

**BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI**  
**NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19**

**Based on CBCS & OBE model**

**Recommended scheme of study**

***B.Tech. in Electronics & Communications Engineering***

Semester/ Session of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Mode of delivery & credits <i>L-Lecture; T-Tutorial; P-Practicals</i>			Total Credits <i>C- Credits</i>
					L <i>(Periods/ week)</i>	T <i>(Periods/ week)</i>	P <i>(Periods/ week)</i>	C
THIRD Monsoon	<b>THEORY</b>							
	FIRST	FS	BE101	Biological Science for Engineers	2	0	0	2
	SECOND	GE	IT 201	Basics of Intelligent Computing	3	0	0	3
		PC	EE205	Circuit Theory	3	1	0	4
			EC201	Electronic Devices	3	0	0	3
			EC203	Digital System Design	3	0	0	3
			EC205	Signals and Systems	3	0	0	3
	<b>LABORATORIES</b>							
	FIRST	GE	EE102	Electrical Engineering lab	0	0	3	1.5
	SECOND	MC	MC201/202/203/204	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
		PC	EC202	Electronic Devices Lab	0	0	3	1.5
			EC204	Digital System Design Lab	0	0	3	1.5
			EC208	Electronic Measurements Lab	0	0	4	2
<b>TOTAL</b>								<b>25.5</b>
FOURTH Spring	<b>THEORY</b>							
	SECOND	FS	MA203	Numerical Methods	2	0	0	2
	FIRST	FS	CE101	Environmental Science	2	0	0	2
	SECOND	PC	EC251	Probability and Random Processes	3	0	0	3
			EC253	Analog Circuits	3	0	0	3
			EC255	Analog Communication	3	0	0	3
			EC257	Electromagnetic Fields and Waves	3	0	0	3
	<b>LABORATORIES</b>							
	SECOND	FS	MA204	Numerical Methods Lab	0	0	2	1
		GE	IT202	Basic IT Workshop (Common Subject)	0	0	2	1
		MC	MC205/206/207/208	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
PC		EC254	Analog Circuits Lab	0	0	3	1.5	
		EC258	Electromagnetic Waves Lab	0	0	3	1.5	
<b>TOTAL</b>								<b>22</b>

FIFTH Monsoon	THIRD	PC	EC301	Digital Communication	3	0	0	3
			EC303	Microprocessors and Microcontrollers	3	0	0	3
			EC305	Signal Processing Techniques	3	0	0	3
			EC307	Fundamentals of Data Communication	3	0	0	3
		PE	Program Electve-I	3	0	0	3	
	OE	Open Electve-I	3	0	0	3		
		<b>LABORATORIES</b>						
	THIRD	PC	EC302	Communication System Lab	0	0	4	2
			EC304	Microprocessors and Microcontrollers Lab	0	0	3	1.5
			EC306	Signal Processing Lab	0	0	3	1.5
<b>TOTAL</b>								<b>23</b>
<b>Student may choose subjects of minor/specialization from 5th semester and onwards.</b>								
SIXTH Spring	THIRD	PC	EC351	Fiber Optic Communication	3	0	0	3
			EC353	Pulse, Digital and Switching System	3	0	0	3
			EC379	Control Systems	3	0	0	3
		PE	Program Electve-II	3	0	0	3	
		OE	Open Electve-II	3	0	0	3	
	FIRST	HSS	MT123	Business Communications	3	0	0	3
	THIRD	MC	MC300	Summer training - Mandatory				3
	SECOND	HSS	MT204	Constitution of India	2	0	0	0 Non-credit
		<b>LABORATORIES</b>						
	THIRD	PC	EC352	Fiber Optic Communication Lab	0	0	3	1.5
PC		EC354	Pulse, Digital and Switching System Lab	0	0	3	1.5	
<b>TOTAL</b>								<b>25</b>
SEVENTH Monsoon	FOURTH	PC	EC401	Industrial Electronics	3	0	0	3
			EC403	Professional Practice Law & Ethics	2	0	0	2
		PE		Program Electve-III	3	0	0	3
				Program Electve-IV	3	0	0	3
		OE		Open Elective-III	3	0	0	3
				Open Elective-IV	3	0	0	3
<b>TOTAL</b>								<b>17</b>
EIGHTH Spring	FOURTH	PC	EC400	Research project / Industry Internship	<i>NOT APPLICABLE</i>			12
<b>GRAND TOTAL</b>								<b>167</b>
<i>Minimum requirement for Degree award</i>								

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**PROGRAMME ELECTIVES (PE)\***  
**OFFERED FOR LEVEL 1-4**

PE / LEVEL	Code no.	Name of the PE courses	Prerequisite/Corequisite courses with code	L	T	P	C
<b>PE-I</b>							
PE/Level-3 (MO) SEM-V	EC309	Adaptive Signal Processing	EC305 Signal Processing Techniques	3	0	0	3
	EC311	DSP Processor	EC305 Signal Processing Techniques	3	0	0	3
	EC313	Electronic Measurements	EC208 Electronic Measurement Lab	3	0	0	3
	EC315	Industrial Instrumentation	EC208 Electronic Measurement Lab	3	0	0	3
	EC319	VLSI Systems	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC321	Microelectronic Devices and Circuits	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC323	Microwave Theory and Techniques	EC257 Electromagnetic Fields and Waves	3	0	0	3
	EC325	Antenna and Wave Propagation	EC257 Electromagnetic Fields and Waves	3	0	0	3
	EC327	Mobile & Cellular Communication	EC255 Analog Communication, EC301 Digital Communication	3	0	0	3
	EC329	Information Theory and Coding	EC251 Probability and Random Process, EC255 Analog Communication	3	0	0	3
	EC331	Issues in Nanoscale CMOS Design	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
<b>* PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS</b>							

PE / LEVEL	Code no.	Name of the PE courses	Prerequisite/Corequisite courses with code	L	T	P	C
<b>PE-II</b>							
PE/Level-3 (SP) SEM-VI	EC355	Time Frequency and Wavelet Transform	EC205 Signals and Systems, EC305 Signal Processing Techniques EC251 Probability and Random Processes	3	0	0	3
	EC357	Speech and Audio Processing	EC205 Signals and Systems, EC305 Signal Processing Techniques EC251 Probability and Random Processes	3	0	0	3
	EC359	Microcontrollers and Interfacing	EC303 Microprocessors and Microcontrollers	3	0	0	3
	EC361	Digital Systems Design with FPGAs	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices EC203 digital System Design	3	0	0	3
	EC363	Nanoelectronics	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC365	Radar and Navigation System	EC257 Electromagnetic Fields and Waves	3	0	0	3
	EC367	Computer Networking	EC307 Fundamentals of Data Communication	3	0	0	3
	EC369	Wireless Networks	EC307 Fundamentals of Data Communication	3	0	0	3
	EC371	Introduction to Electromagnetic Compatibility	EC257 Electromagnetic Fields and Waves	3	0	0	3
	EC373	Introduction to Sensors and Transducers	EC208 Electronic Measurement Lab	3	0	0	3
	EC375	High Speed Electronics	EC101 Basics of Electronics and Communication Engineering,	3	0	0	3
	EC381	Error correcting Codes	EC329 Information Theory and Coding	3	0	0	3
	EC383	DSP Architecture for VLSI	EC331 VLSI Systems EC305 Signal Processing Techniques	3	0	0	3
	EC385	Physical Design Automation	EC331 VLSI Systems	3	0	0	3
	EC387	Wireless Communication	EC255 Analog Communication, EC301 Digital Communication	3	0	0	3
EC389	Radar Signal Analysis	EC323 Microwave Theory and Techniques	3	0	0	3	
<b>* PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS</b>							

PE / LEVEL	Code no.	Name of the PE courses	Prerequisite/Corequisite courses with code	L	T	P	C
<b>PE-III</b>							
PE/Level-4(MO) SEM-VII	EC405	Digital Image & Video Processing	EC305 Signal Processing Techniques	3	0	0	3
	EC407	Multichannel Signal Processing	EC305 Signal Processing Techniques	3	0	0	3
	EC409	Fiber Optic Sensors	EC351 Fiber Optic Communication	3	0	0	3
	EC411	Mixed Signal Design	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC413	Real Time Embedded System	EC203 Digital System Design EC303 Microprocessors and Microcontrollers	3	0	0	3

EC415	Semicustom IC Design	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
EC419	Satellite Communication	EC255 Analog Communication, EC301 Digital Communication	3	0	0	3
EC421	Bio-Medical Electronics & Signal Processing	EC205 Signals and Systems, EC305 Signal Processing Techniques EC207 Probability and Random Processes	3	0	0	3
<b>* PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS</b>						

PE / LEVEL	Code no.	Name of the PE courses	Prerequisite/Corequisite courses with code	L	T	P	C
<b>PE-IV</b>							
<b>PE/Level-4(MO) VII SEM</b>	EC423	Radar Engineering	EC257 Electromagnetic Fields and Waves				
	EC425	Optoelectronic devices	EC351 Fiber Optic Communication	3	0	0	3
	EC427	Neural Networks and Fuzzy System	EC205 Signals and Systems, EC305 Signal Processing Techniques	3	0	0	3
	EC429	Device Modeling & Simulation	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC431	Multimedia Communication	EC255 Analog Communication, EC301 Digital Communication	3	0	0	3
	EC433	Low Power VLSI Circuits	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC435	ASIC Design	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices EC331 VLSI Systems	3	0	0	3
	EC437	VLSI System Testing	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC439	Integrated Circuit Technology	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices	3	0	0	3
	EC447	Electronic Packaging	EC101 Basics of Electronics and Communication Engineering, EC201 Electronic Devices EC331 VLSI Systems	3	0	0	3
	EC449	Wireless Sensors networks	EC307 Fundamentals of Data Communication	3	0	0	3
<b>* PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS</b>							

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**OPEN ELECTIVES (OE)\***  
**OFFERED FOR LEVEL 1-4**

<b>OE / LEVEL</b>	<b>Code No.</b>	<b>Name of the OE courses</b>	<b>Prerequisites courses with code</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>OE-I</b>					
OE/Level-3 (MO)	EC333	Sensors and Transducers	N/A	3	0	0	3
	EC335	Consumer Electronics	N/A	3	0	0	3
		<b>OE-II</b>					
OE/Level-3 (SP)	EC377	Introduction to Communication System	N/A	3	0	0	3
		<b>OE-III</b>					
OE/Level-4 (MO)	EC441	Introduction to MEMS	N/A	3	0	0	3
	EC443	Introduction to Human- Machine Interface	N/A	3	0	0	3
		<b>OE-IV</b>					
	EC445	Introduction to Signal Processing	N/A	3	0	0	3

**\* OPEN ELECTIVES TO BE OPTED ONLY BY OTHER DEPARTMENT STUDENTS**