

 FLORIDA ATLANTIC UNIVERSITY	NEW/CHANGE PROGRAM REQUEST Graduate Programs		UGPC Approval _____ UFS Approval _____ Banner _____ Catalog _____
	Department Civil, Environmental and Geomatics Engineering (CEGE) College Engineering and Computer Science		
Program Name PhD in Transportation and Env. Eng.		<input type="checkbox"/> New Program* <input type="checkbox"/> Change Program*	Effective Date (TERM & YEAR) Spring 2025
<p>Please explain the requested change(s) and offer rationale below or on an attachment.</p> <ul style="list-style-type: none"> - The Department of CEGE offers over 10 cross-listed courses at the 4000/5000 and 4000/6000 levels. This catalog change will prevent students from taking these courses twice at the undergraduate and graduate levels. - Clarifying English proficiency requirements for admission to the program. - The remedial coursework requirements are clarified. - The structure of the Qualifying and Candidacy Exams is modified. - The core course list is revised. - The structure of the of dissertation supervisory committee is modified for students with two co-advisors. 			
<small>*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.</small>			
Faculty Contact/Email/Phone Dr. Evangelos Kaisar / ekaisar@fau.edu / 561-297-4084		Consult and list departments that may be affected by the change(s) and attach documentation N/A	
Approved by Department Chair <u>Evangelos Kaisar</u> College Curriculum Chair <u>Francisco Presuel-Moreno</u> College Dean <u>Raquel Assis</u> UGPC Chair <u>[Signature]</u> UGC Chair <u>[Signature]</u> Graduate College Dean <u>[Signature]</u> UFS President _____ Provost _____			Date _____ 9/18/2024 9/18/2024 10/02/2024 <u>[Signature]</u> 10/02/2024 _____ _____

Email this form and attachments to UGPC@fau.edu 10 days before the UGPC meeting.

Doctoral Program

Transportation and Environmental Engineering
Doctor of Philosophy (Ph.D.)

(Minimum of 72 credits required)

~~(For this degree program, the GRE admission requirement is waived through and including fall 2023.)~~

The Department of Civil, Environmental and Geomatics Engineering offers a Doctor of Philosophy (Ph.D.) degree focused on urban mobility and environmental/water resources sustainability. This degree provides students with a fundamental and applied research-based education suitable for seeking employment in industry, government or academia.

Admission Requirements

Applicants should have a master's degree in Engineering, Science, Urban Planning, Transportation Logistics or Mathematics from an accredited college or university. A student with outstanding scholastic achievement who holds only a baccalaureate degree in Engineering, Science, Urban Planning, Transportation Logistics or Mathematics from an accredited college or university may be admitted directly to this Ph.D. program and be eligible to earn the *Master's en Passant*. Specific requirements for the B.S. to Ph.D. are found [here](#).

Requirements for students with previous degrees in non-engineering disciplines are found [here](#). Additional eligibility requirements are:

1. A cumulative GPA of 3.00;
2. Completion of at least two semesters of college calculus with grades of "B" or better;
3. Satisfaction of departmental minimum GRE score requirements; and
4. A letter of recommendation from their potential graduate advisor.

The Department of Civil, Environmental and Geomatics Engineering requires the following deficiency coursework for students without an engineering bachelor's degree from an accredited program: two fundamental engineering courses in the relevant area, as determined by the dissertation advisor or department graduate committee.

1. Applicants must have a 3.0 GPA (on a 4.0 scale) or better in the last 60 credits of work attempted coursework and must have an official transcript forwarded directly to the FAU Graduate College from each college-level institution attended;
2. Applicants must submit the Graduate Record Examination (GRE) score. The GRE requirement is waived with proof of passing the Fundamentals of Engineering (FE) or Principles and Practice of Engineering (PE) exam. The GRE requirement is waived for applicants who have a previous degree from FAU's College of Engineering and Computer Science;
3. ~~Applicants must demonstrate proficiency in both written and spoken English. Students from non-English-speaking countries are required to take an English language proficiency test and are expected to achieve a minimum TOEFL score of 550 on PBT (paper-based test), 79 on IBT (internet-based test) or 213 on CBT (computer-based test); 6.0 on IELTS; or 100 on Duolingo. A student from a non-English-speaking country is required to take the Test of English as a Foreign Language (TOEFL) and achieve a score of at least 550~~

~~(paper-based) or 213 (computer-based) or 79 (iBT).~~ This requirement may be waived for students who have obtained a prior degree from a U.S. institution;

4. Applicants must submit to the Graduate College at least two letters of recommendation attesting to the student's ability to pursue with distinction a curriculum of advanced study and research in a chosen area;
5. Applicants must abide by the policies and regulations and the graduate admission requirements of the University as outlined in this University Catalog;
6. Conditional admission may be permitted if the above conditions are not met.

Graduation Requirements

The degree will be conferred on candidates who have fulfilled the following requirements:

1. Completed the curriculum for the Ph.D. in Transportation and Environmental Engineering, which entails:
 - Successful completion of 72 credits of course and dissertation work beyond the baccalaureate degree with a minimum grade of "B" in each course. Up to 30 credits of coursework from an approved master's degree program may be applied. **Cross-listed courses are offered at the 4000/5000 and 4000/6000 levels. Students may not enroll in the 5000/6000 level course if they have completed the corresponding 4000 level course;**
 - Successful completion of any remedial course(s) determined by the departmental graduate program committee and/or the dissertation supervisory committee.
 - Maintain a minimum 3.0 GPA in all coursework attempted for the degree. Failure to maintain a minimum GPA of 3.0 may result in creating an Academic Progression Plan (APP) for the student.

Core Courses - two courses for 6 credits

<u>Advanced Research</u>	<u>CGN 7978</u>	<u>3, and</u>
Sustainability and Pollution Prevention	ENV 6932	3, <u>or</u>
Transportation System Analysis	TTE 6501	3, <u>or</u>
<u>Advanced Structural Analysis</u>	<u>CES 6106</u>	<u>3</u>

Graduate Seminar (CGN 5937) - two semesters

Technical Electives - three courses for 9 credits

Select three courses at the 5000 or 6000 level from the Department of Civil, Environmental and Geomatics Engineering. The courses must be approved by the dissertation advisor.

Other Electives - two courses for 6 credits

Select two courses at the 5000, 6000 or 7000 level from the College of Engineering and Computer Science or other FAU colleges. No more than 3 credits of Directed Independent Study (DIS) ~~or Advanced Research (CGN 7978)~~. The courses must be approved by the dissertation advisor.

Dissertation (CGN 7980) - 21 credits (minimum) for students entering with a master's degree

Up to 3 credits of graduate internship (EGN 5940) may be used to satisfy the 21-credit dissertation minimum requirement, with approval of the dissertation advisor.

Graduate Seminar (CGN 5937) – two semesters

2. Successful completion of a qualifying exam is required ~~upon completion of 15 credits of core and technical elective courses;~~
3. Successful completion of a dissertation proposal defense is ~~typically required within two semesters after passing the qualifying exam;~~
4. Prior to the dissertation defense, the student is required to have published or have accepted for publication a refereed research paper in a field of study deemed acceptable by the dissertation committee. A journal article is preferred, but a peer-reviewed conference paper is also acceptable;
5. Successful completion of an oral defense of the written doctoral dissertation based on original research in the student's area of specialization. The Dissertation/Supervisory Committee, the Department Chair and the Graduate College must have approved the dissertation and oral defense;
6. Complied with the University's Graduate Policies and Regulations and satisfied the University's Graduate Degree Requirements.

Dissertation/Supervisory Committee

Upon acceptance into the Ph.D. Program, a student will select an advisor from the department faculty members to serve as chair of the Dissertation/Supervisory Committee. The student's Ph.D. Dissertation/Supervisory Committee will have a minimum of four members with at least two of them having expertise in the research area. At least two committee members must be from the Department of Civil, Environmental and Geomatics Engineering. One member and/or co-chair of the committee can be from outside the department. Also, the committee may include a member from another institution or industry. For students with two co-advisors, the committee must have a minimum of five members. The Dissertation/Supervisory Committee shall approve the dissertation proposal, monitor academic progress every semester, evaluate the dissertation defense and approve the final doctoral dissertation document.

Qualifying Exam

~~Upon successful completion of core and technical elective courses, the student will be required to complete a qualifying examination. The examination is scheduled after the last day of the final examination period and before the end of the fall semester and the spring semester each year. The examination will be in two parts: One covering the core courses and one covering the technical elective subjects. An overall grade of 70 percent on each part of the written examination is passing. Students who score below 70 percent on certain parts of the written examination are given the option of retaking exams on areas in which they scored less than 70 percent. The student must score at least 70 percent in each subject that is retaken. Normally, two failures will result in the student's dismissal from the Ph.D. program. After passing the Qualifying Exam, the student advances to candidacy.~~

All doctoral students are expected to complete a Qualifying Exam by their fourth semester in the program. The examination will assess the student's content knowledge, critical thinking, and communication skills. Students shall enroll in the Advanced Research (CGN 7978) course in the semester they plan to take the Qualifying Exam. A Qualifying Exam Committee consisting of at least 3 departmental faculty members will determine the structure of the exam (written, oral, or both) and will evaluate the student's performance (pass, fail, or conditional pass). The student is allowed to retake the exam once. Normally, two failures will result in the student's dismissal from the

Ph.D. program. After passing the Qualifying Exam, the student advances to candidacy and will be permitted to enroll in dissertation credits (CGN 7980).

Proposal Defense: Within ~~four~~ **two** semesters after successful completion of the Qualifying Exam, the candidate must orally defend the dissertation proposal to the Dissertation/Supervisory Committee for approval. The student ~~shall~~**should** submit a written proposal report to the Dissertation/Supervisory Committee for review prior to the oral presentation.

Dissertation Defense: The doctoral dissertation shall be written in the format specified by the Graduate College. The dissertation must be defended orally and represent an original piece of research that advances the body of knowledge in the field. A written dissertation is submitted to the members of the committee who may approve, suggest additional work or reject the dissertation work after the defense.

Civil, Environmental and Geomatics Engineering Graduate Courses

Civil Engineering Project Management (CCE 5036) 3 credits

This is a course in which planning, design, document preparation, bidding, big tabulation, construction management, cost estimation, conflict resolution and scheduling for civil engineering projects are covered. [Students may not enroll in this course if they have completed CCE 4031.](#)

Advanced Foundation Engineering (CEG 6105) 3 credits

Rigid and flexible earth retaining structures; shallow and deep foundations; laterally loaded piles; sheet-pile walls, braced excavations, cellular cofferdams, and buried culverts; consolidation settlement, stress distribution, elastic settlement, load bearing capacity; seepage and dewatering of foundation excavations. [Students may not enroll in this course if they have completed CEG 4012.](#)

Soil Stabilization and Geosynthetics (CEG 6124) 3 credits

Soil chemistry, mineralogy, and properties; techniques of soil reinforcement, soil improvement, and soil treatment; chemical stabilization; mechanical stabilization; designing with geosynthetics; foundations and pavement applications. [Students may not enroll in this course if they have completed CEG 4122.](#)

Pavement Analysis and Design (CEG 6129) 3 credits

Stresses and strains in flexible and rigid pavements, materials characterization, pavement performance, mechanistic design principles, AASHTO design method, pavement rehabilitation. [Students may not enroll in this course if they have completed CEG 4126.](#)

Terrestrial Laser Scanning (CEG 6304C) 3 credits

This course gives an introduction to applications of terrestrial laser scanning systems in geosciences, engineering, urban planning, forestry, architecture, emergency planning and forensics. [Students may not enroll in this course if they have completed CCE 4514C.](#)

Structural Health Monitoring (CES 5164) 3 credits

Prerequisite: CES 3102C with minimum grade of "C"

This course explores the theory and applications of structural health monitoring, which is a new technology to diagnose the state of structural conditions based on sensor data and novel data analytics approaches. This course covers various important topics, including sensing technology, signal processing, machine learning and optimization. Students are expected to gain a deep understanding of sensor-embedded structural maintenance systems and to learn how visualize and process sensor data.

Nonlinear Behavior of Structures (CES 5527) 3 credits

This course provides an introduction to the fundamental concepts used to analyze the

nonlinear behavior of structures under static loading conditions. Displacements, member forces and collapse conditions are studied considering equilibrium in the deformed configuration and linear-elastic, perfectly plastic material behavior. Assignments require the development of computer programs written in MATLAB (or Excel) and their solutions verified using nonlinear modeling capabilities of MASTAN2. [Students may not enroll in this course if they have completed CES 4526.](#)

Advanced Building Design (CES 5583) 3 credits

Prerequisite: CES 3102C

This course covers the fundamental concepts to determine the wind and seismic forces used in the design of buildings. Using the provisions of ASCE 7, wind and seismic force magnitudes, distributions and direction are determined for typical buildings. Wind forces are studied for the MWFRS and for components and cladding. Dynamic analysis of SDOF and MDOF building models are studied. Load transfer through the diaphragm to the lateral force resisting system is studied to determine member forces, drift and torsion. [Students may not enroll in this course if they have completed CES 4225.](#)

Advanced Structural Analysis (CES 6106) 3 credits

Review of matrix-force and displacement methods and their applications to civil structures.

Finite Element Methods in Civil Engineering (CES 6119) 3 credits

Variational principles, weighted residual methods, convergence criteria, shape functions for one-, two-, and three-dimensional elements, isoparametric elements, and applications to structural and geotechnical engineering. [Students may not enroll in this course if they have completed EGM 5351.](#)

Bridge Design (CES 6325) 3 credits

Planning, design, and construction of bridges. Discussion of bridge types and factors affecting the selection of type: concrete versus steel, prestressed, composite, segmental concrete bridges; design issues and techniques; detailed case study of a particular bridge; recent technological developments in bridge engineering.

Structural Dynamics (CES 6585) 3 credits

Response of lumped parameter systems to dynamic loading: formulation and solution of problems of one or more degrees of freedom for discrete systems, modal analysis, numerical integration, and transform techniques. Response of continuous systems. Introduction to earthquake engineering: response spectra, energy absorption capacity of structures, estimation of damping, seismic design, seismic codes, and soil-structure

interaction. Wind effects on structures and hurricane-resistant design. Blast-resistant design. Approximate design methods.

Advanced Steel Structures (CES 6607) 3 credits

Review of basic steel design; beam columns; interaction formulas; first-order and second-order moments; eccentric bolted and welded connections; moment resisting connections; composite construction; effective flange width; shear connectors; composite beams with formed steel deck; plate girder proportions; AISC requirements; flexure-shear interaction.

Advanced Reinforced Concrete (CES 6706) 3 credits

Analysis and design of two-way slabs, floor systems, deep beams, shear walls and footings. Limit state, yield line and deflection analysis. Continuity, tall buildings, seismic, and hurricane-resistant design. Torsion.

Prestressed Concrete (CES 6715) 3 credits

Behavior, analysis and design of pretensioned and post-tensioned concrete structures. Flexural, shear, bond and anchorage zone design. Partial prestressing strength, serviceability and structural efficiency of beams, slabs, tension and compression members. Frameworks and bridges.

Design and Analysis for Engineering Data (CGN 5716) 3 credits

Prerequisites: Basic course in statistics or permission of instructor

Course covers development of hypothesis and thesis-driven data analysis via applications of the basic principles of experimental design to analysis of engineering data, computational algorithms for sample size optimization, analysis of variance for experiments with a single factor, multi-variate analysis.

Special Topics in Civil Engineering (CGN 5935) 3 credits

Prerequisite: Permission of instructor

Study relating to specialized topics associated with civil engineering.

Graduate Seminar (CGN 5937) 0 credit

Prerequisite: Graduate standing

The objective is to encourage and enhance graduate student participation in technical seminars or presentations deemed appropriate by the department for graduate students. This course requires participation of graduate students in a minimum of five technical seminars or presentations in one semester. *Grading: S/U*

Infrastructure Maintenance and Management (CGN 6616) 3 credits

The course involves evaluating infrastructure systems (water, sewer, stormwater, roads, bridges, rail, power) to identify concepts on repair, replacement and maintenance, including dollars to spend on same.

Directed Independent Study (CGN 6905) 1-3 credits

Prerequisite: Permission of instructor

Study of topics in civil engineering relating to the special needs and interests of individual students.

Special Topics (CGN 6930) 1-3 credits

Prerequisite: Permission of instructor

Topics in civil engineering.

Master's Thesis (CGN 6971) 1-10 credits**Advanced Research (CGN 7978) 1-9 credits**

Prerequisite: ~~Permisson~~ Permission of department

~~Course~~ The course covers research that is relevant to the student's course of study in the Ph.D. program. This course requires oversight by the student's advisor who can assess the student's performance at the end of the semester. This course can be taken prior to admission to candidacy for the doctoral degree and may be repeated in multiple semesters. *Grading: S/U*

Dissertation - Transportation and Environmental Engineering (CGN 7980) 1-15 credits

Prerequisite: Permission of department

Grading: S/U

Stormwater Modeling and Management (CWR 5308) 3 credits

The course presents a comprehensive view of stormwater modeling and management with an emphasis on current modeling techniques and design practices. The course provides an in-depth review of fundamentals of hydrology along with spatial analysis tools required for effective stormwater modeling and management. Students may not enroll in this course if they have completed CWR 4307.

Groundwater Flow (CWR 6125) 3 credits

Infiltration; Capillarity; Groundwater and Aquifers; Anisotropy; Groundwater motion; Darcy's law, Dupuit-Forcheimer's law; Potential flow; Flow nets; Conformal mapping; Unsaturated flow; Diffusion and dispersion; Well hydraulics, Theis equation; Drainage; Salt water intrusion; Legal doctrines; Economics of groundwater.

Open-Channel Hydraulics (CWR 6235) 3 credits

Review of basic hydraulics: Continuity, momentum and energy balance; Uniform and steady flow; Non-uniform flow; Critical flow; Gradually-varied flow; Surface profiles; Chezy's and Manning's formulas; Laminar and turbulent flow; Velocity distribution; Unsteady flow; Rapidly varying flow; Flood routing; Design of open-channels.

Dynamic Hydrology (CWR 6525) 3 credits

Dynamics and statistics of principal hydrometeorological processes; Hydrologic cycle; Precipitation, Infiltration; Evapotranspiration; Surface runoff; Percolation; Groundwater motion; Storm water management; Hydrologic modeling; Water budget; Hydrologic time series, Stochastic analysis; ARARMA models.

Water Resource System Engineering (CWR 6818) 3 credits

Nature of water resource systems; Systems analysis, Objective functions; Optimal policy analysis; Linear programming; Dynamic programming; Political and economic objectives; Water resource subsystems; Deterministic and stochastic parameters; Large-scale, multi-objective projects; Water allocation; Supply and demand; Hierarchical modeling of water resource systems.

Modeling Methods in Water Resources and Environmental Engineering (EES 6025) 3 credits

Classification of PDEs; fundamentals of numerical analysis; numerical stability, consistency, and convergence; method of characteristics; variational principles; finite differences; finite elements; integral-boundary element method; applications to water resource and environmental engineering problems.

Energy Engineering (EGN 5735) 3 credits

This course provides an overview of renewable energy technology and outlines the basic principles of solar electricity, solar water heating, wind power, marine renewable energy, micro-hydro, biomass and heat pumps and their application in urban and rural environments. In addition, the fundamentals of conventional power generation (fossil fuel nuclear, etc.) are discussed.

Water and Wastewater Treatment (ENV 5510) 3 credits

Prerequisites: CWR 3201C or equivalent, ENV 3001C or equivalent, and permission of instructor

This course introduces students to the principles and design of physical, chemical and biological treatment systems for potable and wastewater applications. [Students may not enroll in this course if they have completed ENV 4514.](#)

Hydraulic Systems Engineering (ENV 5565C) 3 credits

This class ~~is~~ outlines the concepts behind the design of piping and pumping stations. The class includes a review of hydraulics and piping networks, pipe materials, pump selection, multiple pump systems, sewer pumping networks and pump station design and appurtenances.

Special Topics in Environmental Engineering (ENV 5935) 3 credits

Prerequisite: Permission of instructor

Study relating to specialized topics associated with environmental engineering.

Air Pollution and Control (ENV 6115) 3 credits

Review of air quality and air pollution problems. Sources, characteristics, and effects of specific air pollutants; Lower atmospheric motion dynamics; Dispersion and interaction of pollutants in the atmosphere; Smog effects; Air quality standards and regulations; Air pollution control methods; Acid rain. Students may not enroll in this course if they have completed ENV 4112.

Solid Waste Management (ENV 6356) 3 credits

Quantities and composition of refuse; Municipal and industrial solid waste disposal methods; Sanitary landfills; Incineration; Grinding and composting of refuse; Energy recovery from solid wastes; Hazardous waste; Optimization techniques to solid waste operation and management. Students may not enroll in this course if they have completed ENV 4341.

Water Supply and Treatment (ENV 6418) 3 credits

Bacteriological, chemical, and physical water quality standards; distribution systems; water treatment theory and design; aeration; coagulation and flocculation; sedimentation; filtration; disinfection; softening; membranes.

Contamination of Aquatic Sediment (ENV 6441) 3 credits

Prerequisites: ENV 3001C

Topics include: cohesive sediments, settling, re-suspension, aggregation, flocculation, pollutant adsorption/desorption; partitioning of chemicals, sediment toxicity assessment, bioassays/bioassessments, aquatic sediment sampling.

Wastewater Engineering (ENV 6507) 3 credits

Wastewater characterization, collection, and pumping. Physical unit operations and biological treatment unit process design including screening, sedimentation, filtration, activated sludge, disinfection, sludge digestion, and sludge disposal.

Environmental Systems and Processes (ENV 6668) 3 credits

Physical, chemical, and biological processes, reactor theory, particle transport, mass transfer, mixing, advection, dispersion, diffusion, sorption, phase transfer. Students may not enroll in this course if they have completed ENV 4053.

Sustainability and Pollution Prevention (ENV 6932) 3 credits

This course introduces students to the principles of engineering sustainability, life cycle cost analysis, pollution prevention and environmental resource management of

infrastructure planning and design. [Students may not enroll in this course if they have completed ENV 4072.](#)

Offshore Structures (EOC 6431) 3 credits

[\(See Ocean and Mechanical Engineering courses, this section\)](#)

Special Topics in Geomatics Engineering (SUR 5935) 3 credits

Prerequisite: Permission of instructor

Study relating to specialized topics associated with geomatics engineering.

Digital Photogrammetry and Image Interpretation (SUR 6335C) 3 credits

This course provides students with an advanced understanding of digital photogrammetric principles and their applications. This includes the techniques for calibration of digital cameras, extraction of point and linear features and 3D reconstruction of visible surfaces. The course also enables students to independently implement the digital photogrammetric concepts throughout projects, such as calibration of mobile phone camera and 3D surface reconstruction from stereoscopic images. [Students may not enroll in this course if they have completed SUR 4331C.](#)

Thermal Infrared Remote Sensing (SUR 6387C) 3 credits

Prerequisite: GIS 4035C with minimum grade of "C" or permission of instructor

Temperature is one of the most important physical variables. Temperature information with an appropriate spatial and temporal coverage is a key to addressing most of the environmental challenges on both local and regional scales. Measuring temperature remotely by thermal infrared is a new technology, which has found a wide area of applications. In this course, students learn the basic theory of sensors and data processing and analysis. They also investigate new applications of thermal infrared remote sensing on civil infrastructure and environmental systems monitoring. [Students may not enroll in this course if they have completed SUR 4384.](#)

Advanced Unmanned Aerial System Mapping (SUR 6402) 3 credits

Covers the fundamental components of small unmanned aerial systems (sUAS) and how they are used to produce high resolution, spatially accurate, planimetric maps and 3-D models of the terrain. [Students may not enroll in this course if they have completed SUR 4503C.](#)

Traffic Signal Systems (TTE 6259) 3 credits

This course teaches students about advanced concepts of traffic signal systems that are currently used in the U.S. Students design, evaluate and optimize various components of

traffic signal operations both for individual intersections and coordinated traffic signal systems.

Intelligent Transportation Systems (TTE 6272) 3 credits

Provides instruction on topics related to intelligent transportation systems, including theoretical fundamentals of systems engineering, traffic flow theory, architecture of telecommunications networks, freeway and arterial management and other topics related to ITS.

Transportation System Analysis (TTE 6501) 3 credits

Concepts of operations research using various models to optimize holistic operations of transportation systems from the perspectives of sustainability, resilience, environmental impacts and robustness are discussed. Programming model development and optimizations based on mathematical interpretations of descriptive problems are also covered.

Highway Traffic Characteristics and Measurements (TTE 6505) 3 credits

This course instructs students on the concept of advanced traffic operations including the characteristics of functional relationships between traffic modeling and travel demand forecasting. Students evaluate transportation scenarios and design solutions to improve traffic operations.

Transportation and Supply Chain Systems (TTE 6507) 3 credits

A study of engineering decision problems for transportation and supply chain systems, relying primarily on the quantitative methods of operations research. Topics include an introduction to the components of logistics systems, such as suppliers, customers, inventory, orders and freight transportation systems and the interactions between these components; a thorough coverage of models and solution techniques for the design and control of logistics systems, primarily network and network-based optimization models; and study in the application of such models and solution techniques.

Maritime Freight Operations (TTE 6508) 3 credits

Addresses important transportation modeling techniques for maritime freight transport. Mathematical models are used to represent transportation problems, and commercial computer software packages are used to evaluate and investigate modern freight transportation systems.

Sustainable Public Transportation (TTE 6651) 3 credits

Designed to outline the principles of transit systems in the urban transportation arena, functional relationships that govern bus and rail transit, and issues associated with

unbalanced flow and lane control, transportation system management and railroad economics and policies.

Highway Engineering (TTE 6815) 3 credits

Route selection including environmental impacts, vertical and horizontal alignment, intersection design, evaluation of subgraded soil strengths, and pavement design, drainage, and overlay design. Students may not enroll in this course if they have completed TTE 4810.

Masoud Jahandar Lashaki

From: Masoud Jahandar Lashaki
Sent: Monday, September 23, 2024 3:22 PM
To: Yalan Liu
Subject: RE: Catalog Changes

Sounds good, thank you!

Masoud

From: Yalan Liu <yalanliu@fau.edu>
Sent: Monday, September 23, 2024 3:21 PM
To: Masoud Jahandar Lashaki <mjahandarlashaki@fau.edu>
Cc: Fred Bloetscher <fbloetsc@fau.edu>; Hongbo Su <suh@fau.edu>
Subject: Re: Catalog Changes

Good afternoon Masoud,

We discussed this matter in today's college UPC meeting and it was approved by the committee. Please let me know if this approval is sufficient for us to proceed, or if there are any other steps we need to take.

Best,
Yalan

~*****~

Yalan Liu, PhD
Assistant Professor
Civil, Environmental and Geomatics Engineering
College of Engineering and Computer Science
Florida Atlantic University

From: Masoud Jahandar Lashaki <mjahandarlashaki@fau.edu>
Sent: Friday, September 13, 2024 4:43 PM
To: Yalan Liu <yalanliu@fau.edu>
Cc: Fred Bloetscher <fbloetsc@fau.edu>; Hongbo Su <suh@fau.edu>
Subject: Catalog Changes

Hi Yalan,

The attached documents show the catalog changes we approved today at our faculty meeting. Could you please take them to the College UPC for review and approval?

Thank you for your time and consideration.

Best regards,

Masoud

Masoud Jahandar Lashaki, Ph.D.

Assistant Professor and Graduate Program Director

Department of Civil, Environmental and Geomatics Engineering (CEGE)

Florida Atlantic University

Main Office: 101 N Beach Road, SeaTech Campus, Room 202; Dania Beach, FL 33004

Second Office: 777 Glades Road, Building 36 (EG), Room 216; Boca Raton, FL 33431

Masoud Jahandar Lashaki

From: Masoud Jahandar Lashaki
Sent: Thursday, September 19, 2024 12:21 PM
To: Eric Dumbaugh
Cc: Diana Mitsova; Evangelos Kaisar
Subject: RE: Review Request for Catalog Changes

Thank you!

I will share the course information with our graduate students.

Masoud

From: Eric Dumbaugh <edumbaugh@fau.edu>
Sent: Wednesday, September 18, 2024 3:43 PM
To: Masoud Jahandar Lashaki <mjahandarlashaki@fau.edu>
Cc: Diana Mitsova <dmitsova@fau.edu>; Evangelos Kaisar <ekaisar@fau.edu>
Subject: RE: Review Request for Catalog Changes

Hello Masoud,

This looks fine to me, though I will defer to my department chair.

Also: I wanted to let you know that we offer Intro to Transportation Planning in the Spring, which would be a great course for your grad students. It covers the transportation planning and design process pretty thoroughly. If you've got transport students, I'm certain they'd find it worthwhile.

Best,

Eric

From: Masoud Jahandar Lashaki <mjahandarlashaki@fau.edu>
Sent: Wednesday, September 18, 2024 2:46 PM
To: Eric Dumbaugh <edumbaugh@fau.edu>
Cc: Diana Mitsova <dmitsova@fau.edu>; Evangelos Kaisar <ekaisar@fau.edu>
Subject: Review Request for Catalog Changes

Good afternoon Dr. Dumbaugh,

I hope all is well.

I am writing on behalf of the Department of Civil, Environmental and Geomatics Engineering. Our department would like to make some catalog changes for our PhD program in Transportation and Environmental Engineering. The changes have been approved by our College GPC. Could you please kindly review the attached documents and advise whether your department has any objections to these changes? Once received, I will attach your remarks to our Program Change Form. I would be grateful if you provide your input by **Monday, September 23rd, at 5 PM**. Please let me know if you need any additional information in this regard. Thank you for your time and consideration.

Best regards,
Masoud

Masoud Jahandar Lashaki, Ph.D.
Assistant Professor and Graduate Program Director
Department of Civil, Environmental and Geomatics Engineering (CEGE)
Florida Atlantic University
Main Office: 101 N Beach Road, SeaTech Campus, Room 202; Dania Beach, FL 33004
Second Office: 777 Glades Road, Building 36 (EG), Room 216; Boca Raton, FL 33431