [Online Communication Tips](#). The instructor may not answer e-mails that do not abide to these tips.

Course Description

Utilization of problem-solving techniques applied to the functional areas of business under risk and uncertainty. Business process analysis concepts, methodologies and tools are utilized in solving real problems in the business, government, and academic settings. The foundations for this are business process analysis employing business process software, six sigma analysis and state-of-the-art statistical software. Students will develop and present solutions to the problems chosen for analysis. Emphasis is placed on problem structuring, creating solutions and presentations of solutions.

Course Prerequisites or Other Restrictions

DSCI 5240 or consent of department.

Course Objectives

The end product of this course is a capstone project. Therefore, by the end of this course students will

- Identify a project that is of interest to them where they can apply some of the concepts learned in their graduate studies.
- Build a structured framework for solving business problems using advanced analytics.

- Identify and implement predictive models most appropriate for a business situation.
- Utilize Python to visualize data and prepare run predictive models.

Technical Requirements & Skills

All students are responsible satisfying the requirements below and they must make sure that they comply with them when they perform the tasks that are needed for the successful completion of this course.

- Computer with Webcam.
- Reliable internet access.
- Speakers.
- Microphone.
- Microsoft Office Suite.
- [Canvas Technical Requirements](#).
- LockDown Browser and Respondus Monitor.
- We will use Python in this course. For this reason, prior experience or exposure to a programming language is useful.

Textbooks and Materials

1. **Textbooks:** No textbook is required for this course. When needed, instructional materials will be provided (slides, handouts, and/or assigned readings) through Canvas. The following book may be useful as references:
 - Fabio Nelli. Python Data Analytics : Data Analysis and Science Using Pandas, Matplotlib and the Python Programming Language. Apress L.P. Available online at UNT Library.
 - Mohammed Kashif: [Exploratory data analysis with Pandas and Python 3.x](#). Available online at UNT Library.
 - [Coursera for UNT](#).
2. **Software:** Python / Anaconda – Available free online.
3. **Computer:** Access to a computer with an operational webcam and microphone is required. More details will follow in the section [Technical Requirements & Skills](#).

Teaching Philosophy

Because the final product of this course will be a capstone project, this course will be conducted in a different way. Some weeks I will plan on meeting with the teams separately during class time to review their progress, listen to their ideas, and offer guidance if needed. Some other weeks, I will briefly review some concepts that you should have learned in other courses and show you how to implement certain topics with Python. Finally, I might introduce you to some new concepts during other lectures. These concepts might or might not be directly applicable to your projects, but they will be useful as they represent state-of-the-art tools in predictive analytics.

Every capstone project will be different and every team will have its own questions and needs. My role in this course will be to lay the foundations for you to be able to produce results with Python and come up with a professional report and presentation. Everything else is team-specific, because every project will be different and so will its needs and challenges. For these reasons, a very important characteristic of this course is that students must be proactive in solving the challenges that they encounter. I will be happy to guide the students through the process from the inception to completion of their projects, but it must be them that ultimately pose the questions and find the answers they need for their work.

Course Structure

This course will be delivered in face-to-face format and will take place between the weeks of January 17th, 2023, and May 12th, 2023*. You will see that there is a significant overlap with contents that you should have learned in previous courses (either the required DSCI 5240 or in some of the program’s foundational courses such as DSCI 5210, DSCI 5420, and DSCI 5340). Please, note that it is not my intent to re-introduce these concepts in detail, but rather to briefly review them, discuss their implementation in Python, and go over some case studies that may be helpful for your projects.

<i>Week</i>	<i>Topics</i>	<i>Deliverables</i>
<i>Week 1 - Introduction</i>	Course Introduction Introduction to Python	Form teams (01/25)
<i>Week 2 – Project Selection</i>	Team Meetings	Project selection (02/01)
<i>Week 3 – Project Proposal</i>	Introduction and Background	
<i>Week 4 – Project Proposal</i>	Literature Review	
<i>Week 5 – Project Proposal</i>	Team Meetings	Project proposal (02/22)
<i>Week 6 – Handling Data</i>	Data Collection Descriptive Statistics Exploratory Data Analysis Outliers and Missing Values	
<i>Week 7 – Classification</i>	K-Nearest Neighbors SVM	
<i>Week 8 – Deep Learning</i>	Neural Networks	
<i>Week 9</i>	Spring Break	
<i>Week 10 – Project Update</i>	Team Meetings	Project update (03/29)
<i>Week 11</i>	TBD: Invited Speaker	
<i>Week 12 – Project Update</i>	Project Update Presentations	Presentations (04/05)
<i>Week 13 – Final Report</i>	Team Meetings	
<i>Week 14 – Final Report</i>	No Class Meeting	Final Project report (04/23)
<i>Week 15</i>	No Class Meeting	
<i>Week 16 – Final Presentation</i>	Final project presentations	Presentations (05/03)
<i>Week 17</i>	TBD: Invited Speaker	

* Course structure and deadlines subject to change in order to accommodate specific circumstances that may appear throughout the semester.

Grading

Grades measure the performance of a student in individual courses. Students will be evaluated based on their performance and command of the course materials. Final grades are broken down as shown below[†]. Note that the specifics of the capstone project are discussed in the corresponding addendum of this syllabus:

Course Requirement	Points	Percentage of Final Grade
Professionalism	150	15%
Capstone project	850	70%
Total	1000	100%

The grades for the capstone project will be assigned as a group. However, I might assign different grades to different students within the same group. **That is, I reserve the right to modify individual grades according to the student's individual performance.** This performance will be assessed via the peer evaluation forms that I will circulate after your deliverables. In these forms students will be asked to rate the contributions/effort of each of their teammates on a scale of 1-5:

- Team members averaging 3 or above will receive no penalty.
- Team members averaging between 2 and 3 will receive a penalty equivalent to 15% of the possible grade.
- Team members averaging between 1 and 2 will receive a penalty equivalent to 30% of the possible grade.

Professionalism will be evaluated individually and will measure the student's involvement, class participation, responsiveness, work ethic, quality of deliverables specifically asked from him/her, and other intangibles. A student's final grade will be determined following the grading scale[‡] below:

A = 900 – 1000 points

B = 800 – 899 points

C = 700 – 799 points

D = 600 – 699 points

F = 0 – 599 points

After all grades have been released, **I kindly ask that you refrain from sending any e-mails requesting a change in your final grades based on scholarships, GPA, visa status, etc.** You must know that I will not entertain these requests and, if I receive any, two things will happen:

[†] The breakdown below is contingent upon acceptance of this syllabus and its addenda. Each student submission will receive a 0 until such acceptance is received by the instructor.

[‡] This grading scale is tentative and may be adjusted at the end of the semester based on overall class performance.

1. I will ignore your request.
2. If you received any curving in any of your graded deliverables, I will revert the effect of those curves in all those deliverables. As a result, your final grade, if it was ever impacted positively by the effect of those curves, will be reduced.

Course Policies

Attendance

One of the main ideas of this course is that you take it as if you were completing a project for a company. For this reason, starting during the second week of the semester, attendance to class meetings is **required** for this course. Moreover, it is expected that you show up **on time** for these meetings. **Late arrivals will be counted as no-shows** and I reserve the right to forbid access to class to students that arrive late to a session. Entering the classroom after the class has started is disruptive for both your colleagues and the professor. If there is one major reason why you cannot make it to class or to a meeting on a given week, this must be communicated to me in advance. Based on your specific circumstances, I may or may not authorize your absence. I will base my decisions on this matter in the same way as described in the [Late Work](#) section. **Bear in mind the following: I will allow one unexcused absence per student; the second unexcused absence will result in an F in this course.** Moreover, students are responsible for learning the contents, meet the deadlines, and follow the directions explained in class regardless of their attendance.

The policies above also apply to team meetings, where the professor will meet with teams, one by one, to discuss their progress. In short, the team meetings are considered class sessions and students must be on time to the meetings they schedule with the professor.

Announcements Policy

In addition to in class announcements, important messages may be communicated via [Canvas](http://canvas.unt.edu) (<http://canvas.unt.edu>). You are responsible for actively monitoring Canvas for announcements which, among other things, may be related to changes in schedule, syllabus, or other key aspects of the course.

Group Participation Policy

This course requires considerable group work. I hope that participation issues do not arise in any team. However, to monitor this, I will circulate a peer evaluation form after your deliverables. Please, bear in mind that:

1. These forms are **mandatory** to submit. **Students who do not submit their peer evaluation forms on time will receive a zero in the deliverable in question.** Your peer evaluation form is, therefore, an essential part of your deliverable.
2. As mentioned in the Grading section, I reserve the right to modify individual grades according to how your peers evaluate your work and contribution to the team.

Assignment Policy

Homework assignments will be announced via Canvas. The due date for each homework will be announced on the posting date along with extra instructions (if needed). As a rule of thumb, assignments must be completed professionally and therefore it needs to be well presented, clean, readable, and easy

to follow. The instructor and/or the grader may reduce your grade at their discretion if these general guidelines are not correctly followed.

All assignments will be completed in teams. These teams will be the same that will complete the capstone project. The assignments must be submitted through Canvas and alternative submission methods (e.g., paper, email, USB drive) are not acceptable unless prior permission of the instructor is obtained. **Any assignment or deliverable that is submitted after its corresponding submission deadline will not be graded and will result in a zero.** Consequently, make sure that you do not leave your submissions for the last minute. See the [Late Work](#) subsection for more details about late submissions. **Make sure that the names of all the students that participated in the homework are listed in the first page of your Word file. Students that participated in an assignment that are not listed will not receive any credit for this submission.**

Students are welcome to review both assignments and exams after grading to improve their understanding of course material and check for the presence of grading errors. This review must be conducted within a week after the grade of the deliverable has been posted. No changes to grades will be made after this time period.

[Late Work](#)

It is **highly recommended** that you work on your submissions well in advance to avoid last-minute issues. I will **not** accept any late submissions except in the following cases:

- Medical emergency cases, in which case a doctor's note is required.
- Family emergency cases, in which case a written verifiable proof is required.
- Any other excused absence specified in Chapter 6 of Faculty Affairs document, [Student Attendance and Authorized Absences](#).

Late submissions must always be agreed **before the corresponding due date**.

[Academic Dishonesty and Associated Consequences](#)

Academic Integrity Standards and Consequences. According to [UNT Policy 06.003, Student Academic Integrity](#), academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. **In this course, engaging in academic dishonesty will result in an F in the course.** All incidents of academic dishonesty will be reported via departmental, college, and university channels as appropriate and may result in additional penalties.

In this class, unless otherwise stated, individual work should be completed alone and using only resources explicitly outlined in the instructions. Similarly, group work, should be completed only by the members of the group and should utilize only those resources specified in the instructions. While external research may be permitted in assignment instructions, utilizing resources such as Chegg, Course Hero, and similar websites is never appropriate and is expressly forbidden.

Academic dishonesty is an extremely serious issue. It will not be tolerated and will be prosecuted according to UNT Policy 06.003. You are responsible for knowing what those behaviors above (cheating, plagiarism, etc.) mean and when you might be incurring any of them.

Electronics Policy

Electronics will be used **strictly as needed** for class purposes. A student that engages in the use of these devices may be directed to leave the classroom according to UNT's policy on [Acceptable Student Behavior](#).

If this behavior persists, I reserve the right to reduce the student's grade in this course at my discretion.

Syllabus Change Policy

The contents of this syllabus might be changed to the instructor's discretion in order to adjust the course to the specific circumstances of each semester.

Rules of Engagement

Rules of engagement refer to the way students are expected to interact with each other and with their instructors online. Here are some general guidelines:

- Treat your instructor and classmates with respect in any communication online or face-to-face, even when their opinion differs from your own.
- Always use your professors' proper title: Dr. or Prof., or if in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to your instructor by first name.
- Use clear and concise language.
- Remember that all college level communication should have correct spelling and grammar (this includes discussion boards).
- Avoid using "text-talk" unless explicitly permitted by your instructor.
- Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"
- Be careful with personal information (both yours and other's) and avoid sending confidential information via e-mail.
- Be cautious when using humor or sarcasm in emails or discussion posts as tone can be difficult to interpret digitally.
- Keep in mind that online posts can be permanent, so think first before you type.

See these [Engagement Guidelines](https://clear.unt.edu/online-communication-tips) (https://clear.unt.edu/online-communication-tips) for more information.

Course Evaluation

The Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course. At some stage during this course, students will be given access to this evaluation. I will certainly appreciate your constructive feedback when the time comes.

Getting Help

Technical Assistance

Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

UIT Help Desk: [UIT Student Help Desk site](http://www.unt.edu/helpdesk/index.htm) (<http://www.unt.edu/helpdesk/index.htm>)

Email: helpdesk@unt.edu

Phone: 940-565-2324

In Person: Sage Hall, Room 130

Walk-In Availability: 8am-9pm

Telephone Availability:

- Sunday: noon-midnight
- Monday-Thursday: 8am-midnight
- Friday: 8am-8pm
- Saturday: 9am-5pm

Laptop Checkout: 8am-7pm

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328) (<https://community.canvaslms.com/docs/DOC-10554-4212710328>)

Computer Labs

The BLB computer labs on the first floor will open with reduced hours and reduced seating to comply with social distancing guidelines. There will not be BLB laptop checkouts due to potential contamination issues. The library [has computers to check out for up to 24 hours](#) and the [RCOB virtual computer labs](#) will be open for business continuously.

UNT and College of Business Policies and Notices

RCOB Statement on Academic Honesty

The G. Brint Ryan College of Business takes academic honesty seriously. Ethics and integrity are important business values, essential to building trust and adhering to both professional and legal standards. Academic dishonesty destroys trust, damages the reputation and the value of the degree and is unacceptable.

According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions from admonition (a warning) to expulsion from the University.

Some of the most common examples of academic integrity violations include plagiarism or cheating, such as unauthorized assistance on examinations, homework, research papers or case analyses. Your work must be entirely your own. When working on assignments, you should not discuss your work with others unless approved by the course instructor. Group assignments should only be discussed with

members assigned to your group, and all group members may be held accountable in some way for known academic integrity violations in a group assignment.

Another example of academic dishonesty relates to improper attribution. When preparing your assignments, you must cite all outside sources in the manner requested by your instructor. Copying or using material from any source prepared by or previously submitted by others, at UNT or other institutions, or downloaded from the Internet, is plagiarism. Unless directed otherwise in an assignment, large scale “cutting and pasting” from other sources, even if properly footnoted, is not appropriate. You should synthesize this material in your own words and provide a footnote.

Your instructor will specify what materials, if any, may be used on the tests and exams. Using materials other than those permitted, talking with other individuals during the exam, individuals exchanging information about an exam when one has taken the exam and the other has not, or copying or using material from another individual’s exam is academic dishonesty and will result in a meeting to discuss academic integrity violations and potentially issue sanctions mentioned above, and may result in ineligibility for academic scholarships. The use of online assistance, such as sites commonly used for finding homework solutions, group chat, cell phones, smart watches, and similar tools during exams is not allowed for any reason unless specifically permitted. No portion of an exam may be copied or photographed without permission.

Students are expected to conduct themselves in a manner consistent with the University's status as an institution of higher education. A student is responsible for responding to a request to discuss suspected academic dishonesty when issued by an instructor or other University official. If a student fails to respond after a proper attempt at notification has been made, the University may take appropriate academic actions in the absence of the student’s participation.

ADA Policy

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website (<http://www.unt.edu/oda>). You may also contact ODA by phone at (940) 565-4323.

Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's Code of Student Conduct (<https://deanofstudents.unt.edu/conduct>) to learn more.

Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect (<https://it.unt.edu/eagleconnect>).

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Important Notice for F-1 Students Taking Online Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the Electronic Code of Federal Regulations website (<http://www.ecfr.gov/>). The

specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

1. Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.
2. Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Use of Student Work

A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student's permission unless all of the following criteria are met:

- The work is used only once.
- The work is not used in its entirety.
- Use of the work does not affect any potential profits from the work.
- The student is not identified.
- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student's written permission.

Emergency Evacuation Procedures for Business Leadership Building

Severe Weather

In the event of severe weather, all building occupants should immediately seek shelter in the designated shelter-in-place area in the building. If unable to safely move to the designated shelter-in-place area, seek shelter in a windowless interior room or hallway on the lowest floor of the building. All building occupants should take shelter in rooms 055, 077, 090, and the restrooms on the basement level. In rooms 170, 155, and the restrooms on the first floor.

Bomb Threat/Fire

In the event of a bomb threat or fire in the building, all building occupants should immediately evacuate the building using the nearest exit. Once outside, proceed to the designated assembly area. If unable to safely move to the designated assembly area, contact one or more members of your department or unit to let them know you are safe and inform them of your whereabouts. Persons with mobility impairments who are unable to safely exit the building should move to a designated area of refuge and await assistance from emergency responders. All building occupants should immediately evacuate the building and proceed to the south side of Crumley Hall in the grassy area, west of parking lot 24.

Syllabus Acceptance Form

By signing below, I acknowledge that I have read and understood the contents of this course's syllabus and its addenda and that I agree to abide to the terms exposed in these documents.

Student Name (Print) _____ Student ID No. _____

Student Signature _____ Date _____