Undergraduate Minor in Transportation and Logistics

- An interdisciplinary program available to all Northwestern undergraduates from any undergraduate school.

- Administered by Northwestern’s renowned Transportation Center – one of the country’s most prestigious academic and research centers dedicated to the study of transportation and logistics.

Students pursuing the Transportation and Logistics Minor will have . . .

- access to numerous transportation and logistics-related courses available in a variety of schools and departments across campus taught by faculty who are recognized experts in their fields.

- personalized academic advising by senior faculty

- opportunities for involvement in exciting transportation research projects

- access to highly specialized career counseling and numerous job opportunities with top companies

- membership in the NU Transportation Club - and involvement in all of its activities including field trips, executive luncheons, speaker events and social activities

- opportunities to attend research seminars and presentations at the Transportation Center

- interaction with fellow undergraduates interested in transportation and logistics, and the Transportation Center’s faculty, graduate students and alumni/alumnae
The Transportation and Logistics Minor

*Interdisciplinary Cross-School accredited Minor available to all Northwestern Undergraduates*

Passenger and freight transportation represents nearly a fifth of the United States Gross Domestic Product, and influences every aspect of our lives: where we live, where we work and the goods we purchase. The study of transportation and logistics is inherently interdisciplinary, reaching across disciplines, schools and departments.

Northwestern offers relevant courses through the Department of Civil and Environmental Engineering and the Department of Industrial Engineering and Management Science in the McCormick School of Engineering and Applied Sciences, and the Department of Economics and other social science departments in the Weinberg College of Arts and Sciences.

The Minor offers undergraduate students the opportunity to obtain a more rounded education in transportation and logistics compared with that offered within their selected major program of study. The curriculum equips students with a broad understanding of the economics, engineering and operations of transportation and logistics systems and the role of public policy.

The Minor is administered by the Transportation Center, an interdisciplinary research center founded in 1954. The Center has been recognized for decades as a leader in graduate education, and now extends this expertise to undergraduates. The Center has affiliated faculty from many of the participating departments.

For more information on the Transportation Center, go to our web site at:

[http://transportation.northwestern.edu](http://transportation.northwestern.edu)
Degree Requirements

Students are required to complete seven of the courses listed below (at a grade of C- or better), of which:

- **one** is a required course (Trans 310 -- a seminar course taken in the senior year)

- at least **three** must be from the list of core courses, or which two must be from Departments other than that in which they are majoring.

- the remainder may be additional core courses or from the list of approved elective courses. Courses offered by Northwestern University that are not listed here will be considered for credit towards the Minor if the course is appropriate to the student's program of study.

At least two courses of the core or elective courses must be outside the school in which the student is registered.

- Students in the McCormick School of Engineering and Applied Science may double count a maximum of two courses from their major program toward the Minor.

- However, students registered in other schools are not allowed to "double count" courses which are part of their major, but can count courses that form “related courses,” or “distribution” requirements.

- The McCormick School of Engineering and Applied Science has approved TRANS 310 as acceptable for the “social science/humanities” requirement. In addition TRANS 310 and other WCAS courses taken as part of the Minor will be considered as “thematically related” for purposes of the “social science/humanities” requirement.

In preparation for taking the minor, students should have taken courses in:

- calculus
- probability and statistics.
Curriculum

In the listing of courses the following abbreviations identify the school and department.

**WCAS - Weinberg College of Arts and Sciences**
- ECON Economics
- GEOG Geography
- HISTORY History
- POLI_SCI Political Science
- SOCIOL Sociology

**MEAS - McCormick School of Engineering and Applied Science**
- CIV_ENG Civil Engineering
- IEMS Industrial Engineering and Management Science

**KSM - Kellogg School of Management**
- KELLG_FE Financial Econ. Certificate

**Interschool Program**
- TRANS Transportation Program

**Required Course**

TRANS 310  Seminar in Transportation and Logistics.

*Course will meet weekly for a whole academic year. Enrolled students will obtain one credit based on formal enrollment in the Spring Quarter. Students should take this course during their senior year. You must have taken at least five of the courses for the Minor by the time you formally enroll for the spring quarter.*

The course is designed for seniors and as a culmination of their student for the Minor. It will bring together the knowledge gained from other courses in the Minor and in their Major. Unlike the technical courses offered as part of the Minor, this course is designed to emphasize the relation of theory to the real world, and to pull together their studies in various schools and departments in an interdisciplinary manner.

**Syllabus:** The course will consist of four parts. The first will be traditional lecture style formats by an NU faculty member concentrating on transportation policy. The second will be invited outside speakers from industry and government. The third will be field trips to transportation and logistics installations. The fourth will be student presentations of their own work completed as part of the two papers required for the course. It is anticipated that the first and fourth parts will comprise the bulk of the class time. Appropriate journal and newspaper articles dealing with policy and policy analysis will be used as readings.

**Evaluation:** Evaluation will be based on two extended papers. The first will be a descriptive case study of a particular transportation or logistics firm or industry. The second will be a more analytical piece evaluating a specific public policy initiative. Students will also be graded on class participation.
Core Courses

Students must select at least three core courses, of which at least two are from Departments other than that in which they are majoring. No substitutions will be allowed for the core courses.

WCAS-ECON-310-1 Intermediate Microeconomics I
WCAS-ECON-355 Transportation Economics and Public Policy (Econ 310-1 and a statistics / regression course are prerequisites)
MEAS-CIV_ENG-371 Transportation Systems Planning and Management
MEAS-CIV_ENG-376 Transportation System Operations

Either MEAS-IEMS-310 Operations Research (for those wishing to only take one course in industrial engineering)
or MEAS-IEMS-313 Deterministic Models and Optimization (for IEMS Majors and those wishing to take additional IEMS courses)
MEAS-IEMS-381 Supply Chain Modeling and Analysis (IEMS 313 prerequisite)
MEAS-IEMS-383 Service Operations Management (IEMS 313 prerequisite)

Elective Courses

The remainder of the program must be selected from additional core courses and the following list of approved elective courses. Courses offered by Northwestern University that are not listed here will be considered for credit towards the minor if the course is appropriate to the student’s program of study. Approval for substitutions will be made by the Transportation Center's Program Committee based on a written submission made by the student.

WCAS-ECON-309 Elements of Public Finance
WCAS-ECON-337 Economics of State and Local Governments
WCAS-ECON-349 Industrial Economics
WCAS-ECON-350 Monopoly, Competition and Public Policy
WCAS-ECON-354 Issues in Urban Economics
WCAS-ECON-361 International Trade
Either WCAS-ECON-370 Environmental and Resource Economics
or WCAS-ECON-372 Environmental Economics
and/or WCAS-ECON-373 Natural Resource Economics
WCAS-ECON 371 Economics of Energy
WCAS-ECON-381-1,2 Econometrics
WCAS-GEOG-312 Chicago and its Region
WCAS-GEOG-341 Principles of Cartography
WCAS-GEOG-343 Geographic Information Systems

WCAS-HISTORY-322-2 Development of the Modern American City 1870 - Present

Either WCAS-POLI_SCI-221 Urban Politics
   or WCAS-POLI_SCI-322 Ideas and Institutions in Urban Politics
Either WCAS-POLI_SCI-329 U.S. Environmental Politics
   or WCAS-POLI_SCI-367 Politics and Nature in a Comparative Perspective
WCAS-SOCIOL-301 The City: Urbanization and Urbanism
WCAS-SOCIOL-312 Social Basis of Environmental Change

Either MEAS-CIV_ENG-205 Economics and Finance for Engineers
   or MEAS-IEMS-326 Economics and Finance for Engineers
   or WCAS-ECON-360-1 Foundations of Corporate Finance Theory
   or WCAS-BUS__INST 304 Corporate Finance
   or KSM- KELLG_FE 310 Principles of Finance
MEAS-CIV_ENG-304 Civil and Environmental Engineering Systems Analysis
MEAS-CIV_ENG-338 Public Infrastructure Management
MEAS-CIV_ENG-360 Environmental Impact Evaluation
MEAS-IEMS-315 Stochastic Models and Simulation
MEAS-IEMS-317 Discrete-Event Systems Simulation
MEAS-IEMS-382 Production Planning and Scheduling

- **Graduate Level Courses** Qualified advanced students may take the following courses upon petition to the instructor

MEAS-CIV_ENG-471-1 Transportation Systems Analysis I
MEAS-CIV_ENG-471-2 Transportation Systems Analysis I
MEAS-CIV_ENG-480-1 Travel Demand Analysis and Forecasting I
MEAS-CIV_ENG-480-2 Travel Demand Analysis and Forecasting II
MEAS-CIV_ENG-482 Evaluation and Decision making for Infrastructure Systems
MEAS-IEMS-480-1 Production and Logistics I
MEAS-IEMS-480-2 Production and Logistics II

- **Independent Study** Students may count up to one credit of approved independent study in transportation and logistics towards the minor. The student may register in either TRANS 399, or a 399 in the department appropriate for the supervising faculty member.
For More Information

- For general information and to join the mailing list for activities of the Transportation Center and the Transportation Club:

  Diana Marek  
  Assistant Director for Academic Affairs  
  The Transportation Center  
  600 Foster Street, Third Floor  
  847-491-2280  
  d-marek@northwestern.edu

- For academic advising, and to declare a Minor see the Program Director:

  Professor Ian Savage  
  Department of Economics  
  Room 3371  
  2211 Campus Drive  
  847-491-8241  
  ipsavage@northwestern.edu

- Contact an Associate Program Director in your department. These include:

  Civil & Environmental Engineering:  
  Professor Pablo Durango-Cohen   (847-491-4008, pdc@northwestern.edu)

  Industrial Engineering and Management Science:  
  Professor Karen Smilowitz   (847-491-4693, ksmilowitz@northwestern.edu)