School of Emerging Technologies, IUST
Advanced Engineering Mathematics

Coordinator: Vahid Nayyeri (Assistant Prof., Department of Satellite Engineering, IUST)

Course website: http://webpages.iust.ac.ir/nayyeri/courses/aem/

Subjects (*Note: Topics may change during the term*):

- Calculus of variations;
- Strum Liouville problems;
- Boundary value problems;
- Generalized functions (distributions);
- Dirac Delta function;
- Green functions in one, two and three dimensions;
- Spectral domain;
- Electromagnetic source in various coordinates;
- Integral equations;
- Integral transforms;
- Numerical methods;

References:

- G. Arfken and H. Weber, Mathematical Methods for Physics, 6th Ed., Elsevier Academic Press, 2005; (*calculus of variations, integral equations, integral transform*)
- D. G. Dudley, Mathematical Foundations for Electromagnetic Theory, IEEE Press, 1994; (*Sturm-Liouville problems, spectral domain, Delta function, Green functions, boundary value problem, electromagnetic sources*)
- C. A. Balanis, Advanced Engineering Electromagnetics, 2nd Ed., John Wiley & Sons, 2012; (*Green functions*)
- M. Sadiku, Numerical Techniques in Electromagnetics, 2nd Ed., CRC Press., 2000; (*numerical methods*)
- *Class Notes* (the Most Important!)

Grading System:

- Midterm Exam: 40%
- Final Exam: 40%
- Quizzes and Final Project: 20%