BE (COMPUTER SCIENCE AND ENGINEERING) -2019 Scheme

SEMESTER-I

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCB008	APPLIED CHEMISTRY	CF	3	1	2	4.5
2	UTA017	COMPUTER PROGRAMMING	CP	3	0	2	4.0
3	UES013	ELECTRICAL & ELECTRONICS ENGINEERING	CF	3	1	2	4.5
4	UEN002	ENERGY AND ENVIRONMENT	CF	3	0	0	3.0
5	UMA003	MATHEMATICS – I	CF	3	1	0	3.5
6	UES009	MECHANICS	CF	2	1	0	2.5
		TOTAL		17	4	6	22.0

SEMESTER-II

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UPH004	APPLIED PHYSICS	CF	3	1	2	4.5
2	UTA018	OBJECT ORIENTED PROGRAMMING	CP	3	0	2	4.0
3	UTA020	MANUFACTURING PROCESS	CF	2	0	3	3.5
4	UTA015	ENGINEERING DRAWING	CF	2	0	4	4.0
5	UHU003	PROFESSIONAL COMMUNICATION	CF	2	0	2	3.0
6	UMA004	MATHEMATICS – II	CF	3	1	0	3.5
		TOTAL		14	2	14	22.5

SEMESTER-III

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		OPERATING SYSTEMS	UCS303	3	0	2	4.0
2		DISCRETE MATHEMATICAL STRUCTURES	UCS404	3	1	0	3.5
3		COMPUTER NETWORKS	CP	2	0	2	3.0
4		COMPUTER ARCHITECTURE AND ORGANIZATION	CP	2	1	0	2.5
5		NUMERICAL ANALYSIS	CF	3	0	2	4.0
		TOTAL		13	2	6	17

SEMESTER-IV

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		OPTIMIZATION TECHNIQUES	CF	3	0	2	4.0
2		PROBABILITY AND STATISTICS	CP	3	0	2	4.0
3		DATABASE MANAGEMENT SYSTEMS	UCS310	3	0	2	4.0
4		SOFTWARE ENGINEERING	CP	2	0	2	3.0
5		DATA STRUCTURES	CP	3	0	2	4.0
6		NETWORK PROGRAMMING	CP	2	0	2	3.0
		TOTAL		16	0	12	22.0

SEMESTER-V

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		CLOUD COMPUTING	CP	2	0	2	3.0
2		ANALYSIS AND DESIGN OF ALGORITHMS	CP	3	0	2	4.0
3		THEORY OF COMPUTATION	UCS701	3	1	0	3.5
5		IT PROJECT MANAGEMENT	CP	3	1	0	3.5
6		ELECTIVE-I		2	0	2	3.0
7		INVENTIONS & INNOVATIONS IN COMPUTING	CP	1	0	0	1.0
8		PROFESSIONAL PRACTICES#	CP	1	0	0	1.0
		TOTAL		15	2	6	19.0

SEMESTER-VI

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		ARTIFICIAL INTELLIGENCE	CP	2	0	2	3.0
2		COMPUTER GRAPHICS	CP	3	0	2	4.0
3		QUANTUM COMPUTING	CP	3	0	2	4.0
4		ELECTIVE-II		2	0	2	3.0
5		ELECTIVE-III		2	0	2	3.0
6		GENERIC ELECTIVE	GE	2	0	0	2.0
		CAPSTONE PROJECT* STARTS	PR	0	0	2	-
		TOTAL		14	0	12	19

SEMESTER-VII

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		COGNITIVE COMPUTING	CP	2	0	0	2.0
2		COMPILER CONSTRUCTION	UCS802	3	0	2	4.0
3		HUMANITIES FOR ENGINEERS	UHU005	2	0	2	3.0
4		ELECTIVE-IV		2	0	2	3.0
5		CAPSTONE PROJECT	PR	0	0	2	8.0
6		INDEPENDENT STUDY	UCS781	0	2	0	1.0
		TOTAL		9	2	6	21.0

SEMESTER-VIII

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		PROJECT SEMESTER*	PR	-	-	-	15.0
		TOTAL		-	-	-	15.0

*TO BE CARRIED OUT IN INDUSTRY/RESEARCH INSTITUTION

OR

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		SIMULATION AND MODELING	CP	2	0	2	3.0
2		ETHICAL HACKING	UCS806	3	0	2	4.0
		PROJECT	PR	-	-	0	8
		TOTAL		5	0	4	15.0

OR

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		START- UP SEMESTER**		-	-	-	15.0
		TOTAL		-	-	-	15.0

** BASED ON HANDS ON WORK ON INNOVATIONS AND ENTREPRENEURSHIP

* From Semester1 Till Semester VI Students Have To Undergo Experiential Learning Activity (ELC).

Semester	ELC Activity	CR
1st	Robotic Arm	0.0
2nd	Mobile App for Institute Services	0.0
3rd	Unity game design	1.0
4th	NN/AI/Block Chain/Char. Recog/Deep Learning	1.0
5th	Cyber Security, Internet Security	1.0
6th	Smart City Smart Car Parking System	1.0

LIST OF PROFESSIONAL ELECTIVES

ELECTIVE I

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		ENGINEERING SOFTWARE AS A SERVICE	PE	2	0	2	3
2		COMPUTER & NETWORK SECURITY	PE	2	0	2	3
3		COMPUTER VISION	PE	2	0	2	3
4		MACHINE LEARNING	PE	2	0	2	3
5		COMPUTATIONAL BIOLOGY AND BIOINFORMATICS	PE	2	0	2	3
6		MATHEMATICAL MODELING AND SIMULATION	PE	2	0	2	3

ELECTIVE II

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		SOFTWARE METRICS AND QUALITY MANAGEMENT	PE	2	0	2	3
2		SECURE CODING	PE	2	0	2	3
3		3D MODELING AND ANIMATION	PE	2	0	2	3
4		DATA ANALYTICS AND VISUALIZATION	PE	2	0	2	3
5		COMBINATORICS	PE	2	0	2	3
6		MATRIX COMPUTATION	PE	2	0	2	3

ELECTIVE III

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		SOFTWARE VERIFICATION AND VALIDATION	PE	2	0	2	3
2		CYBER FORENSICS	PE	2	0	2	3
3		AUGMENTED AND VIRTUAL REALITY	PE	2	0	2	3
4		NATURAL LANGUAGE PROCESSING	PE	2	0	2	3
5		COMPUTATIONAL CHEMISTRY	PE	2	0	2	3
6		FINANCIAL MANAGEMENT	PE	2	0	2	3

ELECTIVE IV

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		AGILE SOFTWARE DEVELOPMENT	PE	2	0	2	3
2		BLOCKCHAIN TECHNOLOGY	PE	2	0	2	3
3		GAME DESIGN & DEVELOPMENT	PE	2	0	2	3
4		DEEP LEARNING	PE	2	0	2	3
5		QUANTUM ALGORITHMS	PE	2	0	2	3
6		COMPUTATIONAL FINANCE AND MODELING	PE	2	0	2	3

GENERIC ELECTIVE-I

S.N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1		EMPLOYABILITY DEVELOPMENT SKILL	GE	2	0	0	2.0
2		INTRODUCTORY COURSE IN FRENCH/GERMAN/SPANISH	GE	2	0	0	2.0
3		INTRODUCTION TO COGNITIVE SCIENCE	GE	2	0	0	2.0
4		INTRODUCTION TO CORPORATE FINANCE	GE	2	0	0	2.0
5		TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT	GE	2	0	0	2.0
6		BIOLOGY FOR ENGINEERS	GE	2	0	0	2.0
7		ASTRONOMY AND ASTROPHYSICS	GE	2	0	0	2.0
8		INTELLECTUAL PROPERTY RIGHTS	GE	2	0	0	2.0
9		TOTAL QUALITY MANAGEMENT	GE	2	0	0	2.0
10		INTRODUCTION TO INDIAN CONSTITUTION	GE	2	0	0	2.0
11		ECONOMICS FOR DECISION MAKING	GE	2	0	0	2.0

SEMESTER WISE CREDITS FOR BE: COMPUTER SCIENCE AND ENGINEERING

Nature of Course	Credits to be Earned(As per Choice Based Credit System)								Total
	Semesters								Total
	I	II	III	IV	V	VI	VII	VIII	
Core-Foundation Courses	18	18.5	4	4	0	0	2	0	46.5
Core-Professional Courses	4	4	13	18	16	11	7	0	73.0
Professional & Generic Electives	0	0	0	0	3	6	3	0	9
Project Based Courses	0	0	1	1	1	3	8	15	29
								Total	157.5

Elective Focus

B.E. Computer Science and Engineering Program is designed to offer elective focus as soon as student clears semester IV of the program. Student has to choose EF (Elective Focus) out of the following six choices and shall continue with this group till his study at Thapar Institute of Engineering & Technology. Choices are:

I. Software Engineering
II. Information and Cyber Security
III. Computer Animation and Gaming
IV. Machine Learning and Data Analytics
V. Computational Science
VI. Mathematics and Computing

Nature of Course	CODE
Core-Foundation Courses	CF
Core-Professional Courses	CP
Generic Electives	GE
Professional Electives	PE
Project Based Courses	PR