Fall 2019

CE 615-101: Infrastructure and Facilities Remediation

Giri Venkiteela

CE 615 - Infrastructure and Facilities Remediation **Fall 2019**

Section: 101

Text:
- Feld, Jacob and Carper, Kenneth, Construction Failure, 2nd Edition, Wiley, Interscience, ISBN: 0-471-57477-5
- Class lectures and other related resources provided during lectures.

Instructor: Adjunct Professor Giri Venkiteela: email address: venkitee@njit.edu
Office Hours by Appointment Only

Restriction: graduate standing in civil engineering and basic knowledge of structures, and material science. Examines the methodology of inspection, field testing, evaluation and remediation of existing infrastructure and facilities, which include pipelines, tunnels, bridges, roadways, dams, and buildings. Typical materials distress and failure scenarios will be covered with remediation options through the use of case studies.

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Course Description: Infrastructure materials characteristics and degradation mechanisms. Examine the methodology of inspection, field testing, evaluation and remediation of existing infrastructure and facilities, which include pipelines, tunnels, bridges, roadways, dams and buildings. Typical material distress and failure scenarios will be covered with remediation options through the use of case studies.

Course Outcomes: Upon successful completion of this course, students should specifically be able to do the following:

1. Understand the infrastructure materials characteristics and degradation mechanisms
2. Identify the typical failures in infrastructures and facilities
3. Knowledge on tools and technologies used in infrastructure remediation

Grading:

Midterm	*25%*
Final	*25%*
Term Paper/ Presentation	*40% (30%/10%)*
Homework	*10%*

Schedule:

Week-1	Introduction	Term Project team/topic selection
Week-2	Concrete basics	
Week-3	Concrete testing and repair	HW#1
Week-4	Structural Steel	HW#2
Week-5	Timber	HW#3
Week-6	Masonry	HW#4
Week-7	Exam-1	**Midterm**
Week-8	Dams, Bridges, Tunnel, Pavements, Foundations, pipelines	HW#5
Week-9	Guest lecture	
Week-10	Infrastructure condition assessment tools	HW#6
Week-11	Case studies	HW#7
Week-12	Infrastructure failures during construction	
Wek-13	*Thanksgiving (Holiday)*	**Presentation slides due**
Week-14	Term paper presentations	
Week-15	Reading Day	**Term report due**
Week-16	Exam-2	**Final Exam**