

International Summer School- Manipal University Jaipur [ISSMUJ]-2025

[Online Mode]



Course Overview

Name of Course- Image processing using Verilog

Name of instructor: Dr Neha Singh (Manipal University Jaipur)/Dr Shilpi Birla (Manipal University Jaipur)

Session: May-July 2025

Language of instruction: English

Number of contact hours: 36

Credit awarded: 03

Pre-requisite: Basic knowledge of image processing and Verilog.

Objective of Course/Project:

The student will learn to implement image processing algorithms in hardware using the Verilog Hardware Description Language (HDL)

Syllabus:

Digital image fundamentals and basic image processing operations. Convolution.

Revision of Verilog language. Implementation of image manipulation operation using Verilog

Organization of Course/Project:

Total contact Hours: 36		
1st week:	10 hrs (classes)	2 hrs (self-study)
2nd week:	10 hrs (classes/project)	2 hrs (Mid-term assessment)

3rd week:	10 hrs (project)	2 hrs (self-study/project)
4 th week:	6 hrs (project)	2hrs (End term exam)

Mode of lectures: Online

Course/Project Plan:

Lecture no.	Topic	Lecture mode	Instructor
L: 1-10	Digital image fundamentals and basic image processing operations. Convolution.	Online	Dr Neha Singh
L: 11-15	Verilog programming	Online	Dr Shilpi Birla
L: 16-30	Project implementation	Online	Dr Neha Singh/Dr Shilpi Birla
L:31-36	Result compilation and report writing	Online	Dr Neha Singh/Dr Shilpi Birla

Brief profile of the instructors:



Dr Neha Singh is a well-rounded and dynamic teaching professional with 20 years of in-depth experience in educating undergraduate and postgraduate engineering students in Electronics & Communication Engineering. She is currently working in the Department of Electronics & Communication Engineering at Manipal University Jaipur, Rajasthan, India. She did her PhD in the year 2020. Her areas of research interest include VLSI design and nanodevices, image Processing, and Machine learning. She has several indexed papers and book chapters published in Journals, conferences and books of repute. She has co-authored engineering textbooks and edited three books with international publishers. She has served as reviewer in various International and peer reviewed Journals and conferences. She has convened various international conferences and other events. She has guided several M Tech Dissertations and B Tech projects and guided PhD scholars as well. She is a Senior Member of IEEE.



Dr Shilpi Birla is working as an Associate Professor in Electronics & Communication Department at Manipal University Jaipur. She has a teaching and industrial experience of more than 15 years. She did her Ph D in Low Power VLSI Design. Her research interests are Low Power VLSI Design, Memory Circuits, Digital VLSI Circuits, Nanodevices and Image

Processing. She has authored more than 60 research papers in journals of repute and International conferences. She has organized several workshops in HSPICE, TCAD and XILINX, Summer internships in Diode Fabrication and

Faculty Development Programs. She has worked as a session chair, conference steering committee member, editorial board member, and reviewer in international/national IEEE Journal and conferences. She has guided many M. Tech Students and 04 PhD scholars. Also, she is currently guiding Ph.D. students. She is a senior member of IEEE.