

13. Courses of Study and Scheme of Assessment BE COMPUTER SCIENCE & ENGINEERING

(2015 REGULATIONS)
(Minimum credits to be earned:185)

Code No.	Course	Hours / week				Maximum marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER I									
15Z101	Calculus and its Applications	3	2	0	4	50	50	100	BS
15Z102	Physics	3	0	0	3	50	50	100	BS
15Z103	Chemistry	3	0	0	3	50	50	100	BS
15Z104	English Language Proficiency	2	2	0	3	50	50	100	HS
15Z105	Problem Solving using C	3	0	0	3	50	50	100	ES
15Z106	Basics of Electrical and Electronics Engineering	3	0	0	3	50	50	100	ES
15Z110	Engineering Practices	0	0	2	1	100	-	100	ES
15Z111	Physics Laboratory I	0	0	2	1	100	-	100	BS
15Z112	Chemistry Laboratory I	0	0	2	1	100	-	100	BS
15Z113	C – Programming Laboratory	0	0	4	2	100	-	100	ES
15Z214	Personality and Character Development	0	0			Refer sem 2 and footnote			MC
Total 31hrs		17	4	10	24	700	300	1000	
SEMESTER II									
15Z201	Complex Variables and Transforms	3	2	0	4	50	50	100	BS
15Z202	Computer Architecture I	3	0	0	3	50	50	100	ES
15Z203	Object Oriented Programming in C++	3	0	0	3	50	50	100	PC
15Z204	Materials Science	3	0	0	3	50	50	100	BS
15Z205	Applied Electrochemistry	3	0	0	3	50	50	100	BS
15Z____	Language Elective	3	0	0	3	50	50	100	HS
15Z210	Engineering Graphics	1	0	4	3	100	-	100	ES
15Z211	Physics Laboratory II	0	0	2	1	100	-	100	BS
15Z212	Chemistry Laboratory II	0	0	2	1	100	-	100	BS
15Z213	C++ Programming Laboratory	0	0	2	1	100	-	100	PC
15Z214	Personality and Character Development	0	0	**	Grade	-	-	-	MC
Total 31hrs		19	2	10	25	700	300	1000	

CA - Continuous Assessment; FE- Final Examination

** - Total 40 hrs in I & II semesters put together. Grade : Completed / Not Completed

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SEMESTER II – Summer Term[€]									
15Z215	Professional Skills	6	0	9	2	100	-	100	EEC
15Z216	In-Plant Training & Technical Seminar	6	0	9	2	100	-	100	EEC
Total 30hrs		12	0	18	4	200	-	200	
SEMESTER III									
15Z301	Linear Algebra and Numerical Analysis	3	2	0	4	50	50	100	BS
15Z302	Data Structures	3	0	0	3	50	50	100	PC
15Z303	Microprocessors and Interfacing	3	0	0	3	50	50	100	ES
15Z304	Environmental Science and Engineering	3	0	0	3	50	50	100	HS
15Z305	Discrete Structures	3	2	0	4	50	50	100	BS
15Z070	Economics for Engineers	3	0	0	3	50	50	100	HS
15Z310	Microprocessors and Interfacing Laboratory	0	0	4	2	100	-	100	ES
15Z311	Data Structures Laboratory	0	0	4	2	100	-	100	PC
Total 30hrs		18	4	8	24	500	300	800	
SEMESTER IV									
15Z401	Probability, Statistics and Random Processes	3	2	0	4	50	50	100	BS
15Z402	Software Engineering	3	0	0	3	50	50	100	PC
15Z403	Design and Analysis of Algorithms	2	2	0	3	50	50	100	PC
15Z404	Operating Systems	3	0	0	3	50	50	100	PC
15Z405	Database Management Systems	3	0	0	3	50	50	100	PC
15_____	Open Elective I*	3	0	0	3	50	50	100	OE
15Z410	Operating Systems Laboratory	0	0	2	1	100	-	100	PC
15Z411	Database Management Systems Laboratory	0	0	2	1	100	-	100	PC
15Z412	Software Package Development	0	0	4	2	100	-	100	EEC
Total 29hrs		17	4	8	23	600	300	900	

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

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Code No.	Course	Hours / week				Maximum marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER V									
15Z501	Theory of Computing	3	2	0	4	50	50	100	PC
15Z502	Computer Networks	3	0	0	3	50	50	100	PC
15Z503	Object Oriented Analysis and Design	3	2	0	4	50	50	100	PC
15Z504	Computer Architecture II	3	0	0	3	50	50	100	ES
15Z____	Professional Elective I	3	0	0	3	50	50	100	PE
15____	Open Elective II*	3	0	0	3	50	50	100	OE
15Z510	Computer Networks Laboratory	0	0	4	2	100	-	100	PC
15Z511	Java Programming Laboratory	1	0	2	2	100	-	100	PC
Total 29hrs		19	4	6	24	500	300	1000	
SEMESTER VI									
15Z601	Embedded Systems	3	0	0	3	50	50	100	ES
15Z602	Compiler Design	3	2	0	4	50	50	100	PC
15Z603	Distributed Operating Systems	3	0	0	3	50	50	100	PC
15Z604	Data Mining	3	2	0	4	50	50	100	PC
15Z____	Professional Elective II	3	0	0	3	50	50	100	PE
15____	Open Elective III*	3	0	0	3	50	50	100	OE
15Z610	Embedded Systems Laboratory	0	0	2	1	100	-	100	ES
15Z611	Innovation Practices	0	0	4	2	100	-	100	EEC
Total 28hrs		18	4	6	23	500	300	800	

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SEMESTER VII									
15Z701	Artificial Intelligence	3	0	0	3	50	50	100	PC
15Z702	Data Analytics	3	2	0	4	50	50	100	PC
15Z703	Mobile Systems Engineering	3	2	0	4	50	50	100	PC
15Z704	Cryptography and Network Security	2	2	0	3	50	50	100	PC
15Z____	Professional Elective III	3	0	0	3	50	50	100	PE
15Z____	Professional Elective IV	3	0	0	3	50	50	100	PE
15Z710	Artificial Intelligence Laboratory	0	0	4	2	100	-	100	PC
15Z720	Project Work I	0	0	4	2	100	-	100	EEC
Total 31hrs		17	6	8	24	500	300	800	

SEMESTER VIII

15Z____	Professional Elective V	3	0	0	3	50	50	100	PE
15Z____	Professional Elective VI	3	0	0	3	50	50	100	PE
15Z820	Project Work II	0	0	16	8	50	50	100	EEC
Total 22hrs		6	0	16	14	150	150	300	

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LANGUAGE ELECTIVES

15Z080	Communication Skills for Engineers
15Z081	Basic German
15Z082	Basic French
15Z083	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
15OH08	Operations Research
15OH09	Reliability and Quality Control
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

15OH33	Chemical Sensors and Biosensors
15OH37	Energy Storing Devices and Fuel Cells
15OH39	Modern Electronic Materials

COMPUTER APPLICATIONS

15OH49	High Performance Computing
15OH50	Mainframe Systems
15OH51	Mobile Application Development
15OH54	Programming in Python
15OH55	Responsive Web Design
15OH56	Social Web Mining

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

15OH82	Optimization Techniques
15OH84	Data Visualization
15OH86	Pervasive Computing
15OH88	Cyber Security
15OH89	Randomized Algorithms
15OH90	Approximation Algorithms
15OH91	Network Science
15OH92	Applied Stochastic Processes
15OH93	Modelling and Simulation
15OH94	Graph Algorithms

OPEN ELECTIVES OFFERED BY ENGINEERING DEPARTMENTS

15MH02	Total Quality Management	(Department of Mechanical Engineering)
15PH07	Virtual Reality Systems and Applications	(Department of Production Engineering)
15RH02	Introduction to Robotics & Automation	(Department of Robotics and Automation)

PROFESSIONAL ELECTIVES

15Z001	Advanced Data Structures
15Z002	Advanced Algorithms
15Z003	Cloud Computing
15Z004	Programming Paradigms
15Z005	Service Oriented Architecture
15Z006	XML and Web Technology
15Z007	Semantic Web Technology
15Z008	Internet of Things
15Z009	Parallel Programming
15Z010	Open Source Systems
15Z011	Software Project Management
15Z012	Software Testing and Quality Assurance
15Z013	User Interface Design
15Z014	Storage Management
15Z015	Soft Computing
15Z016	Evolutionary Computing
15Z017	Machine Learning
15Z018	Computer Graphics
15Z019	Basics of Digital Signal Processing
15Z020	Unix Internals
15Z021	Wireless Networks
15Z022	Advanced Computer Networks
15Z023	Information Security

ONE CREDIT COURSES

OFFERED BY THE DEPARTMENT

15ZF01	Virtual Machine Fundamentals
15ZF02	SOA and Business Mashups
15ZF03	Design and Development of Enterprise Applications using .Net
15ZF04	Operating System Performance - Workload Considerations, Testing & Measurement
15ZF05	Multi-Core Technology and Programming
15ZF06	Game Programming
15ZF07	Database Systems in Practice
15ZF08	Design of Database Query Compiler
15ZF09	Software Product Development and Management
15ZF10	Test Automation using Open Source Tools
15ZF11	IoT for Telecommunication Systems

OFFERED BY THE DEPARTMENT OF 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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SUMMARY OF CREDIT DISTRIBUTION

B.E. COMPUTER SCIENCE & 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	6	0	0	0	0	0	12	9	18
2	BS	12	12	8	4	0	0	0	0	36	27	36
3	ES	9	6	5	0	3	4	0	0	27	27	36
4	PC	0	4	5	14	15	11	16	0	65	54	72
5	PE	0	0	0	0	3	3	6	6	18	18	27
6	OE	0	0	0	3	3	3	0	0	9	9	18
7	EEC	0	4	0	2	0	2	2	8	18	18	27
	Total	24	29	24	23	24	23	24	14	185	175	185

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