## **ECE 6382**

## **Engineering Analysis I**

## **Suggested Reading Assignments**

Reading assignments are selected from the following texts:

* G. B. Arfken, H. J. Weber, and F. E. Harris, *Mathematical Methods for Physicists*, 7th Ed., Academic Press, 2013.
* J. W. Brown and R. V. Churchill, *Complex Variables and Application*s, McGraw-Hill, 8th Ed., 2009.

**Topics**

* Introduction to Complex Variables: Arken, Sections 1.8, 11.1. Churchill, Chapter 1. Churchill, Chapter 3, Sections 21-23.
* Complex Differentiation: Arfken, Section 11.2, Churchill, Chapter 2.
* Complex Integration: Arfken, Sections 11.3, 11.4. Churchill, Chapter 4.
* Complex Mappings: Arfken, Section 11.10 (section on Mapping). Churchill, Chapter 3 and Chapter 8, pp. 299–332.
* Conformal Mapping: Churchill, Chapters 9 and 10.
* Branch Cuts: Arfken, pp. 499–503. Churchill, pp. 95–96, pp. 336–340, pp. 347–350.
* Power Series: Arfken, pp. 492–497. Churchill, Chapter 5.
* Analytic Continuation: Arfken, pp. 503–507. Churchill, pp. 83–85.
* Singularities: Arfken, pp. 497–502. Churchill, pp. 229–231, pp. 240–243, pp. 257–260.
* Residue Theorem: Arfken, pp. 509–511. Churchill, pp. 231–239, pp. 244–247, pp. 277-280.
* Integral Evaluation: Arfken, pp. 522–538, pp. 544–546. Churchill. pp. 269–275, pp. 280–285, pp. 288–290.
* Pole-Zero Expansions: Arfken, pp. 515–520.
* Asymptotic Series: Arfken, pp. 577–584.
* Gamma Function: Arfken, pp. 599–605.
* Method of Steepest-Descent: Arken, pp. 585–590.
* Watson’s Lemma: N. Bleistein and R. A. Handelsman, *Asymptotic Expansion of Integrals*, Holt, Rinehart, and Winston, 1975 (reprinted by Dover, 2010).
* Linear Independence and Wronskians: Arfken, pp. 359–360.
* Sturm-Liouville Theory: Arfken, pp. 381–387, p. 398.
* Green’s Functions: Arfken, pp. 447–467.
* Bessel Functions: Arfken, pp. 643–648, pp. 650–653, pp. 661–663, pp. 667–672 pp. 674–675, pp. 680–683.