MATH 128A Numerical Analysis Discussion Section

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General Information

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General Information

- Office Hours : Mon 2-4pm

- Course Website :
  https://bcourses.berkeley.edu/courses/1542890
  https://math.berkeley.edu/~mgu/MA128A2021S/index.html

General Information

- Textbook : R. L. Burden and J. D. Faires, Numerical Analysis, 9-th or 10-th edition, Brooks-Cole

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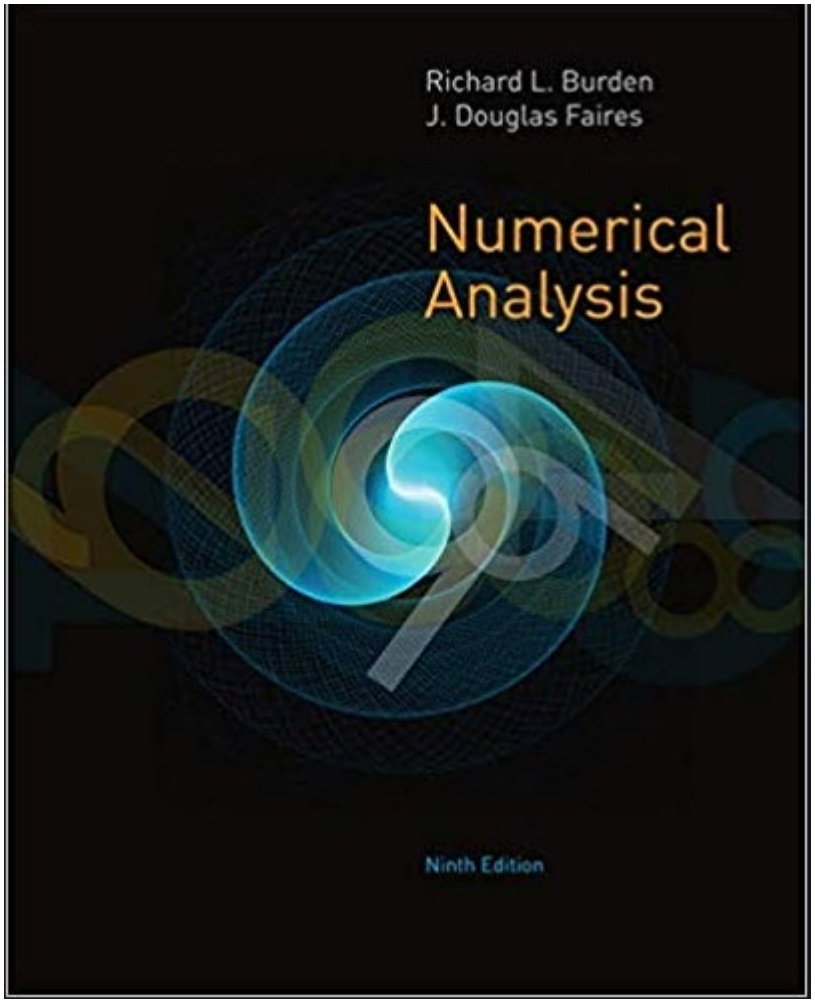

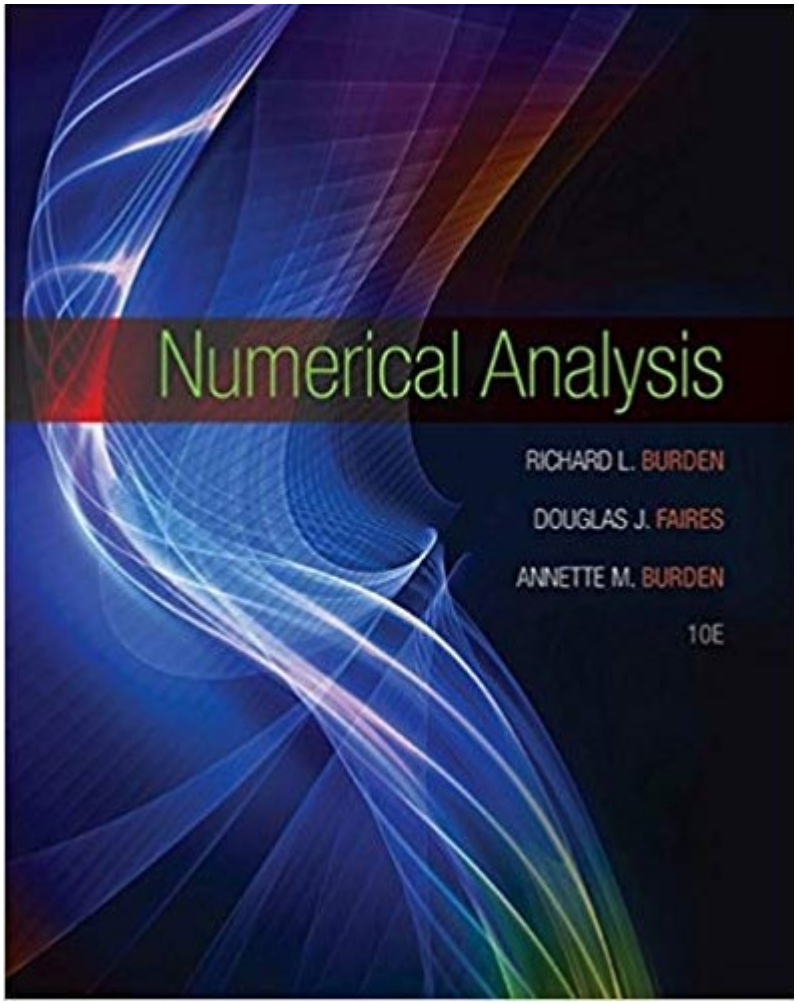

General Information

- Programming Language : MATLAB

- Quiz :
  Schedule
  2/7, 2/21, 3/7, 4/11, 4/25
  10 min / 2 problems
  No make-up quiz & the lowest score will be dropped

Brief Review of Calculus

- Several Theorems from Calculus
  - Mean Value Theorem
  - Extreme Value Theorem
  - Intermediate Value Theorem
  - Taylor expansions

Brief Review of Calculus

- Differentiation Rules
  - $(C)' = 0$
  - Linearity rule $(af + bg)' = af' + bg'$
  - Product rule $(fg)' = f'g + fg'$
  - Power rule $(f^n)' = nf'f^{n-1}$
  - Quotient rule $\left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$
  - Chain rule $(f(g(x)))' = f'(g(x))g'(x)$

Brief Review of Calculus

- Differentiation Formulas
  - $\frac{d}{dx}(\log x) = \frac{1}{x}$
  - $\frac{d}{dx}(a^x) = a^x \log a$
  - $\frac{d}{dx}(\sin x) = \cos x$
  - $\frac{d}{dx}(\cos x) = -\sin x$
  - $\frac{d}{dx}(\tan x) = \sec^2 x = 1 + \tan^2 x$

Programming Exercises

- Goal : print “Hello, world!”
- Functions:
  - disp
  - fprintf
- Command window v.s. Script