

Short Term Courses – NIELIT

PG Diploma in VLSI & Embedded Hardware Design

Objective of the Course:

The PG Diploma in VLSI & Embedded Hardware Design is intended to impart training in designing complex digital systems using integrated circuit cells as building blocks and employing hierarchical design methods. Emphasis of the teaching curriculum is on design methodology and practicable applications. The course contents have been designed keeping in view the emerging trends in the field of VLSI design technology and emerging needs for skilled manpower.

Learning Outcomes:

This course is structured to provide the students knowledge in Design of Digital Systems, System Architectures, Hardware description Languages required for VLSI Design such as VHDL and Verilog. The students shall learn how to program and test programs on FPGAs, CPLDs etc. The students shall get exposure to the Various ASIC Design Issues, CMOS Technology, VLSI Design techniques.

Expected Job Roles:

VLSI Design Engineer

Duration of the Course (in hours) 720 hrs /24 Weeks

Appr. Fees (INR): Rs 68,000/- (Service Tax Extra)

Minimum eligibility criteria and prerequisites if any

- a. M.E/ M.Tech/ BE /B.Tech in Electronics/ Electronics & Communication/ Electrical/ Instrumentation/ Computer Science/ IT or M.Sc (Electronics).
- b. Graduates with appropriate experience and final year students also may apply

Outline of the Course

S. No	Topic	Minimum No. of Hours
1.	Advanced Digital Design	90
2.	VHDL - Language and Coding for Synthesis	90
3.	Verilog - Language and Coding for Synthesis	90
4.	CMOS Logic Design	30
5.	Embedded Controller Based Product Design	60
6.	Programmable SoC	30
7.	FPGA Design Methodology and Prototyping	60
8.	RTL Verification	30
9.	Project	240
Theory/ Lecture Hours:		216
Practical/ Tutorial Lecture Hours:		504
Total Hours:		720

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Books recommended for reference and reading:

1. Modern Digital Electronics. Author, R P Jain. Edition, 3. Publisher, Tata McGraw-Hill Education
2. Wakerly, John F.. Digital Design Principles and Practices,
3. VHDL Programming By Example By Douglas Perry-PHI
4. Verilog HDL, 2/E By Samir Palnitkar, Pearson Education
5. John.P.Uyemura, *Introduction To VLSI Circuits And Systems*, John Wiley And Sons
6. Smith, M.J.S., *Application-Specific Integrated Circuits*, Addison-Wesley
7. Rabaey, J.M., A. Chandrakasan And B. Nikolic, *Digital Integrated Circuits, A Design Perspective, Second Edition*, Prentice Hall,
8. Wolf, W., *Modern Vlsi Design, System-On-Chip Design, Third Edition*, Prentice Hall Ptr
9. FPGA Users Guides And Datasheets From Xilinx & Altera

Group Code: VLSI

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Course Code: PG01

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