List of Experiments (Semester I and Semester II) to be Demonstrated in Offline Mode for M. Tech. ESS Students (Batch 2019) currently in Semester - III

Semester - 1

Embedded System Design Lab

1. Using MPLAB, and Proteus for programming and simulating PIC 16F84A/PIC16F877A Microcontroller based Circuits.
2. Using Proteus for programming and simulating PIC 16F84A/PIC16F877A Microcontroller based circuits with Interrupts and Timers/Counters.
3. Using Proteus for programming and simulating PIC 16F84A/PIC16F877A Microcontroller based circuits with USART, LCD, and buses (SPI, I2C).
4. Programming the PIC 16F84A/PIC16F877A microcontrollers and hardware realization of the circuits.

Wireless Communications and Networks Lab

1. Write a MATLAB program for Rayleigh Fading at 900 MHz, 1800 MHz and 2700MHz. Assuming the receiver replacement rate is 120km/hr.
2. Estimate Path Loss using Okumura Hata model for a Medium size city using given data.
3. To write a Matlab program to calculate the median path loss for Hata model for outdoor propagation
4. Create a frequency-flat Rayleigh fading channel object.
   a. Uses it to process a DBPSK signal.
   b. Compare the BER of the system for different values of SNR
   c. Compare the empirical results with theoretical results and plot them.
4. Create a Rician fading channel object.
   a. Uses it to process a DBPSK signal.
   b. Compare the BER of the system for different values of SNR
   c. Compare the empirical results with theoretical results and plot them.
5. Simulate a QPSK modulation scheme and compare it with BPSK scheme.
6. To determine the free space loss and the power received using Matlab program

Besides above some Trainer/ Hardware based practical's may be conducted in the laboratory.

Advanced Digital System Design Lab

Write a VHDL code to design:

1. 4*1 MUX
2. Full adder
3. 4*2 Decoder
4. D Flip-Flop
5. SR Flip-Flop
6. 2-bit multiplier

Semester – II

ARM Cortex Microcontroller Lab

1. Writing & Running ALP Programs using Keil uVision for ARM Cortex M3/M4 processors.
2. Writing & Running C Programs using Keil uVision for ARM Cortex M3/M4 processors.
3. Using FRDM-KL25Z: Freedom Development Platform for Kinetis, OpenSDA, and mBed.
4. Programming different IoT boards (M3/M4 based) in Keil uVision and their Performance and Energy Analysis.

CPLD and FPGA Lab

Using FPGA developments boards to:

1. Design 4-Bit ALU Using "Case" Statement
2. Design Binary/Decimal to Decimal/Binary converter.
3. Design Binary/Grey to Grey/Binary converter.
4. Design Synchronous Counter.
5. Design 4-Bit ALU Using "Case" Statement

Note: The list is the minimum set of experiments to be demonstrates/conducted in offline-mode at the Department by the teacher as notified. The corresponding teacher may demonstrate more experiments depending upon the availability of time and requirements of the Course.