**System Verilog for ASIC/FPGA Design & Simulation 2023 - FPGA Inperson Session**

Date – 23rd April 2023

Venue – [Department of Electronics and Telecommunications Engineering](https://goo.gl/maps/NxYG5F18f2vL56pZ7)

**Schedule**

9.00 a.m. to 1.15 p.m. – FPGA hands-on Lab Session

1.15 p.m to 2.00 p.m - Lunch Break

2.00 p.m to 3.00 p.m – Summary and next steps

3.00 p.m to 4.00 p.m – Concluding Ceremony and Group Photo

**Lunch will be provided**

**FPGA hands-on Lab Session**

In this lab session, you will be divided into groups of four. Each group will receive an FPGA and the equipment required to complete the practical. In addition, you will be provided with the introduction and instructions at the beginning of the Lab. Finally, a live demo will be presented with all the steps required to complete the practical. There will be two tasks expected to be completed.

1. Implement a simple counter/logic circuit and demonstrate it on the FPGA.
2. Implement the vector matrix multiplier design on the FPGA and demonstration.

In the end, to obtain completion, you are expected to submit a detailed report to the Moodle submission link. In this submission, you must include a report, source codes, and a video of your design running on the FPGA.

**Prerequisite for the Lab**

* A Laptop with minimum system requirements.
* Vivado 19.1 or a later version.
* Board Files for [Xilinx Zybo](https://digilent.com/reference/programmable-logic/zybo/start)
* Python 3.
* Numpy
* Pyserial.

See the next page for useful links.

**Useful Links**

Use the below link for a guide on how to generate the licenses and install Vivado 19.1

<https://www.xilinx.com/content/dam/xilinx/support/documents/sw_manuals/xilinx2019_1/ug973-vivado-release-notes-install-license.pdf#namedDest=InstallingTheVivadoDesignSuiteTools>

Use the below link to download the board files for Xilinx Zybo

<https://github.com/Digilent/vivado-boards>

Use the below link for a guide on how to install the board files on Vivado

<https://digilent.com/reference/software/vivado/board-files?redirect=1>

Installing Python and packages

Step 1 - Use the below link for a guide on installing python ( Miniconda )

<https://www.youtube.com/watch?v=-H_onyfW9VE>

Step 2 - Use the below link for a guide on how to install Numpy ( Use the conda command )

<https://numpy.org/install/>

Use the below link for a guide on how to install Pyserial ( Use the conda command )

<https://pyserial.readthedocs.io/en/latest/pyserial.html>