MTDE - MULTIDISCIPLINARY ENGR

MTDE 609 Patent Law for Engineers
Credits 3. 3 Lecture Hours.
Exploration of how proprietary interests in technology are protected by patent law, with a focus on issues of patent validity, patent-eligible subject matter and the enforcement of patent rights.

MTDE 630 Fundamentals of Subsea Engineering
Credits 3. 3 Lecture Hours.
Orientation to subsea engineering fundamentals; includes SURF (Subsea, Umbilicals/Controls, Risers, Flowlines) equipment and configurations; exposure to practical, industry focused problems; subsea equipment components; design considerations and design drivers; subsea production operations; integrity critical maintenance activities. Prerequisites: Graduate classification, enrollment in the College of Engineering or approval of instructor.

MTDE 631 Subsea Project Implementation
Credits 3. 3 Lecture Hours.
Overview of the realization of a subsea development project; includes all stages from discovery to pre-commissioning of the subsea infrastructure. Prerequisite: SSEN 630 or concurrent enrollment.

MTDE 650 Leadership for Transportation Professionals
Credits 3. 3 Lecture Hours.
Overview of theories and best practices of leadership at all levels of an organization; five core practices of exemplary leadership - model the way, inspire a shared vision, challenge the process, enable others to act and encourage the heart; adoption of an outward mindset to improve performance, spark collaboration and accelerate innovation. Prerequisite: Approval of instructor.

MTDE 651 Transportation Organizational Management
Credits 3. 3 Lecture Hours.
Current practice and practical tools for leaders and aspirational leaders of transportation organizations; practices and processes for mission critical areas; managing flow of work products and projects; decision making processes; interdisciplinary interaction with planners, property owners, developers and government agencies; project development and execution; organizational performance metrics and transportation system performance. Prerequisite: Approval of instructor.

MTDE 652 Transportation and the Economy
Credits 3. 3 Lecture Hours.
Relationship between transportation modes and local, regional, national and international economic systems; history of the relationship between economic growth and development and the transportation system; role of different modes and intermodal facilities and transportation development; vulnerabilities in transportation and economic systems; trends in financing transportation systems; application of block chain and other technologies to the movement of goods. Prerequisite: Approval of instructor.

MTDE 653 Communication for Transportation Professionals
Credits 3. 3 Lecture Hours.
Exploration of effective communication fundamentals; the concepts of strategic thinking and storytelling; use of verbal, printed and electronic media in communicating transportation information; the set of modern professional behavior for excelling in the workforce among peers and clients. Prerequisite: Approval of instructor.

MTDE 654 Selection and Adoption of New Transportation Technologies
Credits 3. 3 Lecture Hours.
Innovative transportation solutions and societal impacts; connected and automated vehicles; demise of the internal combustion engine and rise of electrification; communications with travelers and vehicles; intelligent roadway infrastructure; smart sensor data fusion with artificial intelligence; cybersecurity and communications spectrum; tools for public agencies building transportation's future. Prerequisite: Approval of instructor.

MTDE 660 Sustainable Transportation and the Environment
Credits 3. 3 Lecture Hours.
Sustainable transportation as the nexus of transportation and the environment; human environment and socioeconomic issues relevant to transportation and the natural environment of ecological issues relevant to transportation; environmental legislation affecting the transportation infrastructure development process; emerging environmental topics such as resilience and public health. Prerequisite: Approval of instructor.

MTDE 661 Transportation Organizational Management
Credits 3. 3 Lecture Hours.
Fundamentals of policy tools in transportation; strategic policy development; transportation governance, laws and regulation; transportation policy in relation to economics, funding, finance and modal usage; linkages between urban development, transportation systems and policy levers; policy issues associated with the relationship between transportation and global drivers of change; role of the transportation leader in strategic policy development. Prerequisite: Approval of instructor.

MTDE 662 Regulatory and Legal Topics in Transportation
Credits 3. 3 Lecture Hours.
Legal and regulatory matters relevant to planning, developing, constructing and maintaining transportation facilities; local, state and federal transportation laws and regulations; legal matters, types of unforeseen questions and dispute resolution options arising in the life cycle of a transportation project; role of counsel and effective interactions with counsel. Prerequisite: Approval of instructor.

MTDE 663 Innovation in Transportation Funding and Finance
Credits 3. 3 Lecture Hours.
Transportation funding and finance at the federal and state levels for all modes of transportation; funding process, financing strategies, innovative funding options and associated risks; role of funding in project planning and prioritization; measuring return on transportation investment; role of various governmental agencies in the funding process; shifting policies and issues that impact funding. Prerequisite: Approval of instructor.
MTDE 669 Transportation Capstone I
Credits 2. 1 Lecture Hour. 2 Lab Hours.
Project selection and development of problem statement; review of literature relevant to problem; proposal to address problem including analysis methodology and data collection plan; mid-project presentation at end of semester; first semester course in two semester capstone project sequence.
Prerequisite: Approval of instructor.

MTDE 670 Transportation Capstone II
Credit 1. 0 Lecture Hours. 2 Lab Hours.
Continuation of project started in first semester; project scoping; data analysis; development of options, recommendations and implementation approaches; formal presentation of final results to stakeholder audience at end of semester; second semester course in two semester capstone project sequence.
Prerequisite: MTDE 669.