MATH 471, Fall 2019 Introduction to Numerical Analysis

Section 1: TTh 8:30-10:00AM, 2147 GG Brown Section 2: TTh 11:30-1:00PM, 2866 East Hall

Instructor: Smadar Karni, 4834 East Hall, 647-9720, karni@umich.edu

Office Hours: TTh 10 -10:30AM (2147 GG Brown/ Lounge FXB), 1-1:30PM (2866 EH/4834 EH) or by arrangement.

Text:

A Friendly Introduction to Numerical Analysis, Brian Bradie, Pearson/Prentice Hall, 2006.

The course will introduce basic numerical methods used for solving problems that arise in different scientific fields. Properties such as accuracy of methods, their stability and efficiency will be studied. Students will gain practical programming experience in implementing the methods using programming languages such as FORTRAN and C/C++ or programming environments such as MATLAB.

We will cover the following topics: Error Propagation (chapter 1) Rootfinding (chapter 2) Systems of Equations (chapter 3) Interpolation (chapter 5) Numerical Integration and Differentiation (chapter 6) Numerical Methods for Differential Equations (chapter 7 & 8)

Final Exam Date:

Monday, December 16, 10:30AM-12:30PM (***)

Grading policy:

Homework (30%), midterm exam (30%) and final exam (40%).

Homework assignments will be given out regularly for a total of about 10 homework sets. It is important to do the homework, not only because it is graded but also in order to learn the course material well. Homework is due at the beginning of class on the given date. The midterm and final exam scores together with homework scores will determine the course grade, and the homework scores will be used to push the course grade up or down in borderline cases.

 $(^{***})$ The final exam is common for both sections, note that the time is *different* than the times set by the Registrar