B.TECH. PROGRAMME

ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM

for 2015 admissions onwards

GENERAL INFORMATION

Code Numbering:

Each course is assigned an 8-character Code number. The first two digits indicate the year of curriculum revision. The next three letters indicate the Department offering the course. The last three digits are unique to the course – the first digit indicates the level of the course (100, 200, 300, 400 etc.); the second digit indicates the type of the course, viz. 0, 1 and 2 indicate the core courses; 3,4,5,6 and 7 indicate the Elective courses; 8 indicates the Lab. or practical-based courses and 9 indicates Projects.

ABBREVIATIONS USED IN THE CURRICULUM:

Cat. - Category;
L - Lecture;
T - Tutorial;
P - Practicals;
Cr - Credits;
ES - Exam Slot;
ENGG. - Engineering Sciences (including General, Core and Electives);
HUM - Humanities (including Languages and others);
SCI - Basic Sciences (including Mathematics);
PRJ - Project Work (including Seminars).

Departments

AES - Aerospace Engineering;
CHE - Chemical Engineering;
CHY - Chemistry;
CSE - Computer Science and Engineering;
CUL - Cultural Education;
CVL - Civil Engineering;
ECE - Electronics and Communication Engineering;
EEE - Electrical and Electronics Engineering;
EIE - Electronics and Instrumentation Engineering;
HUM - Humanities and Languages;
MAT - Mathematics;
MEC - Mechanical Engineering;
PHY - Physics;
SWK - Social Work.

Category-wise distribution of credits for B Tech Electrical and Electronics Engineering programme:

Humanities - 22 credits; Basic Sciences - 25 credits;
Engineering Sciences - 105 credits; Project Work - 12 credits. **Total = 164 Credits**

Semester I

Cat.	Code	Course Title	L-T-P	Cr	ES
HUM	15ENG111	Communicative English	2 0 2	3	A
SCI	15MAT111	Calculus and Matrix Algebra	2 1 0	3	B
ENGG	15CSE100	Computational Thinking and Problem Solving	3 0 2	4	D
SCI	15PHY100/ 15CHY100	Physics / Chemistry	3 0 0	3	C
SCI	15PHY181/ 15CHY181	Physics Lab. / Chemistry Lab.	0 0 2	1	L1
ENGG	15MEC180/ 15EEE180	Workshop A/ Workshop B	0 0 2	1	L2
ENGG	15MEC100	Engineering Drawing - CAD	2 0 2	3	E
HUM	15CUL101	Cultural Education I	2 0 0	2	F
			Total	**20**	

Semester II

Cat.	Code	Course Title	L-T-P	Cr	ES
SCI	15MAT121	Vector Calculus and Ordinary Differential Equations	3 1 0	4	B
SCI	15CHY100/ 15PHY100	Chemistry/ Physics	3 0 0	3	C
ENGG	15CSE102	Computer Programming	3 0 0	3	D
ENGG	15EEE111	Fundamentals of Electrical and Electronics Engineering	4 0 0	4	A
ENGG	15MEC111	Fundamentals of Mechanical Engineering	3 0 0	3	E
SCI	15CHY181/ 15PHY181	Chemistry Lab. / Physics Lab.	0 0 2	1	L1
ENGG	15EEE180/ 15MEC180	Workshop B/ Workshop A	0 0 2	1	L2
ENGG	15CSE180	Computer Programming Lab.	0 0 2	1	L3
HUM	15CUL111	Cultural Education II	2 0 0	2	F
			Total	**22**	

Semester III

Cat.	Code	Course Title	L-T-P	Cr	ES
ENGG	15EEE201	Analog Electronic Circuits	3 1 0	4	A
ENGG	15EEE202	Electric Circuits	3 1 0	4	D
ENGG	15EEE203	Electromagnetic Theory	3 1 0	4	C
SCI	15MAT203	Transforms and Complex Analysis	3 1 0	4	B
HUM		Humanities Elective I		2	H
ENGG	15EEE281	Electric Circuits Lab.	0 0 2	1	L2
ENGG	15EEE282	Electronic Circuits and Simulations Lab. I	0 0 2	1	L1
HUM	15AVP201	Amrita Values Programme I	1 0 0	1	F
			Total	**21**	

Semester IV

Cat.	Code	Course Title	L-T-P	Cr	ES
ENGG	15EEE211	Analog Integrated Circuits	3 0 0	3	A
ENGG	15EEE212	Electrical Machines I	3 1 0	4	C
ENGG	15EEE213	Electrical Measurements	3 0 0	3	D
SCI	15MAT214	Probability and Statistics	2 1 0	3	B
HUM		Humanities Elective II		2	H
ENGG	15EEE285	Electrical Machines Lab. I	0 0 2	1	L1
ENGG	15EEE286	Electrical Measurements Lab.	0 0 2	1	L2
ENGG	15EEE287	Electronic Circuits and Simulations Lab. II	0 0 2	1	L3
HUM	15SSK221	Soft Skills I	1 0 2	2	G
HUM	15AVP211	Amrita Values Programme II	1 0 0	1	F
			Total	**21**	

Semester V

Cat.	Code	Course Title	L-T-P	Cr	ES
ENGG	15EEE301	Control Systems	3 0 0	3	A
ENGG	15EEE302	Digital Systems	3 0 0	3	B
ENGG	15EEE303	Electrical Machines II	3 0 0	3	C
ENGG	15EEE304	Signals and Systems	3 0 0	3	E
HUM	15ENV300	Environmental Science and Sustainability	3 0 0	3	D
ENGG	15MEC305	Thermal Engineering and Fluid Machinery	3 0 0	3	F
ENGG	15EEE381	Digital Systems and Signals Lab.	0 0 2	1	L1
ENGG	15EEE382	Electrical Machines Lab. II	0 0 2	1	L2
HUM	15SSK321	Soft Skills II	1 0 2	2	G
ENGG	15EEE390	Live-in-Lab**		[3]	P2
			Total	**22 [+3]**	

Semester VI

Cat.	Code	Course Title	L-T-P	Cr	ES
ENGG	15EEE311	Digital Signal Processing	3 0 0	3	A
ENGG	15EEE312	Electrical Energy Systems I	3 0 0	3	C
ENGG	15EEE313	Power Electronics	3 0 0	3	D
ENGG	15EEE314	Microcontroller and Applications	3 0 0	3	F
SCI	15MAT303	Optimization Techniques	2 1 0	3	B
ENGG		Elective I*	3 0 0	3	E
ENGG	15EEE385	DSP and Microcontroller Lab.	0 0 2	1	L1
ENGG	15EEE386	Power Electronics Lab.	0 0 2	1	L2
ENGG	15EEE387	Open Lab.	0 1 2	2	L3
HUM	15SSK331	Soft Skills III	1 0 2	2	G
			Total	**24**	

* A maximum of One Elective course can be chosen from the Electives prescribed for other Branches or from under Science Electives.

** Students undertaking and registering for a Live-in-Lab project, can be exempted from registering for an Elective course in the higher semester.

Semester VII

Cat.	Code	Course Title	L-T-P	Cr	ES
ENGG	15EEE401	Electric Drives and Control	3 1 0	4	A
ENGG	15EEE402	Electrical Energy Systems II	3 1 0	4	B
ENGG		Elective II*	3 0 0	3	E
ENGG		Elective III*	3 0 0	3	D
ENGG	15EEE481	Drives and Controls Lab.	0 0 2	1	L1
ENGG	15EEE482	Power Systems Lab.	0 0 2	1	L2
PRJ	15EEE495	Project Phase I		2	P1
ENGG	15EEE490	Live-in-Lab**		[3]	P2
			Total	**18 [+3]**	

Semester VIII

Cat.	Code	Course Title	L-T-P	Cr	ES
ENGG		Elective IV*	3 0 0	3	E
ENGG		Elective V*	3 0 0	3	D
PRJ	15EEE499	Project Phase II		10	P
			Total	**16**	

TOTAL 164

* A maximum of One Elective course can be chosen from the Electives prescribed for other Branches or from under Science Electives.

** Students undertaking and registering for a Live-in-Lab project, can be exempted from registering for an Elective course in the higher semester.

ELECTIVES

15EEE330	Advanced Control Systems
15EEE331	Advanced Microcontrollers
15EEE332	Communication Engineering
15EEE333	Deregulated Power System
15EEE334	Design of Electrical Apparatus
15EEE335	Design of Electrical Systems
15EEE336	Digital Control Systems
15EEE337	Digital Image Processing
15EEE338	Digital Signal Processors
15EEE339	Electrical Safety
15EEE340	Electromagnetic Compatibility
15EEE341	Embedded Systems Design
15EEE342	Flexible AC Transmission Systems
15EEE343	Fundamentals of Soft Computing
15EEE344	High Voltage Engineering
15EEE345	Illumination Engineering
15EEE346	Industrial Electronics
15EEE347	Introduction to Computer Networks
15EEE348	Management of Power Distribution
15EEE349	Network Synthesis
15EEE350	Optoelectronics and Laser Instrumentation
15EEE351	Power Converters
15EEE352	Power Plant Instrumentation
15EEE353	Power Quality
15EEE354	Power System Management
15EEE355	Power System Protection and Switchgear
15EEE356	Power System Stability
15EEE357	Power Systems Operation, Control and Stability
15EEE358	Process Control and Instrumentation
15EEE359	Renewable Energy and Energy Conservation
15EEE360	Smart Grid
15EEE361	Special Electric Machines
15EEE362	Utilisation of Electric Energy
15CSE301	Computer Organisation and Architecture
15CSE330	Information Technology Essentials
15CSE374	Introduction to Data Structures and Algorithms
15ECE315	Biomedical Instrumentation
15ECE373	VLSI System Design

SCIENCE ELECTIVES (3 0 0 3)

15CHY231	Advanced Polymer Chemistry
15CHY232	Biomaterials Science
15CHY233	Catalytic Chemistry
15CHY234	Chemistry of Advanced Materials
15CHY235	Chemistry of Engineering Materials
15CHY236	Chemistry of Nanomaterials
15CHY237	Chemistry of Toxicology
15CHY238	Colloidal and Interfacial Chemistry
15CHY239	Computational Chemistry and Molecular Modelling
15CHY241	Electrochemical Energy Systems and Processes
15CHY242	Environmental Chemistry
15CHY243	Fuels and Combustion
15CHY244	Green Chemistry and Technology
15CHY245	Instrumental Methods of Analysis
15CHY246	Medicinal Organic Chemistry
15CHY247	Modern Polymer Composites
15CHY248	Organic Reaction Mechanisms
15CHY249	Organic Synthesis and Stereochemistry
15CHY250	Polymer Materials and Properties
15CHY251	Polymers for Electronics
15CHY252	Solid State Chemistry
15CHY331	Batteries and Fuel Cells
15CHY332	Corrosion Science
15PHY230	Advanced Classical Dynamics
15PHY233	Biophysics and Biomaterials
15PHY234	Introduction to Computational Physics
15PHY238	Electrical Engineering Materials
15PHY239	Electromagnetic Fields and Waves
15PHY240	Electronic Material Sciences
15PHY241	Lasers in Material Processing

15PHY243	Microelectronic Fabrication	
15PHY245	Nuclear Energy – Principles and Applications	
15PHY247	Photovoltaics	
15PHY248	Physics of Lasers and Applications	
15PHY250	Quantum Physics and Applications	
15PHY251	Thin Film Physics	
15PHY331	Astronomy	
15PHY333	Concepts of Nanophysics and Nanotechnology	
15PHY335	Medical Physics	
15PHY338	Physics of Semiconductor Devices	
15PHY532	Astrophysics	
15PHY535	Earth's Atmosphere	
15PHY536	Earth's Structure and Evolution	
15PHY540	Nonlinear Dynamics	
15PHY542	Optoelectronic Devices1	

HUMANITIES ELECTIVES

15CUL230	Achieving Excellence in Life - An Indian Perspective	2 0 0 2
15CUL231	Excellence in Daily Life	2 0 0 2
15CUL232	Exploring Science and Technology in Ancient India	2 0 0 2
15CUL233	Yoga Psychology	2 0 0 2
15ENG230	Business Communication	1 0 2 2
15ENG231	Indian Thought through English	1 0 2 2
15ENG232	Insights into Life through English Literature	1 0 2 2
15ENG233	Technical Communication	1 0 2 2
15ENG234	Indian Short Stories in English	1 0 2 2
15FRE230	Proficiency in French Language (Lower)	1 0 2 2
15FRE231	Proficiency in French Language (Higher)	1 0 2 2
15GER230	German for Beginners I	1 0 2 2
15GER231	German for Beginners II	1 0 2 2
15GER232	Proficiency in German Language (Lower)	1 0 2 2

15GER233	Proficiency in German Language (Higher)	1 0 2 2
15HIN101	Hindi I	1 0 2 2
15HIN111	Hindi II	1 0 2 2
15HUM230	Emotional Intelligence	2 0 0 2
15HUM231	Glimpses into the Indian Mind - the Growth of Modern India	2 0 0 2
15HUM232	Glimpses of Eternal India	2 0 0 2
15HUM233	Glimpses of Indian Economy and Polity	2 0 0 2
15HUM234	Health and Lifestyle	1 0 2 2
15HUM235	Indian Classics for the Twenty-first Century	2 0 0 2
15HUM236	Introduction to India Studies	2 0 0 2
15HUM237	Introduction to Sanskrit Language and Literature	2 0 0 2
15HUM238	National Service Scheme	2 0 0 2
15HUM239	Psychology for Effective Living	2 0 0 2
15HUM240	Psychology for Engineers	2 0 0 2
15HUM241	Science and Society - An Indian Perspective	2 0 0 2
15HUM242	The Message of Bhagwad Gita	2 0 0 2
15HUM243	The Message of the Upanishads	2 0 0 2
15HUM244	Understanding Science of Food and Nutrition	1 0 2 2
15JAP230	Proficiency in Japanese Language (Lower)	1 0 2 2
15JAP231	Proficiency in Japanese Language (Higher)	1 0 2 2
15KAN101	Kannada I	1 0 2 2
15KAN111	Kannada II	1 0 2 2
15MAL101	Malayalam I	1 0 2 2
15MAL111	Malayalam II	1 0 2 2
15SAN101	Sanskrit I	1 0 2 2
15SAN111	Sanskrit II	1 0 2 2
15SWK230	Corporate Social Responsibility	2 0 0 2
15SWK231	Workplace Mental Health	2 0 0 2
15TAM101	Tamil I	1 0 2 2
15TAM111	Tamil II	1 0 2 2