Fall 2020

CE 615-851: Infrastructure and Facilities Remediation

Giri Venkiteela

CE 615 - Infrastructure and Facilities Remediation Fall 2020

Text: Class lectures and other related resources provided during lectures.

Instructor: Professor Giri Venkiteela: email address: venkitee@njit.edu

Prerequisite: Graduate standing in Civil Engineering and basic knowledge of structures, and material science.

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

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Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu*

Grading:

Midterm	*25%*
Final	*25%*
Research Paper/ Presentation	*35% (30%/5%)*
Homework	*5%*
Research article review	*10%*

Schedule:

Week-1	Introduction	**Research Project topics and team selection**
Week-2	Concrete basics	**HW#1**
Week-3	Concrete testing and repair	**RA1 (Research Article)**
Week-4	Structural Steel	**HW#2**
Week-5	Timber	**RA2**
Week-6	Masonry	
Week-7	**Exam-1**	**Midterm Exam**
Week-8	Infrastructure condition assessment tools	**HW#3**
Week-9	Dams, Bridges, Tunnels Pavements, Foundations, Pipelines	**RA3**
Week-10	Infrastructure failures during construction/ Infrastructure resiliency	**RA4**
Week-11	Case studies	**RA#5**
Week-12	Repair specifications	**HW#4**
Week-13	Thanksgiving week	
Week-14	Guest lecture/ Infrastructure resiliency	
Week-15	**Research project report/presentations due**	**Presentation power point slides due**
Week-16	**Exam-2**	**Final Exam**