



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I

Course Title	ASIC - CAD Laboratory		
Course Code	EC660	No. of Credits	2
Course Code of Pre-requisite subject(s)	--		
Session	Jan. 2023	Sem/Section (if, applicable)	II Sem. - M.Tech. (VLSI System)
Name of Faculty	Dr. G. Lakshminarayanan	Department	ECE
Email	laksh@nitt.edu	Telephone No.	0431-2503307
Name of Course Coordinator(s) (if, applicable)	Dr. G. Lakshminarayanan		
E-mail	laksh@nitt.edu	Telephone No.	0431-2503307/ 9442940144
Course Type	<input type="checkbox"/> Elective course	<input checked="" type="checkbox"/> LAB course	

Syllabus (approved in BoS)

List Of Experiments:

1. Ripple Carry Adder
2. Sequence Detector
3. Signed Booth Multiplier
4. MAC Unit
5. Mod -x counter
6. 4 Tap FIR Filter
7. Memory RAM
8. Vending Machine
- 9 & 10. Mini Project

COURSE OBJECTIVES

- To prepare the student to be an entry-level industrial standard ASIC or FPGA designer.
- To give the student an understanding of issues and tools related to ASIC/FPGA design and implementation.
- To give the student an exposure of industry standard tools.
- To give the knowledge of Front end as well as Back end through Cadence tool and Xilinx tools

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. Students able to demonstrate VLSI tool-flow, understand the issues involved in ASIC design and appreciate FPGA and CPLD architectures.	PO1(H), PO2(H), PO3(M), PO4(M), PO5(L), PO6(M)
2. Familiar with sophisticated VLSI CAD tools available in the lab.	
3. Students able to design and implement any ASIC designs using the latest VLSI CAD tools.	
4. Learn advanced features in physical design.	
5. Learn complete cycle from design to chip tape-out procedure.	

## COURSE PLAN – PART II

### COURSE OVERVIEW

This course enables the students to understand the task and algorithms running in the backend of every VLSI tools. It also enables to students to know the simulation, synthesis and PNR tool in the cadence.

### COURSE DESCRIPTION :

### COURSE TEACHING AND LEARNING ACTIVITIES

Sl. No.	Week/Contact Hours	Topic	Mode of Delivery
1.	Week 1	Ripple Carry Adder	LAB Exercise
2.	Week 2	Sequence Detector	
3.	Week 3	Signed Booth Multiplier	
4.	Week 4	MAC Unit	
5.	Week 5	Mod -x counter	
6.	Week 6	4 Tap FIR Filter	
7.	Week 7	Memory RAM	
8.	Week 8	Vending Machine	
9.	Week 9	Mini Project	
10.	Week 10	Mini Project	

### COURSE ASSESSMENT METHODS

Sl. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Record Work – Set 1 (1 – 4 Exp.)	Every Week Correction & End of February	--	20 marks
2	Record Work – Set 2 (5 – 8 Exp.)	Every Week Correction & End of March	--	20 marks

3	Compensation Assessment	1 <sup>st</sup> & 2 <sup>nd</sup> week of April	--	20 marks
4	Mini Project	3 <sup>rd</sup> & 4 <sup>th</sup> week of April	--	30 marks
5	Final Assessment	As per Academic calendar	120 Minutes	30 marks

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

- Through questionnaire.

Course feedback from the students is obtained at regular intervals and also during class committee meeting.

**COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)**

**MODE OF CORRESPONDENCE (email/phone etc.)**

1. All the students are advised to attend the lab. regularly.
2. All the correspondence (schedule of lab/ schedule of assessment/ course material/ any other information regarding this course) will be intimated in class/ over phone/ in faculty room / through their webmail.

**COMPENSATION ASSESSMENT POLICY**

1. Attending all the assessments are mandatory.
2. Schedule for all the assessments will be intimated in class or through class committee meeting.
3. Those who are unable to attend either of the assessment I & II under medical reasons are allowed to appear for CPA (Compensation Assessment) with 20% weightage.
4. At any case, CPA will not be considered as an improvement test.
5. Institute regulations will be followed for fixing minimum passing marks, grading pattern, Reassessment, FA, and Redo.

**ATTENDANCE POLICY** (A uniform attendance policy as specified below shall be followed)

1. **At least 75% attendance in each course is mandatory.**
2. **A maximum of 10% shall be allowed under On Duty (OD) category.**
3. Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

**ACADEMIC DISHONESTY & PLAGIARISM**

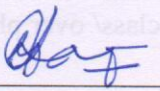
1. Possessing a mobile phone, keeping bits of paper, talking to other students, copying from others during assessment will be treated as punishable dishonesty.
2. Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
3. The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

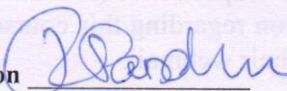
The above policy against academic dishonesty shall be applicable for all the programmes.

**ADDITIONAL INFORMATION**

Queries and feedback may also be emailed to the Course Faculty directly at [laksh@nitt.edu](mailto:laksh@nitt.edu)

**FOR APPROVAL**

Course Faculty 

CC-Chairperson 

HOD 

Date: 23.01.2023

**Guidelines:**

- a) Every course shall have a final assessment on the entire syllabus with at least 30% weightage.
- b) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- c) The passing minimum shall be as per the regulations. Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- d) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- e) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.