MTH430 : Numerical Analysis and Scientific Computing II

- **Course Objective and Content:**
  Study the numerical solution of ordinary and partial differential equations along with some other relevant schemes including some integral equation techniques. The course will cover the following material -
  (1) Introduction
  (2) Initial value problems for ODEs
  (3) Boundary value problems for ODEs
  (4) Partial Differential Equations
  (5) Linear Integral Equations
- **Course Team:**
  - **Instructor:**
    * Akash Anand (akasha@iitk.ac.in)
  - **Teaching Assistant:**
    * Rakesh Kumar (rakeshh20@iitk.ac.in)
- **Course Page:**
  The Mookit (Hello IITK) course page is available at https://hello.iitk.ac.in. You should be able to sign in using your CC login credentials to access the course webpage.
- **Class Venue and Schedule:**
  Lectures: Monday from 12:00 noon to 1:15 pm in L9 and Tuesday from 9:00 am to 10:15 am in L9
  Lab: Friday from 11:00 am to 12:00 noon in 204H, DJ Building
- **Course Grading Policy:**
  - **Exams:**
    There will be *a mid-semester examination* and *an end-semester examination*. These will be held during the prescribed examination period. The mid-semester and end-semester examinations will contribute 20% and 30% respectively, toward the final grade.
  - **Lab Examinations:**
    There will be four lab exams carrying a total of 40% weight. These will be announced and will take place during the lab sessions.
  - **Quiz:**
    There will be four quiz carrying a total of 10% weight. These will be announced and will take place during the lab sessions.
  - **Assignments:**
    There will be two kinds of assignments – theoretical and computational. These will be made available on Hello IITK course page. These are for practice and

will not be formally graded. The computational exercises can be discussed in the lab sessions.

- **Course Policies:**
  The course should be cleared via honest practices and any unfair practice will be dealt with seriously. No pro rata of marks will be done for missing exams for non-medical reasons. However, emergency medical situations will be dealt on a case to case basis subject to approval and verification by DUGC and SUGC.

- **References:**
  (1) M. T. Heath, Scientific Computing: An introductory survey (Main Text).
  (2) K. E. Atkinson, An introduction to Numerical Analysis.
  (3) Isaacson and Keller, Analysis of numerical methods.
  (4) Rainer Kress, Linear Integral Equations