College of Education and Psychology
School of Education | Ed.D. in School Improvement

EDRM 6354: Learning Analytics

Spring 2026

Instructor: Christopher Thomas, Ph.D.
Office: BEP 204
Office Hours: Thursday 4:00–7:00 PM (& by appointment)
Email: cthomas@uttyler.edu
Phone: 903.566.7171

Last Day to Withdraw: March 30, 2026
Default Due Date: Sundays at 11:59 PM CST
Prerequisite: EDRM 6352
Delivery Mode: Online (Canvas)
Total Points: 335 points

Course Overview

Course Description:
This course is an introduction to educational data mining and learning analytics. Learning analytics involves the application of statistical techniques to educational data for the purpose of predicting student behavior and learning. The course will cover the history and value of learning analytics. The course will also cover commonly used learning analytic techniques such as multiple regression, logistic regression, cluster analysis, and factor analysis.

Student Learning Outcomes:
After completing this course, you will be able to:

1. Read and critically evaluate educational data mining and learning analytics research.
2. Discuss the potential influence learning analytics can have on pedagogy and school policy.
3. Explain the logic and purpose of common learning analytic techniques.
4. Apply commonly used learning analytic techniques to educational data.
5. Correctly interpret results of commonly used learning analytic techniques.

Required Resources

Software:
This course uses two free, open-source statistical programs. Each has strengths for different analyses, and learning both will serve you well in your career:

- **JASP** (v. 0.95.4 or later): Download: jasp-stats.org/download
- **JAMOVI** (v. 2.6.44 solid): Download: jamovi.org

Required Readings:
All readings will be distributed through Canvas. Required texts include:

- Gignac, G. E. (2023). How2statsbook (Online Edition 2). Perth, Australia: Author.
- Huang, F. L., & Moon, T. R. (2013). What are the odds of that? A primer on understanding logistic regression. Gifted Child Quarterly, 57(3), 197-204.
- King, M. W., & Resick, P. A. (2014). Data mining in psychological treatment research: A primer on classification and regression trees. Journal of Consulting and Clinical Psychology, 82(5), 895–905.
- Mertler, C. A., Vannatta, R. A., & Lavenia, K. N. (2022). Advanced and multivariate statistical methods (7th ed.). Routledge.

- Osborne, J. W. (2000). Prediction in multiple regression. Practical Assessment, Research, and Evaluation, 7(1), 2.
- Seftor, N., Shannon, L., Wilkerson, S., & Klute, M. (2021). Branching Out: Using Decision Trees to Inform Education Decisions. REL 2022-133.
- Watkins, M. W. (2018). Exploratory factor analysis: A guide to best practice. Journal of Black Psychology, 44(3), 219-246.

Supplemental readings are optional and provided for those who want to explore topics in more detail. These will be listed in the course schedule and will be distributed through Canvas.

Course Policies

Due Dates:
Unless otherwise noted, all assignments are due by **11:59 PM Central Time on Sunday** of the week they appear in the schedule.

Late Work:
Late work will be accepted with a 10% penalty per day (up to 10 days late).

File Naming & Anonymous Grading:
I use Canvas's anonymous grading feature this semester. Please name files using this format: EDRM6354_AssignmentTitle (e.g., EDRM6354_RegressionHomework.docx). Do not include your name or other identifying information in the document itself.

Written Assignment Format:
All written assignments should be typed, double-spaced, using Times New Roman 12-point font. Submit through the Canvas assignment link. *Work completed for other courses may not be submitted here and will be considered academic dishonesty.*

Communication:
Email me with questions about course content or assignments. I typically check email twice daily during the workweek and less frequently on weekends. If I will be unavailable for an extended period, I will post a Canvas announcement. My priority is your success. If problems arise, we will work together to solve them
.

Technical Support:
For Canvas or technical issues, contact IT Support at itsupport@patriots.uttyler.edu. Include: (1) course title and number, (2) the specific page, (3) any error messages, and (4) what you were doing when the issue occurred.

Artificial Intelligence Policy
You may use generative AI tools (e.g., ChatGPT, Gemini, Copilot) for learning and productivity—brainstorming, explaining concepts, or as a tutor. However, you remain the author of record and are responsible for the accuracy, ethics, and integrity of all submitted work. This course follows the University's Student Code of Conduct.

Every assignment must include an AI Disclosure section containing:

- The tool used (e.g., ChatGPT-4o) — or "no AI used"
- How it was used (e.g., "brainstormed outline," "summarized article")
- How you verified accuracy of the content
- The complete AI exchange (prompts and outputs) relevant to the assignment

AI-generated content included verbatim must be quoted and cited; paraphrased AI content must also be cited per APA guidelines.

I use Turnitin to screen submissions. High AI-probability scores without proper disclosure will be flagged for investigation, which may include a meeting, review of drafts, or oral explanation of your work. Undisclosed AI use constitutes plagiarism and will be handled per university policy.

Assignments & Grading

Course Structure:
The course is organized into modules, each with readings, lecture videos (posted Monday mornings at 9:00 AM CT), and assignments.

Assignment Types:

Data Analysis Assignments (5 × 50 points = 250 points)
You will conduct and interpret statistical analyses using JASP and Jamovi. These hands-on assignments are designed to help you apply concepts from readings and lectures to real and simulated datasets. In general, you will run the required analysis, report key results, and provide a brief interpretation of what the output means in context. Detailed instructions and datasets will be provided in Canvas for each assignment.

Final Project (75 points)
You will design and test a hypothesis using a simulated dataset that I will provide. This project is designed to help you integrate course concepts by moving from a research question to an analysis and interpretation. Your paper will include an introduction, method, results, and discussion sections. Additional details (including the simulated dataset(s) and expectations for the paper) will be provided mid-semester.

Article Critique (50 points)
You will complete one written critique of a published research article. The purpose of this assignment is to help you evaluate how statistical methods are used in applied research. In your critique, you will address: (1) the research questions the authors examined, (2) the suitability of the statistical methods used, and (3) the appropriateness of the authors' interpretation of the results. Details (including article selection and submission instructions) will be posted on Canvas.

Self-Reflection Assignments (2 × 5 points = 10 points)
You will complete two brief reflections designed to develop your metacognitive skills. Research shows that metacognition (the ability to reflect on learning and make changes) is critical for doctoral success. These reflections are low-stakes and focus on study habits, learning progress, and adjustments you plan to make. Details and prompts will be provided later in the semester.

Research Pool Requirement (10 points)
Students must fulfill a research pool requirement. This requirement can be satisfied in one of two ways: (1) volunteering for approved School of Education research studies or (2) completing alternative assignments that are equal in time and effort to the research opportunities. Detailed information (including options and deadlines) is available on Canvas.

Grade Summary

Assignment	Points	% of Grade
Data Analysis Assignments (5)	250	63.29%
Final Project	75	18.99%
Self-Reflection Assignments (2)	10	2.53%
Article Critique	50	12.66%
Research Pool Requirements	10	2.53%
TOTAL	**335**	**100%**

Note: The number, content focus, and point value of assessments may be adjusted as needed.

Letter Grade Scale

A: 90–100%	**B**: 80–89.9%	**C**: 70–79.9%	**D**: 60–69.9%	**F**: Below 60%

Course Schedule

Note: Schedule is subject to change. Check Canvas for the most current information.

Week	Topic	Required Reading	Supplemental	Due
MODULE 1: Multiple Regression				
1 Jan 12–18	Introduction to Learning Analytics & Review of Statistical Concepts	—	—	—
2 Jan 19–25	Multiple Linear Regression (Standard & Hierarchical)	Gignac Ch. 14	—	—
3 Jan 26–Feb 1	Multiple Regression Using Software; Prediction	Osborne, 2000	Hoyt et al.; Thomas, 2021; Rader-Brown	—
MODULE 2: Logistic Regression				
4 Feb 2–8	Logistic Regression with Dichotomous Outcome	Gignac Ch. 17	Osborne, 2012	**Regression HW**
5 Feb 9–15	Binary Logistic Regression Using Software	Huang & Moon, 2013	Chuang, 1997	—
6 Feb 16–22	Logistic Regression: Nominal & Ordinal Outcomes	TBD	—	**Dichotomous Logistic HW**
7 Feb 23–Mar 1	Nominal & Ordinal Logistic Using Software	—	Moon et al., 2021	*Self-Reflection #1*
MODULE 3: Decision Trees (CART)				
8 Mar 2–8	Introduction to Regression & Classification Trees	King & Resick	—	**Nom/Ord Logistic HW**
9 Mar 9–15	**SPRING BREAK — No Class**			
10 Mar 16–22	CART Using Software	Seftor et al. (IES)	Gomes & Almeida	—

Week	Topic	Required Reading	Supplemental	Due
MODULE 4: Factor Analysis & Clustering				
11 Mar 23–29	Intro to PCA, Factor Analysis, & Data Reduction	Gignac Ch. 15	Osborne, 2015	**CART HW**
12 Mar 30–Apr 5	PCA & Factor Analysis Using Software	Watkins, 2018	Costello & Osborne; Thomas et al., 2022	—
13 Apr 6–12	Introduction to Cluster Analysis	TBD	—	—
14 Apr 13–19	Cluster Analysis Using Software	—	—	—
15 Apr 20–26	Special Topics	TBD	—	**Factor/Cluster HW**
16 Apr 27–May 2	**FINALS WEEK**	—	—	**Self-Reflection #2 & Final Project (Due Apr 30)**

Schedule Key:

Data Analysis HW	Self-Reflection	No Class	Final Due