

**Spring 2020 Syllabus Addendum  
Transitioning to Online Instruction**

***Math 451-H04***

**Course Title:** Methods of Applied Mathematics II

**Instructor:** Professor W. Choi, wychoi@njit.edu, 602 CULM

**Date:** March 20, 2020

**TA:** Guangyuan Liao, gl92@njit.edu, 105 CULM

**Class:** 1:00-2:20pm on M and W, CULM 514

**Office Hours:** 2:30-3:30pm on M and W

**Textbooks:**

No book is required, but the recommended includes

1. Water wave mechanics for engineers and scientists by Dean and Dalrymple
2. Spectral methods in Matlab by L. N. Trefethen

**Grading Policy:**

Participation and presentations: 40%; Assignments: 40%; Final report: 20%

**Projects:**

1. Generation of solitary waves by lifting a gate (Project 1)
2. Generation of solitary waves by a piston-type wavemaker (Project 2)
3. Interaction of solitary waves with bottom topography (Project 3)
4. Generation and propagation of periodic waves (Project 4)

Each project has theoretical/numerical/experimental components

**Course Outline:**

Week 1-2: Finite difference method

Week 3-5: Linear and nonlinear water wave theory

Week 6: Development of numerical models and validation

Week 7-8: KdV, BBM, Boussinesq equations and their solitary wave solutions

Week 9: Spring break

Week 10: Propagation of solitary waves in a wave tank: Project 0

Week 11-12: Numerical experiments & discussions: Projects 1 & 2

Week 13-14: Numerical experiments & discussions: Projects 3 & 4

Week 15-16: Presentations and final report

**Notice that the changes in red have been made for the transition to online instruction.**