

1. Course number and name

CptS 430: Numerical Analysis

2. Credits and contact hours

3 credits, 3 lecture hours

3. Instructor's or course coordinator's name

Robert Dillon

4. Textbook, title, author, and year

R. L. Burden, J. D. Faires, and A.M. Faires. 2016. *Numerical Analysis* (10th ed.). Cengage.

5. Specific course information

- a. *Catalog description:* Fundamentals of numerical computation; finding zeroes of functions, approximation and interpolation; numerical integration (quadrature), numerical solution of ordinary differential equations.
- b. *Prerequisites or corequisites:* Math 315 with a C or better, one of CPT S 121, CPT S 251, or Math 300.

6. Specific goals for the course

By the end of the course, students will be able to

- Understand the theory and application of a broad range of fundamental numerical methods (1e, 2g, 6a).

7. Brief list of topics to be covered

- Computer arithmetic and roundoff errors
- Solution of one variable and systems of nonlinear equations.
- Interpolation
- Numerical integration and differentiation
- Numerical solution of ordinary differential equations
- Introduction to solution of PDEs