Education

The Institute’s activities in education encompass a multidisciplinary program of coursework and experiential learning that reinforces the Institute’s theme. The educational program includes the disciplines of civil engineering, computer science and engineering, electrical and computer engineering, mechanical engineering, human factors, and public policy, among others.

The Institute sponsors and supports many educational initiatives for students, including the development of new curriculum and courses, the involvement of undergraduate and graduate students in research projects, travel awards that allow students to attend national conferences, awards that recognize outstanding students, and research assistantships to help attract more students to the study of transportation. Through these initiatives, the Institute is increasing awareness of and interest in its core ITS science and technologies.
In March, the Institute partnered with the Center for Transportation Studies, the Women’s Transportation Seminar, the Minnesota Local Road Research Board, and the Minnesota T2/LTAP Program to hold the sixth annual Transportation Career Expo in Minneapolis. Over 70 participants—from institutions including the University of Minnesota, St. Cloud State University, and North Dakota State University—attended sessions and viewed exhibits from 18 organizations involved in transportation.

The event offered a general session on career preparation and four concurrent sessions on specific areas of transportation: engineering/technical careers, transportation/policy careers, intelligent transportation systems (ITS), and transportation logistics careers. The ITS session was moderated by Dawn Spanhake, the Institute’s manager of research development and contract management, and featured panelists from private industry and the Minnesota Department of Transportation.

**Institute helps prepare student for career in driver behavior**

Selma de Ridder, graduate research assistant at the Institute’s Human Factors Research Laboratory, credits the Institute with helping her work toward a profession in which “I might really be able to make a difference,” she says. That difference may take the form of vehicle safety improvements that reduce crashes, as well as improvements in comfort and convenience.

Although she first considered a career as an artist, de Ridder says she is happy to have found her current niche in driver behavior research.

de Ridder recently accepted a job at TNO-Human Factors in Soesterberg, the Netherlands, and will begin work there in November 2001. At TNO, de Ridder will be coordinating and conducting research for industry and government on a variety of projects related to driver and traffic behavior.

ITS Institute funds allowed de Ridder to attend the TRB 2000 Annual Meeting, where, she says, “I realized most clearly that I was very interested in this particular work and...”
have been even more excited since.” She also met a researcher whom she’ll be working with at TNO. “So in many ways that conference was a great opportunity,” she says.

Receiving the 2000 Matthew J. Huber Award (for excellence in transportation research and writing) from CTS was another good opportunity for her, she says, in that it allowed her to meet people and provided additional research funding. Preparing research grants through the Institute “taught me the ropes of practical implications related to grant writing and funding possibilities,” she adds.

de Ridder is a doctoral candidate in kinesiology at the University of Minnesota and holds a doctorandus [master’s degree equivalent] in theoretical psychology from the University of Leiden, the Netherlands.

Mentoring program gives student experience in ITS research

The President’s Distinguished Faculty Mentor Program at the University of Minnesota gives freshmen and sophomores who are just beginning their academic careers an opportunity to learn and gain practical experience from faculty. This program, which pairs participating students with a faculty mentor, helps students maximize their scholastic and professional development opportunities and provides a solid foundation for graduate school.

The program has been an invaluable tool for mechanical engineering student Jennifer Wagner. Her mentor, professor and Institute director Max Donath, has given her advice, motivation, and best of all, connections, Wagner says. Following Donath’s advice, she obtained a drafting position with the Narrow Commuter Vehicle project that is designing and building a half-lane-wide tilting vehicle. “The mentoring experience has been very helpful. Besides the expanded network, it has helped me learn about the [University] and all it has to offer,” Wagner says.

Faculty learn from the mentoring program, too. “It was my pleasure to have [Wagner] participate on our team,” says Donath. “I learned as much from her as she did from us. Her enthusiasm is not the kind that you typically experience in the classroom. Her work with Lee Alexander made a real difference.”

Institute sponsorships help students attend national conferences

The Institute sponsors ITS students to attend various conferences so that they can report on their research to larger audiences. Students also help staff Institute exhibit areas, giving them a chance to interact with conference participants. This past year, the Institute sponsored 14 students to attend national meetings of the Transportation Research Board (TRB) in January and ITS America in May.

Student attendees at the TRB Annual Meeting were Seshasai Kanchi, Atif Sheikh, Subramaniam Vijay-Konduru, Satyanarayana Muthuswamy, Sreemannarayan Nanduri,
Ravi-Praveen Ambadipudi, Kate Sanderson, and Wing Lau.

Students attending ITS America were Xi Zou, Pavithra Kandadai-Parthasarathi, Atif Sheikh, Prasoon Sinha, Adarsh Sekhar, and Jiji Kottommannil.

Institute partners with Fond du Lac Tribal and Community College

The ITS Institute was a partner in the Summer Transportation Institute hosted by the Fond du Lac Tribal and Community College. The summer institute ran for four weeks between July 17 and August 18 of 2000.

The National Summer Transportation Institute (NSTI) is funded by the U.S. Federal Highway Administration (FHWA). The NSTI provides career orientation and educational experiences to motivate secondary school students toward college education and professions in the field of transportation by exposing them to a variety of academic experiences.

During the ITS Institute-sponsored tour, the students viewed a presentation describing intelligent transportation systems that put them into the context of day-to-day living experienced by the students. The explanation of research projects currently underway at the Institute helped the students understand the future of transportation and the role technology will play. The students were also given a tour of Mn/DOT’s Traffic Management Center, where they were able to see first-hand how vital technology is to the transportation system.

On August 18, ITS Institute director Max Donath participated in the closing “graduation” ceremonies together with the Fond du Lac Tribal and Community College president Lester “Jack” Briggs in Cloquet, Minn.

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Annual Intelligent Ground Vehicle Competition (IGVC), hosted by Oakland University in Rochester, Mich., June 2–4. It was the first time in many years that a University of Minnesota team competed in the annual event.

The IGVC project, which was funded by the Institute, prepares students for working with “intelligent machines” and helps them understand vehicle guidance technology. “The real benefit of these vehicles is that they let students know the potential of the technology available today,” says student Josh Chambers, a team member responsible for the vehicle’s programming and maintenance.

With two semesters to complete the project, the students faced the task of building a fully autonomous ground vehicle that, during the obstacle course competition, needed to stay within a five-mile-per-hour speed limit, avoid obstacles on the track, and complete the course within ten minutes.

To create the vehicle, students designed and built a manually controllable robot platform and then designed, built, and tested a sensing and control system to direct the robot. The vehicle uses a differential system for maneuverability and sensory devices to gather course data, which are then converted into control signals by the vehicle’s central computer.

Although the vehicle didn’t fare as well at the competition as it did in testing (motion control and algorithm problems prevented it from qualifying), building it was an invaluable learning experience for the students, Chambers says. Although many of the technical skills gained from the experience were useful, what he learned about group dynamics was more valuable because that could not be learned from a textbook. In addition, Chambers says, “I learned that I have to confront problems the first time I see them, and not push them off to the side where they will come back at the worst time possible.”

New program expands research opportunities for UMD students

With the creation this past year of the Northland Advanced Transportation Systems Research Laboratories, University of Minnesota Duluth undergraduate and graduate students will have an important new resource for conducting transportation-related research and a place for developing and testing new traffic information systems. In addition, students from the Fond du Lac Tribal and Community College, Iron Range community colleges, and UMD will work on NATSRL research projects under funding obtained from a National Science Foundation Computer Science, Engineering, and Mathematics Scholarships grant awarded to the UMD Department of Computer Science.
Receiving the Student of the Year Award was gratifying, Sergi says, because “it made me feel that I contributed something worthwhile to the field [of ITS].”

**Students receive TRB, CTS awards**

Michael Sergi received the 2000 Outstanding Student of the Year Award at the Transportation Research Board (TRB) 80th Annual Meeting, held in January in Washington, D.C. For the past nine years the USDOT has honored the most outstanding student from each University Transportation Center at a special ceremony during the TRB meeting.

Sergi, a research assistant at the ITS Institute’s Intelligent Vehicles Laboratory, was recognized for his work on developing the web-based laboratory used as a baseline for the ITS Interdisciplinary Laboratory. The laboratory, used in the mechanical engineering robotics course, required students to write and test their own software to automate the steering and guidance systems of a truck so that it could drive on a test road digitized in a geospatial database.

As the teaching assistant for the class, Sergi wrote the technical material that was used for the project and developed and tested the software that the students used. (The project details are described on the Web at www.me.umn.edu/courses/me5268/project.html.)

According to Professor Max Donath, instructor for the course, the Institute hopes to use the system as a model for training future transportation professionals in the component technologies of ITS.

Receiving the Student of the Year Award was gratifying, Sergi says, because “it made me feel that I contributed something worthwhile to the field [of ITS].” Sergi is pursuing his master’s degree in mechanical engineering at the University of Minnesota.

Seshasai Kanchi is the 2001 recipient of the Matthew J. Huber Award for Excellence in Transportation Research and Education. CTS presents this award annually to graduate students demonstrating an outstanding contribution in research, writing, and educational activities in the field of transportation. The award is named in honor of the late Professor Matthew J. Huber, in recognition of his contribution to the teaching and study of trans-
Kanchi, a graduate research assistant in the Department of Civil Engineering, was nominated by Assistant Professor David Levinson. The awards were presented at the CTS annual meeting and awards ceremony held in April in Minneapolis.

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