

Course Number	CEE 410/510
Title	TRAVEL SURVEY DATA AND ANALYSIS
Section	004
CRN(s)	44534/44535
Credits	4
Prerequisite(s)	N/A
Days/Time	T/Th 12-150 PM
Location	ITS LAB, 315A ENG BLDG
Final Exam Day/Time	Thursday, March 23 10:15-12:05

Course Website	<a href="http://kellyjclifton.com">http://kellyjclifton.com</a>
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Office Hours	Thursdays 10-12 or by appointment
Mailbox Location	CEE Office, EB 200 Suite

### Required Text or Other Materials:

Peter Stopher. 2012. *Collecting, Managing, and Assessing Data Using Sample Surveys*, Cambridge: Cambridge University Press. This is an e-book available from the Portland State University Library.

TSM: Travel Survey Methods Wiki: <http://www.travelsurveymethods.org/>

NCHRP: Stopher et al. 2008. NCHRP Report 571: Standardized Procedures for Personal Travel Surveys. Transportation Research Board, Washington, DC.

All other readings and course materials will be available on the course website.

**Catalog Course Description:** This course focuses on the design, administration and analysis of various types of surveys used to collect transportation data, including but not limited to household travel surveys, establishment surveys, intercept surveys, and freight/commercial vehicle surveys.

## Course Objectives:

Students must demonstrate the ability to:

- Understand the various survey techniques appropriate for collecting travel behavior data
- Develop a transportation survey, including sampling, instrument design, and administration
- Analyze travel survey data

## Student Learning Outcomes:

- Understand the fundamentals of survey design, including: instrument design, administration mechanisms, sampling, data processing and archiving.
- Identify the various survey types common in transportation and their relationship to engineering, planning and policy needs.
- Analyze data collected from these surveys using elementary statistical and qualitative techniques.
- Understand the role of changing technology (internet, smartphone, GPS, etc.) in the design and administration of surveys.

## Course Requirements:

Class participation	10%
Homework & In-class exercises	40%
Final Exam	30%
Project/Paper	20%

### Class Participation

Students are expected to actively engage in this course. This includes regular attendance, asking questions, providing examples and commentary, and contributing to the intellectual environment of the classroom. “Satisfactory” participation means that you attend class regularly, pay attention, and ask questions. “Excellent” class participation means that you make an original contribution, such as sharing examples that relate to the topics covered in class and expanding the discussion.

### Homework & In-class exercises

There will be several exercises assigned in this course. Some will be in class; others will be homework. Some will be group assignments; others will be individual assignments. These will be based upon the course content and make include: a) critique of a survey instrument design; b) calculations of sample sizes; c) data collection/survey administration; and d) statistical and/or qualitative analysis of these data. Students enrolled as CE 510 will have additional requirements for these assignments, such as additional questions to answer or expanded analysis.

### Final Exam

A final exam will be given in the course. The day and time are determined by the PSU academic calendar.

### Final Project/Paper

Students will be required to develop a project or paper on a topic of their choice. Projects or papers may include the design and administration of a survey, analysis of travel behavior data, review of the academic literature or professional practice, or another relevant subject for the

course. You will be required to express your ideas for your project or paper at the mid-term of the class and the finished project is expected to reflect effort commensurate with 5 weeks of effort. Recommended length of the final papers/project reports should be around 8 pages for CE 410 students and 12-pages for those students registered for CE 510, for a 1.5 spaced; 11-point font. Final products should be framed in terms of the current academic and professional literature (i.e., you need to reference others' work and relate it to your project idea, methods and/or findings). In addition, graduate students are expected to draw upon and reference more scholarly literature in their final product.

Examples of course paper/projects include:

- Review of the state of practice in using passive technologies (smart phones, GPS, accelerometers or other technology) to capture travel behaviors.
- Analysis of the National Household Travel Survey (NHTS) data or other travel survey data to understand the travel patterns of particular demographic groups (e.g.; age, income, gender, race), mode users (e.g.; cyclists and pedestrians, transit riders, zero-vehicle households), households living in specific environments (e.g.; transit-oriented neighborhoods, suburban areas, high-density environments), or some other aspect that interests you.
- Develop a position about how (or why or if) public agencies can access the information about travel behavior needed to make transportation plans, invest in infrastructure and develop transportation policies. Consider that private companies (e.g.; Google, Facebook, cell phone service providers) often have access to more detailed personal information about travel patterns than public agencies. Balance your response by considering the increasing concerns about individual privacy. Support your position with references to the appropriate literature.
- Develop, administer and analyze a survey aimed at understanding how the public may desire or respond to some other future innovation (connected and autonomous vehicles, bicycle infrastructure, parking fees, road mileage fees, etc.).

The final grade will be assigned as follows:

90 to 100%	A
80 – 89	B
70-79	C
60-69	D
<60	F

**Late policy:** Unless prior arrangements have been made, assignments submitted after the due date will receive an 8% deduction per day late on the assignment grade.

**Plagiarism will not be tolerated.** All work must be original; else, contributions from other authors/contributors must be appropriately cited. Consult appropriate writing guides should you have doubts about appropriate referencing or writing methods.

**Incompletes:** A grade of “I” is granted by the instructor *only* with prior approval and consent. Criteria are outlined in the PSU Bulletin.

**Program requirements:** {for UG courses} The CEE Department requires that junior and senior engineering courses must be completed with a minimum grade of C-, and a student's cumulative PSU GPA must be 2.33 or higher to graduate from the BSCE program.

Week	Date	Topic	Readings
1	10-Jan-17	Introduction to course	Stopher 1
	12-Jan-17	Review of statistical foundations	Stopher 2
2	17-Jan-17	Transportation Surveys	
	19-Jan-17	Surveys & Censuses, Error & Bias, Ethics	Stopher 3 & 4
3	24-Jan-17	Survey Design	Stopher 5
	26-Jan-17	Designing a Survey	Stopher 5
4	31-Jan-17	Methods for Conducting Surveys; Focus Groups	Stopher 6 & 7
	02-Feb-17	Survey Instrument Design	Stopher 8
5	07-Feb-17	Survey Instrument Design	Stopher 9
	09-Feb-17	Data Collection	Stopher 11
6	14-Feb-17	Sampling	Stopher 13
	16-Feb-17	Sampling	Stopher 13
7	21-Feb-17	Survey Administration	Stopher 15
	23-Feb-17	Survey Administration	Stopher 16
8	28-Feb-17	Coding & Data Structure, Missing Data/Nonresponse	Stopher 18
	02-Mar-17	Data Analysis	NHTS data: <a href="http://nhts.ornl.gov">http://nhts.ornl.gov</a>
9	07-Mar-17	Data Analysis	
	09-Mar-17	Data Analysis	
10	14-Mar-17	Wrap Up	Student Presentations
	16-Mar-17		
11	21-Mar-17	Finals Week	Final Project Reports

Stopher. 2012. *Collecting, Managing, and Assessing Data Using Sample Surveys*, Cambridge: Cambridge University Press.

## Computer and E-mail Accounts

- If you haven't done so already, please go to the CadLab located in EB 325 to activate your engineering account. If you need help in using this account, please see the attendant or send an e-mail to [support@cecs.pdx.edu](mailto:support@cecs.pdx.edu)
- If you choose not to check your CECS e-mail account regularly ([yourname@cecs.pdx.edu](mailto:yourname@cecs.pdx.edu)) then please forward it to an e-mail account that you do check. Important information and announcements are delivered via this e-mail address.

## Code of Conduct

The PSU Student Conduct Code prohibits all forms of academic cheating, fraud, and dishonesty. Further details can be found in the PSU Bulletin. Allegations of academic dishonesty may be addressed by the instructor, and/or may be referred to the Office of Student Affairs for action. Acts of academic dishonesty may result in a failing grade on the exam or assignment for which the dishonesty occurred, disciplinary probation, suspension or dismissal from the University. The students and the instructor will work together to establish optimal conditions for honorable academic work. Questions about academic honesty may be directed to the Office of Student Affairs: <http://www.ess.pdx.edu/osa/>.

## Classroom Rules and Behavior Expectations

The classroom is a professional space and professional conduct is expected. Please silence your cell phone and refrain from text messaging during class and exam times. Treat your fellow students and the instructor with respect and please use appropriate language at all times. Additional rules may be added at the instructor's discretion.

## Ethics and Professionalism

As future professional engineers you should plan to take the FE Exam (see the Oregon State Board of Examiners for Engineering and Land Surveying at [www.osbeels.org](http://www.osbeels.org)), and you should be familiar with the ASCE Code of Ethics ([www.asce.org/inside/codeofethics.cfm](http://www.asce.org/inside/codeofethics.cfm)), which includes the following:

**Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the engineering profession.**

## Campus Resources

As a PSU student, you have numerous resources at your disposal. Please take advantage of them while you are here. A small sample is listed below:

- CEE Website: <http://www.cce.pdx.edu>
- Career Center: <http://www.career.pdx.edu/>
- Center for Student Health & Counseling: <http://www.shac.pdx.edu/>
- The Writing Center: <http://www.writingcenter.pdx.edu/>
- PSU Disability Resource Center: 435 SMU - The PSU Disability Resource Center is available to help students with academic accommodations. If you are a student who has need for test-taking, note-taking or other assistance, please visit the DRC and notify the instructor at the beginning of the term.

Participation in student and professional groups can be a valuable part of your education experience. Membership gives students opportunities to get to know fellow students better, meet and network with professionals, collaborate in solving real engineering problems, learn about internship or job possibilities, socialize and have fun. Consider becoming active with a student organization, such as the following:

- American Society of Civil Engineers Student Group (ASCE): <http://www.asce.pdx.edu>
- Institute of Transportation Engineers Student Chapter (ITE): <http://www.its.pdx.edu/ite/>

Most professional organizations have monthly meetings and encourage student participation by providing discounts for lunch and dinner meetings. These meetings provide opportunities to network with potential future employers, learn about scholarships, and increase your technical knowledge. Take a look at these organizations as a starting point:

- American Society of Civil Engineers (ASCE) Oregon Section: [www.asceor.org](http://www.asceor.org)
- Institute of Transportation Engineers (ITE) Oregon Section: [www.oregonite.org](http://www.oregonite.org)
- Society of Women Engineers (SWE) Columbia River Section - <http://www.swe-columbia-river.org>
- Structural Engineers Association of Oregon (SEAO): [www.seao.org](http://www.seao.org)

## Library and Literature Research

With the advent of the Internet it is very tempting to think that all necessary resources for a term project will be available in full text after typing in a few words at Google.com. This is not the case. You will often need to go to the library, use real library search tools and access real books and articles contained in refereed/archival journals.

Be sure to make use of the Vikat library catalog accessed via the PSU library home page at <http://www.lib.pdx.edu/>. Also available on the library home page are Full Text Electronic Journals and a list of on-line Databases. Databases to try are EI Compendex (<http://www.ei.org/ev2/ev2.home>) and Lexis-Nexis. Note that access to these databases is free for PSU students, but you must be using a computer on campus or via a dial-in service. See <http://www.lib.pdx.edu/services/distance/proxyserver.html> for instructions on how to gain off-campus access using a proxy server.

## Campus Safety

The University considers student safety paramount. The Campus Public Safety Office is open 24 hours a day to assist with personal safety, crime prevention and security escort services. Call 503-725-4407 for more information.

**For Campus emergencies call 503-725-4404.**