MATH 382 Numerical Analysis II

Spring 2021

Instructor: Baver Okutmuştur **Office** : M242 **Tel**: 210 2974 **email**: baver@metu.edu.tr

Lectures: Monday 10:40-12:30, Thursday 15:40-16:30 (online via zoom)

Office Hour: Tuesday 11:40-13:30

Course Website: http://users.metu.edu.tr/baver/382.htm

Textbook:
- Numerical Analysis. Mathematics of Scientific Computing, W. Cheney, D. Kincaid, Books/Cole Publishing, (1991)

Additional Refereences:
- Numerical Mathematics and Computing, 6th edition, D. Kincaid , W. Cheney. Thomson Brooks/Cole, (2008)
- Numerical Analysis, M. Tezer, C. Bozkaya, METU(2018).
- Introduction to Numerical Analysis, J. Stoer and R. Bulirsch, Springer (1976)

Grading:
-60%   (**Midterm** exam + possible quizzes/Hmws)
-40%   (**Final** exam + possible **Oral** exam)

Exam Date: 3 May, Monday at 10:40 (via zoom)

Note: All exams will be online (via zoom). All participants accept to have webcamera in order to take those exams.

NA Policy: If you miss **more** than **three** quizes or **two** quizes and **one** midterm exam, you will receive NA.

Make-up policy: In order to be eligible to enter a make-up examination for a missed examination, a student should have a documented or verifiable, and officially acceptable excuse. However**,** due to electricty cut during online-exam(s), infection, or special reason(s), the instructor may provide make up exam. A student cannot get make-up examinations for two missed exams. Only **ONE** make up exam is offered. The make-up examination will be after the final exam and will include all topics.

Course Topics :

1. Approximating Functions:

- Polynomial interpolation
- Divided differences
- Hermite interpolation
- Spline interpolation
- Interpolation Error

2. Numerical differentiation

- Differentiating via polynomial interpolation
- Richardson Extrapolation

3. Numerical Integration

- Integration via polynomial interpolation
- Trapezoid rule
- Method of undetermined coefficients
- Simpson's rule
- Error analysis
- Gaussian quadrature
- Romberg integration