



AMRITA
VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY

School of
Engineering

(AMRITAPURI, BANGALORE, COIMBATORE, CHENNAI)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. in COMPUTER AND COMMUNICATION ENGINEERING

(BTC-CCE)

CURRICULUM 2019

SEMESTER I

Cat.	Code	Title	L T P	Credit
SCI	19BIO101	Biology for Engineers - A	3 0 0	3
SCI	19MAT101	Single Variable Calculus	1 0 0	1
SCI	19MAT102	Matrix Algebra	2 0 0	2
ENGG	19CSE100	Problem Solving and Algorithmic Thinking	2 1 3	4
SCI	19PHY103	Physics of Electronic Materials	3 0 0	3
ENGG	19MEE100	Engineering Graphics - CAD	2 0 3	3
ENGG	19EEE100	Basic Electrical and Electronics Engineering	3 0 0	3
ENGG	19EEE181	Basic Electrical and Electronics Engineering Lab	0 0 3	1
ENGG	19ECE101	Introduction to Internet of Things	0 0 3	1
HUM	19CUL101	Cultural Education - I	2 0 0	2
		TOTAL		23

SEMESTER II

Cat.	Code	Title	L T P	Credit
HUM	19ENG111	Technical Communication	2 0 3	3
SCI	19MAT111	Multivariable Calculus	2 0 0	2
SCI	19MAT112	Linear Algebra	2 1 0	3
SCI	19CHY102	Engineering Chemistry - B	2 1 0	3
SCI	19CHY182	Engineering Chemistry Lab - B	0 0 3	1
ENGG	19CSE102	Computer Programming	3 0 3	4
ENGG	19CCE101	Digital Design	3 1 0	4
ENGG	19CCE181	Digital Design Lab	0 0 3	1
ENGG	19MEE181	Manufacturing Practice	0 0 3	1
ENGG	19ECE181	Electronic Systems Lab	0 0 3	1
HUM	19CUL111	Cultural Education - II	2 0 0	2
		TOTAL		25

SEMESTER III

Cat.	Code	Title	L T P	Credit
ENGG	19CCE201	Microcontrollers and Interfacing Techniques	3 0 3	4
ENGG	19CCE202	Data Structures and Algorithms	3 0 0	3
ENGG	19CCE203	Computational Electromagnetics	3 0 3	4
ENGG	19CCE204	Signal Processing	3 1 0	4
SCI	19MAT205	Probability Theory and Random Processes	3 1 0	4
ENGG	19CCE281	Signal Processing Lab	0 0 3	1
ENGG	19CCE282	Data Structures Lab	0 0 3	1
HUM	19AVP201	Amrita Values Program I	1 0 0	1
HUM	19ENV300	Environmental Science		P/F
		TOTAL	29	22

SEMESTER IV

Cat.	Code	Title	L T P	Credit
ENGG	19CCE211	Embedded Computing	3 0 0	3
ENGG	19CCE212	Multi rate Signal Processing & Software Defined Radio	3 0 0	3
ENGG	19CCE213	Machine Learning and Artificial Intelligence	3 0 3	4
HUM	19AVP211	Amrita Values Program II	1 0 0	1
ENGG	19CCE214	Analog Communication Theory	3 1 0	4
SCI	19MAT213	Optimization Techniques	3 0 0	3
ENGG	19CCE283	Embedded Computing Lab	0 0 3	1
ENGG	19CCE284	Software Defined Radio Lab	0 0 3	1
HUM	19SSK211	Soft Skills I	1 0 3	2
HUM	19LAW300	Indian Constitution		P/F
		TOTAL	29	22

SEMESTER V

Cat.	Code	Title	L T P	Credit
ENGG	19CCE301	Internet of Things	3 0 0	3
ENGG	19CCE303	Digital Communication	3 1 0	4
ENGG	19CCE304	Computer Networks	3 0 3	4
ENGG	19CCE302	Computer Systems and Architecture	3 0 0	3
ENGG		Professional Elective I*	3 0 0	3
ENGG	19CCE391	Seminar	0 0 3	1
ENGG	19CCE381	IoT and Computing Lab	0 0 3	1
ENGG	19CCE382	Communication Systems Design Lab	0 0 3	1
HUM	19SSK301	Soft Skills II	1 0 3	2
ENGG	19LIV390	Live-in –Labs***		[3]
		TOTAL	32	22

SEMESTER VI

Cat.	Code	Title	L T P	Credit
ENGG	19CCE311	Wireless Communication	3 1 0	4
ENGG	19CCE312	Cyber-Physical Systems: Design, Modeling and Simulation	3 0 3	4
ENGG	19CCE313	RF System Design	3 0 0	3
ENGG		Professional Elective II*	3 0 0	3
ENGG		Professional Elective III*	3 0 0	3
ENGG	19CCE383	Electromagnetic Simulation Lab	0 0 3	1
ENGG	19CCE384	Design and Innovation Lab	0 0 3	1
HUM	19SSK311	Soft Skills III	1 0 3	2
ENGG	19LIV490	Live-in –Labs***		[3]

HUM	19MNG300	Disaster Management		P/F
		TOTAL	29	21

SEMESTER VII

Cat.	Code	Title	L T P	Credit
ENGG		Professional Elective IV*	3 0 0	3
ENGG		Professional Elective V*	3 0 0	3
ENGG		Professional Elective VI*	3 0 0	3
HUM		Free Elective**	2 0 0	2
HUM		Free Elective**	2 0 0	2
PRJ	19CCE495	Project Phase I	0 0 6	2
		TOTAL	19	15

SEMESTER VIII

Cat.	Code	Title	L T P	Credit
ENGG		Professional Elective VII*	3 0 0	3
PRJ	19CCE499	Project Phase II	0 0 30	10
		TOTAL	33	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 ELECTIVES

Cat.	Code	Title	L T P	Credit
Computational Engineering				
ENGG	19CCE331	Markov Process and Queuing Theory	3 0 0	3
ENGG	19CCE332	Operations Research	3 0 0	3
ENGG	19CCE333	Convex Optimization	3 0 0	3
ENGG	19CCE334	Deep Learning	3 0 0	3
ENGG	19CCE335	Bio-inspired Algorithms	3 0 0	3
ENGG	19CCE336	Game Theory	3 0 0	3
ENGG	19CCE337	Pattern Recognition	3 0 0	3
ENGG	19CCE338	Signal Processing for Business Applications	3 0 0	3
ENGG	19CCE339	Non-linear Dynamics and Chaos	3 0 0	3
ENGG	19CCE340	Agent Based Modeling	3 0 0	3
ENGG	19CCE341	Robotics	3 0 0	3
Communication Engineering				
ENGG	19CCE431	Software Defined Networks	3 0 0	3
ENGG	19CCE432	Orthogonal Frequency Division Multiplexing	3 0 0	3
ENGG	19CCE433	Multiple Input Multiple Output Communication	3 0 0	3
ENGG	19CCE434	Spread Spectrum Communication	3 0 0	3
ENGG	19CCE435	Wireless Sensor Networks	3 0 0	3
ENGG	19CCE436	Mobile Communication	3 0 0	3
ENGG	19CCE437	Vehicular Communication	3 0 0	3
ENGG	19CCE438	Millimeter Wave Personal Communication Systems	3 0 0	3
ENGG	19CCE439	Telecommunication Management	3 0 0	3
ENGG	19CCE440	Avionics	3 0 0	3
ENGG	19CCE441	Antenna Systems	3 0 0	3
ENGG	19CCE442	Planar Microwave Devices	3 0 0	3
ENGG	19CCE443	Satellite Communication	3 0 0	3
ENGG	19CCE444	Spoken Language Processing	3 0 0	3
ENGG	19CCE445	Radar Signal Processing	3 0 0	3
ENGG	19CCE446	Statistical Signal Processing	3 0 0	3
ENGG	19CCE447	Image Processing	3 0 0	3

ENGG	19CCE448	Biomedical Signal Processing	3 0 0	3
ENGG	19CCE449	Hyperspectral Image Analysis	3 0 0	3
ENGG	19CCE450	Wavelets and Application	3 0 0	3
ENGG	19CCE451	Adaptive Signal Processing	3 0 0	3

Computer Science Engineering				
ENGG	19CSE471	Principles of Operating Systems	3 0 0	3
ENGG	19CSE463	Mobile Application Development	3 0 0	3
ENGG	19CSE464	Fundamentals of Software Engineering	3 0 0	3
ENGG	19CSE465	Introduction to Big Data Analytics	3 0 0	3
ENGG	19CSE466	Foundation of Information Technology	3 0 0	3
ENGG	19CSE467	Principles of Database Management Systems	3 0 0	3
ENGG	19CSE477	Principles of Computer Networks	3 0 0	3
ENGG	19CSE201	Advanced Programming	3 0 0	3
ENGG	19CSE204	Object Oriented Paradigm	3 0 0	3

PROFESSIONAL ELECTIVES UNDER SCIENCE STREAM

CHEMISTRY				
Cat.	Code	Title	L T P	Credit
SCI	19CHY243	Computational Chemistry and Molecular Modelling	3 0 0	3
SCI	19CHY236	Electrochemical Energy Systems and Processes	3 0 0	3
SCI	19CHY240	Fuels and Combustion	3 0 0	3
SCI	19CHY232	Green Chemistry and Technology	3 0 0	3
SCI	19CHY239	Instrumental Methods of Analysis	3 0 0	3
SCI	19CHY241	Batteries and Fuel Cells	3 0 0	3
SCI	19CHY242	Corrosion Science	3 0 0	3
PHYSICS				

SCI	19PHY340	Advanced Classical Dynamics	3 0 0	3
SCI	19PHY342	Electrical Engineering Materials	3 0 0	3
SCI	19PHY331	Physics of Lasers and Applications	3 0 0	3
SCI	19PHY341	Concepts of Nanophysics and Nanotechnology	3 0 0	3
SCI	19PHY343	Physics of Semiconductor Devices	3 0 0	3
SCI	19PHY339	Astrophysics	3 0 0	3
MATHEMATICS				
SCI	19MAT341	Statistical Inference	3 0 0	3
SCI	19MAT342	Introduction to Game Theory	3 0 0	3
SCI	19MAT343	Numerical Methods and Optimization	3 0 0	3

FREE ELECTIVES

FREE ELECTIVES OFFERED UNDER MANAGEMENT STREAM				
Cat.	Code	Title	L T P	Credit
HUM	19MNG331	Financial Management	3 0 0	3
HUM	19MNG332	Supply Chain Management	3 0 0	3
HUM	19MNG333	Marketing Management	3 0 0	3
HUM	19MNG334	Project Management	3 0 0	3
HUM	19MNG335	Enterprise Management	3 0 0	3
HUM	19MNG338	Operations Research	3 0 0	3
HUM	19MEE401	Industrial Engineering	3 0 0	3
HUM	19MEE346	Managerial Statistics	3 0 0	3
HUM	19MEE347	Total Quality Management	3 0 0	3
HUM	19MEE342	Lean Manufacturing	3 0 0	3
HUM	19CSE358	Software Project Management	3 0 0	3
HUM	19CSE359	Financial Engineering	3 0 0	3
HUM	19CSE360	Engineering Economic Analysis	3 0 0	3

HUM	19MNG331	Financial Management	3 0 0	3
HUM	19CSE362	Information Systems	3 0 0	3

FREE ELECTIVES OFFERED UNDER HUMANITIES / SOCIAL SCIENCE STREAMS				
Cat.	Code	Title	L T P	Credit
HUM	19CUL230	Achieving Excellence in Life - An Indian Perspective	2 0 0	2
HUM	19CUL231	Excellence in Daily Life	2 0 0	2
HUM	19CUL232	Exploring Science and Technology in Ancient India	2 0 0	2
HUM	19CUL233	Yoga Psychology	2 0 0	2
HUM	19ENG230	Business Communication	1 0 3	2
HUM	19ENG231	Indian Thought through English	2 0 0	2
HUM	19ENG232	Insights into Life through English Literature	2 0 0	2
HUM	19ENG233	Technical Communication	2 0 0	2
HUM	19ENG234	Indian Short Stories in English	2 0 0	2
HUM	19FRE230	Proficiency in French Language (Lower)	2 0 0	2
HUM	19FRE231	Proficiency in French Language (Higher)	2 0 0	2
HUM	19GER230	German for Beginners I	2 0 0	2
HUM	19GER231	German for Beginners II	2 0 0	2
HUM	19GER232	Proficiency in German Language (Lower)	2 0 0	2
HUM	19GER233	Proficiency in German Language (Higher)	2 0 0	2
HUM	19HIN101	Hindi I	2 0 0	2
HUM	19HIN111	Hindi II	2 0 0	2
HUM	19HUM230	Emotional Intelligence	2 0 0	2
HUM	19HUM231	Glimpses into the Indian Mind - the Growth of Modern India	2 0 0	2
HUM	19HUM232	Glimpses of Eternal India	2 0 0	2
HUM	19HUM233	Glimpses of Indian Economy and Polity	2 0 0	2

HUM	19HUM234	Health and Lifestyle	2 0 0	2
HUM	19HUM235	Indian Classics for the Twenty-first Century	2 0 0	2
HUM	19HUM236	Introduction to India Studies	2 0 0	2
HUM	19HUM237	Introduction to Sanskrit Language and Literature	2 0 0	2
HUM	19HUM238	National Service Scheme	2 0 0	2
HUM	19HUM239	Psychology for Effective Living	2 0 0	2
HUM	19HUM240	Psychology for Engineers	2 0 0	2
HUM	19HUM241	Science and Society - An Indian Perspective	2 0 0	2
HUM	19HUM242	The Message of Bhagwad Gita	2 0 0	2
HUM	19HUM243	The Message of the Upanishads	2 0 0	2
HUM	19HUM244	Understanding Science of Food and Nutrition	2 0 0	2
HUM	19JAP230	Proficiency in Japanese Language (Lower)	2 0 0	2
HUM	19JAP2313	Proficiency in Japanese Language (Higher)	2 0 0	2
HUM	19KAN101	Kannada I	2 0 0	2
HUM	19KAN111	Kannada II	2 0 0	2
HUM	19MAL101	Malayalam I	2 0 0	2
HUM	19MAL111	Malayalam II	2 0 0	2
HUM	19SAN101	Sanskrit I	2 0 0	2
HUM	19SAN111	Sanskrit II	2 0 0	2
HUM	19SWK230	Corporate Social Responsibility	2 0 0	2
HUM	19SWK231	Workplace Mental Health	2 0 0	2
HUM	19TAM101	Tamil I	2 0 0	2
HUM	19TAM111	Tamil II	2 0 0	2



