

University of North Texas
G. Brint Ryan College of Business
MGMT 4130—People Analytics and HRIS | (Fall 2026 Hybrid)

Course Syllabus

Professor: Dr. David Swanagon, Ed.D., SPHR
Chief Editor, The Machine Leadership Journal

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Required Text: Python for Everybody (Open Source) - <https://www.py4e.com/>
Automate the Boring Stuff - <https://automatetheboringstuff.com/3e/>
Pandas (User Guide) - [Link](#)
Plotly - <https://plotly.com/python/plotly-express/>
NumPy - https://numpy.org/doc/stable/user/absolute_beginners.html

Bauer T., Erdogan B., Caughlin D., & Truxillo D. (Eds) (2018). Human Resource Management. People, data, and analytics. 2nd Edition. Sage Publications. ISBN: 9781071876855; ISBN: 9781071876848 (ebook).

Location: **Hybrid - Thursdays from 9:35 am to 10:55 am in BLB 245**
This is a hybrid course. Students are expected to read the material posted online and the chapters in the textbook. Students are also expected to attend class, participate in-class and online discussion forums, and submit all the assigned materials on time, per the course calendar in the syllabus.

Course Overview

This course is designed to help equip students to excel in an increasingly data-driven HRM profession by providing them with foundational knowledge and skills in the appropriate and ethical use of data and HRIS (Human Resource Information System). This includes learning how to utilize tools such as AI agents, statistical analysis, and python programming to optimize data-driven decision-making. This course includes weekly assignments using Python, alongside a group project that requires building an HR learning agent. The activities are clearly explained, interactive, and apply directly to HR business problems. Non-technical degrees CAN SUCCEED in this course if they follow the weekly exercises and stay engaged with the class discussions. The course integrates a conceptual foundation of key HR areas including planning, talent acquisition, training and development, performance management, and reward systems with relevant data analysis and dissemination approaches to support data-driven decision making in these areas.

Course Objectives

- Develop an understanding of People Analytics tools and methodologies.
- Build fundamental skills in data analysis techniques.
- Learn how to use Python programming to conduct analysis.
- Learn how to build AI agents that support HR business problems.
- Learn to evaluate the value proposition of the industry's leading HRIS platforms.
- Identify the federal, state, and industry regulation impacting data privacy.

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Grading

Students will be graded using five assignments. The assignment is due on the date listed in the syllabus. Due dates are published well in advance and you are encouraged to submit early to avoid technical difficulties, which are your responsibility to resolve and not a justification for late work. If you have a legitimate reason under University policy you should (a) contact your professor in advance to provide notification/verification or (b) work with the Dean of Students Office after the fact to provide your faculty with verification. Late submissions, which are not excused by University policy, will be subject to 10% reduction for the first week, followed by 50% the second week, and a 75% reduction thereafter.

Please do reach out to your instructor if you're having any issues. Learning remains the number one goal and I'm here to help you succeed.

Assignments	Format	Type	Points
1—HR Challenge: Linear Regression-15%	Individual	Python/Slides	150
2—HR Challenge: Survival Analysis-15%	Individual	Python/Slides	150
3—HR Challenge: Principal Component-15%	Individual	Python/Slides	150
4—HR Challenge: Competency Map-15%	Individual	Python/Slides	150
5—HR Challenge: HRIS Negotiation-15%	Individual	Python/Slides	150
6—Final Exam (Python Principles)-25%	Canvas	EXAM	250
Total Points			1000
Bonus Points (HR Challenge Debrief) – 5%			50

Grades are based on the points earned during the course according to this scale:

- 900-1000 = A 800-899 = B 700-799 = C
- 600-699 = D Below 600 points = F

Generative AI:

Students in this course are not permitted use of generative AI technology to assist in completing assignments except where specifically noted in the assignment directions or unless otherwise directed to do so by the Instructor. Students found to be using generative AI technology in an unauthorized way may be subject to academic integrity processes under UNT Policy 06.003 Student Academic Integrity. **THE INSTRUCTOR WILL PROVIDE CLEAR GUIDELINES ON THE PERMISSIBLE USE OF GENERATIVE AI FOR EACH ASSIGNMENT.**

**** This is a technology and analytics class. As such, Generative AI should be respectfully incorporated, while maintaining academic integrity. The instructor will post weekly instructions on the announcement section and review in class what is permissible use.**

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WEEKLY ASSIGNMENTS

(Class Starts Aug 13 – First In-Person Thursday August 20)

Week	In-Person	Deliverable
1	Aug 20	HR Challenge 1 PY4E: Chapter 1: Introduction & Chapter 2: Variables and Expressions ATBS: Chapter 0: Introduction & Chapter 1: Python Basics Chapter 2 (HRIS) Professor Video: Setting up Python Environment
2	Aug 27	HR Challenge 1 PY4E: Chapter 3: Conditional Execution ATBS: Chapter 2: Flow Control Pandas: Pandas Intro: Calculate Summary Statistics Numpy: Numpy: Statistics Logic Chapter 3 (HRIS) – Covered in Class Professor Video: Linear Regression
3	Sep 3	HR Challenge 1 PY4E: Chapter 4: Functions ATBS: Chapter 3: Functions PY4E: Chapter 7: Files Pandas Intro: How do I read and write tabular data? Chapter 4 (HRIS) Professor Video: Executive Presentations Due: HR Challenge 1
4	Sep 10	HR Challenge 2 PY4E: Chapter 8: Lists ATBS: Chapter 4: Lists Pandas Intro: Selecting a subset of a DataFrame Pandas: Pandas: Time Series / Date functionality Prophet: How to do time series Chapter 5 (HRIS) Professor Video: Survival Analysis (Cox)

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5	Sep 17	HR Challenge 2 PY4E: Chapter 9: Dictionaries ATBS: Chapter 5: Dictionaries and Structuring Data Professor Video: Survival Analysis (Weibull)
6	Sep 24	HR Challenge 2 Professor Video: Executive Presentations <i>Due: HR Challenge 2</i>
7	Oct 1	HR Challenge 3 PY4E: Chapter 6: Strings ATBS: Chapter 6: Manipulating Strings & Chapter 7: Pattern Matching (RegEx) Chapter 6 (HRIS) Professor Video: Principal Component Analysis (PCA)
8	Oct 8	HR Challenge 3 ATBS: Chapter 8: Input Validation & Chapter 10: Organizing Files Chapter 7 (HRIS) Professor Video: Executive Presentations
9	Oct 15	HR Challenge 3 PY4E: Chapter 15: Databases (The Logic) ATBS: Chapter 13: Working with Excel & Chapter 16: CSV and JSON Pandas: Pandas: How to reshape the layout of tables? Pandas: Pandas: Correlation and Covariance Chapter 8 (HRIS) <i>Due: HR Challenge 3</i>
10	Oct 22	HR Challenge 4 PY4E: Chapter 12: Network Programs & Chapter 13: Using Web Services ATBS: Chapter 11: Web Scraping/APIs Scikit: https://scikit-learn.org/stable/modules/preprocessing.html Chapter 9 (HRIS) Professor Video: Designing a Competency Map

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11	Oct 29	HR Challenge 4 Lifelines Library: Introduction to Survival Analysis PY4E: Chapter 16: Data Visualization ATBS: Chapter 19: Manipulating Images (Visual Logic) Numpy: Polyfit Professor Video: Data Driven 9-Box
12	Nov 5	HR Challenge 4 Professor Video: Executive Presentations <i>Due: HR Challenge 4</i>
13	Nov 12	HR Challenge 5 PY4E: Intro to Data Science Sections Pandas: Pandas Intro: How to combine data from multiple tables? Professor Video: HRIS Evaluations
14	Nov 19	HR Challenge 5 PY4E: Chapter 11: Regular Expressions (Redaction Revisited) ATBS: Reviewing Ethics of Automation Pandas Tutorial: Merging Data Frames Pattern Matching with Regular Expressions Professor Video: HRIS Negotiations
No Class (Thanksgiving Break: Nov 23-29)		
15	Dec 3	HR Challenge 5 Professor Video: Executive Presentations <i>Due: HR Challenge 5</i>
Finals	Dec 10	Final Exam (Python Principles) <i>Post HR Challenge Debrief</i>

**** Please submit your Post HR Challenge Debrief promptly due to grading submission deadlines**

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HR Challenges (750 Points)

Type: This is an individual exercise.

The HR Challenges apply rigorous quantitative methodologies to solve real-world human capital crises at the Gulf Coast Industrial Refining Platform (GCIRP) [Semester Case Study]. Across five hands-on, case-based assignments, students use Python and statistical modeling to address \$1.5M daily margin risks, technical talent competition, and impending workforce retirements. Challenges 1 through 3 focus on predictive modeling and unsupervised learning: applying **Simple Linear Regression** to quantify financial operating losses driven by shift competency deficits, executing **Survival Analysis (Cox & Weibull models)** to model engineer turnover against pay compression and overtime fatigue, and leveraging **Principal Component Analysis (PCA)** to reduce complex performance metrics into an objective 9-Box Grid matrix for succession planning.

Challenges 4 and 5 transition students into talent architecture and strategic technology governance. Students construct a **Process Engineering Competency Map (CMAP)** across four technical domains and career stages to establish clear developmental pathways, followed by a multi-criteria **HRIS Contract Negotiation Model** that optimizes 3-year Total Cost of Ownership (TCO), price accelerations, functional coverage, and training delivery. These five challenges represent the core applied learning of the course, accounting for **75% of the overall grade at 150 points per challenge**. For each challenge, students are evaluated on both technical script execution and an executive 5-slide presentation translating data into C-suite strategy.

The HRIS principles from the textbook should be used to inform the HR Challenge exercise submissions as the grading depends on the quality of the integrated best practices. It is expected that you incorporate the textbook into your executive presentation analysis using APA guidelines.

Final Exam (250 Points)

Type: This is an individual exercise.

The student will complete one exam during the semester according to the course calendar. This exam is comprehensive. The Exam is not open book or open note; no outside assistance is allowed. Students are expected to study beforehand. The Exam will use Respondus LockDown Browser with a Webcam. The final exam will cover the Python principle readings from the course.

OPTIONAL BONUS: Post HR Challenge Debrief Analysis

Type: This is an OPTIONAL exercise.

- After each HR challenge, students may submit a reflection paper that analyzes the area(s) that were missed and provides an explanation for the correct answer. The purpose of this exercise is to address any learning gaps. To receive full credit, students are required to analyze each area resulted in a reduced grade. This includes providing a response that has the same breadth,

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depth, and quality as the original submission. A maximum of 10 points is available for each debrief paper that is submitted (total of 50 points).

For more information on the UNT academic calendar, please use this link: [UNT Calendar](#)

Canvas & Technology

- You can access the course at <https://unt.instructure.com>
- Login using your EUID and Password
- Click “MGMT 4130” from the list of courses

Though this class is a face-to-face course we will still utilize Canvas to review and submit assignments. Please note that Canvas relies exclusively on electronic technologies for online participation, and technology is not a 100% reliable. Students assume ALL responsibility for the operating condition of personal computers and the functionality of individual Internet connections. I will provide you with tips and guidance for operating your equipment, and the helpdesk offers support, but you must assume responsibility for everything on your end. Students are expected to navigate the Canvas course site to access information and submit assignments.

TECHNICAL ISSUES WITH CANVAS: Please immediately report ALL Canvas problems to the UNT helpdesk at 940.565.2324. Be sure to ask for a ticket number and then email the ticket number to me along with the report from the helpdesk. Without a ticket number, I can’t follow up on the technical issue. Technical difficulties will be resolved as they appear. The University computer techs can determine exactly what has taken place and will advise me of the outcome (your ISP, our ISP, Canvas, etc.). I will determine how to resolve the technical issue based on their advice, University policy, applicable law, and my experience.

EUID ACCESS AND PASSWORDS: Enterprise User Identification Numbers (EUID’s) and passwords are required by the University of North Texas to access this course. It is the student’s responsibility to maintain a current EUID number and password. You may reset your password at <https://ams.unt.edu/acctreq.php>.

Academic Integrity

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. All violations of the Student Academic Integrity policy will be reported. Usage of cell phones, iPhones, cameras, or any other electronic device is not allowed during a test; nor is talking to other students, soliciting or giving help. Copying, photographing, or disseminating the questions in any form is prohibited. Remember, the exam questions are randomized so you will NOT see the same questions in the same order as your classmates. The course will utilize TurnItIn as a plagiarism checker.

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Policy Link: (<https://policy.unt.edu/policy/06-003>)

Chosen Names & Pronouns

A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name, below is a list of resources for updating your chosen name at UNT.

- UNT Records
- UNT ID Card
- UNT Email Address
- Legal Name

Pronouns (she/her, they/them, he/him, etc.) are a public way for people to address you or reference you in conversation. You can add your pronouns to your Canvas account so that they follow your name when posting to discussion boards, submitting assignments, etc.

College Emergency Evacuation Procedures

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.

Course Evaluations

This semester, UNT will administer course evaluations online (the “SPOT” – Student Evaluation of Teaching). The evaluations are used to evaluate faculty performance and provide guidance on what can be improved (also tell us what you like!). These are very important to me as you are the reason I’m here. I truly value your feedback and very much appreciate you taking the time to complete the evaluations which will be administered towards the end of the semester. You will be notified on Canvas and via your UNT email once the evaluations open.

Disability Accommodation

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one’s

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specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided to me within the first week of the semester. Note that students must obtain a new letter of accommodation for every semester. For additional information see the ODA website at <http://disability.unt.edu>.

Dropping the Course

If you decide it is necessary to drop the course, please adhere to the Academic Calendar on the Registrar's website: <http://www.unt.edu/catalog/>. With regards to dropping the course, you will need to go to the following link: <https://registrar.unt.edu/registration/dropping-class> and click on Request to Drop Class form. If you have questions or need assistance you may go by the Department of Management in the Business Leadership Building— room 207.

Covid-19

If you are experiencing any symptoms of COVID-19 please seek medical attention from the Student Health and Wellness Center (940-565-2333 or ask SHWC@unt.edu) or your health care provider. Contact the UNT COVID Hotline at 844-366-5892 or COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. Then let me know if it is impacting your assignment completion.

Emergency Alerts

The University of North Texas has an emergency Notification System, Eagle Alert (<https://www.unt.edu/eaglealert/>), which has the capability of calling or text messaging emergency notices. As a student, you may also register with Eagle Connect Alert to receive notification of any warnings or campus closings that are announced. Instructions for enrollment can be found at my.unt.edu. The university's radio station, KNTU 88.1 FM and website <http://www.unt.edu>, will provide updated information during an emergency.

Prohibition of Discrimination, Harassment, and Retaliation

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate. 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. 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.

Retention of Student Records

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Student records pertaining to this course are maintained in a secure location by the instructor of record of the course and are kept for at least one calendar year after course completion. 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.

Student Behavior

Always act professionally and respectfully. Student behavior that interferes with an instructor's ability to conduct a class, or other students' opportunity to learn, is unacceptable, disruptive, and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior may be referred to the Dean of Students to review whether the student's conduct violated the Code of Student Conduct. The Code of Student Conduct can be found at <https://conduct.unt.edu>. Any person who believes that a violation of University policy has been committed by a student can go to <https://report.unt.edu> and report the allegation.

Student Services & Academic Support

Mental Health: UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity.

Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)
- Counseling / Testing Services (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- UNT Care Team (<https://studentaffairs.unt.edu/care>)
- UNT Psychiatric Services (<https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry>)
- Individual Counseling (<https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling>)

Additional Student Support Services

- Registrar (<https://registrar.unt.edu/registration>)
- Financial Aid (<https://financialaid.unt.edu/>)
- Student Legal Services (<https://studentaffairs.unt.edu/student-legal-services>) □ Career Center (<https://studentaffairs.unt.edu/career-center>)
- Multicultural Center (<https://edo.unt.edu/multicultural-center>)
- Counseling/Testing Services (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- Pride Alliance (<https://edo.unt.edu/pridealliance>)
- UNT Food Pantry (<https://deanofstudents.unt.edu/resources/food-pantry>)
- Academic Support Services
- Academic Resource Center (<https://clear.unt.edu/canvas/student-resources>)
- Academic Success Center (<https://success.unt.edu/asc>)

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- UNT Libraries (<https://library.unt.edu/>)
- Writing Lab (<http://writingcenter.unt.edu/>)

Important Notice for F-1 Students taking Distance Education 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 internationaladvising@unt.edu) to get clarification before the 1-week deadline.