

**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, Computer Science & Engineering, Electrical & Electronics Engineering, Information Technology)*

Semester/ Session of Study (Recommended)	Course Level	Category of course	Course Code	Course	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
		THEORY						
FIRST Monsoon	FIRST	FS <i>Foundation Sciences</i>	MA 103	Mathematics - I	3	1	0	4
			CH101	Chemistry	3	1	0	4
		GE <i>General Engineering</i>	EC101	Basics of Electronics & Communication Engineering	3	1	0	4
			ME101	Basics of Mechanical Engineering	3	1	0	4
		LABORATORIES						
	FIRST	FS	CH102	Chemistry Lab	0	0	3	1.5
		GE	EC102	Electronics & Communication Lab	0	0	3	1.5
		GE	ME102	Engineering Graphics	0	0	4	2
		MC Mandatory Course	MC101/10 2/103/104	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
	TOTAL							
SECOND Spring		THEORY						
	FIRST	FS	MA107	Mathematics - II	3	1	0	4
			PH113	Physics	3	1	0	4
		GE	CS101	Programming for problem Solving	3	1	0	4
			EE101	Basics of Electrical Engineering	3	1	0	4
		LABORATORIES						
	FIRST	FS	PH114	Physics Lab	0	0	3	1.5
		GE	CS102	Programming for problem Solving lab	0	0	3	1.5
			PE101	Workshop Practice	0	0	3	1.5
		MC	MC105/10 6/107/108	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
TOTAL								21.5
GRAND TOTAL FOR FIRST YEAR								43.5

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 Electrical and Electronics Engineering								
Semester/ Session of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial;P-Practicals			Total Credits C- Credits
					L (Periods/week )	T (Periods/week)	P (Periods/week)	C
GRAND TOTAL FOR FIRST YEAR								43.5
THIRD Monsoon	FIRST	FS	BE101	Biological Science for Engineers	2	0	0	2
	SECOND	GE	IT 201	Basics of Intelligent Computing	3	0	0	3
		PC	EE201	Electrical Measurement & Instrumentation	3	0	0	3
			EE203	Electrical Energy Generation & Control	3	0	0	3
			EC203	Digital System Design	3	0	0	3
			EE205	Circuit Theory	3	1	0	4
	FIRST	GE	EE102	Electrical Engineering Laboratory	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	EC204	Digital System Design Laboratory	0	0	3	1.5
	TOTAL							
FOURTH Spring				THEORY				
	SECOND	FS	MA203	Numerical Methods	2	0	0	2
	FIRST	FS	CE101	Environmental Science	2	0	0	2
	SECOND	PC	EE251	DC Machines & Transformers	3	1	0	4
			EE253	Engineering Electromagnetics	3	1	0	4
		Open Elective OE		Open Elective-I	3	0	0	3
				LABORATORIES				
	SECOND	FS	MA204	Numerical Methods Laboratory	0	0	2	1
		GE	IT202	Basic IT Workshop	0	0	2	1
		MC	MC205/206/ 207/208	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
PC		EE252	Electrical Machine Laboratory	0	0	3	1.5	
		EE202	Electrical Measurement & Instrumentation Laboratory	0	0	3	1.5	
TOTAL								21

<b>BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI</b> <b>NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19</b> <b>Based on CBCS &amp; OBE model</b> <b>Recommended scheme of study</b> <b>B.Tech. in Electrical and Electronics Engineering</b>								
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>	
FIFTH Monsoon				<b>THEORY</b>				
	THIRD	PC	EE301	AC Rotating Machines	3	0	0	3
			EE303	Introduction to Microprocessors & Microcontrollers	3	0	0	3
			EE305	Digital Signal Processing	3	1	0	4
			EE307	Electrical Power Transmission & Distribution	3	0	0	3
		PE	Program Elective -I	3	0	0	3	
		OE		Open Elective -II	3	0	0	3
				<b>LABORATORIES</b>				
	THIRD	PC	EE302	Electrical Machine Laboratory 6II	0	0	3	1.5
			EC304	Microprocessors & Microcontrollers Laboratory	0	0	3	1.5
EE306			Digital Signal Processing Laboratory	0	0	3	1.5	
<b>TOTAL</b>								<b>23.5</b>
SIXTH Spring				<b>THEORY</b>				
	THIRD	PC	EE351	Control Theory	3	1	0	4
			EE353	Power Electronics	3	1	0	4
			EE355	Power System Analysis	3	0	0	3
		PE	Program Elective-II	3	0	0	3	
		OE	Open Elective-III / MOOC-I	3	0	0	3	
	FIRST	HSS	MT123	Business Communications	3	0	0	3
	SECOND	HSS	MT204	Constitution of India	2	0	0	0 Non-credit
				<b>LABORATORIES</b>				
	THIRD	PC	EE352	Control System Laboratory	0	0	3	1.5
PC		EE354	Electrical Workshop	0	0	3	1.5	
MC		MC300	Summer Training -Mandatory				3	
<b>TOTAL</b>								<b>26</b>
SEVENTH Monsoon	FOURTH	PC	EE401	Switchgear and Protection	3	1	0	4
		HSS	EE403	Professional Practice Law & Ethics	2	0	0	2
		PE		Program Elective-III	3	0	0	3
				Program Elective-IV	3	0	0	3
		OE		Open Elective-IV / MOOC-II	3	0	0	3
				<b>LABORATORIES</b>				
	FOURTH	PC	EE402	Power System Laboratory	0	0	3	1.5
		PC	EE404	Power Electronics Laboratory	0	0	3	1.5
PC		EE406	Simulation Laboratory	0	0	2	1	
<b>TOTAL</b>								<b>19</b>
EIGHTH Spring	FOURTH	PC	EE400	Research project / Industry Internship				12
<b>GRAND TOTAL</b>								<b>167</b>

**BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19**  
*Based on CBCS & OBE model*  
**LIST OF PROGRAM ELECTIVES (B. Tech.. - EEE)**

Level of Study	Course Code	Courses	Pre-requisites	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
Programme Elective - I							
3	EE413	Sensors and Transducers	EE201 Electrical Measurement & Instrumentation	3	0	0	3
	EE415	Bio-Instrumentation and Concepts	EE201 Electrical Measurement & Instrumentation	3	0	0	3
	EE357	Electronic Devices and Analog Circuits	EC101 Basics of Electronics & Communication Engineering	3	0	0	3
	EE421	Information Technology		3	0	0	3
	EE427	Soft Computing Techniques	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3
	EE449	Artificial Intelligence for Electrical Engineering	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3
	EE447	Machine Learning	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3
Programme Elective - II							
3	EE417	Fundamentals of Communication System	EC101 Basics of Electronics & Communication Engineering	3	0	0	3
	EE411	Microprocessor Applications	EE303 Introduction to Microprocessors & Microcontrollers	3	0	0	3
	EE419	Special Electrical Machines	EE251 DC Machines and Transformer EE301 AC Rotating Machines	3	0	0	3
	EE443	Utilization of Electrical Power	EE101 Basics of Electrical Engineering EE307 Electrical Power Transmission and Distribution	3	0	0	3
	EE445	Testing and Commissioning of Electric Equipment	EE251 DC Machines and Transformer EE301 AC Rotating Machines	3	0	0	3
	EE425	Robotics	EE351 Control Theory	3	0	0	3
Programme Elective - III							
4	EE423	VLSI Systems	EC101 Basics of Electronics & Communication Engineering	3	0	0	3
	EE573	Embedded System and Applications	EE101 Basics of Electrical Engineering EC101 Basics of Electronics & Communication Engineering	3	0	0	3
	EE531	EHV AC Power Transmission	EE307 Electrical Power Transmission and Distribution EE355 Power System Analysis	3	0	0	3
	EE437	Industrial Drives and Control	EE353 Power Electronics EE351 Control Theory	3	0	0	3
	EE439	Applied Control Theory	EE351 Control Theory	3	0	0	3
	EE597	Reliability Engineering	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3
	EE441	Computer Aided Power System Analysis	EE307 Electrical Power Transmission and Distribution EE355 Power System Analysis	3	0	0	3

BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI  
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19  
Based on CBCS & OBE model  
LIST OF PROGRAM ELECTIVES (B. Tech.. - EEE)

Level of Study	Course Code	Courses	Pre-requisites	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
Programme Elective - IV							
4	EE593	High Voltage Engineering	EE101 Basics of Electrical Engineering EE201 Electrical Measurement & Instrumentation Engineering Electromagnetics EE253	3	0	0	3
	EE535	HVDC and FACTS	EE307 Electrical Power Transmission and Distribution EE355 Power System Analysis EE353 Power Electronics	3	0	0	3
	EE507	Advanced Power Electronics	EE353 Power Electronics	3	0	0	3
	EE539	Power System Dynamics	EE307 Electrical Power Transmission and Distribution EE355 Power System Analysis	3	0	0	3
	EE585	Hybrid Electric Vehicle	EE251 DC Machines and Transformer EE301 AC Rotating Machines EE353 Power Electronics	3	0	0	3
	EE605	Micro-grid Operation and Control	EE307 Electrical Power Transmission and Distribution EE355 Power System Analysis EE353 Power Electronics	3	0	0	3

**BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19**  
**Based on CBCS & OBE model**  
**LIST OF OPEN ELECTIVES (UG)**

Level of Study	Course Code	Courses	Pre-requisites	Mode of delivery & credits <i>L-Lecture; T-Tutorial; P-Practicals</i>			Total Credits <i>C- Credits</i>
				L (Periods/ week )	T (Periods/ week)	P (Periods/ week)	C
Open Elective - I							
2	EE203	Electric Energy Generation & Control	EE101 Basics of Electrical Engineering	3	0	0	3
	EE255	Signal and Systems	MA103 Mathematics - I MA107 Mathematics - II EE101 Basics of Electrical Engineering	3	0	0	3
Open Elective - II							
3	EE359	Introduction to Reliability Engineering	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3
	EE361	Linear Control Theory	EE101 Basics of Electrical Engineering MA107 Mathematics -I	3	0	0	3
Open Elective - III							
4	EE457	Fundamental of Power System	EE101 Basics of Electrical Engineering MA107 Mathematics -I	3	0	0	3
	EE459	Introduction to Power Electronics	EE101 Basics of Electrical Engineering	3	0	0	3
	EE425	Robotics	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3
Open Elective - IV							
4	EE453	Machine Electronics	EE101 Basics of Electrical Engineering EC101 Basics of Electronics & Communication Engineering	3	0	0	3
	EE427	Soft Computing Techniques	MA103 Mathematics - I MA107 Mathematics - II	3	0	0	3

BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI OF ELECTRICAL AND ELECTRONICS ENGINEERING NEWCOURSE STRUCTURE - <i>To be effective from academic session 2018- 19</i> <i>Based on CBCS &amp; OBE model</i> <i>Minor Courses For Other Department</i>							DEPARTMENT
Level of Study	Course Code	Courses	Pre-requisites	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/w eek)</i>	P <i>(Periods/ week)</i>	C
Minor for CSE & IT							
4	EE421	Power System	EE101 Basic Electrical Engineering EE261 Principle of Electrical Machines	3	0	0	3
2	EE205	Circuit Theory	EE101 Basic Electrical Engineering	3	1	0	4
3	EE331	Fundamental of Power Electronics	EE101 Basic Electrical Engineering	3	0	0	3
2	EE261	Principles of Electrical Machines	EE101 Basic Electrical Engineering	3	1	0	4
3	EE333	Fundamental of Control Theory	EE101 Basic Electrical Engineering	3	0	0	3
4	EE412	Power Electronics and Control Laboratory	EE333 Fundamental of Contro Theory EE 331 Fundamental of Power Electronics	0	0	3	1.5
4	EE414	Electrical Machines and Power System Laboratory	EE261 Principle of Electrical Machines EE421 Power System	0	0	3	1.5
Minor for ECE							
2	EE201	Electrical Measurement and Instrumentation	EE101 Basic Electrical Engineering	3	0	0	3
3	EE353	Power Electronics	EE101 Basic Electrical Engineering	3	1	0	4
2	EE261	Principles of Electrical Machines	EE101 Basic Electrical Engineering	3	1	0	4
4	EE413	Industrial Drives and Control	EE333 Fundamental of Contro Theory EE 331 Fundamental of Power Electronics	3	0	0	3
4	EE421	Power System	EE101 Basic Electrical Engineering EE261 Principle of Electrical Machines	3	0	0	3
4	EE412	Power Electronics and Control Laboratory	EE333 Fundamental of Contro Theory EE 331 Fundamental of Power Electronics	0	0	3	1.5
4	EE414	Electrical Machines and Power System Laboratory	EE261 Principle of Electrical Machines EE421 Power System	0	0	3	1.5
Minor for Non Circuitual Branches (Mechanical, Production, Civil, Chemical and Bio-Engineering)							
3	EE331	Fundamental of Power Electronics	EE101 Basic Electrical Engineering	3	0	0	3
2	EE261	Principles of Electrical Machines	EE101 Basic Electrical Engineering	3	1	0	4
2	EE205	Circuit Theory	EE101 Basic Electrical Engineering	3	1	0	4
3	EE333	Fundamental of Control Theory	EE101 Basic Electrical Engineering	3	0	0	3
4	EE421	Power System	EE101 Basic Electrical Engineering EE261 Principle of Electrical Machines	3	0	0	3
4	EE412	Power Electronics and Control Laboratory	EE333 Fundamental of Contro Theory EE 331 Fundamental of Power Electronics	0	0	3	1.5
4	EE414	Electrical Machines and Power System Laboratory	EE261 Principle of Electrical Machines EE421 Power System	0	0	3	1.5