Math 225: Ordinary Differential Equations
Syllabus

- **Instructor:** Dr. Shayea Aldossari.
- **Contact:** e-mail: shaaldossari@ksu.edu.sa.
- **Meeting Time:** Sun, Tu, and Th from 9:00am-9:50am.
- **Office Hours:** Monday and Wednesday from 10:00am-12:00pm, or by appointment.
- **Texts:** A first course in differential equations with modeling applications, by Dennis Zill 10th edition.
- **Course Contents: Sections,Topics, Exercises**

  - Chapter one (Introduction to Differential Equations):

  1.1 DEFINITIONS AND TERMINOLOGY

  1.2 INITIAL-VALUE PROBLEMS

  - Chapter two (First-Order Differential Equations):

  2.2 SEPARABLE EQUATIONS

  2.3 LINEAR EQUATIONS

  2.4 Exact EQUATIONS

  2.5 SOLUTIONS BY SUBSTITUTIONS

  - Orthogonal trajectories.

  - Chapter four (Higher-Order Differential Equations):

  4.1 PRELIMINARY THEORY—LINEAR EQUATIONS

  4.2 REDUCTION OF ORDER

  4.3 HOMOGENEOUS LINEAR EQUATIONS WITH CONSTANT COEFFICIENTS

  4.4 UNDETERMINED COEFFICIENTS—SUPERPOSITION APPROACH

  4.5 UNDETERMINED COEFFICIENTS —ANNIHILATOR APPROACH

  4.6 VARIATION OF PARAMETERS

  4.7 CAUCHY-EULER EQUATION

4.9 SOLVING SYSTEMS OF LINEAR DEs BY ELIMINATION

- Chapter six (Series Solutions of Linear Equations):

6.1 REVIEW OF POWER SERIES

6.2 SOLUTIONS ABOUT ORDINARY POINTS

- Chapter Seven (The Laplace Transform):

7.1 DEFINITION OF THE LAPLACE TRANSFORM

7.2 INVERSE TRANSFORMS AND TRANSFORMS OF DERIVATIVES

7.3 OPERATIONAL PROPERTIES

- **Attendance Policy:** Students are expected to attend every class, to arrive on time, and to participate in all class activities. You are responsible for material covered if you are absent. If you miss 25% of the class meetings, your grade will be DN (Denied).

- **Exams and Grading Policy:**

  - First midterm: 20 points.
  - Second midterm: 20 points.
  - Final Exam: 40 points.
  - 10 points for the TA.
  - 10 points for a project.

  Final grade will be calculated in the following way: $100 - 95 =$ A+, $> 95 - 90 =$ A, $> 90 - 85 =$ B+, $> 85 - 80 =$ B, $> 80 - 75 =$ C+, $> 75 - 70 =$ C, $> 70 - 65 =$D+, $> 65 - 60 =$ D, and $> 60 =$F.