

# Graduate Education in Transportation

*Nohad A. Toulou School of Urban Studies and Planning  
College of Urban and Public Affairs*

*Department of Civil and Environmental Engineering  
Maseeh College of Engineering and Computer Science*



## About Transportation at PSU

Transportation education and research at Portland State University is multidisciplinary and focuses on transportation systems, infrastructure, policy, and planning. Our faculty cover all modes of transport and the interactions of transportation systems with land use, the economy, the environment, institutions, and people. Faculty conduct research on a range of topics, including: advances in transit operations; the relationships among urban form, travel behavior and health; intelligent transportation systems; health and safety issues; and transportation finance mechanisms.

The Center for Transportation Studies (CTS) coordinates transportation research, education and outreach in the College of Urban and Public Affairs, and works with the Oregon Transportation Research and Education Consortium (OTREC) that plays a campuswide role. OTREC is a national university transportation center, in partnership with the University of Oregon, Oregon State University, and the Oregon Institute of Technology.

Transportation is a growing profession with opportunities for people with a wide variety of backgrounds and strengths. You should consider studying transportation and entering the transportation profession if you enjoy: solving real world problems, being involved in your community, focusing on people and places, working with a wide variety of professionals, using a variety of skills, and working to improve livability and sustainability.

## Six Graduate Degrees Offered

Portland State University offers six graduate degrees with transportation specializations. Students from a wide variety of backgrounds participate in these programs both full- and part-time:

- Master of Urban and Regional Planning (MURP)
- Master of Urban Studies (MUS)
- Ph.D. in Urban Studies
- Master of Science in Civil and Environmental Engineering (MSCEE)
- Master of Engineering in Civil and Environmental Engineering (MEng)
- Ph.D. in Civil and Environmental Engineering

Portland State University also offers a Dual Master's Degree, a Graduate Certificate in Transportation, a weekly Transportation Seminar, Short Courses and Workshops as well as more than 25 transportation courses that can be taken individually for professional development.



# Master of Urban and Regional Planning (MURP)

[www.pdx.edu/usp/urban\\_planning.html](http://www.pdx.edu/usp/urban_planning.html)

The MURP is a 2-year (72 credit) professional degree in urban and regional planning. The degree is fully accredited by the Planning Accreditation Board, sponsored by the American Institute of Certified Planners, American Planning Association, and the Association of Collegiate Schools of Planning. Experiential learning is integral to the program.

## MURP Program

Core courses focus on the history and theory of planning, plan implementation, analytical methods (including Geographic Information Systems [GIS]), and the dynamics of metropolitan development. Students also choose a specialization (transportation, community development, environment, land use, or regional economic development) and complete 400 internship hours. MURP students may prepare an original field area paper (FAP) in consultation with faculty involving research in their specialization, or take 6 additional credits. The FAP demonstrates a student's ability to integrate and apply coursework material. Examples, ideas, and more FAP information: [web.pdx.edu/~jdill/Field\\_Area\\_Papers.htm](http://web.pdx.edu/~jdill/Field_Area_Papers.htm)

## Transportation Specialization

### Required Course

- USP 556: Urban Transportation: Problems and Policies

### Choose Three

- USP 537: Economics of Urban Transportation
- USP 544: Urban Transportation Planning
- USP 570: Transportation and Land Use
- USP 587: Travel Demand Modeling

### Choose One

- USP 507: Transportation Seminar
- USP 543: Geographic Applications in Planning
- USP 565: Pedestrian and Bicycle Planning
- CE 507: Cost Benefit Analysis in Transportation
- CE 550: Transportation Safety Analysis
- CE 553: Freight Transportation and Logistics
- CE 555: Intelligent Transportation Systems
- CE 558: Public Transportation
- CE 559: Transportation Operations

## Featured Alum

### Theresa Carr, MURP, 2003

While in the MURP program, Theresa interned at Angelo Eaton and Associates, the City of Portland, and Kittelson and Associates. Theresa was named the Region X University Transportation Center Student of the Year in 2002, was a graduate research assistant, and co-authored a paper on bicycle commuting facilities in major U.S. cities, published in 2003 in the *Transportation Research Record*. Her field area paper was *The Mobility of Elderly Persons in the Portland Metropolitan Region*. She is currently a planner with CH2M Hill in Portland.

# Master of Urban Studies

[www.pdx.edu/usp/urban\\_studies.html](http://www.pdx.edu/usp/urban_studies.html)

The Master of Urban Studies (MUS) is a 2-year (52 credit) pre-doctoral degree for those considering a career in policy analysis and research, or continuing on for a doctorate.

## MUS Program

Core courses cover theory, methods, and research design. Students choose a specialization in transportation, community development, policy analysis, gerontology or social demography, and have the option of a thesis or field area paper (FAP).

## Transportation Specialization

### Required Courses

- USP 556: Urban Transportation: Problems and Policies
- USP 544: Urban Transportation Planning
- USP 537: Economics of Urban Transportation
- USP 570: Transportation and Land Use

### Choose One

- USP 610: Econometrics for Public Policy
- USP 593: Advanced GIS Applications
- USP 655: Structural Equation Modeling
- USP 656: Multilevel Regression

### Choose Two

- USP 587: Travel Demand Modeling
- USP 565: Pedestrian and Bicycle Planning
- USP 543: Geographic Applications to Planning
- USP 578: Impact Assessment
- USP 579: Metropolitan Fiscal Structure
- CE 550: Transportation Safety Analysis
- CE 553: Freight Transportation and Logistics
- CE 555: Intelligent Transportation Systems
- CE 558: Public Transportation Systems
- CE 559: Transportation Operations



## Ph.D. in Urban Studies

[www.upa.pdx.edu/phd\\_admin.php](http://www.upa.pdx.edu/phd_admin.php)

The Ph.D. in Urban Studies (99 credits) is for those seeking a scholarly career or wanting to develop an understanding of related fields in depth through original research.

### Ph.D. Program

The Ph.D. core courses cover theory, methods, and research design. PhD students choose two fields: one from a defined list (transportation, planning, community development, policy analysis, gerontology, or social demography) and the second is defined by the student and his/her faculty committee. Ph.D. students must successfully complete a comprehensive examination covering their two fields, and complete a dissertation that makes an original contribution to knowledge.

### Transportation Specialization

The Ph.D. in Urban Studies transportation specialization requirements are the same as for the MUS.

### Featured Alum

#### Zhong-Ren Peng, Ph.D. Urban Studies, 1994

Zhong-Ren is currently a Professor of Urban Planning at the University of Wisconsin–Milwaukee whose research focuses on travel demand modeling, land use/transportation interaction, and the application of GIS for transportation planning and analysis. He is the co-author of *Internet GIS: Distributed Geographic Information Services for the Internet and Wireless Networks*, John Wiley & Sons, 2003.



### Featured Alum

#### Monica T. Leal, MSCEE, 2002

Originally from Bogotá, Colombia, Monica completed her M.S. Project on *Empirical Analysis of Traffic Flow Features of a Freeway Bottleneck Surrounding a Lane Drop*, from which a paper was published in the *Journal of Transportation Engineering*. Monica received the Women's Transportation Seminar Graduate Scholarship in 2001. Monica now works for DKS Associates in Portland.

## M.S. in Civil and Environmental Engineering (MSCEE)

[www.ce.pdx.edu/dp\\_master.shtml](http://www.ce.pdx.edu/dp_master.shtml)

The MSCEE program with a specialization in transportation provides students with the technical and professional knowledge necessary to seek creative solutions to complex problems in the transportation field. Flexibility is achieved by designing programs of study to meet individual needs.

### MSCEE Program

The MSCEE includes a thesis option (45 credits, including 6-9 hours of thesis, thesis proposal, and defense) or a project option (45 credits, including 4 hours of research project, research report and technical presentation). Students work closely with their advisor to develop a comprehensive and cohesive program of study.

### Transportation Specialization

Core courses include:

- CE 550: Transportation Safety Analysis (4)
- CE 551: Traffic Control & Analysis (4)
- CE 552: Highway Design for Capacity (4)
- CE 553: Freight Transportation and Logistics (4)
- CE 555: Intelligent Transportation Systems (4)
- CE 556: Traffic Engineering (4)
- CE 557: Pavement Design (4)
- CE 558: Public Transportation (4)
- CE 559: Transportation Operations (4)
- CE 560: Access Management (4)
- CE 510: Traffic Engineering Applications (4)
- CE 510: Context Sensitive Design of Transportation Facilities (4)
- CE 510: Geometric Design of Transp. Facilities (4)
- CE 510: Computer Aided Highway Design (4)
- CE 507: Benefit-Cost Analysis Seminar
- CE/USP 507: Transportation Seminar (1)

Complimentary courses from Urban Studies and Planning, Statistics, Economics, Computer Science, Mathematics, Business Administration, Public Administration, or English are also typically part of the curriculum.

## Master of Engineering in Civil and Environmental Engineering (MEng)

[www.ce.pdx.edu/dp\\_meng.shtml](http://www.ce.pdx.edu/dp_meng.shtml)

The Master of Engineering program is a professional degree (48 credits) designed for those who want the option of a coursework-only program. MEng. students may be full-time graduate students or may be working in the engineering field and want to complete an advanced degree without a thesis/project requirement. Coursework options for the MEng are the same as those for the MSCEE described above.

## Ph.D. in Civil and Environmental Engineering

[www.ce.pdx.edu/dp\\_phd.shtml](http://www.ce.pdx.edu/dp_phd.shtml)

The Ph.D. in Civil and Environmental Engineering requires advanced study and original research in transportation engineering. The Ph.D. requires at least two years of full-time graduate work beyond the M.S., a minimum of 24 course credits (transportation and supporting electives), a comprehensive examination, and a dissertation representing an original contribution to knowledge.

### Ph.D. Program

A student applying to the Ph.D. program will normally be required to have completed an M.S. degree in civil and environmental engineering or a closely related field. Students also will need to develop a relationship with a faculty member who agrees to be the official Ph.D. advisor. The faculty are engaged in research related to: intelligent transportation systems, urban transportation, traffic flow theory, data fusion and macroscopic modeling, multi-modal traveler information, traffic management of freeways, traffic operations using real-time traffic information, access management and traffic safety, and land use and access relationships. Three new laboratories are available in the new Northwest Center for Engineering Science and Technology: the Intelligent Transportation Systems Laboratory ([www.its.pdx.edu](http://www.its.pdx.edu)), the Traffic Signal Laboratory, and the Transportation/GIS Laboratory.

### Transportation Specialization

A course plan is developed for each student based on close collaboration with his/her advisor.



### Featured Alum

#### Roger Lindgren, Ph.D., CEE, 2005

Roger is an Associate Professor of Civil Engineering at the Oregon Institute of Technology in Klamath Falls. His dissertation, *Analysis of Flow Features in Queued Traffic on a German Freeway*, aimed at better understanding traffic features in queued and congested flow. Roger received the Oregon Tech 2003 Faculty Achievement Award, and has presented results of his research at the Annual Meeting of the Transportation Research Board.

## Dual Master's Degree Program

Portland State University students may obtain MURP/MSCEE or MURP/MEng degrees with transportation specializations using the Dual Degree option. Current MURP and MSCEE/MEng students can apply for a second master's degree using the GO-19M form:

[www.gsr.pdx.edu/forms/go-19m.pdf](http://www.gsr.pdx.edu/forms/go-19m.pdf). Students must complete admission requirements in both departments. Either 15 credits (MSCEE) or 16 credits (MEng) can be used as combined coursework for both degrees. Combined coursework must be approved by the graduate committee or department chairs of both departments using the Memo for Acceptance of Credits for Dual Degree Program, [www.gsr.pdx.edu/forms/dualdegree.pdf](http://www.gsr.pdx.edu/forms/dualdegree.pdf). Students must be formally admitted to both programs no later than the term prior to the final term of the first degree.

## Graduate Certificate in Transportation

The Graduate Certificate in Transportation (21 credits) offers graduate education for those seeking to build upon their undergraduate training and expand their capabilities in the field. Students must have a Bachelor's degree and a 2.75 undergraduate GPA. The Certificate includes courses from the Nohad A. Toulon School of Urban Studies and Planning and the Department of Civil and Environmental Engineering. For details see [www.cts.pdx.edu/grad\\_cert.htm](http://www.cts.pdx.edu/grad_cert.htm)

## Transportation Seminar Series

The Center for Transportation Studies offers a weekly Transportation Seminar Series ([www.cts.pdx.edu/seminars.htm](http://www.cts.pdx.edu/seminars.htm)), sponsored by the Oregon Transportation Research and Education Consortium (OTREC). The seminars are presented each Friday during the academic year. Students, transportation professionals, and community members are welcome to participate in person and via live streaming video, with remote participants submitting questions by email. All seminars are archived in streaming video format for future viewing. PSU students may enroll in the seminar for one credit.

## Transportation Short Courses and Workshops

The Center for Transportation Studies sponsors lifelong learning opportunities through short courses and workshops. For more information see [www.cts.pdx.edu/professionalcourses.htm](http://www.cts.pdx.edu/professionalcourses.htm)

## Individual Transportation Courses

Non-degree students may enroll in up to 8 credits of graduate-level courses via Quick Entry, [www.pdx.edu/admissions/ugrad\\_qkentry\\_apply.html](http://www.pdx.edu/admissions/ugrad_qkentry_apply.html)

# Center for Transportation Studies

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The Center for Transportation Studies is dedicated to stimulating and conducting collaborative multi-disciplinary research on multi-modal surface transportation issues; educating a diverse array of current practitioners and future leaders in the transportation field; and encouraging implementation of relevant research results. This is accomplished through collaboration and partnerships with transportation agencies and industry. For regular updates, subscribe to the CTS e-mail list: [www.cts.pdx.edu/email.htm](http://www.cts.pdx.edu/email.htm)

## The PSU Advantage

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Portland, Oregon, is at the forefront of collaborative urban transportation solutions with links to land use, and is one of America's most livable cities. Transportation education and research at Portland State University are multi-disciplinary and focus on transportation systems, infrastructure, policy, and planning. Our faculty cover all modes of transport, and the relationships and interactions of transportation systems with land use, the economy, the environment, institutions, and people. Recent research topics include: transit operations; the relationships among urban form, travel behavior, and health; intelligent transportation systems; health and safety issues; and transportation finance.

## Contacts

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[www.ce.pdx.edu/GradHandbookCE-05.pdf](http://www.ce.pdx.edu/GradHandbookCE-05.pdf)

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