FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL

UUPC APPROVAL _____
SCNS SUBMITTAL _____
CONFIRMED _____
BANNER POSTED _____
CATALOG POSTED _____
WEB POSTED _____

DEPARTMENT NAME :CIVIL, ENVIRONMENTAL AND GEOMATICS ENGINEERING | **COLLEGE OF: ENGINEERING AND COMPUTER SCIENCE**

RECOMMENDED COURSE IDENTIFICATION:

PREFIX __TTE_____ **COURSE NUMBER** ____5306_____ **LAB CODE** (L or C) __C___

COMPLETE COURSE TITLE: QUANTITATIVE METHODS IN TRANSPORTATION ENGINEERING

EFFECTIVE DATE (first term course will be offered): **FALL 2011**

INSTRUCTIONAL METHOD (V, BB, IC, EC, ETC.): BB

CREDITS: 3	**LAB/DISCUSSION: N/A**	**TEXTBOOK INFORMATION:** by Paul A. Jensen and Jonathan F Bard. Operation Research: Models and Methods
LECTURE: 3	**FIELD WORK: N/A**	**ISBN:** 0471380040

GRADING: REGULAR □□ **__X____** **PASS/FAIL** □**_____** **SATISFACTORY/UNSATISFACTORY _____**

COURSE DESCRIPTION, NO MORE THAN 3 LINES: This course covers operations research techniques for modeling transportation system performance and design of transportation service. Topics include queuing systems, graph theory, network analysis, traffic assignment, and others. Students will utilize skills in linear programming and multi-objective analysis.

PREREQUISITES:	**COREQUISITES:**	**OTHER REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL):**
TTE 4005 OR INSTRUCTOR PERMISSION REQ'D O *Check box to enforce**	**NONE** O *Check box to enforce**	O *Check box to enforce**

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PHD IN CIVIL ENGINEERING WITH CONCENTRATION IN TRANSPORTATION

Other departments, colleges that might be affected by the new course must be consulted. List entities that have been consulted and attach written comments from each. None

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_____
Faculty Contact, Email, Complete Phone Number

SIGNATURES

Approved by:	***Date:***
Department Chair: _____	_____
College Curriculum Chair: _____	_____
College Dean: _____	_____
UGPC Chair: _____	_____
Dean, Graduate Studies _____	_____

SUPPORTING MATERIALS

Syllabus—must include course objectives.

Written Consent—required from all departments affected.

Go to: *http://graduate.fau.edu/gpc/* to download this form

* "Enforce" prerequisites or other registration controls adds these restrictions to the course schedule; students whose academic careers do not show these prerequisites or other details will not be able to register. When box is not checked, restrictions show in catalog description only.

Email this form and syllabus to Graduate Studies one week ***before*** the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website by committee members prior to the meeting.

Florida Atlantic University

College of Engineering and Computer Science

Department of Civil, Environmental and Geomatics Engineering

Course Syllabus

Course name: Quantitative Methods in Transportation Engineering

Course number: TTE 5306 (3 cr.)

Prerequisites: Transportation Planning & Logistics (TTE 4005), or permission of instructor
Co-requisites: None

Instructor: Dr. Aleksandar Stevanovic, Assistant Professor
Building 36-225
561-297-3743
astevano@fau.edu
M – F 1:00 – 3:00 pm or by appointment
Blackboard@fau.edu

Course Logistics: Fall 2011

TA Contact:
Information:
TA: TBD
Office Hours: TBD
Phone: TBD
E-mail: TBD

Catalog Description: This course is an introductory course in modeling and systems analysis. It will discuss the use of operations research techniques for modeling system performance and design of transportation service. Topics include spatially distributed queuing systems; bulk queues; application of graph theory and network analysis to transportation problems; formulation of network equilibrium assignment problems and solution algorithms, with emphasis on alternative assumptions on user behavioral process; introduction to dynamic assignment**.**

Course Description, Objectives and Student Learning Outcomes:

The objective of this course is to provide the students with basic and applied knowledge of transportation system management, transit, and public transportation. Specifically, the students completing this course will be able to: a) Conceptualize, and solve transportation system problems, b)Apply operation research techniques for modeling system performance and design of transportation services, c0 Understand queuing theory, d) Understand and apply emergency response systems in the transportation arena via class room discussion problem sets and semester long project.

The course outcomes are**:**

- Understand the principles of the operation research applied to transportation engineering.
- Understand queuing theory.
- Understand multi-objective analysis tools.
- Understand and apply transportation simulation techniques.
- Experience working with their peers in project teams to deal with semi-real world scale projects**.**

Course Evaluation Method:

An overall course average will be computed for each student. The course average will combine scores from weekly homework assignments, six quizzes, one semester test, final exam and class project. Dates of semester tests will be announced on the first day of lecture. The weights assigned to each component of the final course average are given below.

Grading scheme: Grades will be based on a final course percentage. The final course percentage will be computed as follows:

Homework assignments	15%
Quizzes	5%
Class project(s)	40%
Semester exam(s)	20%
Final exam	20%

Assignments and projects may be submitted online. Online students are expected to take exams with the lecture section; distance learning students must arrange testing through the DEDECS office. Late assignments and projects will be accepted with penalty only until solutions have been posted. It is the student's responsibility to arrange for alternative testing dates. Late makeup exams will be administered only in documented cases of emergency.

Grading criteria: Final grades will be assigned using a grading scale no stricter than 90–100%: A, 85–90%: A-, 82–84%: B+, 78–81%: B, 75–77%: B-, 72–74%: C+, 68–71%: C, 65–67%: C-, 52–64%: D+, 48–51%: D, 45–47%: D-.

Incomplete grades: A grade of incomplete will be given only under documented, exceptional circumstances, and will be completed in the semester following its issuance.

Classroom etiquette: As this class is being recorded, it is important that students refrain from disruptive or distracting behavior. Also, it is a strict DEDECS policy that no food or drinks are allowed in the studio, and cell phones must be turned off.

Students with disabilities:

The Americans with Disabilities Act (ADA) guidelines will be followed. Any student with a documented disability which may require special accommodations should self-identify to the instructor as early as possible in order to receive effective and timely accommodations.

Academic integrity: The Academic Integrity policy of the Department of Civil, Environmental and Geomatics Engineering will be enforced; refer to the Department web-site for further details: www.cege.fau.edu.

Required text: Winston, W., L., "Operations Research: Application and Algorithms", Duxbury Press, 2006.

Supplementary texts: Ortizar J., D., Willumsen L., G., "Modeling Transport", John Wiley & Sons, ISBN: 0471861103, 2005.

Ahuja, R.K., T.L. Magnati, and J.B. Orlin, "Network Flows and Theory, Algorithms, and Applications," Prentice Hall, Inc. 1993.

Law, A.M., and W.D. Kelton, "Simulation Modeling & Analysis," McGraw-Hill Inc.1991

Selected reports and articles, primarily for Transportation Research and Transportation Science.

Topics covered:

1. Queuing Theory: 2 lectures
2. Network Models: 2 lectures
3. Simulation: 2 lectures
4. Shortest Path Algorithms: 2 lectures
5. Network Equilibrium and Assignment Problems: 2 lectures
6. Dynamic traffic Assignment: 2 lectures
7. Planning and Operations: 2 lectures
8. Transportation and Supply Chain Management: 1 lectures

Computer usage: Extensive use will be made of CAD software, including MATLAB with the RF Toolbox, micro-meso simulation platforms (AIMSUN/VISSIM), Express, CPLEX/OPL, and AMPL. Some are available in downloadable student versions; all are available online and on the networked PC's in the CEGE's PC lab and transportation laboratory.