



CE 5502 –NUMERICAL METHODS FOR PDE

2019-2020 SPRING SEMESTER

Instructor : Dr. Ersan Güray

Institute : Faculty of Engineering - Department of Civil Engineering

Objective : A number of numerical methods to solve differential equations are presented in this course. These equations are not limited with the ordinary differential equations but linear nonlinear elliptic, parabolic and hyperbolic equations are also taken in to the course list. Finite difference, some direct and iterative methods are included.

Grading Policy

Homework + Attendance	- 50 %
Final Exam (in class)	- 50 %

Outline

- One Step Methods, Explicit methods, Implicit methods(Euler, Runge Kutta Methods)
- Multistep Methods (Adams Bashford, etc.)
- Stability of methods
- Boundary value problems(shooting method, finite differences)
- Finite difference solutions for parabolic equations(Crank Nicolson, ADI method)
- Explicit methods for hyperbolic PDE
- Finite Difference Methods for elliptic PDE

Textbooks

- Numerical Methods for Engineers, Steven C. Chapra
- Numerical Solution of Partial Differential Equations: An Introduction, K.W.Morton

Link

https://drive.google.com/drive/folders/10rTmXeYDE_0-ox6LWj6y_3H3YgZAEb7g?usp=sharing
or
shorturl.at/cpqCL
