Analysis I, MTH 301 A
Jan-Apr 2022

- **Instructor** Parasar Mohanty
- Office: FB 524
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- **Pre-requisite:** MTH 101
- **Course Contents:** Real Number system: Completeness property. Countable and Uncountable. Metric Spaces: Metric spaces, Examples: Limit, Open sets, Convergence of a sequence, Closed sets, Continuity. Completeness: Complete metric space, Nested set theorem, Baire category theorem, Applications. Compactness: Totally bounded, Characterizations of compactness, Finite intersection property, Continuous functions on compact sets, Uniform continuity. Connectedness: Characterizations of connectedness, Continuous functions on connected sets, Path connected. Riemann integration: Definition and existence of integral, Fundamental theorem of calculus, Set of measure zero, Cantor set, Characterization of integrable functions. Convergence of sequence and series of functions: Pointwise and uniform convergence of functions, Series of functions, Power series, Dini's theorem, Ascoli's theorem, Continuous function which is nowhere differentiable, Weierstrass approximation theorem.

  Books

  1. N.L. Carothers, Real Analysis, Cambridge University Press
  2. W. Rudin, Principle of Mathematical Analysis, Mc-Graw-Hill
  3. K.R. Davidson & A.P. Donsig, Real Analysis and Application, Springer Verlag
  4. T. Tao, Analysis I, HBA

- **Lectures:** MWF 10-10.50 am (L 16) **Tutorial:** Tuesday 10-10.50 am (L 16)
- **Grading Policies:** Final grades will be based on your performance in the following components.

  Multiple quizes - 10%

  Mid-Semester Examination - 30%

  End Semester Examination - 50%

  Homework assignments - 5%

  Attendance - 5%