

MAV 07

Deadlines

October 3, 2003 to be implemented Fall:2004 ~ February 13, 2004 to be implemented Spring 2005

PROPOSAL TITLE: Revisions to Graduate Course Prerequisites and Catalog Descriptions in Civil and Environmental Engineering

Sponsor(s): Ralph Dusseau E-Mail: dusseau@rowan.edu Ext: 5321
Douglas Cleary E-Mail: Cleary@rowan.edu Ext. 5325
E-Mail: _____ Ext. _____
E-Mail: _____ Ext. _____

DEPARTMENT: Civil and Environmental Engineering

COLLEGE: Engineering

If Liberal Arts & Sciences CHECK : History/Humanities Math/Sciences Social/Behavioral Sciences
 UNDERGRADUATE GRADUATE

THE ATTACHED **NON-GEN-ED** PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED.

- New non-gen-ed course
- Short-term non-gen-ed course
- Minor curricular changes (fewer than three)
- Existing non-gen-ed course
- Non-gen-ed degree requirements
- Major
- Minor, specialization, concentration, track, certificate program

The following signatures REPRESENT APPROVAL

Department Chair: [Signature] Date: 2/11/04
Department Curriculum Chair: [Signature] Date: 02/10/04
Academic Dean: [Signature] Date: 2/11/04

COLLEGE CURRICULUM COMMITTEE

OPEN HEARING Date: 3/4/04 Approved Not Approved

COLLEGE CURRICULUM CHAIR: [Signature]
Senate Curriculum Chair Signature: [Signature] Date: Senate Announcement _____
Comments: _____

EXECUTIVE VICE PRESIDENT/PROVOST Signature: [Signature] Date: 6/16/04
 Approved Not Approved

REGISTRAR
Date: 6/28/04 Course Description Received & Approved ~ Hegis Taxonomy & Course #: _____
Registrar Signature: [Signature]

NOTIFICATION FORWARD

- SCC Chair
- Academic Dean
- Department Chair
- Registrar
- IR
- CAP
- VP Student Affairs
- Others

Trans 7-12-04
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1. Details

- a. Revisions to Graduate Course Prerequisites and Catalog Descriptions in Civil and Environmental Engineering
- b. Sponsors: Ralph Dusseau and Douglas Cleary
- c. Credit Hours: N/A
- d. Course Level: Graduate
- e. Changes Requested

Change from:	Change to:
<p>0908.512 - Advanced Environmental Treatment Process Principles ... 3 s.h. <i>(Prerequisite: Graduate standing or permission of instructor ,)</i> (Offered every other fall semester.) Topics in Fundamentals of Physicochemical Processes in Environmental Engineering such as Adsorption, Coagulation/Flocculation, Filtration, Sedimentation, Disinfection, Ion Exchange, Chemical Oxidation, Corrosion and Membranes.</p>	<p>0908.512 - Advanced Environmental Treatment Process Principles ... 3 s.h. <i>(Prerequisite: Graduate standing or permission of instructor)</i> Topics in Fundamentals of Physicochemical Processes in Environmental Engineering such as Adsorption, Coagulation/Flocculation, Filtration, Sedimentation, Disinfection, Ion Exchange, Chemical Oxidation, Corrosion and Membranes.</p>
<p>0908.522 - Site Remediation Engineering ... 3 s.h. <i>(Prerequisite: Graduate standing or permission of instructor ,)</i> (Offered fall semesters in odd-numbered years.) Topics in site remediation engineering, including site characterization, site safety, modeling site conditions, conducting feasibility studies, and designing remediation systems, such as pump and treat, stabilization, containment, treatment walls, natural attenuation, enhanced bioremediation, phytoremediation, oxidation, soil flushing, and soil vapor extraction.</p>	<p>0908.522 - Site Remediation Engineering ... 3 s.h. <i>(Prerequisite: Graduate standing or permission of instructor)</i> Topics in site remediation engineering, including site characterization, site safety, modeling site conditions, conducting feasibility studies, and designing remediation systems, such as pump and treat, stabilization, containment, treatment walls, natural attenuation, enhanced bioremediation, phytoremediation, oxidation, soil flushing, and soil vapor extraction.</p>
<p>0908.532 - Pollutant Fate and Transport ... 3 s.h. <i>(Prerequisite: Graduate standing or permission of instructor ,)</i> (Offered every other fall semester.) Topics include Characteristics and Properties of Organic Pollutants, Aquatic Chemistry, Transport Mechanisms for Pollutants (Adsorption, Retardation, Attenuation, Volatilization, Biodegradation), Groundwater (Properties, Flow Equations, Transport in Porous Media) and Mathematical Modeling.</p>	<p>0908.532 - Pollutant Fate and Transport ... 3 s.h. <i>(Prerequisite: Graduate standing or permission of instructor)</i> Topics include Characteristics and Properties of Organic Pollutants, Aquatic Chemistry, Transport Mechanisms for Pollutants (Adsorption, Retardation, Attenuation, Volatilization, Biodegradation), Groundwater (Properties, Flow Equations, Transport in Porous Media) and Mathematical Modeling.</p>
<p>0908.533 - Integrated Solid Waste Management ... 3 s.h. <i>(Prerequisite: Permission of instructor ,)</i> The course deals with the theories and principles of integrated solid waste management as applied to real-world analysis and design problems. The course covers the design of facilities and programs, such as landfills, composting facilities, transfer stations, collection programs, and drop-off centers, and planning of integrated systems for municipalities and counties. Computer applications are included.</p>	<p>0908.533 - Integrated Solid Waste Management ... 3 s.h. <i>(Prerequisite: Permission of instructor)</i> The course deals with the theories and principles of integrated solid waste management as applied to real-world analysis and design problems. The course covers the design of facilities and programs, such as landfills, composting facilities, transfer stations, collection programs, and drop-off centers, and planning of integrated systems for municipalities and counties. Computer applications are included.</p>
<p>0908.543 - Advanced Water Resources</p>	<p>0908.543 - Advanced Water Resources</p>

<p>Engineering ... 3 s.h. <i>(Prerequisite: Water Resources Engineering or equivalent ,)</i> The fundamental theme of the course is the study of advanced topics in water resources engineering including the analysis and design of advanced hydraulic structures, hydraulic similitude and modeling, wave action, and advanced hydrology. The course includes appropriate laboratory experiments and computer applications.</p>	<p>Engineering ... 3 s.h. <i>(Prerequisite: 0908.342 Water Resources Engineering or equivalent)</i> The course covers advanced topics in water resources engineering including the analysis and design of advanced hydraulic structures, hydraulic similitude and modeling, wave action, and advanced hydrology.</p>
<p>0908.544 - Hydraulic Design ... 3 s.h. <i>(Prerequisite: 0908.342 , or permission of instructor ,)</i> (Offered even-numbered years.) The fundamental theme of the course is the design and analysis of structures for controlling and conveying water in both the built and natural environment. Topics covered vary from year to year based upon instructor and student interests. Past topics have included open channel flow design, dams and spillways, sanitary and storm sewers, culverts, pumping stations, turbomachinery, and hydraulic similitude and modeling.</p>	<p>0908.544 - Hydraulic Design ... 3 s.h. <i>(Prerequisite: 0908.342 Water Resources Engineering or permission of instructor)</i> The course focuses on the design and analysis of structures for controlling and conveying water in both the built and natural environment. Topics covered vary from year to year based upon instructor and student interests. Past topics have included open channel flow design, dams and spillways, sanitary and storm sewers, culverts, pumping stations, turbomachinery, and hydraulic similitude and modeling.</p>
<p>0908.545 - Environmental Fluid Mechanics ... 3 s.h. <i>(Prerequisite: (0908.342 , or permission of instructor ,)</i> (Offered even-numbered years.) The fundamental theme of the course is the engineering study of fluid flow in the environment. Advanced topics in water resources engineering are explored, with content varying based upon instructor and student interests. Past topics have included open channel flow, hydrology, fish passage at hydraulic structures, sediment transport, mixing in natural water bodies, and water quality modeling. The course includes appropriate laboratory and/or field experiments and computer applications.</p>	<p>0908.545 - Environmental Fluid Mechanics ... 3 s.h. <i>(Prerequisite: 0908.342 Water Resources Engineering or permission of instructor)</i> The course focuses on the engineering study of fluid flow in the environment. Advanced topics in water resources engineering are explored, with content varying based upon instructor and student interests. Past topics have included open channel flow, hydrology, fish passage at hydraulic structures, sediment transport, mixing in natural water bodies, and water quality modeling.</p>
<p>0908.552 - Foundation Engineering ... 3 s.h. <i>(Prerequisite: Geotechnical Engineering or equivalent ,)</i> The fundamental theme of the course is the analysis and design of structural building and bridge foundations based on advanced principles of soil mechanics. These advanced principles of soil mechanics include compressibility, shear strength, and bearing capacity. The types of foundations analyzed and designed include spread footings and pile foundations. The course includes appropriate laboratory experiments and computer applications.</p>	<p>0908.552 - Foundation Engineering ... 3 s.h. <i>(Prerequisite: 0908.351 Geotechnical Engineering or equivalent)</i> The fundamental theme of the course is the analysis and design of structural building and bridge foundations based on advanced principles of soil mechanics. These advanced principles of soil mechanics include compressibility, shear strength, and bearing capacity. The types of foundations analyzed and designed include spread footings and pile foundations. The course includes appropriate computer applications.</p>
<p>0908.553 - Earth Retaining Systems ... 3 s.h. <i>(Prerequisite: Geotechnical Engineering or equivalent ,)</i> The fundamental theme of the course is earth retaining systems including advanced principles of soil mechanics and analysis and design of earth</p>	<p>0908.553 - Earth Retaining Systems ... 3 s.h. <i>(Prerequisite: 0908.351 Geotechnical Engineering or equivalent)</i> The fundamental theme of the course is earth retaining systems including advanced principles of soil mechanics and analysis and design of earth</p>

<p>retaining systems. The advanced principles of soil mechanics include lateral soil pressure and slope stability. The analysis and design of earth retaining systems includes slopes, embankments, retaining walls and other systems. The course includes appropriate laboratory experiments and computer applications.</p>	<p>retaining systems. The advanced principles of soil mechanics include lateral soil pressure and slope stability. The analysis and design of earth retaining systems includes slopes, embankments, retaining walls and other systems. The course includes appropriate laboratory experiments and computer applications.</p>
<p>0908.562 - Advanced Transportation Engineering ... 3 s.h. <i>(Prerequisite: Transportation Engineering or equivalent ,)</i> The fundamental theme of the course is the study of advanced topics in transportation engineering including advanced highway engineering and advanced mass transit systems. These advanced topics include the impact and interaction of sociological, economic, geographic and environmental factors on transportation systems. The course includes appropriate field measurements and computer applications.</p>	<p>0908.562 - Advanced Transportation Engineering ... 3 s.h. <i>(Prerequisite: 0908.461 Transportation Engineering or equivalent)</i> The fundamental theme of the course is the study of advanced topics in transportation engineering including advanced highway engineering and advanced mass transit systems. These advanced topics include the impact and interaction of sociological, economic, geographic and environmental factors on transportation systems. The course includes appropriate field measurements and computer applications.</p>
<p>0908.563 - Advanced Pavement Analysis and Evaluation ... 3 s.h. <i>(Prerequisite: 0908.461 , or permission of instructor ,)</i> (Offered odd-numbered years.) The fundamental theme of the course is the engineering study of pavement response. The topics covered include non-linear behavior of pavement materials and interaction between tires and pavements. Modeling and analysis of pavement behavior will also be taught, with content varying based upon instructor and student interests. The course includes field experiments and computer applications.</p>	<p>0908.563 - Advanced Pavement Analysis and Evaluation ... 3 s.h. <i>(Prerequisite: 0908.461 Transportation Engineering, or permission of instructor)</i> The fundamental theme of the course is the engineering study of pavement response. The topics covered include non-linear behavior of pavement materials and interaction between tires and pavements. Modeling and analysis of pavement behavior will also be taught, with content varying based upon instructor and student interests. The course includes field experiments and computer applications.</p>
<p>0908.564 - Advanced Design of Elements of Transportation Engineering ... 3 s.h. <i>(Prerequisite: 0908.461 , or permission of instructor ,)</i> (Offered even-numbered years.) The fundamental theme of the course is the study of advanced topics in highway design and analysis, signalized and un-signalized intersection design, forecast travel demand modeling and transportation planning. Topics covered vary from year to year based upon instructor and student interests. This course also includes field measurements and computer applications.</p>	<p>0908.564 - Advanced Design of Elements of Transportation Engineering ... 3 s.h. <i>(Prerequisite: 0908.461 Transportation Engineering, or permission of instructor)</i> The fundamental theme of the course is the study of advanced topics in highway design and analysis, signalized and un-signalized intersection design, forecast travel demand modeling and transportation planning. Topics covered vary from year to year based upon instructor and student interests. This course also includes field measurements and computer applications.</p>
<p>0908.573 - Advanced Structural Analysis ... 3 s.h. <i>(Prerequisite: Structural Engineering I , II , and III or equivalent ,)</i> The course deals with the matrix method of structural analysis. The topics covered include structural members, member joints, member end conditions, local and global coordinate systems, coordinate transformation, member structural</p>	<p>0908.573 - Advanced Structural Analysis ... 3 s.h. <i>(Prerequisite: 0908.382 Structural Analysis and Design or equivalent)</i> The course deals with the matrix method of structural analysis. The topics covered include structural members, member joints, member end conditions, local and global coordinate systems, coordinate transformation, member structural matrices, global structural matrices, condensation of global structural matrices, static structural analysis,</p>

<p>matrices, global structural matrices, condensation of global structural matrices, static structural analysis, and dynamic structural analysis. The course will include appropriate computer applications.</p>	<p>and dynamic structural analysis. The course will include appropriate computer applications.</p>
<p>0908.584 - Prestressed Concrete ... 3 s.h. <i>(Prerequisite: Structural Engineering I or equivalent ,)</i> The fundamental theme of the course is the analysis and design of prestressed concrete members for highway bridges, parking structures, office buildings and industrial buildings. Topics covered include prestressed construction applications and materials, flexural analysis of pretensioned and post-tensioning beams, bending and shear design, loss of prestress, deflection and composite beams. The course includes appropriate computer applications.</p>	<p>0908.584 - Prestressed Concrete ... 3 s.h. <i>(Prerequisite: 0908.481 Reinforced Concrete Design or equivalent)</i> The course focuses on analysis and design of prestressed concrete members for highway bridges, parking structures, office buildings and industrial buildings. Topics covered include prestressed construction applications and materials, flexural analysis of pretensioned and post-tensioning beams, bending and shear design, loss of prestress, deflection and composite beams. The course includes appropriate computer applications.</p>
<p>0908.585 - Advanced Reinforced Concrete ... 3 s.h. <i>(Prerequisite: Structural Engineering I or permission of advisor ,)</i> The fundamental theme of the course is the design of advanced reinforced concrete structures and structural components including two-way slabs, footings, retaining walls, shear walls, and slender columns.</p>	<p>0908.585 - Advanced Reinforced Concrete ... 3 s.h. <i>(Prerequisite: 0908.481 Reinforced Concrete Design or equivalent)</i> The emphasis is the design of advanced reinforced concrete structures and structural components not covered in an introductory reinforced concrete design course. Topics include columns in bending, slender columns, slab systems, and other advanced topics in reinforced concrete.</p>
<p>0908.586 - Bridge Engineering ... 3 s.h. <i>(Prerequisite: Structural Engineering I , II and III or equivalent ,)</i> The fundamental theme of the course is the analysis and design of modern steel highway bridges utilizing the bridge code of the American Association of State Highway and Transportation Officials. The topics covered include bridge loads, load combinations, design methods, reinforced concrete deck slabs, steel wide-flange stringer bridges, steel composite wide-flange stringer bridges, continuous bridge spans, steel composite plate-girder bridges, elastomeric bearing connections, steel fixed bridge connections, and steel roller bridge connections. The course includes appropriate computer applications.</p>	<p>0908.586 - Bridge Engineering ... 3 s.h. <i>(Prerequisite: 0908.382 Structural Analysis and Design, 0908.383 Analysis and Design of Steel Frames, and 0908.481 Reinforced Concrete Design or equivalents)</i> The analysis and design of modern steel highway bridges utilizing the bridge code of the American Association of State Highway and Transportation Officials is emphasized. The topics covered include bridge loads, load combinations, design methods, reinforced concrete deck slabs, steel wide-flange stringer bridges, steel composite wide-flange stringer bridges, continuous bridge spans, steel composite plate-girder bridges, elastomeric bearing connections, steel fixed bridge connections, and steel roller bridge connections. The course includes appropriate computer applications.</p>

Rationale:

Over the past two years, the Civil and Environmental Engineering program has made significant changes to its undergraduate program. In some instances prerequisites listed for graduate courses were not previously changed to reflect changes to undergraduate course names or numbers. In addition, listed prerequisites are being corrected to provide consistency in their presentation in the graduate catalog (course number and name).

In some cases course descriptions included statements to the effect that courses were to be offered in even or odd numbered years. The restriction is being eliminated to provide more flexibility in offering courses to reflect the needs of the body of graduate students and to provide more flexibility as faculty engage in sabbaticals. Finally, some minor changes have been made to a few of the course descriptions. Many of these courses were originally proposed when the engineering program was created and prior to the arrival of the faculty currently teaching them. The description changes are made to better reflect the actual course content.

Curricular Effect:

There is limited curricular effect as the bulk of this proposal is essentially bookkeeping to correct prerequisite listings to reflect the current curriculum and provide a consistent presentation in the graduate catalog. No longer listing courses as running in even or odd numbered years will increase flexibility in selecting the graduate courses to offer each year.

Results of Consultations:

No consultation required for prerequisite and catalog changes.

0908.512 - Advanced Environmental Treatment Process Principles ... 3 s.h.

(Prerequisite: Graduate standing or permission of instructor)

Topics in Fundamentals of Physicochemical Processes in Environmental Engineering such as Adsorption, Coagulation/Flocculation, Filtration, Sedimentation, Disinfection, Ion Exchange, Chemical Oxidation, Corrosion and Membranes.

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(Prerequisite: Graduate standing or permission of instructor)

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(Prerequisite: Permission of instructor)

The course deals with the theories and principles of integrated solid waste management as applied to real-world analysis and design problems. The course covers the design of facilities and programs, such as landfills, composting facilities, transfer stations, collection programs, and drop-off centers, and planning of integrated systems for municipalities and counties. Computer applications are included.

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The emphasis is the design of advanced reinforced concrete structures and structural components not covered in an introductory reinforced concrete design course. Topics include columns in bending, slender columns, slab systems, and other advanced topics in reinforced concrete.

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(Prerequisite: 0908.382 Structural Analysis and Design, 0908.383 Analysis and Design of Steel Frames, and 0908.481 Reinforced Concrete Design or equivalents)

The analysis and design of modern steel highway bridges utilizing the bridge code of the American Association of State Highway and Transportation Officials is emphasized. The topics covered include bridge loads, load combinations, design methods, reinforced concrete deck slabs, steel wide-flange stringer bridges, steel composite wide-flange stringer bridges, continuous bridge spans, steel composite plate-girder bridges, elastomeric bearing connections, steel fixed bridge connections, and steel roller bridge connections. The course includes appropriate computer applications.

Rowan University
CURRICULUM PROPOSAL
LIBRARY RESOURCE FORM

The purpose of this form is to provide a channel of communication between the library and faculty changing and designing new courses/programs. The information will be used to assess the resources available in the library, and to identify resources the library should acquire to support the course/program. The information will also provide rationale for institutional support for library acquisitions

This form should be completed in a coordinated effort between the course sponsor(s) and the academic department liaison librarian. **THIS FORM MUST BE COMPLETED FOR ALL CURRICULUM PROPOSALS.**

- The sponsor(s) complete parts A & B
 If assistance is required to complete parts A & B, please notify the liaison librarian.
- Forward this form to the librarian who will complete parts C, D & E

This form must be completed and attached to the original curriculum proposal before being approved by the Senate Curriculum Committee

A. College ENGINEERING Department CIVIL AND ENVIRONMENTAL
 Proposed by: RALPH DUSSEAU Date: 02/09/03
 Course Title: CHANGE IN ^{GRADUATE COURSE} PRE-REQUISITES & CATALOG DESCRIPTIONS IN CEE
 Anticipated Date for Course/Program Offering: _____

B. List specific resources that should be acquired to support this course.
 No additional library resources will be needed.

C. Describe the resources available in the library to support this course/program, including reference, monographic, electronic databases, audio-visual materials, etc. A summary statement is sufficient.

D. List key periodicals available in the library to support this course/program.

E. Librarian comments and recommendations:

Since this is a change in pre-requisites, it will not affect library resources.

Name: LIBRARIAN LIAISON _____

Librarian Signature: *Wendy J. Martin*