

BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI
NEW COURSE STRUCTURE - To be effective from academic session 2018- 19
Based on CBCS & OBE model
Recommended scheme of study
(B. Tech in Production 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 (Periods/ week)	T (Periods/ week)	P (Periods/ week)	C
GRAND TOTAL FOR FIRST YEAR								43.5
THIRD Monsoon	THEORY							
	SECOND	FS	MA203	Numerical Methods	2	0	0	2
	FIRST		CE101	Environmental Sciences	2	0	0	2
	SECOND	PC <i>Program Core</i>	PE201	Metallurgy	3	0	0	3
			ME203	Fluid Mechanics and Hydraulic Machines	3	0	0	3
			ME205	Strength of Materials	3	1	0	4
			PE203	Operations Research	3	0	0	3
	LABORATORIES							
	SECOND	GE	IT202	Basic IT Workshop	0	0	2	1
		FS	MA204	Numerical Methods Lab	0	0	2	1
		PC	PE202	Metallurgy Lab	0	0	3	1.5
			ME204	Mechanical Engineering Lab - I	0	0	3	1.5
		MC	MC201/202/203/204	Choice of: NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
	TOTAL							
FOURTH Spring	THEORY							
	SECOND	GE	IT201	Basics of Intelligent Computing	3	0	0	3
	FIRST	FS	BE101	Biological Sciences for Engineers	2	0	0	2
	SECOND	PC	PE204	Manufacturing Processes - I	3	0	0	3
			PE206	Metrology & Measurement	3	0	0	3
			ME207	Kinematics and Dynamics of Machines	3	0	0	3
		PE <i>Program Elective</i>		Program Elective - I	3	0	0	3
	LABORATORIES							
	FIRST	GE	EE102	Electrical Engineering Lab	0	0	3	1.5
	SECOND	PC	PE205	Manufacturing Processes - I Lab	0	0	3	1.5
			PE207	Metrology & Measurement Lab	0	0	3	1.5
		MC	MC205/206/207/208	Choice of: NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
TOTAL								22.5
FIFTH Monsoon	THEORY							
	FIRST	HSS <i>Humanities & Social Sciences</i>	MT123	Business Communications	2	0	2	3
	THIRD	PC	PE301	Manufacturing Processes - II	3	0	0	3
			PE303	Design of Machine Elements	3	1	0	4
			PE304	Production & Operations Management	4	0	0	4
		PE		Program Elective - II	3	0	0	3
		OE <i>Open Elective</i>		Open Elective - I	3	0	0	3
	LABORATORIES							
	THIRD	PC	PE302	Manufacturing Processes - II Lab	0	0	3	1.5
PE305			Computer Aided Design and Drafting Lab	0	0	3	1.5	
TOTAL								23

THEORY								
SIXTH Spring	THIRD	PC	PE311	Machine Tool Design	3	1	0	4
			PE313	Tool Design	3	1	0	4
			PE314	Statistical Quality Control	3	0	0	3
			PE315	Work Study & Ergonomics	3	0	0	3
	PE		Program Elective - III	3	0	0	3	
	OE		Open Elective - II	3	0	0	3	
	MC	MC300	Summer Training- Mandatory	NA	NA	NA	3	
LABORATORIES								
THIRD	PC	PE312	Machine Tool Design Sessional	0	0	3	1.5	
		PE316	Work Study & Ergonomics Lab.	0	0	3	1.5	
TOTAL								26
THEORY								
SEVENTH Monsoon	FOURTH	HSS	PE401	Professional Practice, Law & Ethics	2	0	0	2
		PC	PE402	Automation in Manufacturing	3	0	0	3
		PE		Program Elective - IV	3	0	0	3
	FOURTH	OE		Open Elective - III / MOOC-I	3	0	0	3
				Open Elective - IV / MOOC-II	3	0	0	3
	SECOND	MC	MT204	Constitution of India	2	0	0	NIL
	LABORATORIES							
FOURTH	PC	PE403	Automation in Manufacturing Lab	0	0	3	1.5	
		PE404	Modelling and Simulation Lab	0	0	3	1.5	
TOTAL								17
EIGHTH Spring	FOURTH		PE400	Research Project / Industrial Internship	Total			12
GRAND TOTAL								167

DEPARTMENT OF PRODUCTION ENGINEERING PROGRAMME ELECTIVES (PE)**								
LEVEL		Course Code	Name of the PE courses	Prerequisites courses with code	L	T	P	C
SECOND	PE - I (Any one) (Industrial Engineering and Management)	PE208	Project Engineering	Nil	3	0	0	3
		PE209	Engineering Economy, Costing and Accounting	Nil	3	0	0	3
		PE210	Reliability and Maintenance Engineering	Nil	3	0	0	3
THIRD	PE - II (Any one) (Industrial Engineering and Management)	PE306	Advanced Operations Research	PE 203 Operations Research	3	0	0	3
		PE307	Competitive Manufacturing Strategies	Nil	3	0	0	3
		PE308	Logistics and Supply Chain Management	PE 203 Operations Research	3	0	0	3
	PE - III (Any one) (Advanced Manufacturing Technology)	PE317	Advanced Welding Technology	PE 201 Metallurgy, PE 204 Manufacturing Processes - I	3	0	0	3
		PE318	Rapid Prototyping and Tooling	PE 204 Manufacturing Processes - I	3	0	0	3
		PE319	Material Deformation Processes	PE 204 Manufacturing Processes - I, ME 205 Strength of Materials	3	0	0	3
FOURTH	PE - I V (Any one) (Advanced Manufacturing Technology)	PE405	Manufacturing Science	PE 204 Manufacturing Processes - I, PE 301 Manufacturing Processes - II	3	0	0	3
		PE406	Non-conventional Machining Processes	PE 204 Manufacturing Processes - I, PE 301 Manufacturing Processes - II	3	0	0	3
		PE407	Advanced Manufacturing Processes	PE 204 Manufacturing Processes - I, PE 301 Manufacturing Processes - II	3	0	0	3

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

**DEPARTMENT OF PRODUCTION ENGINEERING
OPEN ELECTIVES (OE)***

OE / LEVEL	Code no.	Name of the OE courses	Prerequisites courses with code	L	T	P	C
OE (MO) / 2	PE211	Engineering Economy	Nil	3	0	0	3
OE (SP) / 3	PE309	Project Management	Nil	3	0	0	3

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

DEPARTMENT OF PRODUCTION ENGINEERING
IN-DEPTH SPECIALISATION on "Advanced Manufacturing and Production Management"
(OFFERED ONLY TO THE DEPARTMENT STUDENTS)

Students who have registered for DEPARTMENTAL SPECIALISATION (in-depth) in "Advanced Manufacturing and Production Management" should complete 20 credits and shall opt for courses listed below. The credits shall be over and above minimum requirement for degree award.

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
THEORY								
FIFTH / Monsoon	Third	PC	PE310	Industrial Robotics	3	1	0	4
			PE320	Sustainable Manufacturing	3	0	0	3
TOTAL								7
THEORY								
SIXTH / Spring	Third	PC	PE321	Manufacturing Management and Cost Optimization	3	0	0	3
		PE (any one)	PE322	Processing of Polymers, Composite and Advanced Materials	3	0	0	3
			PE323	Material Characterisation and Non-destructive Testing	3	0	0	3
TOTAL								6
THEORY								
SEVENTH / Monsoon	Fourth	PC	PE408	Micro and Nano Manufacturing	3	0	0	3
			PE409	Finite Elements in Manufacturing Engineering Applications	3	1	0	4
TOTAL								7
GRAND TOTAL								20

**DEPARTMENT OF PRODUCTION ENGINEERING
MINOR in "Production Engineering"**

(OFFERED ONLY TO OTHER DEPARTMENT STUDENTS)

Students who have registered for B. Tech Minor in Production Engineering should complete 20 credits and shall opt for courses listed below. The credits shall be over and above minimum requirement for degree award.

Semester/ Session of Study (Recommended)	Course Level	Category of course	Course Code	Courses	Prerequisites courses with code	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										
FIFTH / Monsoon	2	PC	PE203	Operations Research	Nil	3	0	0	3	
	2	PE (any one)	PE213	Manufacturing Processes	Nil	3	0	0	3	
	3		PE307	Competitive Manufacturing Strategies	Nil	3	0	0	3	
TOTAL									6	
THEORY										
SIXTH / Spring	2	PC	PE206	Metrology & Measurement	Nil	3	0	0	3	
	3	PE (any one)	PE318	Rapid Prototyping and Tooling	PE213 Manufacturing Processes	3	0	0	3	
	3		PE314	Statistical Quality Control	Nil	3	0	0	3	
	3		PE308	Logistics and Supply Chain Management	PE203 Operations Research	3	0	0	3	
	LABORATORY									
2	PC	PE207	Metrology & Measurement Lab	(Co-requisite PE206)	0	0	3	1.5		
TOTAL									7.5	
THEORY										
SEVENTH / Monsoon	3	PC	PE304	Production & Operations Management	Nil	4	0	0	4	
	LABORATORY									
	4	PC	PE404	Modelling and Simulation Lab	Nil	0	0	3	1.5	
	PROJECT									
4	PC	PE450	Mini Project		0	0	2	1		
TOTAL									6.5	
GRAND TOTAL									20	