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 for **M.Tech. in Instrumentation**

SEMESTER / Session of Study (Recomended)	Course Level	Category of course	Course Code	Course	Mode of delivery & credits *L-Lecture; T-Tutorial;P-Practicals*			Total Credits *C- Credits*
					L (*Periods/week*)	T (*Periods/week*)	P (*Periods/week*)	C
FIRST / Monsoon	FIFTH	Programme Core (PC)	EC518	Advanced Instrumentation System	3	0	0	3
			EC520	Advanced Sensing Techniques	3	0	0	3
			EC522	Advanced Digital Signal Processing	3	0	0	3
		Programme Elective (PE)		PE-I	3	0	0	3
		Open elective (OE)		OE-I	3	0	0	3
		LABORATORIES						
		Programme Core (PC)	EC519	Advanced Instrumentation Lab.	0	0	4	2
			EC521	Advanced Sensing techniques Lab.	0	0	4	2
			EC523	ADSP Lab.				
		TOTAL						**19**
SECOND / Spring	FIFTH	Programme Core (PC)	EC568	Process Control Instrumentation	3	0	0	3
			EC570	Embedded System Design	3	0	0	3
			EC572	Optoelectronic Instrumentation	3	0	0	3
		Programme Elective (PE)		PE-II	3	0	0	3
		Open elective (OE)		OE-II	3	0	0	3
		LABORATORIES						
		Programme Core (PC)	EC569	Process Control Instrumentation Lab	0	0	4	2
			EC571	Embedded System Lab.	0	0	4	2
			EC573	Optoelectronic Instrumentation Lab				
		TOTAL						**19**
TOTAL FOR FIFTH LEVEL								**38**
THIRD / Monsoon	SIXTH	Programme Core (PC)	EC600	Thesis (Part I)				8
			EC609	Industrial Instrumentation	3	0	0	3
		Programme Elective (PE)		PE-III	3	0	0	3
		Massive Open Online Course		MOOC				2
		TOTAL						**16**
FOURTH / Spring	SIXTH	Programme Core (PC)	EC650	Thesis (Part II)				16
		TOTAL						**16**
TOTAL FOR SIXTH LEVEL								**32**
GRAND TOTAL FOR M. TECH. PROGRAMME (38+32)								**70**

List of Programme Elective (PE)(choose one from each)

PE-I	EC524	Measurements and Statistics
	EC525	High Frequency Measurements
	EE515	Control System Design
	EC526	Digital Image Processing Technique
	EC527	Speech Processing and Recognition
	EC528	CMOS Digital VLSI Design
PE-II	EC574	Pattern recognition and Machine Learning
	EC558	Modern Optimization Techniques
	EC575	Artificial Intelligence System
	EC576	Micro-Electro Mechanical System
	EC577	Photonic Integrated Circuit
	EC578	CMOS Analog VLSI Design
PE-III	EC610	Biomedical Signal Processing
	EC611	Virtual Instrumentation
	EC612	Instrumentation System Design
	EC613	Applied Industrial Instrumentation
	EC614	Adaptive system and Signal Processing

Massive Open Online Course (MOOC)(choose one)

EC617	Nanoelectronic Devices and Materials
EC618	Biophotonics
EC619	Neural Networks and applications

DEPARTMENT OF ECE

PROGRAMME ELECTIVES (PE)

OFFERED FOR LEVEL 5-6 of M. Tech. in Instrumentation

PE / Level	Code no.	Name of the PE courses	Prerequisite/Corequisite courses with code	L	T	P	C
PE / Level-5 (MO)	EC524	Measurements and Statistics	EC313 Electronic Measurement	3	0	0	3
	EC525	High Frequency Measurements	EC257 Electromagnetic Fileds and Waves	3	0	0	3
	EE515	Control System Design	EC313 Electronic Measurement, EE351 Control Theory	3	0	0	3
	EC526	Digital Image Processing Technique	EC305 Signal Processing Technique, EC251 probability and Random Processes	3	0	0	3
	EC527	Speech Processing and Recognition	EC305 Signal Processing Technique	3	0	0	3
	EC528	CMOS Digital VLSI Design	EC101 Basics of Electronics & Communication Engineering	3	0	0	3
PE / Level-5 (SP)	EC574	Pattern recognition and Machine Learning	EC305 Signal Processing Technique	3	0	0	3
	EC558	Modern Optimization Techniques	EC251 probability and Random Processes	3	0	0	3
	EC575	Artificial Intelligence System	CS101 Programming for problem Solving, EC203 Digital System Design, EEC305 Signal Processing Technique, EC 255 Analog Communication, EC570 Embedded System Design	3	0	0	3
	EC576	Micro-Electro-Mechanical System	EC373 Introduction to Sensor and Transducer	3	0	0	3
	EC577	Photonic Integrated Circuit	EC 201 Electronics Devices, EC 257 Electromagnetic Fields and Waves	3	0	0	3
	EC578	CMOS Analog VLSI Design	EC253 Analog Circuits	3	0	0	3
PE / Level-6 (MO)	EC610	Biomedical Signal Processing	EC522 Advanced Digital Signal Processing	3	0	0	3
	EC611	Virtual Instrumentation	CS101 Programming for problem Solving	3	0	0	3
	EC612	Instrumentation System Design	EC518 Advance Instrumentation System	3	0	0	3
	EC613	Applied Industrial Instrumentation	EC313 Electronic Measurement, EC373 Introduction to Sensor and Transducer	3	0	0	3
	EC614	Adaptive system and Signal Processing	EC305 Signal Processing Technique	3	0	0	3

*** PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS**

DEPARTMENT OF ECE
OPEN ELECTIVES (OE)*
OFFERED FOR LEVEL 5-6 of M. Tech. in Instrumentation

OE / LEVEL	Code no.	Name of the OE courses	Prerequisites courses with code	L	T	P	C
OE/Level-5 (MO)	EC549	Modern Instrumentation Theory		3	0	0	3
OE/Level-5 (SP)	EC599	Sensors and Actuators		3	0	0	3

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