Engineering Mathematics 2 Syllabus

- Course No: 033.015

- Lecture No: 001

- Course Title: Engineering Mathematics 2

- Credit: 3

- Instructor: Yong Sung Park (Associate Professor, CEE)

- Office Hour: Monday, Wednesday 12:15-13:00 (immediately after each lecture) at the instructor's office or by appointment

- Prerequisites: Calculus 1, 2, Engineering Mathematics 1

- Purpose: Learn the methodologies of vector calculus, complex analysis, Fourier analysis and partial differential equations and understand how those methodologies are applied in engineering subjects.

- Materials and reference:

Main textbook:

Kreyszig, E. (2011). Advanced Engineering Mathematics, 10th Ed. John Wiley & Sons (ISBN: 978-0-470-64613-7).

References:

Carslaw, H. S. & Jaeger, J. C. (1946). Conduction of Heat in Solids. 2nd Ed. Oxford University (ISBN: 978-0-19-853368-9).

Dettman, J. W. (1984). Applied Complex Variables. Dover (ISBN: 0-486-64670-X).

Hildebrand, F. B. (1976). Advanced Calculus for Applications, 2nd Ed. Prentice-Hall (ISBN: 0-13-011189-9).

Lighthill, M. J. (1962). Introduction to Fourier Analysis and Generalised Functions. Cambridge University (ISBN: ?)

Mei, C. C. (1989). The Applied Dynamics of Ocean Surface Waves. World Scientific (ISBN: 9971-50-773-0, 9971-50-789-7)

- Evaluation

  Attendance: 10%

  Homework: 20%

  Exam 1 (2 October): 20%

  Exam 2 (4 November): 25%

  Exam 3 (18 December): 25%

  Total: 100%

- Lecture Plan

  week 1: vector differential calculus (Kreyszig 9.1-9.7)

  week 2: vector differential and integral calculus (Kreyszig 9.8-9.9; 10.1-10.6)

  week 3: vector integral calculus (Kreyszig 10.7-10.9)

  week 4: complex analysis (Kreyszig 13.1-13.7)

  week 5: Q&A session and Exam 1 (vector calculus)

  week 6: complex analysis (Kreyszig 14.1-14.2)

  week 7: complex analysis (Kreyszig 14.3-14.4; 15.1-15.3)

  week 8: complex analysis (Kryeszig 15.4-15.5; 16.1-16.2)

  week 9: complex analysis (Kryeszig 16.3-16.4) and Q&A session

  week 10: Exam 2 (complex analysis) and Fourier analysis (Kreyszig 11.1-11.3)

  week 11: Fourier analysis (Kreyszig 11.4-11.9)

  week 12: partial differential equations (Kreyszig 12.1-12.6)

  week 13: Q&A session

  week 14: partial differential equations (Kreyszig 12.7-12.9)

  week 15: partial differential equations (Kryeszig 12.10-12.11)

  week 16: Q&A session and Exam 3 (Fourier analysis and PDEs)