

13. Courses of Study and Scheme of Assessment

BE PRODUCTION ENGINEERING (SANDWICH)

(2015 REGULATIONS)
(Minimum Credits to be earned: 183)

Course Code	Course	Hours / week				Credits	Maximum marks			
		Lecture	Tutorial	Practical			CA	FE	Total	CAT
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
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
15P100	Industrial Training I	0	0	10		5*	100	-	100	PC
15P214	Personality and Character Development	0	0				Refer sem 2 and footnote			MC
Total 26 hrs		14	4	8+10		20+5*	650	250	900	
SEMESTER II										
15P104	Problem Solving and C Programming	2	2	0		3	50	50	100	ES
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
15P113	Engineering Practices	0	0	2		1	100	-	100	ES
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
15P200	Industrial Training II	0	0	10		5*	100	-	100	PC
15D214	Personality and Character Development	0	0	**		Grade	-	-	-	MC
Total 25 hrs		11	4	10+10		18+5*	700	200	900	

CA - Continuous Assessment

FE - Final Examination

** - Total 40 hrs in semesters I & II put together.

Grade: Completed / Not Completed.

* - Will be counted for TGPA (Training Grade Point Average) computation

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER II Summer Term €									
15P215	Professional Skills	6	0	9	2	100	-	100	EEC
15P217	Internship – I	6	0	9	2	100	-	100	EEC
Total 30 hrs		12	0	18	4	200	-	200	

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€ - 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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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER III									
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
15P301	Numerical Methods	2	2	0	3	50	50	100	BS
15P305	Machining Technology	3	0	0	3	50	50	100	PC
15C___	Language Elective	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
15P411	Machining Technology Laboratory	0	0	2	1	100	-	100	PC
15P300	Industrial Training III	0	0	10	5*	100	-	100	PC
Total 26 hrs		14	4	8+10	20+5*	650	250	900	
SEMESTER IV									
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
15P401	Probability and Statistics	2	2	0	3	50	50	100	BS
15P403	Thermal Systems and Heat Transfer	3	2	0	4	50	50	100	ES
15P312	Metallurgy and Strength of Materials Laboratory	0	0	2	1	100	-	100	ES
15P410	Thermal Engineering and Fluid Machinery Laboratory	0	0	2	1	100	-	100	ES
15P400	Industrial Training IV	0	0	10	5*	100	-	100	PC
Total 26 hrs		14	8	4+10	20+5*	550	250	800	

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER V									
15P402	Measurement Systems	3	0	0	3	50	50	100	ES
15P405	Foundry Technology	3	0	0	3	50	50	100	PC
15P503	Manufacturing Metrology	3	0	0	3	50	50	100	PC
15P505	Design of Machine Elements	3	2	0	4	50	50	100	PC
15C070	Economics for Engineers	3	0	0	3	50	50	100	HS
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
15P500	Industrial Training V	0	0	10	5*	100	-	100	PC
Total 25 hrs		15	2	8+10	20+5*	550	250	800	
SEMESTER VI									
15P404	Mechanics of Machines	3	2	0	4	50	50	100	PC
15P504	Metal Forming Processes	3	0	0	3	50	50	100	PC
15P601	Operations Research	3	0	0	3	50	50	100	PC
15P604	Computer Numerical Control Machines	3	0	0	3	50	50	100	PC
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
15P600	Industrial Training VI	0	0	10	5*	100	-	100	PC
Total 22 hrs		12	2	8+10	17+5*	500	200	700	

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Course Code	Course	Hours / week				Credits	Maximum marks			
		Lecture	Tutorial	Practical	CA		FE	Total	CAT	
SEMESTER VII										
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	
15____	Open Elective I*	3	0	0	3	50	50	100	OE	
15____	Open Elective II*	3	0	0	3	50	50	100	OE	
15P620	Internship – II & Innovation Practices	0	0	4 [@]	2	100	-	100	EEC	
15P700	Industrial Training VII***	0	0	10 [@]	5*	100	-	100	PC	
Total 16 hrs		12	0	14[@]	14+5*	400	200	600		
SEMESTER VIII										
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	
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	
15P____	Professional Elective I	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	
15P800	Industrial Training VIII	0	0	10	5*	100	-	100	PC	
Total 25 hrs		13	4	8+10	19+5*	550	250	800		

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 *** - Students will undergo training in an industry immediately after the 6th semester examinations for a period of 3 months.

@ - Minimum number of hours in the industry

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

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER IX									
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 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
15P720	Project Work I	0	0	4	2	100	-	100	EEC
15P900	Industrial Training IX	0	0	10	5*	100	-	100	PC
Total 19 hrs		15	0	4+10	17+5*	450	250	700	
SEMESTER X									
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	Internship – III & 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
15OH12	Modelling Flow Through Microchannels

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
15OH30	Quantum Mechanics
15OH31	MEMS Sensors and Actuators for Industrial Applications

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

APPAREL AND FASHION DESIGN

15FOD1	Theatre and Film Costumes
15FOD2	Elements and Principles of Fashion Design
15FOD3	World Art and Craft
15FOD4	Fashion Journalism

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

APPLIED SCIENCES

15OH98	Financial Engineering
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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

OPEN ELECTIVES OFFERED BY ENGINEERING DEPARTMENTS
(Students can register for open electives when offered by engineering departments
excluding those offered by their parent department)

AUTOMOBILE ENGINEERING

15AH01	Automotive Infotronics
15AH02	Off Highway Vehicles
15AH03	Electric and Hybrid Vehicles
15AH04	Electric, Hybrid and Fuel Cell Vehicles
15AH06	Motor Vehicle Engineering

COMPUTER SCIENCE AND ENGINEERING

15ZH01	Multimedia Systems and Applications
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ELECTRICAL AND ELECTRONICS ENGINEERING

15EH01	Sustainable Energy Systems
15EH03	Renewable Energy Sources

MECHANICAL ENGINEERING

15MH01	Project Engineering
15MH02	Total Quality Management
15MH03	Industrial engineering and management
15MH04	Enterprise Resource Planning
15MH05	Six Sigma Project Methodology

PRODUCTION ENGINEERING

15PH04	Financial Management and Accounting
15PH07	Virtual Reality Systems and Applications
15PH08	Foundation Skills in Integrated Product Development

ROBOTICS AND AUTOMATION ENGINEERING

15RH02	Introduction to Robotics & Automation
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BIOTECHNOLOGY

15BH03	Water Resource Management
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INFORMATION TECHNOLOGY

15IH03	Graphics and Multimedia
15IH06	Information Storage and Management

TEXTILE TECHNOLOGY (FT & PT)

15TH01	Characterization of Fibers and Polymers
15TH02	Sound and Thermal Isolation Products and Characterization
15TH03	Technical Textiles in Engineering Applications
15TH04	Electro Active Textiles
15TH05	Filtration Products and Characterization
15TH06	Industrial Textiles
15TH10	Textiles and Fabric Care

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
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OFFERED BY THE DEPARTMENT PHYSICS

15OF31	X-Ray Lithography Processes
15OF32	Synchrotron Radiation Based Characterization of Nanomaterials

SUMMARY OF CREDIT DISTRIBUTION

B.E PRODUCTION ENGINEERING (SW)														
S. No.	Course Work subject Area	Credits Per Semester										Total Credit	Credit Range	
		I	II	III	IV	V	VI	VII	VIII	IX	X		Min	Max
1	HS	3	0	3	0	3	0	0	0	0	0	9	9	18
2	BS	12	12	3	3	0	0	0	0	0	0	30	27	36
3	ES	5	6	10	14	3	0	0	0	0	0	38	27	36
4	PC	0+5 [#]	0+5 [#]	4+5 [#]	3+5 [#]	14+5 [#]	17+5 [#]	6+5 [#]	11+5 [#]	6+5 [#]	0+5 [#]	61	54	72
5	PE	0	0	0	0	0	0	0	3	9	6	18	18	27
6	OE	0	0	0	0	0	0	6	3	0	0	9	9	18
7	EEC	0	0+4 [*]	0	0	0	0	2	2	2	8	18	18	27
	Total	20+5[#]	18+4[*]+5[#]	20+5[#]	20+5[#]	20+5[#]	17+5[#]	14+5[#]	19+5[#]	17+5[#]	14+5[#]	183		

* Summer Term

will be counted for TGPA (Training Grade Point Average) computation

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