



**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**

**Integrated Ph.D.**

**(Effective from AY: 2023-24)**



# JSPM University Pune

FACULTY OF SCIENCE & TECHNOLOGY

SCHOOL OF ELECTRICAL AND COMMUNICATION SCIENCES

COURSE STRUCTURE  
(NEP 2020 Aligned)

W. E. F

2023-2024

RELEASE DATE

01/07/2023

REVISION NO.

0.0 (NEP)

INTEGRATED PHD (ELECTRONICS AND TELECOMMUNICATION)

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	230GETM01_01	Analog CMOS VLSI Design	2	-	-	-	30	30	40	100	-	-	-	-	100	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	230GRAM24_01	Sensors and Automation	1	-	2	-	-	-	-	-	50	50	50	50	100	2
SEC	230GCSM19_01	R- 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
TOTAL			16	1	8	4									800	22

*Alisha*

Dr. Alisha Priya  
M.Tech. Coordinator, SECS

*Santosh*

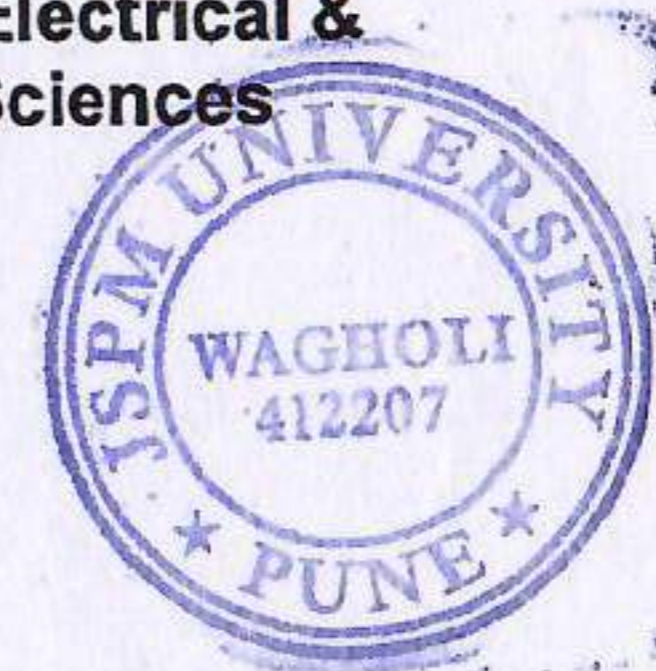
Prof. Santoshkumar Hampannavar  
Director, School of Electrical &  
Communication Sciences

*R. S. Deshpande*

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

*Anuradha*

Dr. Anuradha S. Deshpande  
Associate Dean (Academics)



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

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

T-Tutorial  
Rev. No.:0.0

P-Practical Session (Laboratory)  
Rev. Date:01/07/2023

Vice Chancellor  
JSPM University  
Pune  
EL-Experiential Learning  
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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	230GETM05_02	Digital CMOS VLSI Design	2	-	-	-	30	30	40	100	-	-	-	-	100	2	
MMC	230GISM03_02	Cyber Security	1	-	2	-	-	-	-	-	50	50	50	50	100	3	
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/F P/CEP	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>800</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)

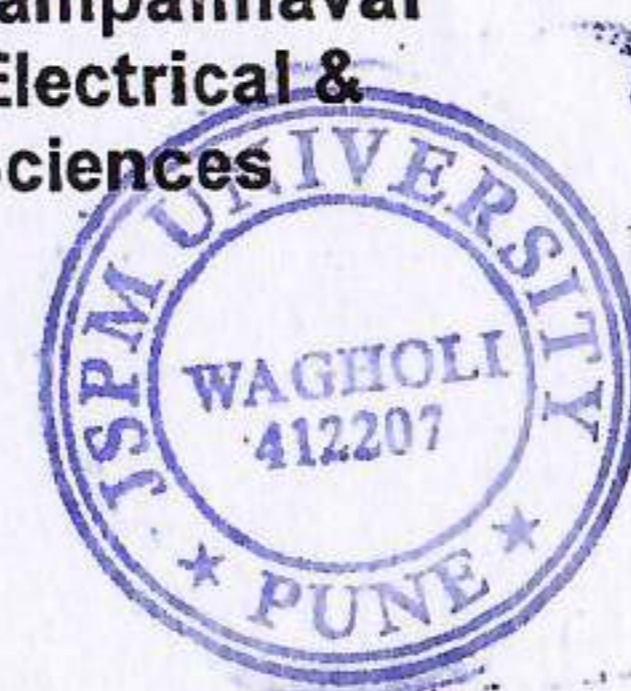
- a) An internship / OJT of 8 - 10 weeks (4 credits)
- b) Additional Course 1 (4 credits) (Vocational Skill Course (VSC) / Skill Enhancement Course (SEC))

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

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

*R.S.*  
**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



# 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

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0.0 (NEP)

INTEGRATED PHD (ELECTRONICS AND TELECOMMUNICATION)

### 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 (HSMC)	230USYB01_03	Behavioral Science and Ethics	2	-	-	-	30	30	40	50	-	-	-	-	50	2
SLC	240GETM02_03	Seminar	-	-	-	4	-	-	-	-	-	-	50	50	50	1
IITP/FP/CEP	231GETM26_03	Internship/Field Project/Community Engagement Programme	-	-	8	-	-	-	-	-	-	-	100	100	100	4
PCC	---	Domain specific Course-1/MOOC	3	-	-	-	30	30	40	100	-	-	-	-	100	3
PCC	---	Domain specific Course-2/MOOC	3	-	-	-	30	30	40	100	-	-	-	-	100	3
<b>TOTAL</b>			<b>18</b>	<b>0</b>	<b>8</b>	<b>4</b>									<b>800</b>	<b>23</b>



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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	230GCSB160_03	230VMSM08_03
	Course Name	Fundamentals of Financial Management	Introduction to Deep Learning	Start up and Entrepreneurship Development

Sem.	Interdisciplinary Open Elective Course -II (IOC-II)			
III	Course Code	230GRAM51_03	230GCSM32_03	230GCSM33_03
	Course Name	Industrial Robotics and Automation	Machine Learning in Practice	Introduction to Python Programming

Sem.	PCC -1 (Domain Specific Course / MOOC)	
	Specialization	
III	Course Code	230GETD01_03
	Course Name	An Introduction to Artificial Intelligence/ MOOC
	Course Code	230GETD06_03
	Course Name	Fundamentals of Artificial Intelligence/MOOC

Sem.	PCC -2 (Domain Specific Course / MOOC)				
	Specialization				
III	Course Code	230GETD02_03	230GETD03_03	230GETD04_03	230GETD05_03
	Course Name	RF Transceiver Design/ MOOC	Biophotonics/ MOOC	Computer Vision and Image Processing/ MOOC	Communication Networks/ MOOC
	Course Code	230GETD07_03	230GETD08_03	230GETD09_03	230GETD10_03
	Course Name	Microwave Engineering/MOOC	Digital Image Processing/MOOC	Nanobiophotonics: Touching Our Daily Life/MOOC	Analog Communication/MOOC
	Course Code	230GETD11_03			
	Course Name	5G Wireless Standard Design/MOOC			

*Alisha*

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*BB*

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COURSE STRUCTURE  
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W. E. F

2024-2025

RELEASE DATE

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REVISION NO.

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SEMESTER IV (LEVEL-8)

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	-	-	-	30	30	40	100	-	-	-	-	100	3
PEC	---	Program Elective Course -IV/ MOOC	3	-	-	-	30	30	40	100	-	-	-	-	100	3
PEC	---	Program Elective Course -IV/ MOOC	3	-	-	-	30	30	40	100	-	-	-	-	100	3
PROJ	231GETM27_04	Project / Internship with Project	-	-	8	16	-	-	-	-	100	100	100	100	200	8
PROJ	231GETM27_04	Project / Internship with Project	-	-	8	16	-	-	-	-	100	100	100	100	200	8
PSMC	230GMAD01_04	Foundation of Mathematical Modelling and Statistical Techniques	3	-	-	-	30	30	40	100	-	-	-	-	50	2
RMC	231IRMD01_04	Research Publication and Ethics	2	-	-	-	30	30	40	50	-	-	-	50	50	2
RMC	231IRMD02_04	Research Proposal Writing	1	1	-	-	-	-	-	-	-	-	50	50	50	2
RMC	231IRMD02_04	Research Proposal Writing	1	1	-	-	-	-	-	-	-	-	50	50	50	2
<b>TOTAL</b>			<b>12</b>	<b>1</b>	<b>8</b>	<b>16</b>					<b>50</b>				<b>600</b>	<b>21</b>
MLC#	230UPOB02_04	Introduction to Indian Constitution	1	-	-	-	-	-	-	-	50	-	-	-	50	1



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

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

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Date: 29-07-2025

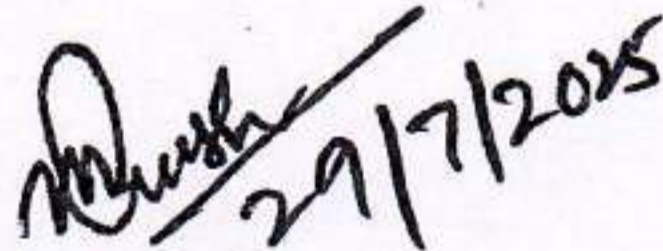
To,  
The Controller of Examinations,  
JSPM University Pune

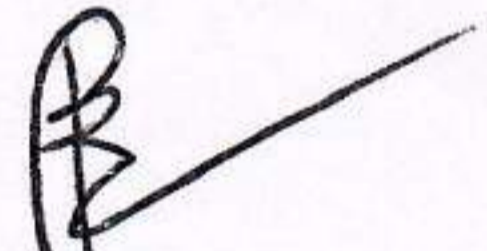
Subject: Submission of Original Structure for Integrated Ph.D. Programme  
(AY 2023-24, 2024-25, 2025-26)

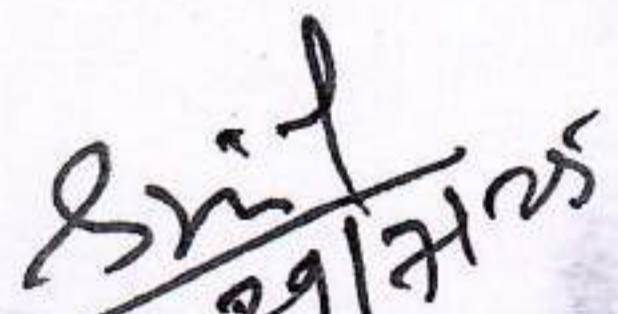
Respected Sir,

Kindly find attached here with the original structure file of Integrated Ph.D. Programme –VLSI and Embedded Systems (AY 2023-24, 2024-25, 2025-26) for your perusal.

AY. 2023-24	<b>Sem-I</b>	<b>Sem-II</b>	<b>Sem-III</b>	<b>Sem-IV</b>
	✓	✓		
AY. 2024-25	<b>Sem-I</b>	<b>Sem-II</b>	<b>Sem-III</b>	<b>Sem-IV</b>
	✓	✓	✓	✓
AY 2025- 26	<b>Dec-Jan</b>	<b>June-July</b>		
	✓	✓		

  
29/7/2025  
Dr. Mahesh Sonth  
M.Tech. Coordinator

  
Dr. R A Patil  
Director, SECS

  
29/7/25  
Dr. Sunil L. Chaudhari  
(Name and Signature of CoE)