BE (COMPUTER 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	UTA003	COMPUTER PROGRAMMING	CP	3	0	2	4.0
3	UEE001	ELECTRICAL ENGINEERING	CF	3	1	2	4.5
4	UEN002	ENERGY AND ENVIRONMENT	CF	3	0	0	3.0
5	UMA010	MATHEMATICS – I	CF	3	1	0	3.5
6	UES009	MECHANICS	CF	2	1	2*	2.5
		TOTAL		17	4	6	22.0

MECHANICS (2*): 2HOURS LAB ONCE IN SEMESTER

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	UEC001	ELECTRONICS ENGINEERING	CF	3	1	2	4.5
4	UTA015	ENGINEERING DRAWING	CF	2	4	0	4.0
5	UHU003	PROFESSIONAL COMMUNICATION	CF	2	0	2	3.0
6	UMA004	MATHEMATICS – II	CF	3	1	0	3.5
		TOTAL		16	7	8	23.5

SEMESTER-III

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS303	OPERATING SYSTEMS	CP	3	0	2	4.0
2	UCS405	DISCRETE MATHEMATICAL STRUCTURES	CP	3	1	0	3.5
3	UCS301	DATA STRUCTURES	CP	3	0	2	4.0
4	UES012	ENGINEERING MATERIALS	CF	3	1	2	4.5
5	UMA011	NUMERICAL ANALYSIS	CF	3	0	2	4.0
6	UCS311	PRACTICAL COMPUTING	CP	1	0	2	2.0
7	UTA016	ENGINEERING DESIGN PROJECT – I	PR	1	0	2	4.0++
		TOTAL		17	2	12	26.0

SEMESTER-IV

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UTA002	MANUFACTURING PROCESSES	CF	2	0	3	3.5
2	UCS521	ARTIFICIAL INTELLIGENCE	CP	3	0	2	4.0
3	UCS411	MEASUREMENT SCIENCE AND TECHNIQUES	CF	3	0	2	4.0
4	UCS310	DATABASE MANAGEMENT SYSTEMS	CP	3	0	2	4.0
5	UCS414	COMPUTER NETWORKS	CP	2	0	2	3.0
6	UCS415	DESIGN AND ANALYSIS OF ALGORITHMS	CP	3	0	2	4.0
7	UTA024	ENGINEERING DESIGN PROJECT – II	PR	1	0	4	4.0++
		TOTAL		17	0	17	26.5

SEMESTER-V

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS503	SOFTWARE ENGINEERING	CP	3	0	2	4.0
2	UCS510	COMPUTER ARCHITECTURE AND ORGANIZATION	CP	3	0	0	3.0
3	UML501	MACHINE LEARNING	CP	3	0	2	4.0
4	UCS410	PROBABILITY AND STATISTICS	CP	3	0	2	4.0
5	UCS413	NETWORK PROGRAMMING	CP	2	0	2	3.0
6		ELECTIVE-I	PE	2	0	2	3.0
		TOTAL		16	0	10	21.0

SEMESTER-VI

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS701	THEORY OF COMPUTATION	CP	3	1	0	3.5
2	UCS505	COMPUTER GRAPHICS	CP	3	0	2	4.0
3	UCS617	MICROPROCESSOR-BASED SYSTEMS DESIGN	CP	3	0	2	4.0
4	UMA037	OPTIMIZATION TECHNIQUES	CF	3	0	2	4.0
5		ELECTIVE-II	PE	2	0	2	3.0
6		ELECTIVE-III	PE	2	0	2	3.0
7	UTA012	INNOVATION AND ENTREPRENEURSHIP (2 SELF-EFFORTS HOURS)	PR	1	0	2	4.5
8	UCS794	CAPSTONE PROJECT* – STARTS		0	0	2	-
		TOTAL		17	1	14	26.0

SEMESTER-VII

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS704	EMBEDDED SYSTEMS DESIGN	CP	2	0	2	3.0
2	UCS802	COMPILER CONSTRUCTION	CP	3	0	2	4.0
3	UHU005	HUMANITIES FOR ENGINEERS	CF	2	0	2	3.0
4		ELECTIVE-IV	PE	2	0	2	3.0
5		GENERIC ELECTIVE	GE	2	0	0	2.0
6	UCS794	CAPSTONE PROJECT	PR	0	0	2	8.0
		TOTAL		11	0	10	23.0

SEMESTER-VIII

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS898	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	UCS813	SOCIAL NETWORK ANALYSIS	CP	2	0	2	3.0
2	UCS806	ETHICAL HACKING	CP	3	0	2	4.0
3	UCS893	CAPSTONE PROJECT II	PR	0	0	4	8.0
		TOTAL		5	0	8	15.0

OR

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS900	START- UP SEMESTER**	PR	-	-	-	15.0
		TOTAL		-	-	-	15.0

** Based on Hands on Work on Innovations and Entrepreneurship

From Semester-I till Semester-VI students have to undergo experiential learning activity (ELC).

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

LIST OF PROFESSIONAL ELECTIVES

ELECTIVE I

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS531	CLOUD COMPUTING	PE	2	0	2	3.0
2.	UCS532	COMPUTER VISION	PE	2	0	2	3.0
3.	UCS533	DATA ANALYTICS & VISUALIZATION	PE	2	0	2	3.0
4.	UCS534	COMPUTER & NETWORK SECURITY	PE	2	0	2	3.0
5.	UCS535	CONTINUOUS DELIVERY AND DEVOPS	PE	2	0	2	3.0
6.	UMC512	MATHEMATIC MODELING AND SIMULATION	PE	2	0	2	3.0

ELECTIVE II

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS635	GPU COMPUTING	PE	2	0	2	3.0
2.	UCS636	3D MODELLING AND ANIMATION	PE	2	0	2	3.0
3.	UCS637	IMAGE PROCESSING	PE	2	0	2	3.0
4.	UCS638	SECURE CODING	PE	2	0	2	3.0
5.	UCS639	IT PROJECT MANAGEMENT	PE	2	0	2	3.0
6.	UCS622	MATRIX COMPUTATION	PE	2	0	2	3.0

ELECTIVE III

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS645	PARALLEL & DISTRIBUTED COMPUTING	PE	2	0	2	3.0
2.	UCS646	GAME DESIGN & DEVELOPMENT	PE	2	0	2	3.0
3.	UCS647	NATURAL LANGUAGE PROCESSING	PE	2	0	2	3.0
4.	UCS648	CYBER FORENSICS	PE	2	0	2	3.0
5.	UCS649	ENGINEERING SOFTWARE AS A SERVICE	PE	2	0	2	3.0
6.	UMC632	FINANCIAL MATHEMATICS	PE	2	0	2	3.0

ELECTIVE IV

S. N.	COURSE NO.	TITLE	CODE	L	T	P	CR
1	UCS751	SIMULATION & MODELLING	PE	2	0	2	3.0
2.	UCS752	AUGMENTED AND VIRTUAL REALITY	PE	2	0	2	3.0
3.	UCS753	DEEP LEARNING AND COMPUTER VISION	PE	2	0	2	3.0
4.	UCS754	BLOCKCHAIN TECHNOLOGY AND APPLICATIONS	PE	2	0	2	3.0
5.	UCS755	SOFTWARE VERIFICATION AND VALIDATION	PE	2	0	2	3.0
6.	UMC742	COMPUTATIONAL NUMBER THEORY	PE	2	0	2	3.0

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

SEMESTER WISE CREDITS FOR BE: COMPUTER ENGINEERING

Nature of Course	Credits to be Earned (As per Choice Based Credit System)								
	Semesters								Total
	I	II	III	IV	V	VI	VII	VIII	
Core-Foundation Courses	18	19.5	8.5	7.5	0	4	3	0	60.5
Core-Professional Courses	4	4	13.5	15	18	11.5	7	0	73
Professional & Generic Electives	0	0	0	0	3	6	5	0	14
Project Based Courses	0	0	4	4	0	4.5	8	15	35.5
								Total	183

Elective Focus

B.E. Computer 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. High Performance Computing
II. Computer Animation and Gaming
III. Machine Learning and Data Analytics
IV. Information and Cyber Security
V. Software Engineering
VI. Mathematics and Computing

I. High Performance Computing
1. Cloud Computing
2. GPU Computing
3. Parallel & Distributed Computing
4. Simulation & Modelling

II. Computer Animation and Gaming
1. Computer Vision
2. 3D Modelling And Animation
3. Game Design & Development
4. Augmented And Virtual Reality

III. Machine Learning and Data Analytics
1. Data Analytics & Visualization
2. Image Processing
3. Natural Language Processing
4. Deep Learning and Computer Vision

IV. Information and Cyber Security
1. Computer & Network Security
2. Secure Coding
3. Cyber Forensics
4. Blockchain Technology and Applications

V. Software Engineering
1. Continuous Delivery And DevOps
2. IT Project Management
3. Engineering Software As A Service
4. Software Verification and Validation

VI. Mathematics and Computing
1. Mathematic Modeling And Simulation
2. Matrix Computation
3. Financial Mathematics
4. Computational Number Theory