



AMRITA
VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY

School of
Engineering

(AMRITAPURI, BANGALORE, COIMBATORE, CHENNAI)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

**B.Tech. in ELECTRONICS AND COMMUNICATION
ENGINEERING**

(BTC-ECE)

CURRICULUM 2019

SEMESTER I

Cat.	Code	Title	Credit
SCI	19BIO101	Biology for Engineers -A	3
SCI	19MAT101	Single Variable Calculus	1
SCI	19MAT102	Matrix Algebra	2
ENGG	19CSE100	Problem Solving and Algorithmic Thinking	4
SCI	19PHY103	Physics of Electronic Materials	3
ENGG	19MEE100	Engineering Graphics - CAD	3
ENGG	19EEE100	Basic Electrical and Electronics Engineering	3
ENGG	19EEE181	Basic Electrical and Electronics Engineering Lab	1
ENGG	19ECE101	Introduction to Internet of Things	1
HUM	19CUL101	Cultural Education - I	2
		TOTAL	23

SEMESTER II

Cat.	Code	Title	Credit
HUM	19ENG111	Technical Communication	3
SCI	19MAT111	Multivariable Calculus	2
SCI	19MAT112	Linear Algebra	3
SCI	19CHY102	Engineering Chemistry - B	3
SCI	19CHY182	Engineering Chemistry Lab - B	1
ENGG	19CSE102	Computer Programming	4
ENGG	19ECE112	Electronic Devices and Circuits	3
ENGG	19ECE181	Electronic Systems Lab	1
ENGG	19MEE181	Manufacturing Practice	1
ENGG	19ECE111	Circuit Theory	3
HUM	19CUL111	Cultural Education - II	2
		TOTAL	26

SEMESTER III

Cat.	Code	Title	Credit
ENGG	19ECE201	Analog Electronic Circuits	3
ENGG	19ECE202	Applied Electromagnetics	4
ENGG	19ECE204	Digital Electronics and Systems	4
ENGG	19ECE203	Signals and Systems	4
SCI	19MAT205	Probability and Random Processes	4
ENGG	19ECE282	Digital Electronics and Systems Lab	1
ENGG	19ECE281	Analog Electronics Lab	1
HUM	19AVP201	Amrita Values Program I	1
HUM	19ENV300	Environmental Science	P/F
		TOTAL	22

SEMESTER IV

Cat.	Code	Title	Credit
ENGG	19ECE213	Transmission Lines and Radiating Systems	4
ENGG	19ECE211	Digital Signal Processing	3
ENGG	19ECE212	Linear Integrated Circuits	3
ENGG	19ECE214	Communication Theory	4
SCI	19MAT213	Optimization Techniques	3
ENGG	19ECE284	Digital Signal Processing Lab	1
HUM	19AVP211	Amrita Values Program II	1
ENGG	19ECE283	Linear Integrated Circuits Lab	1
HUM	19SSK211	Soft Skills I	2
HUM	19LAW300	Indian Constitution	P/F
		TOTAL	22

SEMESTER V

Cat.	Code	Title	Credit
ENGG	19ECE304	Microcontrollers and Interfacing	4
ENGG	19ECE303	Radio Frequency Engineering	3
ENGG	19ECE302	Digital Communication	3
ENGG	19ECE301	Control Theory	4
ENGG		Professional Elective I*	3
ENGG	19ECE381	RF and Simulation lab	1
ENGG	19ECE382	Communication Systems lab	1
HUM	19SSK301	Soft Skills II	2
ENGG	19LIV390	Live-in –Labs***	[3]
		TOTAL	21+[3]

SEMESTER VI

Cat.	Code	Title	Credit
ENGG	19ECE313	VLSI Design	3
ENGG	19ECE311	Computer Networks	4
ENGG	19ECE312	Information Theory and Coding	3
ENGG		Professional Elective II*	3
ENGG		Professional Elective III*	3
ENGG	19ECE383	VLSI Design Lab	1
HUM	19SSK311	Soft Skills III	2
ENGG	19ECE391	Seminar	1
ENGG	19ECE384	Open Lab	1
HUM	19MNG300	Disaster Management	P/F
ENGG	19LIV490	Live-in –Labs***	[3]
		TOTAL	21+[3]

SEMESTER VII

Cat.	Code	Title	Credit
ENGG		Professional Elective IV*	3
ENGG		Professional Elective V*	3
ENGG		Professional Elective VI*	3
HUM		Free Elective**	2
HUM		Free Elective**	2
PRJ	19ECE495	Project Phase I	2
		TOTAL	15

SEMESTER VIII

Cat.	Code	Title	Credit
ENGG		Professional Elective VII*	3
PRJ	19ECE499	Project Phase II	10
		TOTAL	13

		TOTAL CREDITS	163
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***Professional Elective** - Electives categorised under Engineering, Science, Mathematics, Live-in-Labs, and NPTEL Courses. Student can opt for such electives across departments/campuses. Students with CGPA of 7.0 and above can opt for a maximum of 2 NPTEL courses with the credits not exceeding 8.

**** Free Electives** - This will include courses offered by Faculty of Humanities and Social Sciences/ Faculty Arts, Commerce and Media / Faculty of Management/Amrita Darshanam - (International Centre for Spiritual Studies).

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

PROFESSIONAL ELECTIVE

Cat.	Code	Title	Credit
Analog and Mixed Signal Systems			
ENGG	19ECE331	Biomedical Instrumentation	3
ENGG	19ECE332	Mixed Signal Design	3
ENGG	19ECE333	Micro Electro Mechanical Systems	3
ENGG	19ECE334	Analog IC Design	3
ENGG	19ECE335	Applications of Linear Integrated Circuits	3
ENGG	19ECE336	Nano Electronics	3
ENGG	19ECE337	VLSI Fabrication Technology	3
ENGG	19ECE338	Solid State Devices	3
ENGG	19ECE339	Optical Engineering	3
Digital System design and architectures			
ENGG	19ECE341	VLSI System Design	3
ENGG	19ECE342	Hardware Security and Trust	3
ENGG	19ECE343	FPGA Based System Design	3
ENGG	19ECE344	Embedded Systems	3
ENGG	19ECE345	Computer Systems Architecture	3
ENGG	19ECE346	Digital IC Design	3
ENGG	19ECE347	Electronic System Level Design and Verification	3
ENGG	19ECE348	VLSI Testing and Testability	3
ENGG	19ECE349	RISC Processor Design using HDL	3
ENGG	19ECE350	VLSI Signal Processing	3
Computational Engineering			
ENGG	19ECE351	Markov Process and Queuing Theory	3
ENGG	19ECE352	Operations Research	3
ENGG	19ECE353	Convex Optimization	3
ENGG	19ECE354	Deep Learning	3
ENGG	19ECE355	Bio Inspired Algorithms	3
ENGG	19ECE356	Game Theory	3
ENGG	19ECE357	Pattern Recognition	3
ENGG	19ECE358	Signal Processing for Business Applications	3
ENGG	19ECE359	Non-linear Dynamics and Chaos	3
ENGG	19ECE360	Agent Based Modeling	3
ENGG	19ECE361	Data Structures and Algorithms	3
ENGG	19ECE362	Software Engineering	3
ENGG	19ECE363	Machine Learning	3
Wireless Communications and Networks			
ENGG	19ECE431	Wireless Communication	3

ENGG	19ECE432	Software Defined Networks	3
ENGG	19ECE433	Orthogonal Frequency Division Multiplexing	3
ENGG	19ECE434	MIMO and Multicarrier Systems	3
ENGG	19ECE435	Spread Spectrum Communication	3
ENGG	19ECE436	Wireless Sensor Networks	3
ENGG	19ECE437	Mobile Communication	3
ENGG	19ECE438	Vehicular Communication	3
ENGG	19ECE439	Millimeter Wave Personal Communication Systems	3
ENGG	19ECE440	Telecommunication Management	3
RF System design			
ENGG	19ECE441	Avionics	3
ENGG	19ECE442	Antenna Systems	3
ENGG	19ECE443	Planar Microwave Devices	3
ENGG	19ECE444	Satellite Communication	3
Signal Processing			
ENGG	19ECE451	Spoken Language Processing	3
ENGG	19ECE452	Radar Signal Processing	3
ENGG	19ECE453	Statistical Signal Processing	3
ENGG	19ECE454	Image Processing	3
ENGG	19ECE455	Biomedical Signal Processing	3
ENGG	19ECE456	Hyperspectral Image Analysis	3
ENGG	19ECE457	Wavelets and Application	3
ENGG	19ECE458	Adaptive Signal Processing	3
Instrumentation and Control			
ENGG	19ECE461	Intelligent Control Systems	3
ENGG	19ECE462	Process Control	3
ENGG	19ECE463	Smart Sensors	3
ENGG	19ECE464	Virtual Instrumentation for Communication Systems	3
ENGG	19ECE465	Electric Drives	3
ENGG	19ECE466	Industrial Instrumentation	3

PROFESSIONAL ELECTIVES UNDER SCIENCE STREAM

CHEMISTRY			
Cat.	Code	Title	Credit
SCI	19CHY243	Computational Chemistry and Molecular Modelling	3
SCI	19CHY236	Electrochemical Energy Systems and Processes	3
SCI	19CHY240	Fuels and Combustion	3
SCI	19CHY232	Green Chemistry and Technology	3
SCI	19CHY239	Instrumental Methods of Analysis	3
SCI	19CHY241	Batteries and Fuel Cells	3
SCI	19CHY242	Corrosion Science	3
PHYSICS			
SCI	19PHY340	Advanced Classical Dynamics	3
SCI	19PHY342	Electrical Engineering Materials	3
SCI	19PHY331	Physics of Lasers and Applications	3
SCI	19PHY341	Concepts of Nanophysics and Nanotechnology	3
SCI	19PHY343	Physics of Semiconductor Devices	3
SCI	19PHY339	Astrophysics	3
Mathematics			
SCI	19MAT341	Statistical Inference	3
SCI	19MAT342	Introduction to Game Theory	3
SCI	19MAT343	Numerical Methods and Optimization	3

FREE ELECTIVES

FREE ELECTIVES OFFERED UNDER MANAGEMENT STREAM			
Cat.	Code	Title	Credit
HUM	19MNG331	Financial Management	3
HUM	19MNG332	Supply Chain Management	3
HUM	19MNG333	Marketing Management	3
HUM	19MNG334	Project Management	3
HUM	19MNG335	Enterprise Management	3
HUM	19MNG338	Operations Research	3
HUM	19MEE401	Industrial Engineering	3

HUM	19MEE346	Managerial Statistics	3
HUM	19MEE347	Total Quality Management	3
HUM	19MEE342	Lean Manufacturing	3
HUM	19CSE358	Software Project Management	3
HUM	19CSE359	Financial Engineering	3
HUM	19CSE360	Engineering Economic Analysis	3
HUM	19MNG331	Financial Management	3
HUM	19CSE362	Information Systems	3

FREE ELECTIVES OFFERED UNDER HUMANITIES / SOCIAL SCIENCE STREAMS

Cat.	Code	Title	Credit
HUM	19CUL230	Achieving Excellence in Life - An Indian Perspective	2
HUM	19CUL231	Excellence in Daily Life	2
HUM	19CUL232	Exploring Science and Technology in Ancient India	2
HUM	19CUL233	Yoga Psychology	2
HUM	19ENG230	Business Communication	2
HUM	19ENG231	Indian Thought through English	2
HUM	19ENG232	Insights into Life through English Literature	2
HUM	19ENG233	Technical Communication	2
HUM	19ENG234	Indian Short Stories in English	2
HUM	19FRE230	Proficiency in French Language (Lower)	2
HUM	19FRE231	Proficiency in French Language (Higher)	2
HUM	19GER230	German for Beginners I	2
HUM	19GER231	German for Beginners II	2
HUM	19GER232	Proficiency in German Language (Lower)	2
HUM	19GER233	Proficiency in German Language (Higher)	2
HUM	19HIN101	Hindi I	2
HUM	19HIN111	Hindi II	2
HUM	19HUM230	Emotional Intelligence	2
HUM	19HUM231	Glimpses into the Indian Mind - the Growth of Modern India	2
HUM	19HUM232	Glimpses of Eternal India	2
HUM	19HUM233	Glimpses of Indian Economy and Polity	2
HUM	19HUM234	Health and Lifestyle	2
HUM	19HUM235	Indian Classics for the Twenty-first Century	2
HUM	19HUM236	Introduction to India Studies	2

HUM	19HUM237	Introduction to Sanskrit Language and Literature	2
HUM	19HUM238	National Service Scheme	2
HUM	19HUM239	Psychology for Effective Living	2
HUM	19HUM240	Psychology for Engineers	2
HUM	19HUM241	Science and Society - An Indian Perspective	2
HUM	19HUM242	The Message of Bhagwad Gita	2
HUM	19HUM243	The Message of the Upanishads	2
HUM	19HUM244	Understanding Science of Food and Nutrition	2
HUM	19JAP230	Proficiency in Japanese Language (Lower)	2
HUM	19JAP2313	Proficiency in Japanese Language (Higher)	2
HUM	19KAN101	Kannada I	2
HUM	19KAN111	Kannada II	2
HUM	19MAL101	Malayalam I	2
HUM	19MAL111	Malayalam II	2
HUM	19SAN101	Sanskrit I	2
HUM	19SAN111	Sanskrit II	2
HUM	19SWK230	Corporate Social Responsibility	2
HUM	19SWK231	Workplace Mental Health	2
HUM	19TAM101	Tamil I	2
HUM	19TAM111	Tamil II	2