A A E/ECON 421: ECONOMIC DECISION ANAYSIS
Fall semester, 2025

Credits: 4

Canvas Course URL: https://canvas.wisc.edu/courses/461110

Course Designations:
Breadth – Social Science
Level – Intermediate
L&S Credit – Counts as Liberal Arts and
Science credit in L&S

Course Description:
Managerial oriented, applied presentation of microeconomic theory. Quantitative emphasis with extensive homework use of spreadsheets and written executive summaries of applied economic analyses. Applications on natural resources and agricultural markets.

Requisites:
STAT 301, 371, ECON 310, SOC/C&E SOC 360, PSYCH 210, or (GEN BUS 306 and 307)

Meeting Time and Location:
Lectures: *Tu/Th, 2:30 p.m. – 3:45 p.m.*
Lab: *F, 2:25 p.m. – 3:15 p.m.*
Location for both: *3250 Helen C. White Hall*

Instructional Modality: In-person

How Credit Hours are Met by the Course:
The credit standard for this course is met by an expectation of a total of 180 hours of student engagement with the course learning activities (at least 45 hours per credit), which include regularly scheduled lectures, reading, writing, problem sets, studio time, labs, field trips, and other student work as described in the syllabus.

Regular and Substantive Student-Instructor Interaction
This course achieves regular and substantive student-instructor interaction through direct instruction, providing feedback on student work, providing information about course content, and facilitating discussion of course content during two in-person lecture periods and one in-person lab each week.

INSTRUCTORS

Instructor: Dr. Kensuke Kubo, Lecturer, Agricultural and Applied Economics
Email: kkubo2@wisc.edu (please include "421" in email subject line)
Office hours: (opportunity to speak with me about the course material, problem sets, projects, and other topics like future plans)
- *Tuesdays, 3:45 p.m. – 4:30 p.m., 3261 Helen C. White Hall*
- *Thursdays, 3:45 p.m. – 4:30 p.m., 3261 Helen C. White Hall*

Teaching Assistant: Laxmi Narayan Ojha, Ph.D. Student, Agricultural and Applied Economics
Email: lojha2@wisc.edu (please include "421" in email subject line)
Office hours: *Wednesdays, 2:30 p.m. – 4:30 p.m., 314 Taylor Hall*

COURSE LEARNING OUTCOMES

By the end of this course, you will be able to:

- Manipulate, organize, and visualize quantitative economic data using computer software
- Conduct statistical analyses and estimate basic linear regression models of economic data
- Correctly report and interpret results from statistical analyses in the context of informing economic decisions
- Set up and solve linear and non-linear programming problems that inform economic decision-making using computer software
- Integrate uncertainty into the analysis of economic decisions and articulate how uncertainty influences economic behavior
- Effectively communicate verbally, visually, and in writing the process and results of economic decision analyses

GRADING

Your course grade will depend on six components: in-class learning activities, problem sets, lab activities, a lab project report, a midterm project, and a final project:

- **In-class learning activities: 20% of your final grade**
    - o I am planning to have an in-class activity during each lecture between September 9 and November 20 (inclusive), totaling an expected 22 unique activities. (There may be additional in-class activities in December if our schedule permits.) You will complete these activities on Canvas and may only complete them during classtime. They will be graded on successful completion, each worth one point.
    - o This component of your course grade will be evaluated out of 20 points, with no extra credit for additional activities. If you complete 20, 21, or 22 activities, you will get full credit for this 20% of your final grade. If you complete 19 activities, you will get a score of 19/20 for this 20% of your final grade, and so forth.
- **Problem sets:** 4 problem sets collectively worth **32% of your final grade** (they may not be weighted equally)
- **Lab activities: 10% of your final grade**
    - o There will be a total of 10 graded lab activities, each worth 1% of your final grade. Each lab activity is designed to be completed during your regular Friday lab session, but will be officially due the following Monday (see course schedule).
- **Lab project report: 10% of your final grade**
    - o You will be given a "lab project" assignment on September 5 (your first day of Lab) and it will be due December 3. The lab project report will build directly on the lab activities you complete throughout the semester.
- **Midterm project: 12% of your final grade**
- **Final project: 16% of your final grade**

I reserve the right to curve the following grading scale (based on the final, weighted course score) in students' favor at the end of the semester. However, I do not expect to do this.

- A: >92
- AB: 88-92
- B: 82-88
- BC: 78-82
- C: 70-78
- D: 60-70
- F: <60

LEARNING MANAGEMENT SYSTEM

This course utilizes Canvas for all major learning management functions including hosting lecture recordings, in-class activities, assignment submissions, and more. The link to this course's Canvas site is: https://canvas.wisc.edu/courses/461110. Students should explore and become familiar with Canvas and its functionalities.

REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS

There is one required textbook for this course:

- "Introduction to Management Science, 13th Edition" by: Bernard W. Taylor III. Pearson.

You will also need access to the software programs R and RStudio (free) and Microsoft Excel (available for free through UW–Madison licensing).

All other course materials will be provided via the course Canvas site.

HOMEWORK & OTHER ASSIGNMENTS

I plan for this course to include 22 in-class activities, ten lab activities, and four problem sets in addition to occasional assigned readings.

- In-class activities:
    - In-class activities will be formative assessments; that is, their purpose is to help you learn and master material rather than to "test" you .
    - Activities will be structured in such a way that you will have multiple opportunities to answer each question and you should be able to complete the activity correctly by the end of that day's lecture.
    - You are allowed (and encouraged!) to work with your classmates to complete these activities. This provides an additional incentive to attend class in person.
- Lab activities:
    - Lab activities are designed to reinforce and expand upon material from lectures and in-class activities. They also directly relate to the lab project report that is due near the end of the semester.
    - If you attend Lab in person, you should be able to complete the week's lab activity by the end of the lab. Solutions to lab activities will be posted on Canvas after each activity's due date.
- Problem sets:
    - Problem sets will always be posted at least one week before their due date.
    - Due dates are included in the course schedule below.
    - All submissions should occur through the course Canvas site.

EXAMS, QUIZZES, PAPERS & OTHER MAJOR GRADED WORK

This course will include a midterm project, a lab project, and a final project that will be submitted via Canvas. I will provide specific instructions for each at appropriate times during the semester.

LATE POLICY

I reserve the right to enforce the following late policies:

- In-class activities and Lab activities: no late work accepted for credit
- Problem sets: daily penalty of 10% of points possible
- Projects (Lab, Midterm, Final): daily penalty of 25% of points possible

COURSE SCHEDULE (I reserve the right to make adjustments if needed)
*I will assign required readings from the Taylor textbook and other sources (which will be available on Canvas) as needed throughout the semester.

I. DATA MANIPULATION
- <u>Th – Sept. 4:</u> Welcome and course introduction
- <u>F – Sept. 5:</u> **Lab**: Lab preliminaries; introduce Lab Project
- <u>Tu – Sept. 9:</u> Data manipulation in Microsoft Excel I
- <u>Th – Sept. 11:</u> Data manipulation in Microsoft Excel II
- <u>F – Sept. 12:</u> **Lab**: Generating polished tables in Microsoft Excel
    - Lab activity 1 DUE at midnight, Sept. 15
- <u>Tu – Sept. 16:</u> Data manipulation in R I
- <u>Th – Sept. 18:</u> Data manipulation in R II
    - **Problem Set 1 DUE**
- <u>F – Sept. 19:</u> **Lab**: Generating polished figures in Microsoft Excel
    - Lab activity 2 DUE at midnight, Sept. 22
- <u>Tu – Sept. 23:</u> Data manipulation in R III
- <u>Th – Sept. 25:</u> Data manipulation in R IV
- <u>F – Sept. 26:</u> **Lab**: Project management, file types, and use of packages in R
    - Lab activity 3 DUE at midnight, Sept. 29

II. FORECASTING AND REGRESSION ANALYSIS
- <u>Tu – Sept. 30:</u> Regression analysis by hand
- <u>Th – Oct. 2:</u> Regression analysis in Microsoft Excel
    - **Problem Set 2 DUE**
- <u>F – Oct. 3:</u> **Lab**: Creating figures in R
    - Lab activity 4 DUE at midnight, Oct. 6
- <u>Tu – Oct. 7:</u> Regression analysis in R I
- <u>Th – Oct. 9:</u> Regression analysis in R II
- <u>F – Oct. 10:</u> **Lab**: Creating maps in R
    - Lab activity 5 DUE at midnight, Oct. 13
- <u>Tu – Oct. 14:</u> Regression analysis in R III
- <u>Th – Oct. 16:</u> Forecasting in Microsoft Excel
- <u>F – Oct. 17:</u> **Lab**: Effective written communication
    - Lab activity 6 DUE at midnight, Oct. 20
- <u>Tu – Oct. 21:</u> Interpreting and communicating regression analyses I
- <u>Th – Oct. 23:</u> Interpreting and communicating regression analyses II
- <u>F – Oct. 24:</u> **Lab**: Creating regression output tables in R
    - Lab activity 7 DUE at midnight, Oct. 27

III. LINEAR PROGRAMMING
- <u>Tu – Oct. 28:</u> Linear programming I
- <u>Th – Oct. 30:</u> Linear programming II
    - **Midterm Project DUE**

- F – Oct. 31: **Lab**: Review midterm project
- Tu – Nov. 4: Linear programming III
- Th – Nov. 6: Linear programming IV
- F – Nov. 7: **Lab**: Effective editing
    - o Lab activity 8 DUE at midnight, Nov. 10

IV. NONLINEAR PROGRAMMING AND UNCERTAINTY
- Tu – Nov. 11: Nonlinear programming I
- Th – Nov. 13: Nonlinear programming II
    - o **Problem Set 3 DUE**
- F – Nov. 14: **Lab**: Optimization in R I
    - o Lab activity 9 DUE at midnight, Nov. 17
- Tu – Nov. 18: Uncertainty I
- Th – Nov. 20: Uncertainty II
- F – Nov. 21: **Lab**: Optimization in R II
    - o Lab activity 10 DUE at midnight, Nov. 24

V. FINAL PROJECT
- Tu – Nov. 25: Introduce final project, how to record presentations
    - o **Problem Set 4 DUE**
- Th – Nov. 27: THANKSGIVING BREAK – NO CLASS
- F – Nov. 28: **Lab**: THANKSGIVING BREAK – NO CLASS
- Tu – Dec. 2: TBD (Built-in flexibility)
- Th – Dec. 4: TBD (Built-in flexibility)
    - o **Lab Project Report DUE by midnight, Dec. 3**
- F – Dec. 5: **Lab**: Work time for final project
- Tu – Dec. 9: Course reflection and wrap-up
    - o **Final Project DUE by midnight, Dec. 8**

TEACHING & LEARNING DATA TRANSPARENCY
For information about what teaching and learning data are collected by UW–Madison, how those data are used, and how those data are protected, please refer to the university's Teaching and Learning Data Transparency Statement, available at: https://teachlearn.provost.wisc.edu/teaching-and-learning-data-transparency-statement/.

PRIVACY OF STUDENT RECORDS & THE USE OF AUDIO RECORDED LECTURES
Lecture materials and recordings for this course are protected intellectual property at UW-Madison. Students in courses may use the materials and recordings for their personal use related to participation in class. Students may also take notes solely for their personal use. If a lecture is not already recorded, students are not authorized to record lectures without permission unless they are considered by the university to be a qualified student with a disability who has an approved accommodation that includes recording. [Regent Policy Document 4-1] Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities, with the exception of sharing copies of

personal notes as a notetaker through the McBurney Disability Resource Center. Students are otherwise prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

COURSE EVALUATIONS
UW–Madison uses an online course evaluation survey tool, AEFIS. You should receive an official email two weeks prior to the end of the semester when your course evaluation is available. You will receive a link to log into the course evaluation with your NetID where you can complete the evaluation and submit it, anonymously. Your participation is an integral component of this course, and your feedback is important to me. I strongly encourage you to participate in the course evaluation.

DIVERSITY & INCLUSION
Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

MENTAL HEALTH AND WELL-BEING STATEMENT
Students often experience stressors that can impact both their academic experience and personal well-being. These may include mental health concerns, substance misuse, sexual or relationship violence, family circumstances, campus climate, financial matters, among others. Students are encouraged to learn about and utilize UW-Madison's mental health services and/or other resources as needed. Visit uhs.wisc.edu or call University Health Services at (608) 265-5600 to learn more.

ACADEMIC CALENDAR & RELIGIOUS OBSERVANCES
Please refer to the official UW–Madison academic calendar for important deadlines including the last day to drop courses or withdraw without notation on your transcript, the last day to drop courses with full tuition refund, the last day to drop courses, and the last day to apply for a pass/fail grade or convert your enrollment from for-credit to audit: https://secfac.wisc.edu/academic-calendar/.

Wisconsin law mandates that any student with a conflict between an academic requirement and any religious observance must be given an alternative for meeting the academic requirement. If you wish to request relief from any aspect of this course for a religious observance, please notify me via email within the first two weeks of class and specify the specific days or dates for which you are requesting relief. We will work together to determine an appropriate way to satisfy the affected course requirements in an appropriate way.

ACADEMIC INTEGRITY
By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and

helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but are not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Providing reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. I will work either directly with you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

STUDENTS' RULES, RIGHTS & RESPONSIBILITIES

For an extensive summary of students' rules, rights, and responsibilities, please refer to the following website: https://guide.wisc.edu/undergraduate/#rulesrightsandresponsibilitiestext.