

Syllabus for DSI-7000

APPLIED PREDICTIVE ANALYTICS

COURSE DESCRIPTION

In this course, students will apply data mining techniques in a real-world case study. The case study concerns microtargeting in political campaigns, but the principles apply equally to any marketing campaign involving individual-level messaging. This course is really a “lab” for practically testing your skills in a real-world context. You must have some facility with R or Python and some familiarity with predictive modeling before taking this course.

Note: This course is also listed as **Persuasion Analytics**, the study of microtargeting and uplift modeling. The data in the course are sizable and complex, and the domain (political targeting) is relatively new and unlikely to be familiar to most students, hence the course is ideal as a real-world case study for analytics students who need to be prepared to apply their analytical skills to new situations. Students who sign up for Persuasion Analytics will use curated, reduced data sets and an Excel add-in. Students who are taking Predictive Analytics Project Capstone as part of the TESU master’s program must use the full dataset and either R or Python.

COURSE OBJECTIVES

After completing this course, you should be able to:

- CO 1** Prepare data for a predictive modeling task.
- CO 2** Develop predictive models and integrate the results of A-B tests for an uplift model.
- CO 3** Assess model performance.
- CO 4** Improve single model performance using ensembles.
- CO 5** Implement models for a real decision scenario.

COURSE MATERIALS

Depending on topics being covered, reference materials will be provided as required.

Software

To do the project in the course, you will need access to and some familiarity with R or Python.

COURSE STRUCTURE

Applied Predictive Analytics is a three-credit, online course consisting of six modules. Modules include an overview, topics, learning objectives, study materials, and activities. Module titles are listed below.

- **Module 1: Welcome**
- **Module 2: Setting the Scene**
- **Module 3: Developing Predictive Models**
- **Module 4: Combining Models**
- **Module 5: Implementation and Actions**
- **Module 6: Final Project**

ASSESSMENT METHODS

For your formal work in the course, you are required to participate in online discussion forums, complete written assignments, and complete a final project. See below for details.

Consult the Course Calendar for due dates.

Promoting Originality

One or more of your course activities may utilize a tool designed to promote original work and evaluate your submissions for plagiarism. More information about this tool is available in [this document](#).

Discussion Forums

In addition to an ungraded Introductions Forum, you are required to participate in **four** graded online class discussions.

Communication with your mentor and among fellow students is a critical component of online learning. Participation in online class discussions involves two distinct activities: an initial response to a discussion

question and at least two subsequent comments on classmates' responses.

All of these responses must be substantial. Meaningful participation is relevant to the content, adds value, and advances the discussion. Comments such as "I agree" and "ditto" are not considered value-adding participation. Therefore, when you agree or disagree with a classmate or your mentor, state *and support* your position.

You will be evaluated on the quality and quantity of your participation, including your use of relevant course information to support your point of view, and your awareness of and responses to the postings of your classmates. Remember, these are discussions: responses and comments should be properly proofread and edited, mature, and respectful.



Assignments

You are required to complete **four** assignments. The written assignments are on a variety of topics associated with the course modules.



Final Project

You are required to complete a final project that incorporates concepts and skills from throughout the course. There will be several weeks leading up to the submission of the final project where you are expected to work on the project and receive feedback from your mentor.

Part 1: Assemble Data and Strategy

Assemble the data needed to work on the project, formulate a strategy for completing the project, make sure you understand the questions, and address questions to your mentor. The last point is essential—even if you think you understand exactly how you are to proceed, you need to outline your strategy with your mentor.

Part 2: Initial Draft

Prepare an initial submission with your analysis that is substantially complete. You may raise additional questions with your mentor at this point to seek guidance. You must in any case share your work with your mentor.

Part 3: Final Submission

Incorporate guidance and complete final submission. Taking the guidance from your mentor into account, prepare and submit your final submission.

GRADING AND EVALUATION

Your grade in the course will be determined as follows:

- **Discussion forums (4)**—10%
- **Assignments (4)**—40%
- **Final project**—50%
 - Part 1: Assemble Data and Strategy—10%
 - Part 2: Initial Draft—10%
 - Part 3: Final Submission—30%

All activities will receive a numerical grade of 0–100. You will receive a score of 0 for any work not submitted. Your final grade in the course will be a letter grade. Letter grade equivalents for numerical grades are as follows:

A	=	93–100	B	=	83–87
A–	=	90–92	C	=	73–82
B+	=	88–89	F	=	Below 73

To receive credit for the course, you must earn a letter grade of C or higher on the weighted average of all assigned course work (e.g., assignments, discussion postings, projects). Graduate students must maintain a B average overall to remain in good academic standing.

STRATEGIES FOR SUCCESS

First Steps to Success

To succeed in this course, take the following first steps:

- Read the entire Syllabus carefully, making sure that all aspects of the course are clear to you and that you have all the materials required for the course.
- Take time to read the entire Online Student Handbook. The Handbook answers many questions about how to proceed through the course, and how to get the most from your educational experience at Thomas Edison State University.
- Familiarize yourself with the learning management systems environment—how to navigate it and what the various course areas contain. If you know what to expect as you navigate the course, you can better pace yourself and complete the work on time.
- If you are not familiar with web-based learning, be sure to review the processes for posting responses online and submitting assignments before class begins.

Study Tips

Consider the following study tips for success:

- To stay on track throughout the course, begin each week by consulting the Course Calendar. The Course Calendar provides an overview of the course and indicates due dates for submitting assignments, posting discussions, and submitting the final project.
- Check Announcements regularly for new course information.

COMMITMENT TO DIVERSITY, EQUITY, AND INCLUSION

Thomas Edison State University recognizes, values, and relies upon the diversity of our community. We strive to provide equitable, inclusive learning experiences that embrace our students' backgrounds, identities, experiences, abilities, and expertise.

ACCESSIBILITY AND ACCOMMODATIONS

Thomas Edison State University recognizes disability as a facet of diversity and seeks to advance access to its educational offerings. Students with disabilities may seek accommodations by contacting the Office of Student Accessibility Services via email at ada@tesu.edu or phone at (609) 984-1141, ext. 3415. Individuals who are deaf or hard of hearing may call the TTY line at (609) 341-3109.

ACADEMIC POLICIES

To ensure success in all your academic endeavors and coursework at Thomas Edison State University, familiarize yourself with all administrative and academic policies including those related to academic integrity, course late submissions, course extensions, and grading policies.

For more, see:

- [University-wide policies](#)
- [Undergraduate course policies and regulations](#)
- [Graduate academic policies](#)
- [Nursing student policies](#)
- [Academic code of conduct](#)