



BATCH: 2023-2027



SYLLABUS

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
UNIVERSITY OF ENGINEERING & MANAGEMENT JAIPUR

B.Tech. ECE Course Structure

1st Semester (Group – B: ECE)

Sl. No.	Type of Course	Subject code	Subject name	L	T	P	S	Total Contact Hours	Credit Points
THEORY									
1	Basic Science Course	BSCCH102	Chemistry	3	1	0	0	4	4
2	Basic Science Course	BSCM103B	Mathematics and Basic Statistics	3	1	0	0	4	4
3	Humanities and social sciences including Management	HSMC101	English	2	0	0	0	2	2
4	Engineering Science Course	ESCEC101	Basic Electronics Engineering	3	1	0	0	4	4
5	Engineering Science Course	ESME102B	Engineering Mechanics - Essentials	1	1	0	0	2	2
6	Engineering Science Course	ESCCS101	Programming for Problem Solving using C	2	1	0	0	3	3
7	General Studies Course	ESP101	Essential Studies for Professionals - I	1	0	0	0	1	1
PRACTICAL									
8	Basic Science Course	BSCCH192	Chemistry Laboratory	0	0	3	0	3	1.5
9	Humanities and social sciences including Management	HSMC191	Language laboratory	0	0	2	0	2	1
10	Engineering Science Course	ESCEC191	Basic Electronics Engineering Laboratory	0	0	2	0	2	1

11	Engineering Science Course	ESCME193	Workshop/ Manufacturing Practices	1	0	4	0	5	3
12	Engineering Science Course	ESCCS191	Programming for Problem Solving Laboratory using C	0	0	4	0	4	2
SESSIONAL									
13	Mandatory Courses	IKS171	Indian Knowledge System for Engineers	0	0	0	2	2	2
Mandatory Industry and Value Added Courses (IVC)									
14	Mandatory Industry and Value Added Courses (IVC)	IVC181	Design Thinking & Innovation- Basic	0	0	0	1	1	0
15	Mandatory Industry and Value Added Courses (IVC)	IVC182	Economics, Finance and Entrepreneurship Skills - Basic	0	0	0	1	1	0
Total Credit Points of Semester				16	5	15	4	40	30.5
16	Mandatory Courses	MAR	Mandatory Additional Requirements	0	0	0	0	0	0
17	Mandatory Online Courses	MOOCs	Massive Open Online Courses	0	0	0	0	0	0
18	Mandatory Online Courses	IFC	Industry and Foreign Certification	0	0	0	0	0	0
19	Mandatory Courses	SAR	Skill Additional Requirements	0	0	0	0	0	0
Skill Addition Requirements (SAR) 1. Foreign Language, 2. Physical Education, 3. Soft Skill									

2nd Semester (Group – B: ECE)

Sl. No.	Type of Course	Subject code	Subject name	L	T	P	S	Total Contact Hours	Credit Points
THEORY									
1	Basic Science Course	BSCPH201	Physics	3	1	0	0	4	4
2	Basic Science Course	BSCM203A	Mathematics - Calculus	3	1	0	0	4	4
3	Basic Science Course	BSCBE204	Biology for Engineers	2	0	0	0	2	2
4	Engineering Science Course	ESCEE201	Basic Electrical Engineering	3	1	0	0	4	4
5	Engineering Science Course	ESME202A	Engineering Mechanics - Principles	1	1	0	0	2	2
6	Engineering Science Course	ESCCS202	Introduction to AI and Data Science using Python	2	1	0	0	3	3
7	General Studies Course	ESP201	Essential Studies for Professionals - II	1	0	0	0	1	1
PRACTICAL									
8	Basic Science Course	BSCPH291	Physics Laboratory	0	0	3	0	3	1.5
9	Basic Science Course	BSCBE294	Biology for Engineers Laboratory	0	0	2	0	2	1
10	Engineering Science Course	ESCEE291	Basic Electrical Engineering Laboratory	0	0	2	0	2	1
11	Engineering Science Course	ESCME292	Engineering Graphics & Design	1	0	4	0	5	3

12	Engineering Science Course	ESCCS292	Introduction to AI and Data Science Laboratory using Python	0	0	4	0	4	2
SESSIONAL									
13	Humanities and social sciences	UHV272	Universal Human Values- II	0	0	0	2	2	3
Mandatory Industry and Value Added Courses (IVC)									
14	Mandatory Industry and Value Added Courses (IVC)	IVC281	Design Thinking & Innovation- Intermediate	0	0	0	1	1	0
15	Mandatory Industry and Value Added Courses (IVC)	IVC282	Economics, Finance and Entrepreneurship Skills - Intermediate	0	0	0	1	1	0
Total Credit Points of Semester				16	5	15	4	40	31.5
16	Mandatory Courses	MAR	Mandatory Additional Requirements	0	0	0	0	0	0
17	Mandatory Online Courses	MOOCs	Massive Open Online Courses	0	0	0	0	0	0
18	Mandatory Online Courses	IFC	Industry and Foreign Certification	0	0	0	0	0	0
19	Mandatory Courses	SAR	Skill Additional Requirements	0	0	0	0	0	0
Skill Addition Requirements (SAR) 1. Foreign Language, 2. Physical Education, 3. Soft Skill									

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4th SEMESTER

Sl. No.	Type	Subject Code	Subject Name	L	T	P	Total	Credit
1.	CC	PCCECE401	Analog & Digital Communication	3	0	0	3	3
2.	CC	PCCECE402	Digital Electronics	3	0	0	3	3
3.	CC	PCCECE403	Introduction to Artificial Intelligence and Machine Learning	3	0	0	3	3
4.	MC	MCC471	Sustainability & Environmental Science	2	0	0	2	2
5.	BSC	BSM401	Mathematics-IV	3	0	0	3	3
6.	GSC	ESP402	Essential Studies for Professionals IV	2	0	0	2	0.5
7.	CC	PCCECE491	Analog & Digital Communication Laboratory	0	0	2	2	1
8.	CC	PCCECE492	Digital Electronic Laboratory	0	0	2	2	1
9	CC	PCCECE493	Artificial Intelligence and Machine Learning Laboratory	0	0	2	2	1
10.	Sessional	OEC481	Object Oriented Programming using JAVA	1	0	2	3	2
11.	GSC	SDP482	Skill Development for Professionals-IV	0	0	2	2	0.5
12.	ECP	PRJECE481	Mini Project	-	-	-	1	1
13.	Mandatory Course	MAR481	Mandatory Additional Requirement (MAR)	0	0	0	0	0
14.		IFC	Industry and Foreign Certification	0	0	0	0	0
15.		MOOCS						

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5th SEMESTER

Sl. No.	Type	Subject Code	Subject Name	L	T	P	Total	Credit
1.	CC	PCCEC501	Electromagnetic Waves	3	0	0	3	3
2.	CC	PCCEC502	Microprocessor & Microcontroller	3	0	0	3	3
3.	CC	PCCEC503	VLSI Design	3	0	0	3	3
4.	CC	PCCEC504	Data Base Management System	3	0	2		3
4.	ECEL	PECEC504	<u>Program Elective-1</u> A. Information Theory & Coding B. Industrial Automation I C. Cyber Law & Intellectual Property Rights	3	0	0	3	3
5.	GSC	ESP 502	ESP V	1	0	0	1	0.5
6.	GSC	HSM 506	Economics for Engineers	2	0	0	2	1
7.	CC	PCCEC 591	Electromagnetic Waves Laboratory	0	0	2	2	1
8.	CC	PCCEC 592	Microprocessor & Microcontroller Laboratory	0	0	2	2	1
9	CC	PCCEC 593	VLSI Design Laboratory	0	0	2	2	1
10	CC	PCCEC 594	Data Base Management System Laboratory	0	0	2	2	1
11	Sessional	OEC581	Programming in Cloud (Python on AWS)	0	0	2	2	1
12	GSC	SDP 582	SDP V	0	0	1	1	0.5

13	ECP	PRJCE 581	Mini Project	-	-	-	1	1
14	Mandatory Course	MAR 581	Mandatory Additional Requirement (MAR)	0	0	0	0	0
15		IFC	Industry and Foreign Certification	0	0	0	0	0
Total Credit Points =								23

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6th SEMESTER

Sl. No.	Type	Subject Code	Subject Name	L	T	P	Total	Credit
1.	CC	PCCEC 601	Control System	3	0	0	3	3
2.	CC	PCCEC 602	Computer Network	3	0	0	3	3
3.	CC	PCCEC 603	Digital Signal Processing	3	0	0	3	3
3.	ECEL	PECEC 604	<u>Program Elective-2</u> A. Nano Electronics B. Industrial Automation II C. Internet of Things D. Power Electronics	3	0	0	3	3
4.	OEC	OECEC 604	<u>Open Elective-1</u> A. Deep learning with Generative AI B. Operating Systems	3	0	0	3	3
5.	GSC	ESP 602	ESP VI	1	0	0	1	0.5
6.	GSC	HSM 605	Principles of Management	2	0	0	2	2
7.	CC	PCCECE 691	Control System Laboratory	0	0	2	2	1
8.	CC	PCCECE 692	Computer Network Laboratory	0	0	2	2	1
9.	CC	PCCECE 693	Digital Signal Processing Laboratory	0	0	2	2	1
9.	Sessional	PCCECE 681	Advanced VLSI Design	0	0	2	2	1
10.	Sessional	PCCECE 682	Software Engineering with DevOps	0	0	2	2	1
11.	GSC	SDP 682	SDP VI	0	0	1	1	0.5
12.	ECP	PRJECE 681	Mini Project	-	-	-	2	1
13.	Mandatory Course	MAR 681	Mandatory Additional Requirement (MAR)	0	0	0	0	0

14		IFC	Industry and Foreign Certification	0	0	0	0	0
Total Credit Points =								24

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7th SEMESTER

Sl. No.	Type	Subject Code	Subject Name	L	T	P	Total	Credit
1.	ECEL	PECECE 701	<u>Program Elective-3</u> A. Microwave Theory & Techniques B. Computer Architecture	3	0	0	3	3
2.	ECEL	PECECE 702	<u>Program Elective-4</u> A. Wireless Communication B. Electronic measurement and Instrumentation	3	0	0	3	3
3.	ECEL	PECECE 703	<u>Program Elective-5</u> A. Digital Image and Video Processing B. Satellite Communication C. Embedded System	3	0	0	3	3
4.	OEC	OECECE 704	<u>Open Elective-2</u> A. Natural Language Processing with Large Language Models B. Web technology	3	0	0	3	3
5.	GSC	ESP 702	ESP VII	1	0	0	1	0.5
6.	GSC	SDP 782	SDP VII	0	0	1	1	0.5
7.	ECP	PRJECE 781	Project Work - I	-	-	-	5	4
8.	Mandatory	Internship I	Internship					4

9.	Mandatory Course	MAR 781	Mandatory Additional Requirement (MAR)	0	0	0	0	0
10.		IFC	Industry and Foreign Certification	0	0	0	0	0
11.	ECEL	PEEC791	A. Computer Architecture Laboratory B. Microwave Theory and Techniques Laboratory	0	0	0	2	1
Total Credit Points =								22

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8th SEMESTER

Sl. No.	Type	Subject Code	Subject Name	L	T	P	Total	Credit
1.	ECEL	PECEC801	<u>Program Elective-6</u> A. Fiber Optic Communication B. Renewable Energy	3	0	0	3	3
2	ECEL	PECEC802	A. Antenna Systems and Design B. Sensors & Transducers	3	0	0	3	3
3.	OEC	OECEC803	<u>Open Elective-3</u> A. Industrial Management B. Industrial Internet of Things	3	0	0	3	3
4.	OEC	OECEC804	<u>Open Elective-4</u> A. Data Warehousing and Business Intelligence B. Optimization Technique	3	0	0	3	3

5.	ECEL	PECEC892	A. Sensors & Transducers Lab B. Antenna and Propagation Lab	0	0	2	2	1
6.	GSC	ESP 802	ESP VIII	1	0	0	1	0.5
7.	GSC	SDP 882	SDP VIII	0	0	1	1	0.5
8.	ECP	PRJEC 881	Project Work – II & Dissertation	-	-	-	4	4
9.	CC	ECE 891	GRAND VIVA	-	-	-	-	3
10.	Mandatory	Internship II	Internship					4
11.	Mandatory Course	MAR 881	Mandatory Additional Requirement (MAR)	0	0	0	0	0
12		IFC	Industry and Foreign Certification	0	0	0	0	0
Total Credit Points =								25

CUMULATIVE CREDIT POINTS

A. B.Tech Course (Electronics & Communication Engineering)

SEMESTER	TOTAL CREDIT POINTS
3.	23
4.	21
5.	23
6.	24
7.	22
8.	25
Total	138

5th Semester Phygital Learning		
Subject_Name	Course Title	Coursera Link
PCCECE501: Electromagnetic Waves	1. Physics Fundamentals: Electromagnetics 2. Electrodynamics: Analysis of Electric Fields 3. Introduction to Electromagnetic Radiations	1. https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/learn/fundamentals-in-electromagnetics?source=search 2. https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/learn/electrodynamics-analysis-of-electric-fields?source=search 3. https://www.coursera.org/videos/design-of-transmission-line-modelling-and-performance/CndRI?query=Electromagnetic+Field+theory&source=search
PCCECE505: Data Base Management System	1. Database Structures and Management with MySQL 2. Databases and SQL for Data Science with Python	1. https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/learn/database-structures-and-management-with-mysql?source=search#modules 2. https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/learn/sql-data-science?source=search#modules
PECECE504A: Information Theory & Coding	Learning Cryptography and Network Security	https://www.linkedin.com/learning/learning-cryptography-and-network-security-24518359?u=229219690
PCCECE502: Microprocessor & Microcontroller	1. Introduction to Microprocessors 2. Learning Arduino: Interfacing with Hardware	1. https://www.coursera.org/learn/arm-education-introduction-to-microprocessors 2. https://www.linkedin.com/learning/learning-arduino-interfacing-with-hardware/open-up-your-digital-world-with-arduino?u=229219690
OECS81: Programming in Cloud (Python on AWS)	1. Developing Applications in Python on AWS 2. Cloud Native Projects: AWS Serverless	https://www.coursera.org/learn/developing-applications-in-python-on-aws https://www.linkedin.com/learning/cloud-native-projects-aws-serverless/flexibility-with-lambda-16741058?u=229219690
PCCECE503: VLSI Design	1. FPGA Design for Embedded Systems Specialization 2. Chip based VLSI design for Industrial Applications Specialization	https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/specializations/fpga-design?source=search#courses https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/specializations/chip-based-vlsi-design-for-industrial-applications?source=search#courses
6th Semester Phygital Learning		
PCCECE601: Control System	1. Control Systems Analysis: Modeling of Dynamic Systems 2. Modeling and Simulation with Simulink 3. Matlab and Simulink Basics 4. Modern Robotics: Mechanics, Planning, and Control Specialization	1. https://www.coursera.org/learn/modeling-feedback-systems 2. https://www.coursera.org/learn/modeling-with-simulink 3. https://www.coursera.org/learn/matlab-and-simulink-basics 4. https://www.coursera.org/specializations/modernrobotics
PCCECE602: Computer Network	1. Computer Networks and Network Security 2. Networking Foundations: Networking Basics	1. https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/learn/network-security-database-vulnerabilities 2. https://www.linkedin.com/learning/networking-foundations-networking-basics
PCCECE603: Digital Signal Processing	1. Digital Signal Processing 1: Basic Concepts and Algorithms 2. Advanced Armv8-M Features 3. FPGA Architecture Based System for Industrial Application 4. Digital Signal Processing 3: Analog vs Digital	1. https://www.coursera.org/learn/dsp1?specialization=digital-signal-processing#modules 2. https://www.coursera.org/learn/advanced-armv8-m-features/home/module/4 3. https://www.coursera.org/learn/fpga-architecture-based-system-for-industrial-application-using-vivado?specialization=chip-based-vlsi-design-for-industrial-applications#modules 4. https://www.coursera.org/learn/dsp3?specialization=digital-signal-processing
PECECE604A. Nano Electronics	1. Basics of nanotechnology 2. Introduction to nanophotonics and devices 3. Fundamentals of Nanoscale MOSFETs and Quantum Devices 4. MOSFETs and scaling	1. https://www.coursera.org/learn/nanotechnology 2. https://www.coursera.org/learn/nanophotonics-detectors 3. https://www.coursera.org/learn/semiconductor-physics 4. https://www.coursera.org/learn/mosfet
PECECE605A. Deep learning with Generative AI	1. Deep Learning Specialization	1. https://www.coursera.org/specializations/deep-learning
ESP602: ESP V1	1. digital logic design 2. wireless communications 3. Electronics Fundamentals 4. Electronics projects base	1. https://www.linkedin.com/pulse/teaching-digital-logic-design-online-junaid-ahmed-memon 2. https://www.coursera.org/learn/wireless-communications 3. https://www.linkedin.com/learning/electronics-foundations-basic-circuits?utm 4. https://www.linkedin.com/learning/learning-arduino-interfacing-with-analog-devices?utm
HSM675: Principles of Management	1. Principles of Management 2. Principles of Management 3. Principles of business management: Drivers for change 4. Managing Cross-Functional Collaboration as a Leader	1. https://www.coursera.org/learn/principles-of-management/home/module/1 2. https://www.coursera.org/programs/iem-faculty-learning-program-rtty7/learn/principlesofmanagement?source=search 3. https://www.linkedin.com/learning/business-fundamentals-for-customer-success-managers/principles-of-business-management-drivers-for-change?u=229219690 4. http://linkedin.com/learning/managing-cross-functional-collaboration-as-a-leader/the-power-of-cross-functional-collaboration?u=229219690

7th Semester Phygital Learning		
Subject_Name	Course Title	Coursera Link
PECECE701A: Embedded System	1. Embedded Systems using C 2.Advanced Embedded Systems with Arduino	1. https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/embedded-systems-using-c?source=search&collectionId=skill~embedded-systems 2. https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/packt-advanced-embedded-systems-with-arduino-r6pus?source=search&collectionId=skill~embedded-systems
PECECE702A: Microwave Theory and Techniques	Microwave engineering and antennas	https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/microwave-antenna?source=search#modules
PECECE703A: Digital Image and Video Processing	Fundamentals of Digital Image and Video Processing	https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/digital?source=search
OECECE704A: Deep Learning	Learning Deep Learning Specialization	https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/specializations/pearson-learning-deep-learning-from-perception-to-large-language-models?source=search

8th Semester Phygital Learning		
Subject_Name	Course Title	Coursera Link
PECECE801A. Fiber Optic Communication	1. Fiber Optic Technology and FTTX 2.Understanding Copper and Fiber Optic Communication Systems	1. https://www.coursera.org/videos/computer-networking/DG82X?source=search&query=Fiber%20Optic%20Communication 2. https://www.linkedin.com/learning/understanding-copper-and-fiber-optic-communication-systems?upsellOrderOrigin=default_guest_learning&trk=default_guest_learning
PECECE802B. Antenna and Propagation Theory	1. RF/Microwave Design - Antenna Design 2.Antenna Design for IoT Communications 3.Microwave engineering and antennas 4.RF/Microwave Design - S-parameter Analysis	1. https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/rfmicrowave-design---antenna-design?source=search 2. https://www.coursera.org/videos/iot-communications/bigrb?source=search&query=antenna 3. https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/microwave-antenna?source=search 4. https://www.coursera.org/programs/iem-faculty-learning-program-rtyr7/learn/rfmicrowave-design---s-parameter-analysis
OECECE803B. Cyber Security	1."1. Foundations of Cybersecurity 2. Google Cybersecurity 3. Introduction to Cybersecurity Essentials 4.Cybersecurity Architecture"	1. https://www.coursera.org/professional-certificates/google-cybersecurity 2. https://www.coursera.org/learn/foundations-of-cybersecurity 3. https://www.coursera.org/learn/introduction-to-cybersecurity-essentials 4. https://www.coursera.org/learn/cybersecurity-architecture
OECECE804:Optimization Technique	1. Optimization Technique	1. https://www.udemy.com/course/optimization-for-engineering-students 2. https://www.coursera.org/learn/basic-modeling
ESP 802:ESP-VIII	1. 1. Banking & Finance in India 2.Contemporary Issues in World Politics 3.Basics Economics 4. Microeconomics: Foundations and Insights	1. 1. 1. https://www.coursera.org/learn/banking-and-finance-in-india 2. https://www.coursera.org/learn/contemporary-issues-in-world-politics 3. https://www.coursera.org/programs/uemj-passout-batch-2028-54ok2/learn/basics-economics?source=search 4. https://www.coursera.org/programs/uemj-passout-batch-2028-54ok2/learn/microeconomics-foundations-insights-jgu?source=search