

Scheme & Syllabus of **Bachelor of Technology** **Computer Science & Engineering**

Batch 2018 onwards



By

Board of Study CSE on 27 April 2018

Department of Academics

I.K. Gujral Punjab Technical University

Bachelor of Technology in Computer Science & Engineering

It is a Graduate (UG) Programme of 4 years duration (8 semesters)

Courses & Examination Scheme:

Third Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTES 301-18	Engineering Science Course	Digital Electronics	3	0	0	40	60	100	3
BTCS 301-18	Professional Core Courses	Data structure & Algorithms	3	0	0	40	60	100	3
BTCS 302-18	Professional Core Courses	Object Oriented Programming	3	0	0	40	60	100	3
BTAM 301-18	Basic Science Course	Mathematics-III	3	0	0	40	60	100	3
BTHU 301-18	Humanities & Social Sciences Including Management \Courses	Humanities-I	3	0	0	40	60	100	3
BTES 302-18	Engineering Science Course	Digital Electronics Lab	0	0	2	30	20	50	1
BTCS 303-18	Professional Core Courses	Data structure & Algorithms Lab	0	0	4	30	20	50	2
BTCS 304-18	Professional Core Courses	Object Oriented Programming lab.	0	0	4	30	20	50	2
BTCS 305-18	Professional Core Courses	IT Workshop	0	0	2	30	20	50	1
Total Credits			15	0	16	320	380	700	21

IK Gujral Punjab Technical University, Kapurthala
B. Tech, Computer Science & Engineering

Fourth Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 401-18	Professional Core Courses	Discrete Mathematics	3	1	0	40	60	100	4
BTES 401-18	Engineering Science Course	Computer Organization & Architecture	3	0	0	40	60	100	3
BTCS 402-18	Professional Core Courses	Operating Systems	3	0	0	40	60	100	3
BTCS 403-18	Professional Core Courses	Design & Analysis of Algorithms	3	0	0	40	60	100	3
BTHU 401-18	Humanities & Social Sciences including Management Courses	Management-1 (Organizational Behaviour/ Finance & Accounting)	3	0	0	40	60	100	3
EVS102	Mandatory Courses	Environmental Sciences	-	-	-	-	-	-	0
BTES 402-18	Engineering Science Course	Computer Organization & Architecture Lab	0	0	2	30	20	50	1
BTCS 404-18	Professional Core Courses	Operating Systems Lab	0	0	4	30	20	50	2
BTCS 405-18	Professional Core Courses	Design & Analysis of Algorithms Lab	0	0	4	30	20	50	2
Total Credits			15	1	12	290	360	650	22

IK Gujral Punjab Technical University, Kapurthala
B. Tech, Computer Science & Engineering

Fifth Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTES 501-18	Engineering Science	Signals & Systems	3	0	0	40	60	100	3
BTCS 501-18	Professional Core Courses	Database Management Systems	3	0	0	40	60	100	3
BTCS 502-18	Professional Core Courses	Formal Language & Automata Theory	3	0	0	40	60	100	3
BTCS 503-18	Professional Core Courses	Software Engineering	3	0	0	40	60	100	3
BTHU 501-18	Humanities & Social Sciences including Management Courses	Humanities-II	3	0	0	40	60	100	3
BTCS XXX-18	Professional Elective	Elective-I	3	0	0	40	60	100	3
MC	Mandatory Courses	Constitution of India/ Essence of Indian Traditional Knowledge	-	-	-	-	-	-	0
BTCS 504-18	Professional Core Courses	Database Management Systems Lab	0	0	4	30	20	50	2
BTCS 505-18	Professional Core Courses	Software Engineering Lab	0	0	4	30	20	50	2
Total Credits			17	0	8	300	400	700	22

IK Gujral Punjab Technical University, Kapurthala
B. Tech, Computer Science & Engineering

Sixth Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 601-18	Professional Core Courses	Compiler Design	3	0	0	40	60	100	3
BTCS 602-18	Professional Core Courses	Computer Networks	3	0	0	40	60	100	3
BTCS YYY-18	Professional Elective Courses	Elective-II	3	0	0	40	60	100	3
BTCS ZZZ-18	Professional Elective Courses	Elective-III	3	0	0	40	60	100	3
BTOE ***	Open Elective Courses	Open Elective-I (Humanities)	3	0	0	40	60	100	3
BTCS 603-18	Project	Project-1	0	0	6	60	40	100	3
BTCS 604-18	Professional Core Courses	Compiler Design Lab	0	0	4	30	20	50	2
BTCS 605-18	Professional Core Courses	Computer Networks Lab	0	0	4	30	20	50	2
Total Credits			15	0	14	320	380	700	22

IK Gujral Punjab Technical University, Kapurthala
B. Tech, Computer Science & Engineering

Seventh Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS UUU-18	Professional Elective Courses	Elective-IV	3	0	0	40	60	100	3
BTCS VVV-18	Professional Elective Courses	Elective-V	3	0	0	40	60	100	3
BTOE ***	Open Elective Courses	Open Elective-II	3	0	0	40	60	100	3
BTCS 701-18	Professional Core Courses	Artificial Intelligence	3	0	0	40	60	100	3
BTCS 702-18	Project	Project-II	0	0	12	100	50	150	6
BTCS 703-18	Professional Training	Industrial *Training	-	-	-	60	40	100	2
Total Credits			11	1	12	320	330	650	20

* The students will take 6-8 weeks summer training in Industry after semester 6th.

Eighth Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS XXX-18	Professional Elective Courses	Elective-VI	3	0	0	40	60	100	3
BTOE ***	Open Elective Courses	Open Elective-III	3	0	0	40	60	100	3
BTOE ***	Open Elective Courses	Open Elective-IV	3	0	0	40	60	100	3
BTCS 801-18	Project	Project-III	0	0	12	100	50	150	6
Total Credits			9	0	12	220	230	450	15

LIST OF ELECTIVES

Elective-I

- BTCS 506-18** Programming in Java
- BTCS 507-18** Web Technologies
- BTCS 508-18** Computational Biology
- BTCS 509-18** Computer Graphics_

Elective-II

- BTCS 606-18** Mobile Application Development
- BTCS 607-18** Distributed Systems
- BTCS 608-18** Machine Learning
- BTCS 609-18** Digital Signal Processing

Elective-III

- BTCS 610-18** Parallel and Distributed Algorithms
- BTCS 611-18** Embedded Systems
- BTCS 612-18** Data Mining
- BTCS 613-18** Cloud Computing

Elective-IV

- BTCS 702-18** Information Theory and Coding
- BTCS 703-18** Distributed Operating System
- BTCS 704-18** Soft Computing
- BTCS 705-18** Human Computer Interaction

Elective-V

- BTCS 706-18** Computational Number Theory
- BTCS 707-18** Ad-Hoc and Sensor Networks
- BTCS 708-18** Speech and Natural Language Processing
- BTCS 709-18** Parallel Architectures

Elective-VI

- BTCS 802-18** Queuing Theory and Modeling
- BTCS 803-18** Real Time Systems
- BTCS 804-18** Data Analytics
- BTCS 805-18** Image Processing

LIST OF OPEN ELECTIVES

Open Elective-I

1. Soft skills and interpersonal communication
2. Cyber law and ethics
3. Human resource development and organizational behavior
4. Economics policies in India

Open electives offered by the department:

Courses of odd semesters:

BTCS301-18 Data Structures & Algorithms

BTCS503-18 Object Oriented Programming

BTCS501-18 Database Management System

Courses of even semesters:

BTES401-18 Computer organisation & Architecture

BTCS402-18 Operating system

BTCS602-18 Computer Networks

IK Gujral Punjab Technical University, Kapurthala
B. Tech, Computer Science & Engineering

LIST OF COURSES FOR HONOURS DEGREE

In order to have an Honours degree, a student choose 18-20 credits from the following courses in addition.

Course Code	Type of courses	Course Title	Hours per Week			Marks Distributions		Total Marks	Credits
			L	T	P	Internal	External		
BTCS H01-18	Professional Elective Courses	Graph Theory	3	0	0	40	60	100	3
BTCS H02-18	Professional Elective Courses	Computer Vision	3	0	0	40	60	100	3
BTCS 611-18	Professional Elective Courses	Embedded Systems	3	0	0	40	60	100	3
BTCS H03-18	Professional Elective Courses	Software Project Management	3	0	0	40	60	100	3
BTCS H04-18	Professional Elective Courses	Cryptography & Network Security	3	0	0	40	60	100	3
BTCS H05-18	Professional Elective Courses	Internet-of-Things	3	0	0	40	60	100	3
BTCS 804-18	Professional Elective Courses	Data Analytics	3	0	0	40	60	100	3
BTCS 608-18	Professional Elective Courses	Machine Learning	3	0	0	40	60	100	3
BTCS H06-18	Professional Elective Courses	ICT in Agriculture and Rural Development	3	0	0	40	60	100	3
BTCS H07-18	Professional Elective Courses	Computational Technologies for Smart Cities	3	0	0	40	60	100	3
BTCS H08-18	Professional Elective Courses	Computer Forensics	3	0	0	40	60	100	3
BTCS H09-18	Professional Elective Courses	Advavanced Algorithms	3	0	0	40	60	100	3

