

राष्ट्रीय प्रौद्योगिकी संस्थान मिजोरम

**NATIONAL INSTITUTE OF TECHNOLOGY MIZORAM**

(An Institute of National Importance under Ministry of Education, Govt. of India)

CHALTLANG, AIZAWL, MIZORAM – 796012



**Course Structure & Syllabus for Minor in  
VLSI and Semiconductor Technology**

**for existing BTech in ECE and BTech in CSE  
ACADEMIC SESSION: 2023-24 onwards**

सूक्ष्म कणिका एवं संचार अभियांत्रिकी विभाग  
**Center of Interdisciplinary Research (CIR)**

## Course Structure & Syllabus for Minor in VLSI and Semiconductor Technology

### Classification of Credits Points:

<b>1 Hr Lecture (L) per week</b>	<b>1.0 Credit</b>	<b>1 Hr Tutorial (T) per week</b>	<b>1.0 Credit</b>
<b>1 Hr Laboratory (P) per week</b>	<b>0.5 Credit</b>	<b>AUDIT Course</b>	<b>NO Credit</b>

Course Code	Course Name	Category	L-T-P	Credit
CIRL 1X01	Compound Semiconductors	DC	3-0-0	3
CIRL 1X02	VLSI Technology	DC	3-0-0	3
CIRL 1X03	Nanoelectronic Semiconductor Devices	DC	3-0-0	3
CIRL 1X04	Analog VLSI Circuits	DC	3-0-0	3
CIRL 1XXX	Program Elective – I	DE	3-0-0	3
CIRL 1XXX	Program Elective – II	DE	3-0-0	3
CIRL 1XXX	Program Elective – III	DE	3-0-0	3
CIRL 1XXX	Program Elective – IV	DE	3-0-0	3
CIRP 1X01/ CIPR 1X02	Analog VLSI Laboratory / VLSI Design Laboratory	DC	0-0-2	1
CIRP 1X03	VLSI Device Modelling Laboratory	DC	0-0-2	1
<b>TOTAL</b>			<b>24-0-4</b>	<b>26</b>

### PROGRAM ELECTIVES

Sl. No.	Course Code	Course Name
1	CIRL 1X05	Foundation of VLSI
2	CIRL 1X06	Semiconductor Device Modelling
3	CIRL 1X07	Foundations of MEMS
4	CIRL 1X08	Low power VLSI Design
5	CIRL 1X09	VHDL Modelling
6	CIRL 1X10	Physics of Nanoscale FET
7	CIRL 1X11	Semiconductor Materials and Systems
8	CIRL 1X12	Semiconductor Optoelectronics: Theory and Design
9	CIRL 1X13	Digital VLSI Circuits

## CORE COURSES

<b>CIRL 1X05</b>	<b>Compound Semiconductors</b>	
<b>L-T-P: 3-0-0</b>		<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 4101.		

<b>CIRL 1X02</b>	<b>VLSI Technology</b>	
<b>L-T-P: 3-0-0</b>		<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 2202.		

<b>CIRL 1X03</b>	<b>Nanoelectronic Semiconductor Devices</b>	
<b>L-T-P: 3-0-0</b>		<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1X09.		

<b>CIRL 1X04</b>	<b>Analog VLSI Circuits</b>	
<b>L-T-P: 3-0-0</b>		<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 2102.		

<b>CIRP 1X01</b>	<b>Analog VLSI Laboratory</b>	
<b>L-T-P: 0-0-2</b>		<b>Credits: 1</b>
As per the syllabus of ECP 2101.		

<b>CIRP 1X02</b>	<b>VLSI Design Laboratory</b>	
<b>L-T-P: 0-0-2</b>		<b>Credits: 1</b>
As per the syllabus of ECP 1603.		

<b>CIRP 1X03</b>	<b>VLSI Device Modelling Laboratory</b>	
<b>L-T-P: 0-0-3</b>		<b>Credits: 1</b>
As per the syllabus of ECP 2202.		

### Program Elective(s)

<b>CIRL 1X01</b>	<b>Foundation of VLSI</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1503.	

<b>CIRL 1X06</b>	<b>Semiconductor Device Modelling</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 2104.	

<b>CIRL 1X07</b>	<b>Foundations of MEMS</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1X04.	

<b>CIRL 1X08</b>	<b>Low power VLSI Design</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1X08.	

<b>CIRL 1X09</b>	<b>VHDL Modelling</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1X18.	

<b>CIRL 1X10</b>	<b>Physics of Nanoscale FET</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1X16.	

<b>CIRL 1X11</b>	<b>Semiconductor Materials and Systems</b>
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 1X21.	

<b>CIRL 1X12      Semiconductor Optoelectronics: Theory and Design</b>	
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 4XXX.	

<b>CIRL 1X13      Digital VLSI Circuits</b>	
<b>L-T-P: 3-0-0</b>	<b>Credits: 3</b>
As per the syllabus prescribed by Dept. of Electronics and Communication Engineering of ECL 2103.	