13. Courses of Study and Scheme of Assessment

BE PRODUCTION ENGINEERING   **(2015 REGULATIONS)**

(Minimum Credits to be earned: 183)

Course Code	Course	Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
		Hours / week				**Maximum marks**			
SEMESTER I									
15P101	Calculus and its Applications	3	2	0	4	50	50	100	BS
15P102	Physics	3	0	0	3	50	50	100	BS
15P103	Chemistry	3	0	0	3	50	50	100	BS
15P104	Problem Solving and C Programming	2	2	0	3	50	50	100	ES
15P105	Engineering Metallurgy	3	0	0	3	50	50	100	ES
15C104	English Language Proficiency	2	2	0	3	50	50	100	HS
15P110	Engineering Graphics I	0	0	4	2	100	-	100	ES
15P111	Physics Laboratory I	0	0	2	1	100	-	100	BS
15P112	Chemistry Laboratory I	0	0	2	1	100	-	100	BS
15P113	Engineering Practices	0	0	2	1	100	-	100	ES
15P214	Personality and Character Development	0	0	Refer Sem 2 and footnote					MC
	Total 32 hrs	**16**	**6**	**10**	**24**	**700**	**300**	**1000**	
SEMESTER II									
15P201	Complex Variables and Transforms	3	2	0	4	50	50	100	BS
15P202	Materials Science	3	0	0	3	50	50	100	BS
15P203	Chemistry of Engineering Materials	3	0	0	3	50	50	100	BS
15P204	Engineering Mechanics	3	2	0	4	50	50	100	ES
15P205	Basics of Electrical and Electronics Engineering	3	0	0	3	50	50	100	ES
15____	Language Elective	3	0	0	3	50	50	100	HS
15P210	Engineering Graphics II	0	0	4	2	100	-	100	ES
15P211	Physics Laboratory II	0	0	2	1	100	-	100	BS
15P212	Chemistry Laboratory II	0	0	2	1	100	-	100	BS
15P214	Personality and Character Development	0	0	**	Grade	-	-		MC
	Total 30 hrs	**18**	**4**	**8**	**24**	**600**	**300**	**900**	

CA   -   Continuous Assessment
FE   -   Final Examination
**   - Total 40 hrs in semesters I & II put together.
Grade: Completed / Not Completed.

CAT - Category; BS - Basic Science; HS - Humanities and Social Sciences; ES - Engineering Sciences;
PC - Professional Core; PE - Professional Elective; OE - Open Elective; EEC - Employability Enhancement Course;
MC – Mandatory Course.

BE PRODUCTION ENGINEERING

(2015 REGULATIONS)

Course Code	Course	Hours / week				Maximum marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER II Summer Term€									
15P215	Professional Skills	6	0	9	2	100	-	100	EEC
15P216	In-Plant Training & Technical Seminar	6	0	9	2	100	-	100	EEC
	Total 30 hrs	**12**	**0**	**18**	**4**	**200**	**-**	**200**	

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FE   - Final Examination
€   - These courses will be conducted prior to the commencement of the third semester for a period of 4 weeks during summer term.

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BE PRODUCTION ENGINEERING

(2015 REGULATIONS)

Course Code	Course	Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
		Hours / week				**Maximum marks**			
SEMESTER III									
15P301	Numerical Methods	2	2	0	3	50	50	100	BS
15P302	Strength of Materials	3	2	0	4	50	50	100	ES
15P303	Fluid Mechanics and Machinery	3	2	0	4	50	50	100	ES
15P304	Welding Technology	3	0	0	3	50	50	100	PC
15P305	Machining Technology	3	0	0	3	50	50	100	PC
15C070	Economics for Engineers	3	0	0	3	50	50	100	HS
15P310	Machine Drawing	0	0	4	2	100	-	100	ES
15P311	Electrical and Electronics Engineering Laboratory	0	0	2	1	100	-	100	ES
15P312	Metallurgy and Strength of Materials Laboratory	0	0	2	1	100	-	100	ES
	Total 31 hrs	**17**	**6**	**8**	**24**	**600**	**300**	**900**	
SEMESTER IV									
15P401	Probability and Statistics	2	2	0	3	50	50	100	BS
15P402	Measurement Systems	3	0	0	3	50	50	100	ES
15P403	Thermal Systems and Heat Transfer	3	2	0	4	50	50	100	ES
15P404	Mechanics of Machines	3	2	0	4	50	50	100	PC
15P405	Foundry Technology	3	0	0	3	50	50	100	PC
15____	Open Elective I*	3	0	0	3	50	50	100	OE
15P410	Thermal Engineering and Fluid Machinery Laboratory	0	0	2	1	100	-	100	ES
15P411	Machining Technology Laboratory	0	0	2	1	100	-	100	PC
	Total 27 hrs	**17**	**6**	**4**	**22**	**500**	**300**	**800**	

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* – LTPC for open electives can be either 3 0 0 3 or 2 2 0 3.

BE PRODUCTION ENGINEERING (2015 REGULATIONS)

Course Code	Course	Hours / week				Maximum marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER V									
15P501	Statistical Quality Control	3	0	0	3	50	50	100	PC
15P502	Process Planning and Cost Estimation	3	0	0	3	50	50	100	PC
15P503	Manufacturing Metrology	3	0	0	3	50	50	100	PC
15P504	Metal Forming Processes	3	0	0	3	50	50	100	PC
15P505	Design of Machine Elements	3	2	0	4	50	50	100	PC
15____	Open Elective II*	3	0	0	3	50	50	100	OE
15P510	Manufacturing Technology Laboratory	0	0	4	2	100	-	100	PC
15P511	Metrology and Computer Aided Inspection Laboratory	0	0	4	2	100	-	100	PC
	Total 28 hrs	**18**	**2**	**8**	**23**	**500**	**300**	**800**	
SEMESTER VI									
15P601	Operations Research	3	0	0	3	50	50	100	PC
15P602	Jigs, Fixtures and Die Design	2	2	0	3	50	50	100	PC
15P603	Design for Manufacture and Assembly	2	2	0	3	50	50	100	PC
15P604	Computer Numerical Control Machines	3	0	0	3	50	50	100	PC
15P605	Production and Operations Management	3	0	0	3	50	50	100	PC
15____	Open Elective III*	3	0	0	3	50	50	100	OE
15P610	Fluid Power and CNC Laboratory	0	0	4	2	100	-	100	PC
15P611	CAD/CAE/CAM Laboratory	0	0	4	2	100	-	100	PC
15P620	Innovation Practices	0	0	4	2	100	-	100	EEC
	Total 32 hrs	**16**	**4**	**12**	**24**	**600**	**300**	**900**	

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BE PRODUCTION ENGINEERING   (2015 REGULATIONS)

Course Code	Course	Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
Semester VII									
15P701	Automation and Robotics	3	0	0	3	50	50	100	PC
15P702	Environment Conscious Manufacturing	3	0	0	3	50	50	100	PC
15P___	Professional Elective I	3	0	0	3	50	50	100	PE
15P___	Professional Elective II	3	0	0	3	50	50	100	PE
15P___	Professional Elective III	3	0	0	3	50	50	100	PE
15P___	Professional Elective IV	3	0	0	3	50	50	100	PE
15P710	Industrial Engineering and Lean Practices Laboratory	0	0	4	2	100	-	100	PC
15P711	Product Design and Development Laboratory	0	0	4	2	100	-	100	EEC
15P720	Project Work I	0	0	4	2	100	-	100	EEC
	Total 30 Hrs	**18**	**0**	**12**	**24**	**600**	**300**	**900**	
Semester VIII									
15P___	Professional Elective V	3	0	0	3	50	50	100	PE
15P___	Professional Elective VI	3	0	0	3	50	50	100	PE
15P820	Project Work II	0	0	16	8	50	50	100	EEC
	Total 22 Hrs	**6**	**0**	**16**	**14**	**150**	**150**	**300**	

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LANGUAGE ELECTIVES

15C080	Communication Skills for Engineers
15C081	Basic German
15C082	Basic French
15C083	Basic Japanese

OPEN ELECTIVES
(Students can opt for all open electives from single stream or several streams)

MATHEMATICS

15OH01	Advanced Linear Algebra
15OH02	Algebraic Structures
15OH03	Calculus of Variations and Tensor Analysis
15OH04	Graph Theory and its Applications
15OH05	Mathematical Finance
15OH06	Mathematical Modeling and Simulation
15OH07	Number Theory for Computing
15OH09	Reliability and Quality Control
15OH10	Soft Computing
15OH11	Stochastic Models

PHYSICS

15OH20	Analytical Techniques for Materials Characterization
15OH21	Laser Technology
15OH22	Micro Electromechanical Systems
15OH23	Nanomaterials and Applications
15OH24	Physics for Solar PV Systems and Solid-State Lighting Systems
15OH25	Sensors for Engineering Applications
15OH26	Thin Film Technology
15OH27	Nonlinear Science and Engineering Applications
15OH28	Nonlinear Fiber Optics
15OH29	Chaotronics

CHEMISTRY

15OH36	Corrosion Science and Engineering
15OH37	Energy Storing Devices and Fuel Cells
15OH41	Polymer Science and Technology

COMPUTER APPLICATIONS

15OH46	Computer Graphics and Virtual Reality
15OH47	Data and File Structures
15OH48	Database Management System
15OH49	High Performance Computing
15OH50	Mainframe Systems
15OH51	Mobile Application Development
15OH52	Multicore Programming
15OH53	Object Oriented Programming
15OH54	Programming in Python
15OH55	Responsive Web Design
15OH56	Social Web Mining
15OH57	Software Engineering
15OH58	Java Programming
15OH59	Geographic Information System
15OH60	Programming for Robotics

HUMANITIES

15OH61	An Introduction to Indian Constitution
15OH62	Entrepreneurship
15OH63	Human Resource Management
15OH64	Industrial Psychology
15OH65	Principles of Management
15OH66	Business Statistics

15OH67	Disaster Management
15OH68	Financial and Managerial Accounting
15OH69	Marketing Management
15OH70	Defence Practices and Disaster Management

ENGLISH

15OH75	English and Soft Skills for Employability
15OH76	English for Competitive Examinations
15OH77	German Language – International Level A1.1
15OH78	German Language – International Level A1.2

APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES

15OH81	Data Structures and Algorithms
15OH82	Optimization Techniques
15OH83	Data Science
15OH84	Data Visualization
15OH85	Artificial Intelligence
15OH86	Pervasive Computing
15OH87	Parallel and Distributed Computing
15OH88	Cyber Security
15OH89	Randomized Algorithms
15OH90	Approximation Algorithms
15OH91	Network Science
15OH92	Applied Stochastic Processes
15OH93	Modelling and Simulation
15OH94	Graph Algorithms

PROFESSIONAL ELECTIVES

15P001	Mechatronics
15P002	Modeling and Control of Dynamic Systems
15P003	Maintenance and Safety Engineering
15P004	Finite Element Applications in Manufacturing
15P005	Design and Manufacture of Gears
15P006	Product Life Cycle Management
15P007	Surface Engineering and Tribology
15P008	Manufacture of Automotive Components
15P009	Lean Manufacturing
15P010	Material Handling Systems
15P011	Non -Traditional Machining Techniques
15P012	Supply Chain Management
15P013	PLC Programming and Applications
15P014	Mechanical Vibrations
15P015	Precision Manufacturing
15P016	Product Development Strategies
15P017	Applied Hydraulics and Pneumatics
15P018	Composite Materials Processing
15P019	Simulation of Manufacturing Systems
15P020	Computational Fluid Dynamics
15P021	Six Sigma
15P022	Rapid Prototyping
15P023	Optimization Techniques for Manufacturing
15P024	Hybrid Vehicle Traction
15P025	Sustainable Mobility and Logistics
15P026	Automotive Standardization
15P027	Industrial Ergonomics

ONE CREDIT COURSES

OFFERED BY THE DEPARTMENT

15PF01	Process Improvement and Product Design through Lean Six Sigma
15PF02	Design and Optimization Technology
15PF03	Introduction to Precision Machining

| 15PF04 | Non-Destructive Testing of Aircraft Structures |
| 15PF05 | Application of Strength Criteria |

OFFERED BY HUMANITIES
15OF01	Export – Import Management
15OF02	Insurance & Risk Management
15OF03	Values and Ethics at Work Place
15OF04	Development of Industrialisation
15OF05	Creativity and Social Enterprise
15OF06	Social and Psychological Well Being
15OF13	Security Analysis and Portfolio Management
15OF14	Implementation of Quality Management System
15OF15	Financial Management
15OF16	Personality Development Through Transactional Analysis

OFFERED BY THE DEPARTMENT OF ENGLISH
15OF10	Corporate Communication
15OF11	Interpersonal and Organizational Communication
15OF12	Human Values Through Literature

OFFERED BY THE DEPARTMENT OF MATHEMATICS
| 15OF21 | Principles of Business Analytics |

Summary of Credit Distribution

B.E. PRODUCTION ENGINEERING												
S. No	Course Work subject Area	Credits Per Semester								Total Credit	Credit Range	
		I	II	III	IV	V	VI	VII	VIII		Min	Max
1	**HS**	3	3	3	0	0	0	0	0	9	9	18
2	**BS**	12	12	3	3	0	0	0	0	30	27	36
3	**ES**	9	9	12	8	0	0	0	0	38	27	36
4	**PC**	0	0	6	8	20	19	8	0	61	54	72
5	**PE**	0	0	0	0	0	0	12	6	18	18	27
6	**OE**	0	0	0	3	3	3	0	0	9	9	18
7	**EEC**	0	0+4*	0	0	0	2	4	8	18	18	27
	Total	24	24+4*	24	22	23	24	24	14	183		

* Summer Term

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