

Indian Science Technology and Engineering facilities Map (I-STEM)

- a. Name of the Training Coordinator: **Dr. Shipra Upadhyay**
- b. Name of the R&D facility:
Hands on Training on FPGA Development Boards using Xilinx Vivado
- c. Name of the Department: **Electronics and Communication Engineering**
- d. Name of the Institution: **Atria Institute of Technology, Bangalore**
- e. Mob. No.8004959188
- f. Email ID: shipra.u@atria.edu

Details of training

Name of R&D Equipment: **Vivado ML Enterprise Edition, FPGA Pynq/Zynq Development Boards**

Duration and Hours of Usage of Tools/day (Practical Training/tutorials): **3 hours/Day (5 Days)**

Duration of Theoretical Training: **3hours/ Day (5 Days)**

No. of Manpower to be trained per training (Duplication and overlapping of candidate may be avoided): **Twenty**

Details of the Training module/Course Content		
Module -1	Lecture -1 (3 hrs)	Introduction to Verilog language constructs, RTL coding, RTL integration, Functional Verification, Synthesis & STA, Gate level simulations
	Lab -1 (3 hrs)	Vivado Tool Flow
Module -2	Lecture -2 (3 hrs)	SOC introduction, SOC design concepts, SOC Components.
	Tutorial -1 (3 hrs)	Assignments and Quiz on SOC concepts
Module -3	Lecture -3 (3 hrs)	FPGA Architecture: Internals of FPGA, Logic implementation, FPGA Architectures of various FPGA vendors, Anti-fuse and SRAMS, Logic elements and Look-up Tables, Dedicated multipliers, Distributed RAM, Shift registers, Kintex, Zynq, Virtex Architectures
	Tutorial -2 (3 hrs)	Lab session on digital logic design concepts
Module -4	Lecture -4 (3 hrs)	Introduction and usage of IP cores, Design constraining and pin locking Timing analysis, slack calculation, Area and Power Constraints, Static Timing Analysis
	Lab -2 (3 hrs)	Lab session on FPGA Implementation using IP cores, Timing analysis, slack calculation, Area and Power Constraints, Static Timing Analysis

Module -5	Lecture -5 (3 hrs)	FPGA programming, XDC constraints, Configuring FPGAs, FSM Extraction
	Lab -3 (3 hrs)	Lab session on FPGA prototyping

Study Materials will be provided

Refreshments will be provided