

CEE 464: Urban and Regional Transportation Planning
Term: Fall 2023; Time: TUE/THURS 4:30PM – 5:45PM
Room: POST 126

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Office Hours: TUE/THURS 9AM-10AM

Description: This course introduces students the conventional travel analysis work faced by practicing transportation engineers at MPOs, consulting firms and similar organizations. At the end of the course, students can expect to conduct analysis with the conventional four-step model (FSM) and tools that use the FSM. Additionally, to provide a more multimodal perspective, students will learn about parking, pedestrian/bicycle (active modes) and transit planning. From a methodological standpoint, we will also discuss econometric and other data analysis methods used in travel demand forecasting, and network analysis.

Specific Outcomes: At the end of the course, students can expect to be able to conduct analysis with the conventional four-step model to travel analysis and other analysis for multi-modal transportation planning.

Relationships to Student Outcomes: The following table identifies the Student Outcomes addressed in this course:

| | | | | | | | |
|----------------------|---|---|---|---|---|---|---|
| Student Outcome (SO) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Course Emphasis | 2 | | 3 | 1 | | 3 | 3 |

For more information: <http://www.cee.hawaii.edu/wp-content/uploads/2021/07/CE-Student-Outcomes-and-Scorecards.pdf>

Format: The course will use a combination of lectures, homework assignments an in-class exam and a final exam. Lectures will cover mainly methodological material, with an emphasis on their practical application in transportation planning and analysis. The homework exercises will include both analytical problems and empirical case studies, using real world datasets, drawn from a variety of contexts.

Prerequisites: The following prerequisite courses are *recommended*: (i) CEE 305 Applied Probability and Statistics; (ii) a course on Linear and/or Matrix Algebra

Grading: 40% HW; 20% In-Class Exam on 4-Step Model; 35% - Class Project; 5% Class Participation

Homework: There will be a total of five homework assignments. Late homework will receive the following deductions. **Late Homework Deductions: One Day: 10%; Two Days 20%; More than TWO Days: No Credit**

Homework is due by 5PM Hawaii Standard Time on the date stated. For example, if HW1 is due on 9/21/2021. This means it is due by 5PM on 9/21/2021. **I will not be accepting emailed HWs.**

Additionally, please make sure your HW adheres to the following guidelines:

- A) You FULL NAME must appear ON the HW assignment;
- B) If you are submitting electronic copies, the assignment must be in PDF or MS-Word Document format. If you have spreadsheets, make sure these are saved in PDF or MS-Word format and that I can read them without a magnifying glass; and

If you are unable to meet a deadline, due to medical illness or other extenuating circumstances, you will need to make an appointment to see me about it and discuss it in my office or on Zoom. I will need to receive these requests before the due date of the homework. For example, if HW1 is due on 9/21/2021, I would need to see your email before 9/21/2021 at 12AM.

Note: If we (grader and I) cannot read your HW easily, you will not receive credit.

Class Participation and Attendance: Student attendance and participation online is required. We will follow the University of Hawaii at Manoa (UH-M) policy for class attendance.

Extra Credit Reading: At the *end of the semester*, students will have the option of completing a take-home essay prompt on the following optional reading: **TBD**

Your essay response *may result in 0-3 additional point on to your final average*, based on my careful reading of your submission.

UH-Manoa College of Engineering Academic Integrity Statement: The College of Engineering, in order to prevent the use of unauthorized academic assistance, bans the use of any electronic communication devices, including but not limited to, smartphones, smart tablets, smart watches, and related technology while completing closed notes/book quizzes, examinations, or other deliverables in which the faculty expressly outlines these expectations. Additionally, per the University of Hawai'i Student Conduct Code, the following additional actions may constitute a violation of Academic Dishonesty:

- the use of any unauthorized assistance in taking quizzes, tests, or examinations
- use of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments

- the acquisition, without permission, of tests or other academic material belonging to a member of the UH faculty, staff or student body (i.e. use of Chegg or similar website to reference old tests, assignments, etc. without permission)
- engaging in any behavior specifically prohibited by a faculty member in the course syllabus or class discussion

The immediate disciplinary actions will be at the discretion of the instructor but may result in reporting to the Department, College, and/or the Office of Judicial Affairs where, if found in violation, the resulting sanction(s) may include expulsion from the University.

COVID-19 Policy: This class adheres to the UH System-wide COVID-19 Guidelines: <https://www.hawaii.edu/covid19-guidelines/>

Course Materials: Course reading materials will consist of a mix of (i) classic research articles and textbook chapters; (ii) recent research articles; and (iii) excerpts from the popular literature. Course software materials will consist of (a) prepared code/script in MATLAB, R or Python; and (b) other software inputs (LIMDEP, SPSS etc.) as necessary.

Textbook: Material will be drawn from these books.

- a) Ortuzar, J. D. and L. G. Willumsen (2011) Modelling Transport, 4th Edition. Wiley
- b) Stopher, Peter. Collecting, managing, and assessing data using sample surveys. Cambridge University Press, 2012.
- c) Meyer, M. D. (2016) ITE Transportation Planning Handbook, 4th Edition. Wiley

Laulima: Any relevant material for class will be left on the shared network drive on Laulima; please check regularly.

Topics: The following is a tentative list of topics covered, though the final course content will be organic and shaped by student interests as much as possible, as the course progresses.

Class Schedule: The following is the tentative schedule for the topics covered. The pace will be adjusted as needed.

| Day | Date | Topic | Readings |
|----------|-------------------|--|----------------|
| T | 08/22/2023 | Introduction - Transportation Planning Process | Class Notes |
| Th | 08/24/2023 | Data - System Performance + Traveler Characteristics | Class Notes |
| T | 08/29/2023 | Data - Handling Data Sets - Available Data | Class Notes |
| Th | 08/31/2023 | Data - Handling Data Sets - Description | Class Notes |
| T | 09/05/2023 | Trip Generation | OW Chapter 4 |
| Th | 09/07/2023 | Trip Generation | OW Chapter 4 |
| T | 09/12/2023 | Trip Generation | OW Chapter 4 |
| Th | 09/14/2023 | Trip Generation - HW1 Assigned | OW Chapter 4 |
| T | 09/19/2023 | Trip Distribution | OW Chapter 5 |
| Th | 09/21/2023 | Trip Distribution | OW Chapter 5 |
| T | 09/26/2023 | Trip Distribution - HW 2 Assigned (online – video) | OW Chapter 5 |
| Th | 09/28/2023 | Travel Mode Choice (online – video) | OW Chapter 6/7 |
| T | 10/03/2023 | Travel Mode Choice | OW Chapter 6/7 |
| Th | 10/05/2023 | Travel Mode Choice | OW Chapter 6/7 |
| T | 10/10/2023 | Travel Mode Choice | OW Chapter 6/7 |
| Th | 10/12/2023 | Travel Mode Choice - HW3 Assigned | OW Chapter 6/7 |
| T | 10/17/2023 | Traffic Assignment (online) | Class Notes |
| Th | 10/19/2023 | Traffic Assignment (online) | Class Notes |
| T | 10/24/2023 | Traffic Assignment | Class Notes |
| Th | 10/26/2023 | Traffic Assignment – HW4 Assigned | |
| T | 10/31/2023 | Review for Exam | |
| Th | 11/02/2023 | In-Class EXAM | |
| T | 11/07/2023 | Introduce Group Project | Class Notes |
| Th | 11/09/2023 | Final Project: Survey and Field Data Collection Design and Preparation | Class Notes |
| T | 11/14/2023 | Final Project: Survey and Field Data Collection Design and Preparation | Class Notes |
| Th | 11/16/2023 | Final Project: Survey and Field Data Collection Design and Preparation | Class Notes |
| T | 11/21/2023 | Final Project: Survey and Field Data Collection Design and Preparation | Class Notes |
| Th | 11/23/2023 | Thanksgiving Holiday | |
| T | 11/28/2023 | Field Data Collection | |
| Th | 11/30/2023 | Field Data Collection | |
| T | 12/05/2023 | Field Data Collection | |
| Th | 12/07/2023 | Field Data Collection | |
| T | 12/12/2023 | FINAL PROJECT DUE: 5PM | |