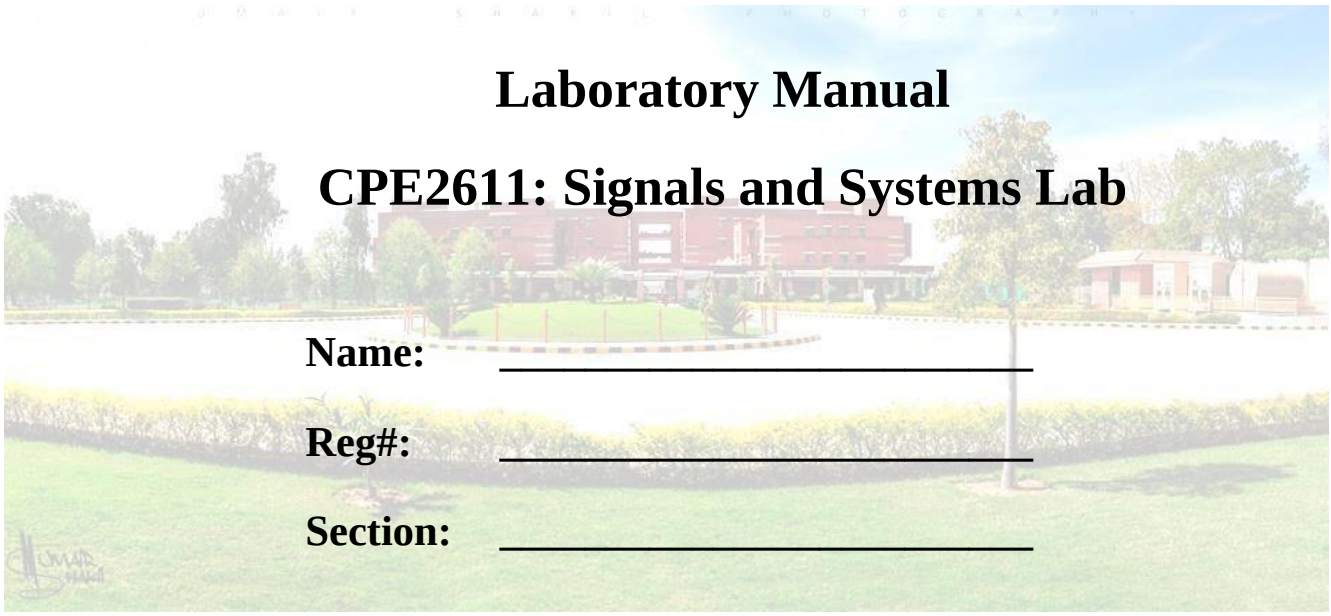


# Laboratory Manual

# CPE2611: Signals and Systems Lab

**Name:** _____

**Reg#:** _____

**Section:** _____


Department of Electrical and Computer Engineering

**Capital University of Science and Technology**

**Islamabad, Pakistan**

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**Edited By: Abdullah Numani / Muhammad Arslan Rafique**

## LABORATORY HEALTH & SAFETY INSTRUCTIONS

Students must read and follow these instructions before and during every laboratory session:

1. **Follow Instructions:** Follow the Lab Engineer/Instructor's instructions and use laboratory computers and equipment only for their intended purpose.
2. **Maintain Discipline:** Keep the laboratory and workstation clean and organized. Running, horseplay, food, and drinks are not permitted.
3. **Electrical Safety:** Keep hands and equipment dry. Check power cables and connections before use, avoid overloaded sockets, and never use damaged electrical equipment.
4. **Computer Safety:** Handle computers, monitors, keyboards, and other peripherals carefully. Do not open, modify, disconnect, or tamper with computer hardware without permission.
5. **MATLAB & Simulink:** Use **MATLAB and Simulink** only as instructed. Do not install unauthorized software, modify system settings, or execute unknown or untrusted scripts or files.
6. **Simulation Safety:** Check MATLAB code and Simulink models before execution. Stop simulations if unexpected behavior, excessive system load, or other abnormal conditions occur.
7. **Report Hazards & Accidents:** Immediately report damaged equipment, exposed wires, sparks, smoke, overheating, electrical faults, software/system problems, accidents, or any other unsafe condition to the **Lab Engineer/Instructor** and follow the **emergency SOP guidelines for accident reporting**.
8. **Emergency & Leaving the Lab:** Know the locations of the **first-aid kit, fire extinguisher, emergency exit, and main electrical switch**. Follow emergency instructions, close applications, log out or shut down the computer as instructed, and leave the workstation clean and safe.

## SAFETY FIRST

**When in doubt, STOP the activity and consult the Lab Engineer/Instructor before proceeding.**

**Name: _____**

**Sign:_____**

**Reg#:_____**

**Date:_____**

| S. No | List of Experiments |
|---|---|
| 1 | Introduction to MATLAB and Signals in MATLAB |
| 2 | Understanding the Basic Signals using MATLAB |
| 3 | Properties of Signals and their transformations |
| 4 | Linearity and time invariant verification of LTI systems |
| 5 | Convolution of Continuous Time Signals |
| 6 | Convolution of Discrete Time Signals |
| 7 | Sampling, periodicity, Harmonics and Sound Manipulation |
| 8 | Laplace Transform and inverse Laplace Transform Analysis |
| 9 | Z-Transform and Inverse Z-Transform Analysis |
| 10 | MATLAB implementation of Fourier Series |
| 11 | Discrete-time Fourier Transform Analysis |
| 12 | Introduction to SIMULINK Modeling in MATLAB |
| 13 | Lab Project (Part I) |
| 14 | Lab Project (Part II) |