

B.E.- COMPUTER SCIENCE AND ENGINEERING
(REGULATIONS 2019)
CHOICE BASED CREDIT SYSTEM
I – VIII SEMESTERS CURRICULUM AND SYLLABI

FIRST SEMESTER							
Code No.	Course	Category	L	T	P	C	H
19CS1101	English for Professional Communication	HSS	3	0	0	3	3
19CS1201	Matrices and Calculus	BS	3	1	0	4	4
19CS1301	Physics for Information Science	BS	3	0	0	3	3
19CS1401	Chemistry for Information Science	BS	3	0	0	3	3
19CS1501	Python Programming	ES	3	0	0	3	3
19CS1502	Engineering Graphics	ES	1	0	4	3	5
19CS1311	Physics and Chemistry Laboratory	BS	0	0	4	2	4
19CS1511	Python Programming Laboratory	ES	0	0	4	2	4
TOTAL			16	1	12	23	29

SECOND SEMESTER							
Code No.	Course	Category	L	T	P	C	H
19CS2101	Technical Communication	HSS	2	0	0	2	2
19CS2201	Vector Calculus and Transforms	BS	3	1	0	4	4
19CS2501	Basics of Electrical and Electronics Engineering	ES	3	0	0	3	3
19CS2502	C Programming	ES	3	0	0	3	3
19CS2511	Electrical and Electronics Laboratory	ES	0	0	4	2	4
19CS2512	C Programming Laboratory	ES	0	0	4	2	4
19CS2513	Computer Hardware and Software Tools Laboratory(Computer Workshop)	ES	0	0	4	2	4
19CS2M01	Fundamentals of Computational Biology	BS	2	0	0	0	2
TOTAL			13	1	12	18	26

THIRD SEMESTER							
Code No.	Course	Category	L	T	P	C	H
19CS3201	Probability and Queuing Theory	BS	3	1	0	4	4
19CS3501	Digital Systems	ES	2	0	2	3	4
19CS3601	Data Structures	PC	3	0	0	3	3
19CS3602	Software Engineering	PC	3	0	0	3	3
19CS3603	Object Oriented Programming Systems	PC	3	0	0	3	3
19CS3611	Data Structures Laboratory	PC	0	0	4	2	4
19CS3612	Object Oriented Programming Systems Laboratory	PC	0	0	4	2	4
19CS3M01	Communication and Soft Skills	EEC	0	0	2	0	2
TOTAL			14	1	12	20	27

FOURTH SEMESTER							
Code No.	Course	Category	L	T	P	C	H
19CS4201	Discrete Mathematics	BS	3	1	0	4	4
19CS4601	Database Management Systems	PC	3	0	0	3	3
19CS4602	Operating System Concepts	PC	2	0	2	3	4
19CS4603	Design and Analysis of Algorithms	PC	3	0	0	3	3
19CS4604	Computer Architecture	PC	3	0	0	3	3
19CS4605	Microprocessors and Microcontrollers	PC	3	0	0	3	3
19CS4611	Database Management Systems Laboratory	PC	0	0	4	2	4
19CS4901	Interpersonal Skills-Listening and Speaking	EEC	0	0	4	2	4
19CS4M01	Environmental Science and Engineering	HSS	2	0	0	0	2
TOTAL			19	1	10	23	30

FIFTH SEMESTER							
Code No.	Course	Category	L	T	P	C	H
19CS5601	Theory of Computation	PC	3	0	0	3	3
19CS5602	Computer Networks	PC	3	0	0	3	3
19CS5101	Professional Ethics for Engineers	HSS	3	0	0	3	3
	Professional Elective I	PE	3	0	0	3	3
	Professional Elective II	PE	3	0	0	3	3
	Open Elective -I	OE	3	0	0	3	3
19CS5611	System Analysis and Design Laboratory	PC	0	0	4	2	4
19CS5612	Computer Networks Laboratory	PC	0	0	4	2	4
19CS5M01	Life Skills: Aptitude	EEC	0	0	2	0	2
19CS5M02	Intellectual Property Rights	HSS	2	0	0	0	2
TOTAL			20	0	10	22	30

SIXTH SEMESTER							
Code No.	Course	Category	L	T	P	C	H
19CS6601	Compiler Design	PC	3	0	0	3	3
19CS6602	Cryptography and Network Security	PC	3	0	0	3	3
19CS6603	Artificial Intelligence and Machine Learning	PC	3	0	0	3	3
	Professional Elective III	PE	3	0	0	3	3
	Professional Elective Elective IV	PE	3	0	0	3	3
	Open Elective -II	OE	3	0	0	3	3
19CS6611	Mobile Application Development Laboratory	PC	0	0	4	2	4
19CS6911	Mini Project and Internship	EEC	0	0	4	2	4
19CS6M02	Human Rights	HSS	2	0	0	0	2
TOTAL			20	0	8	22	28

SEVENTH SEMESTER

Code No.	Course	Category	L	T	P	C	H
19CS7601	Graphics and Multimedia	PC	3	0	0	3	3
19CS7602	Software Project Management	PC	3	0	0	3	3
	Professional Elective V	PE	3	0	0	3	3
	Professional Elective VI	PE	3	0	0	3	3
	Professional Elective VII	PE	3	0	0	3	3
	Open Elective -III	OE	3	0	0	3	3
19CS7611	Graphics and Multimedia Laboratory	PC	0	0	4	2	4
19CS7911	Technical Seminar	EEC	0	0	2	1	2
TOTAL			18	0	6	21	24

EIGHTH SEMESTER

Code No.	Course	Category	L	T	P	C	H
	Professional Elective VIII		3	0	0	3	3
	Open Elective -IV		3	0	0	3	3
19CS8911	Project Work	EEC	0	0	20	10	20
TOTAL			6	0	20	16	26

- L Lecture
T Tutorial
P Practical
C Credit
H Hours

HUMANITIES AND SOCIAL SCIENCES (HSS)						
Sem	Code No.	Course	L	T	P	C
1	19CS1101	English for Professional Communication	3	0	0	3
2	19CS2101	Technical Communication	2	0	0	2
4	19CS4M01	Environmental Science and Engineering	2	0	0	0
5	19CS5M02	Intellectual Property Rights	2	0	0	0
5	19CS7101	Professional Ethics for Engineers	3	0	0	3
6	19CS6M02	Human Rights	2	0	0	0
TOTAL			14	0	0	8
BASIC SCIENCES (BS)						
Sem	Code No.	Course	L	T	P	C
1	19CS1301	Physics for Information Science	3	0	0	3
1	19CS1401	Chemistry for Information Science	3	0	0	3
1	19CS1201	Matrices and Calculus	3	1	0	4
1	19CS1311	Physics and Chemistry Laboratory	0	0	4	2
2	19CS2201	Vector Calculus and Transforms	3	1	0	4
2	19CS2M01	Fundamentals of Computational Biology	2	0	0	0
3	19CS3201	Probability and Queuing Theory	3	1	0	4
4	19CS4201	Discrete Mathematics	3	1	0	4
TOTAL			20	4	4	24

ENGINEERING SCIENCES (ES)						
Sem	Code No.	Course	L	T	P	C
1	19CS1501	Python Programming	3	0	0	3
1	19CS1511	Python Programming Laboratory	0	0	4	2
1	19CS1502	Engineering Graphics	1	0	4	3
2	19CS2501	Basics of Electrical and Electronics Engineering	3	0	0	3
2	19CS2511	Electrical and Electronics Laboratory	0	0	4	2
2	19CS2502	C Programming	3	0	0	3
2	19CS2512	C Programming Laboratory	0	0	4	2
2	19CS2513	Computer Hardware and Software Tools Laboratory (Computer Workshop)	0	0	4	2
3	19CS3501	Digital Systems	2	0	2	3
TOTAL			12	0	20	22

PROFESSIONAL CORE (PC)						
Sem	Code No.	Course	L	T	P	C
3	19CS3601	Data Structures	3	0	0	3
3	19CS3602	Software Engineering	3	0	0	3
3	19CS3603	Object Oriented Programming Systems	3	0	0	3
3	19CS3612	Object Oriented Programming Systems Laboratory	0	0	4	2
3	19CS3611	Data Structures Laboratory	0	0	4	2
4	19CS4601	Database Management Systems	3	0	0	3
4	19CS4602	Operating System Concepts	2	0	2	3
4	19CS4603	Design and Analysis of Algorithms	3	0	0	3
4	19CS4604	Computer Architecture	3	0	0	3
4	19CS4605	Microprocessors and Microcontrollers	3	0	0	3
4	19CS4611	Database Management Systems Laboratory	0	0	4	2
5	19CS5601	Theory of Computation	3	0	0	3
5	19CS5602	Computer Networks	3	0	0	3
5	19CS5611	System Analysis and Design Laboratory	0	0	4	2
5	19CS5612	Computer Networks Laboratory	0	0	4	2
6	19CS6601	Compiler Design	3	0	0	3
6	19CS6602	Cryptography and Network Security	3	0	0	3
6	19CS6603	Artificial Intelligence and Machine Learning	3	0	0	3
6	19CS6611	Mobile Application Development Laboratory	0	0	4	2
7	19CS7601	Graphics and Multimedia	3	0	0	3
7	19CS7602	Software Project Management	3	0	0	3
7	19CS7611	Graphics and Multimedia Laboratory	0	0	4	2
TOTAL			44	0	30	59

PROFESSIONAL ELECTIVES(PE)					
Code No.	Course	L	T	P	C
PROFESSIONAL ELECTIVES I					
19CS5701	Internet Programming	3	0	0	3
19CS5702	Database Tuning	3	0	0	3
19CS5703	Data Science	3	0	0	3
19CS5704	Object Oriented Analysis and Design	3	0	0	3
19CS5705	System Software	3	0	0	3
PROFESSIONAL ELECTIVES II					
19CS5706	Principles of communications	3	0	0	3
19CS5707	Network Directory Services	3	0	0	3
19CS5708	Design Patterns	3	0	0	3
19CS5709	Real Time Operating Systems	3	0	0	3
19CS5710	Mobile Application Development	3	0	0	3
PROFESSIONAL ELECTIVES III					
19CS6701	High Performance Networks	3	0	0	3
19CS6702	Digital Signal Processing	3	0	0	3
19CS6703	Distributed and Parallel Systems	3	0	0	3
19CS6704	Mobile Computing and Communications	3	0	0	3
19CS6705	Software Testing	3	0	0	3
PROFESSIONAL ELECTIVES IV					
19CS6706	Enterprise Application Development	3	0	0	3
19CS6707	Computational Intelligence and Optimization Techniques	3	0	0	3
19CS6708	Cyber Security	3	0	0	3
19CS6709	Introduction to IoT and its applications	3	0	0	3
19CS6710	Agile Software Development	3	0	0	3

Code No.	Course	L	T	P	C
PROFESSIONAL ELECTIVES V					
19CS7701	Data Mining	3	0	0	3
19CS7702	Digital Image Processing	3	0	0	3
19CS7703	Information Retrieval System	3	0	0	3
19CS7704	Cloud Computing	3	0	0	3
19CS7705	5G Communications	3	0	0	3
PROFESSIONAL ELECTIVES VI					
19CS7707	Real Time Embedded Systems	3	0	0	3
19CS7708	Deep Learning Essentials	3	0	0	3
19CS7709	Resource Optimization Techniques	3	0	0	3
19CS7710	Cyber Forensics and its Tools	3	0	0	3
19CS7711	Data Analytics using R	3	0	0	3
PROFESSIONAL ELECTIVES VII					
19CS7712	Block Chain Technologies	3	0	0	3
19CS7713	Virtual Reality	3	0	0	3
19CS7714	Full Stack Application Development	3	0	0	3
19CS7715	Adhoc and Sensor Networks	3	0	0	3
19CS7716	Information Security	3	0	0	3
PROFESSIONAL ELECTIVES VIII					
19CS8707	Multimedia Compression Techniques	3	0	0	3
19CS8708	Multi-core Architectures and Programming	3	0	0	3
19CS8709	Business Intelligence	3	0	0	3
19CS8710	Total Quality Management	3	0	0	3
19CS8711	Bio Informatics Algorithms	3	0	0	3

OPEN ELECTIVE I					
19CS5801	Database Concepts	3	0	0	3
19CS5802	Principles of Software Engineering	3	0	0	3
19CS5803	Introduction to data structures	3	0	0	3
19CS5804	Principles of Operating Systems	3	0	0	3
OPEN ELECTIVE II					
19CS6801	Java Programming	3	0	0	3
19CS6802	Internet Technologies	3	0	0	3
19CS6803	Principles of Multimedia	3	0	0	3
19CS6804	Digital Computer Organization	3	0	0	3
OPEN ELECTIVE III					
19CS7801	Cloud Computing Technologies	3	0	0	3
19CS7802	Problem Solving Technologies	3	0	0	3
19CS7803	Android Application Development	3	0	0	3
19CS7804	Human Computer Interaction	3	0	0	3
OPEN ELECTIVE IV					
19CS8801	Network Engineering and Management	3	0	0	3
19CS8802	Big data Analytics	3	0	0	3
19CS8803	Data Science Essentials	3	0	0	3
19CS8804	Essential of Management	3	0	0	3

EMPLOYABILITY ENHANCEMENT COURSES (EEC)						
Sem	Code No.	Course	L	T	P	C
3	19CS3M01	Communication and Soft Skills	0	0	2	0
4	19CS4901	Interpersonal Skills-Listening and Speaking	0	0	4	2
5	19CS5M01	Life Skills: Aptitude	0	0	2	0
6	19CS6911	Mini Project and Internship	0	0	4	2
6	19CS6M01	Life Skills: Competitive Exams	0	0	2	0
7	19CS7911	Technical Seminar	0	0	2	1
8	19CS8911	Project Work	0	0	20	10
TOTAL			0	0	36	15

MANDATORY COURSES						
Sem	Code No.	Course	L	T	P	C
3	19CS3M01	Communication and Soft Skills	0	0	2	0
4	19CS4M01	Environmental Science and Engineering	2	0	0	0
5	19CS5M01	Life Skills: Aptitude	0	0	2	0
5	19CS5M02	Intellectual Property Rights	2	0	0	0
6	19CS6M02	Human Rights	2	0	0	0
TOTAL			8	0	4	0