

# COURSE SYLLABUS - Revised

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**YEAR COURSE OFFERED:** 2020

**SEMESTER COURSE OFFERED:** Spring

**DEPARTMENT:** Electrical and Computer Engineering

**COURSE NUMBER/ID:** ECE 3340-01 (17762)

**NAME OF COURSE:** ECE 3340 - Numerical Methods for Elec. & Comp. Engineers

**NAME OF INSTRUCTOR:** Han Le

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**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**

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## Learning Objectives

To provide students, as a part of breadth of knowledge, with operational knowledge and skills in numerical methods for computational problems in electrical and comp engineering to prepare them for a professional career.

## Major Assignments/Exams

Class work and quizzes	40-60%
Homework	15-25%
Exams	20-30%
Special project	10%-15%

## Computer and Software

- Student is required to bring a laptop or tablet to class. If you have a problem, please discuss with the instructor.
- The main software for lecture is Wolfram *Mathematica*®, which is free to [all UH students](#) (follow instruction at the link). It is strongly preferred to have it installed for the 1<sup>st</sup> class.

**Required Reading** none.

## Recommended References

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1. **Numerical Methods for Engineers**, Raymond P. Canale and Steven C. Chapra, any edition from 3<sup>rd</sup> to 7<sup>th</sup>, McGraw-Hill, ISBN-13: 978-0073401065
2. **Numerical Methods for Scientists and Engineers** (Dover Books on Mathematics) 2nd Ed., Dover Publishing, ISBN-13: 978-0486652412.
3. *(for only part of the course)* **An Introduction to Statistical Learning**, Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani (free online).

## List of discussion/lecture topics - revised

- **Revision:** The topics below will be covered with less depth than originally planned. The lectures will introduce the topic concepts principally for breadth of knowledge, and a number of details will be removed to fit the remaining scheduled time of the semester.
- Introduction and review of selected topics in electrical and computer engineering that serve as learning materials for the application of computational numerical methods.
- Binary system and numerical representation in digital computer.
- Numerical precisions and errors in computation.
- Polynomials, roots, zeros, and poles.
- Numerical Fourier transform techniques and applications. Laplace transform applications.
- Multivariate linear system and review of linear algebra: matrix and computation techniques.
- Stochastic processes, introduction to statistical analysis and data analytics.
- Differentiation and integration. Differential equations.