

**Tennessee Technological University**  
**Mathematics Department**

**MATH 6610: Operational Mathematics**

**I. COURSE DESCRIPTION FROM CATALOG:** Integral transforms (Laplace, Fourier) inversion and convolution theorems, applications. Lec. 3. Cr. 3.

**II. PREREQUISITE(S):** Consent of instructor

**III. COURSE OBJECTIVE(S):** A study of integral transforms, especially the Laplace and Fourier transforms. Topics include definitions, basic formulas, relations, operational properties, complex analysis and integration, inversion formulas, and solutions of ordinary and partial differential equations.

**IV. TOPICS TO BE COVERED:**

- Chapter 1: The Laplace Transformation
- Chapter 2: Further Properties of the Transformation
- Chapter 3: Elementary Applications
- Chapter 4: Problems in Partial Differential Equations
- Chapter 5: Functions of a Complex Variable
- Chapter 6: The Inversion Integral
- Chapter 7: Problems in Heat Conduction
- Chapter 8: Problems in Mechanical Vibrations
- Chapter 12: Exponential Fourier Transforms
- Chapter 13: Fourier Transforms on the Half Line

**V. ADDITIONAL INFORMATION:**

**VI. POSSIBLE TEXTS AND REFERENCES:**

*Operational Mathematics*, 3<sup>rd</sup> edition, by Ruel V. Churchill

**VII. ANY TECHNOLOGY THAT MAY BE USED:**

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). 1  
An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119.