



**JSPM UNIVERSITY PUNE**

Recognized by UGC u/s 2 (f) of UGC Act 1956 and enacted by the  
State Government of Maharashtra - JSPM University Act, 2022 (Mah.IV of 2023)

**JSPM University Pune**  
**Faculty of Science and Technology**  
**School of Electrical and Communication**  
**Sciences**



**NEP aligned Curriculum Structure**

**For**

**M.Tech (VLSI & Embedded Systems)**

**(Effective from AY: 2024-25)**



# JSPM University Pune

FACULTY OF SCIENCE & TECHNOLOGY

SCHOOL OF ELECTRICAL AND COMMUNICATION SCIENCES

## COURSE STRUCTURE (NEP 2020 Aligned)

W. E. F

2024-2025

RELEASE DATE

01/07/2024

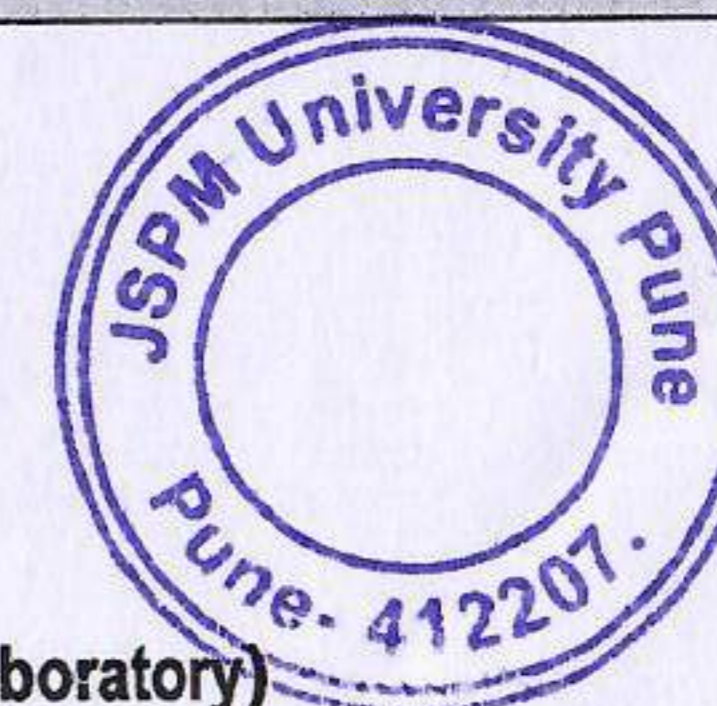
MASTER OF TECHNOLOGY (VLSI AND EMBEDDED SYSTEMS)

REVISION NO.

0.0 (NEP)

### SEMESTER I (LEVEL 6.5)

COURSE			TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS	
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)			PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)					
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)			
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)								
PSMC	230GMAM02_01	Advanced Numerical Methods	2	1	-	-	30	30	40	100	-	-	-	-	100	3	
PCC	231GETM01_01	Analog CMOS VLSI Design	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
PCC	230GETM02_01	Advanced Embedded System	2	-	-	2	30	30	40	100	-	-	-	-	100	2.5	
PCC	230GETM03_01	Low power VLSI Circuit Design	3	-	-	-	30	30	40	100	-	-	-	-	100	3	
MMC	---	Multidisciplinary Minors Course	1	-	2	-	-	-	-	-	50	50	50	50	100	2	
SEC	240GCSM05_01	Advanced Python Programming	2	-	2	-	-	-	-	-	50	50	50	50	100	3	
VSC	230IDCB01_01	Design Thinking and Creativity	1	-	-	2	-	-	-	-	-	-	50	50	50	1.5	
AEC	230UENM01_01	Communicative English for Professionals	1	-	2	-	30	30	40	50	-	-	-	-	50	2	
RMC	230IRMM01_01	Research Methodology	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
LC	230GETM21_01	Advanced Embedded System Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
<b>TOTAL</b>			<b>16</b>	<b>1</b>	<b>8</b>	<b>4</b>									<b>750</b>	<b>22</b>	



Sem.	Multidisciplinary Minors Course (MMC)			
I	Course Code	230GRAM24_01	230GCSM28_01	230GRAB51_01
	Course Name	Sensors and Automation	Introduction to Data Science	Robot Modeling

*Alisha*

**Dr. Alisha Priya**  
M.Tech. Coordinator, SECS

*[Signature]*

**Prof. Santoshkumar Hampannavar**  
Director, School of Electrical & Communication Sciences

*[Signature]*

**Prof. R. S. Deshpande**  
Dean, Faculty of Science and Technology

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**Dr. Anuradha S. Deshpande**  
Associate Dean (Academics)



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**Prof. B.B. Ahuja**  
Vice Chancellor, JSPM University Pune

**Vice Chancellor**  
**JSPM University**  
**Pune**



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## SEMESTER II (LEVEL 6.5)

COURSE			TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS	
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)			PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)					
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)			
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)								
PSBC	230GETM20_02	Basics of IC Fabrication	2	1	-	-	30	30	40	100	-	-	-	-	100	3	
PCC	230GETM04_02	RTL Synthesis and Simulation	2	-	-	2	30	30	40	100	-	-	-	-	100	2.5	
PCC	240GETM01_02	CMOS Digital VLSI Design	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
MMC	---	Multidisciplinary Minors Course	1	-	2	-	-	-	-	-	50	50	50	50	100	2	
SEC	230GETM19_02	System Design with Embedded Linux	2	-	2	-	-	-	-	-	50	50	50	50	100	3	
VSC	230IINB02_02	Innovation	1	-	-	2	-	-	-	-	-	-	50	50	50	1.5	
AEC	230UENM02_02	Business Communication	1	-	2	-	30	30	40	50	-	-	-	-	50	2	
RMC	230IRMM02_02	Research Design and Techniques	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
LC	230GETM22_02	RTL Synthesis and Simulation Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
LC	230GETM23_02	Digital CMOS VLSI Design Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
IITP/ P/CE P	230GETM24_02	Internship/FieldProject/Community Engagement Programme	4 to 6 weeks				-	-	-	-	-	-	-	50	50	50	2
<b>TOTAL</b>			<b>13</b>	<b>1</b>	<b>10</b>	<b>4</b>									<b>750</b>	<b>22</b>	

Note: A Postgraduate Diploma will be awarded if a student exits after first year. For Exit at the end of first year the student must complete: (Total credits = 8)

- An internship / OJT of 8 - 10 weeks (4 credits)
- Additional Course 1 (4 credits) (Vocational Skill Course (VSC) / Skill Enhancement Course (SEC))

L-Lecture  
Format No.: JSPMUni/ACAD/001

T-Tutorial  
Rev. No.:0.0

P-Practical Session (Laboratory)  
Rev. Date:01/07/2024

EL-Experiential Learning  
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Sem.	Multidisciplinary Minors Course (MMC)			
II	Course Code	230GISM03_02	230GCSM29_02	230GRAB52_02
	Course Name	Cyber Security	Introduction to Artificial Intelligence	Autonomous Mobile Robot

*Alisha*

**Dr. Alisha Priya**  
M.Tech. Coordinator, SECS

*Santoshkumar*

**Prof. Santoshkumar Hampannavar**  
Director, School of Electrical & Communication Sciences

*R. S. Deshpande*

**Prof. R. S. Deshpande**  
Dean, Faculty of Science and Technology

*Anuradha S. Deshpande*

**Dr. Anuradha S. Deshpande**  
Associate Dean (Academics)

*B. B. Ahuja*

**Prof. B.B. Ahuja**  
Vice Chancellor, JSPM University Pune



**Vice Chancellor**  
**JSPM University**  
**Pune**



# JSPM University Pune

FACULTY OF SCIENCE & TECHNOLOGY

SCHOOL OF ELECTRICAL AND COMMUNICATION SCIENCES

## COURSE STRUCTURE (NEP 2020 Aligned)

W. E. F

2025-2026

RELEASE DATE

01/07/2025

MASTER OF TECHNOLOGY (VLSI AND EMBEDDED SYSTEMS)

REVISION NO.

0.0 (NEP)

### SEMESTER III (LEVEL-7)

COURSE			TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)				PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)			
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)		
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)							
PEC	---	Program Elective Course -I/MOOC	3	-	-	-	30	30	40	100	-	-	-	-	100	3
PEC	---	Program Elective Course -II/MOOC	3	-	-	-	30	30	40	100	-	-	-	-	100	3
IOC	---	Interdisciplinary Open Elective Course -I	2	-	-	-	30	30	40	100	-	-	-	-	100	2
IOC	---	Interdisciplinary Open Elective Course -II	2	-	-	-	30	30	40	100	-	-	-	-	100	2
VEC (HSM C)	230USYB01_03	Behavioral Science and Ethics	2	-	-	-	30	30	40	50	-	-	-	-	50	2
PROJ	231GETM26_03	Field Project	-	-	4	8	-	-	-	-	50	50	50	50	100	4
SLC	231GETM25_03	Seminar	-	-	-	8	-	-	-	-	-	-	50	50	50	2
<b>TOTAL</b>			<b>12</b>	<b>0</b>	<b>4</b>	<b>16</b>									<b>600</b>	<b>18</b>
MLC#	---	Audit Course	-	-	2	-	-	-	-	-	-	-	50	-	50	1

L-Lecture

T-Tutorial

P-Practical Session (Laboratory)

EL-Experiential Learning

Sem.	Programme Elective Course (PEC-I)			
	Specialization	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems
III	Course Code	230GETM06_03	230GETM07_03	230GETM08_03
	Course Name	VLSI Design Flow: RTL to GDS	VLSI Architectural Design and Implementation	Testing of VLSI Circuits

Sem.	Programme Elective Course (PEC-II)			
	Specialization	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems
III	Course Code	230GETM09_03	230GETM10_03	230GETM11_03
	Course Name	Embedded System Integration	System-on-Programmable-Chip Design	Design of Semiconductor Memories

Sem.	Interdisciplinary Open Elective Course -I (IOC-I)			
III	Course Code	230VMSM11_03	230GCSM29_03	230VMSM08_03
	Course Name	Fundamentals of Financial Management	Introduction to Artificial Intelligence	Start up and Entrepreneurship Development

Sem.	Interdisciplinary Open Elective Course -II (IOC-II)			
III	Course Code	230GRAM51_03	230GCSM32_03	230HFGM25_03
	Course Name	Industrial Robotics and Automation	Machine Learning in Practice	Intellectual Property

Sem.	Mandatory Learning Course (MLC*) Audit Course				
	Specialization	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems
III	Course Code	240GETB02_03	241GETB01_03	240GETB03_03	240GETB04_03
	Course Name	Drone Technology: Quadcopter Design and Control	PCB Design and Fabrication	Amateur Radio: Theory and Practice	Android App Development
IV	Course Code	230UPOB02_04			
	Course Name	Introduction to Indian Constitution			

*Alisha*  
**Dr. Alisha Priya**  
M.Tech. Coordinator, SECS

*[Signature]*  
**Dr. Anuradha S. Deshpande**  
Associate Dean (Academics)

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**Prof. Rajendrakumar Patil**  
Director, School of Electrical & Communication Sciences



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Pune  
**EL-Experiential Learning**  
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# SPM UNIVERSITY PUNE

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Date: 25/6/2025

To,  
The Honorable Vice Chancellor,  
JSPM university Pune.

Subject: Details of NPETL courses offered in Odd semester of ay 2025-26.

Respected sir,

In alignment with the National Education Policy 2020 and to enhance flexible learning, we propose to replace the following course(s) in the current curriculum structure with equivalent MOOC/NPTEL online certification course(s) for the academic year 2025-26.

Name of Programme: Master of Technology (VLSI and Embedded Systems)

Semester: 3

Sr. No.	Existing Course in the Curriculum structure			Suggested equivalent MOOC Course			
	Course Code	Course Name	Credits	Course Code	Course Name	Credits	MOOC duration in weeks
1	230GETM06_03	VLSI Design Flow: RTL to GDS	3	noc25-ee106	VLSI Design Flow: RTL to GDS	3	12



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The teaching and evaluation scheme for the suggested MOOC course is follows.

OURSE			TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)			PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)				
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100/ 25 Marks)			CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)			
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)					END SEMESTER EXAMINATION (100 / 50/ 75 Marks)		
Course to be replaced form the curriculum structure																
PEC	230GETM06_03	VLSI Design Flow: RTL to GDS	3	-	-	-	30	30	40	100	-	-	-	-	100	3
Equivalent MOOC course																
PEC	231GETM06_03	VLSI Design Flow: RTL to GDS	3	-	-	-	25			75	-	-	-	-	100	3

We kindly request your approval for the proposed replacement.

*Alisha*  
**Dr. Alisha Priya**  
 M.Tech. coordinator

*Rajendrakumar Patil*  
**Prof. Rajendrakumar Patil**  
 Director, School of SECS

*R S Deshpande*  
**Prof. R S Deshpande**  
 Dean, Faculty of FST

*Anuradha S. Deshpande*  
**Dr. Anuradha S. Deshpande**  
 Associate Dean (Academics)



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COURSE STRUCTURE  
(NEP 2020 Aligned)

W. E. F

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MASTER OF TECHNOLOGY (VLSI AND EMBEDDED SYSTEMS)

## SEMESTER IV (LEVEL-7)

COURSE		TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS	
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)			PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)				
			L	T	P	EL	CONTINUOUS IN SEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS IN SEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS IN SEMESTER EVALUATION (50 Marks)			END SEMESTER EXAMINATION (50 Marks)
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)							
PEC	---	Program Elective Course -III / MOOC	3	-	-	-	-	-	25	75	-	-	-	-	100	3
PEC	---	Program Elective Course -IV/ MOOC	3	-	-	-	-	-	25	75	-	-	-	-	100	3
PROJ	250GVEM06_04	Project / Internship with Project	-	-	12	24	-	-	-	-	200	200	100	100	300	12
<b>TOTAL</b>			<b>6</b>	<b>0</b>	<b>12</b>	<b>24</b>										
MLC#	---	Audit Course	1	-	-	-	-	-	-	50	-	-	-	-	50	1

L-Lecture

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T-Tutorial

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EL-Experiential Learning

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Sem.	Programme Elective Course (PEC-III)			
	Specialization	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems
IV	Course Code	230GETM12_04	230GETM13_04	230GETM14_04
	Course Name	Design and Analysis of VLSI Subsystems	Embedded Systems-Design Verification and Test	Physical Design Automation

Sem.	Programme Elective Course (PEC-IV)			
	Specialization	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems
IV	Course Code	230GETM15_04	230GETM29_04	230GETM32_04
	Course Name	Digital VLSI Testing	VLSI Signal Processing	Machine Learning in VLSI CAD

Sem.	Mandatory Learning Course (MLC*) Audit Course				
	Specialization	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems	VLSI and Embedded Systems
III	Course Code	240GETB02_03	241GETB01_03	240GETB03_03	240GETB04_03
	Course Name	Drone Technology: Quadcopter Design and Control	PCB Design and Fabrication	Amateur Radio: Theory and Practice	Android App Development
IV	Course Code	230UPOB02_04			
	Course Name	Introduction to Indian Constitution			

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