

Study Scheme & Syllabus of

Bachelor of Technology

Computer Science & Engineering

Batch 2025 onwards

(3rd -8th Semester)



By

Department of Computer Science and Engineering

Shaheed Bhagat Singh State University
Ferozepur-152004 (Punjab)

S B S State University Ferozepur
Department of Computer Science & Engineering

Bachelor of Technology in Computer Science & Engineering

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

Courses & Examination

Semester: Third Semester

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 301-D	Professional Core Courses	Data structures & Algorithms	3	0	0	40	60	100	3
BTCS 302-D	Professional Core Courses	Object Oriented Programming	3	0	0	40	60	100	3
BTCS 303-D	Professional Core Courses	Computer Organization and Architecture	3	0	0	40	60	100	3
BTCS 304-D	Professional Core Courses	Digital Electronics	3	0	0	40	60	100	3
BTAM 304-D	Professional Core Courses	Discrete Mathematics	3	0	0	40	60	100	3
BTCS 305-D	Professional Core Courses	Introduction to Cyber Security	3	0	0	40	60	100	3
BTCS 306-D	Professional Core Courses	Digital Electronics Lab	0	0	2	30	20	50	1
BTCS 307-D	Professional Core Courses	Data structure & Algorithms Lab	0	0	3	30	20	50	1
BTCS 308-D	Professional Core Courses	Object Oriented Programming lab.	0	0	2	30	20	50	1
BTCS 309-D	Professional Core Courses	IT Workshop*	0	0	2	30	20	50	1
BTCS 310-D		Entrepreneurship-II Lab	0	0	4	30	20	50	2
BTCS 311-D		Self-Growth Community Service	0	0	2	60	40	100	1
Total			18	0	15	450	500	950	25

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Semester: **Fourth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 401-D	Professional Core Courses	Mathematics-III	3	0	0	40	60	100	3
BTCS 402-D	Professional Core Courses	Operating Systems	3	0	0	40	60	100	3
BTCS 403-D	Professional Core Courses	Design & Analysis of Algorithms	3	0	0	40	60	100	3
	Humanities & Social Sciences including Management Courses		3	0	0	40	60	100	3
BTCS 404-D	Professional Core Courses	Python Programming	3	0	0	40	60	100	3
	Open Elective Courses	Open Elective-I	3	0	0	40	60	100	3
BTCS 405-D	Professional Core Courses	Operating Systems Lab	0	0	4	30	20	50	2
BTCS 406-D	Professional Core Courses	Design & Analysis of Algorithms Lab	0	0	2	30	20	50	1
BTCS 407-D	Professional Core Courses	Python Programming Lab	0	0	2	30	20	50	1
BTCS 408-D	Diploma Course	Computer Peripherals and Interfacing Lab	0	0	4	30	20	50	2
BTCS 409-D		Entrepreneurship-III Lab	0	0	4	30	20	50	2
Total			18	0	16	390	460	850	26

Students will take up summer internships of 4-6 weeks at industry or reputed organizations after the 4th sem, which will be accredited in the 5th semester.

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Semester: **Fifth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 501-D	Professional Core Courses	Database Management Systems	3	0	0	40	60	100	3
BTCS 502-D	Professional Core Courses	Software Engineering	3	0	0	40	60	100	3
BTCS 503-D	Professional Core Courses	Computer Networks	3	0	0	40	60	100	3
BTCS 504-D	Professional Core Courses	Formal Language & Automata Theory	3	0	0	40	60	100	3
BTCS XXX-D	Professional Elective	Elective-I	2	0	0	40	60	100	2
	Open Elective Courses	Open Elective -II	3	0	0	40	60	100	3
BTCS 505-D	Professional Core Courses	Database Management Systems Lab	0	0	3	30	20	50	1
BTCS 506-D	Professional Core Courses	Computer Networks Lab	0	0	2	30	20	50	1
BTCS XXX-D	Professional Elective	Elective-I Lab	0	0	3	30	20	50	1
BTCS 507-D	Professional Core Courses	Software Engineering Lab	0	0	2	30	20	50	1
BTCS 508-D		Entrepreneurship-IV Lab	0	0	4	30	20	50	2
BTCS 509-D	Professional Training	Industrial Training*	-	-	-	60	40	100	2
Total			17	0	14	450	500	950	25

* 4-6 weeks industrial training undertaken after 4th semester in summer vacations.

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Semester: **Sixth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 601-D	Professional Core Courses	Compiler Design	3	0	0	40	60	100	3
BTCS 602-D	Professional Core Courses	Machine Learning	3	0	0	40	60	100	3
BTCS 603-D	Professional Core Courses	Cloud Computing	3	0	0	40	60	100	3
BTCS YYY-D	Professional Elective Courses	Elective-II	2	0	0	40	60	100	2
	Open Elective Courses	Open Elective-III	3	0	0	40	60	100	3
BTCS 605-D	Professional Core Courses	Compiler Design Lab	0	0	2	30	20	50	1
BTCS 606-D	Professional Core Courses	Machine Learning Lab	0	0	4	30	20	50	2
BTCS 607-D	Professional Core Courses	Cloud Computing Lab	0	0	2	30	20	50	1
BTCS YYY-D	Professional Elective Courses	Elective-II lab	0	0	2	30	20	50	1
BTCS 608-D	Advance Diploma Course	Open-Source Technologies Lab	0	0	4	30	20	50	2
BTCS 609-D		Entrepreneurship-V Lab	0	0	4	30	20	50	2
Total			14	0	18	380	420	800	23

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Semester: **Seventh Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTCS 701-D	Professional Core Courses	Network Security and Cryptography	3	0	0	40	60	100	3
BTCS 702-D	Professional Core Courses	Deep Learning	3	0	0	40	60	100	3
BTCS ZZZ-D	Professional Elective	Elective- III	2	0	0	40	60	100	2
	Humanities Course		3	0	0	40	60	100	3
	Open Elective Courses	Open Elective-IV	3	0	0	40	60	100	3
BTCS 703-D	Professional Core Courses	Network Security and Cryptography Lab	0	0	2	30	20	50	1
BTCS 704-D	Professional Core Courses	Deep Learning Lab	0	0	2	30	20	50	1
BTCS 705-D	Project	Project	0	0	8	120	80	200	4
BTCS ZZZ-D	Professional Elective	Elective-III lab	0	0	2	30	20	50	1
Total			14	0	14	410	440	950	21

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Semester: Eighth Semester (a)

Course Code	Course Title	Hours Per Week			Marks Distribution		Total Marks	Credits
		L	T	P	Internal	External		
BTCS 802-D	IOT with Andriano, ESP Rasberry Pi	1	0	2	40	60	100	2
BTCS SSS-D	Elective – IV	2	0	0	40	60	100	2
BTCS TTT-D	Elective – V	2	0	0	40	60	100	2
BTCS UUU-D	Elective – VI	2	0	0	40	60	100	2
	Open Elective – V	3	0	0	40	60	100	3
BTCS SSS-D	Elective – IV Lab	0	0	2	30	20	50	1
BTCS TTT-D	Elective – V Lab	0	0	2	30	20	50	1
BTCS UUU-D	Elective – VI Lab	0	0	2	30	20	50	1
Total		10	0	8	290	360	650	14

Semester: Eighth Semester (b)

Course Code	Course Title	Marks Distribution		Total Marks	Credits
		Internal	External		
BTCS 801-D	Semester Training	300	200	500	14

LIST OF ELECTIVES

BTCS XXX-C: Elective-I

BTCS 510-D	Data Visualization Using Tableau
BTCS 511-D	Data Visualization Using Tableau Lab
BTCS 512-D	Mobile Application Development
BTCS 513-D	Mobile Application Development Lab
BTCS 514-D	Web Technologies
BTCS 515-D	Web Technologies Lab
BTCS 516-D	Computer Graphics
BTCS 517-D	Computer Graphics Lab

BTCS YYY-C: Elective-II

BTCS 610-D	Software Project Management
BTCS 611-D	Software Project Management Lab
BTCS 612-D	Data Science
BTCS 613-D	Data Science Lab
BTCS 614-D	Artificial Intelligence
BTCS 615-D	Artificial Intelligence Lab
BTCS 616-D	Internet of Things
BTCS 617-D	Internet of Things Lab

BTCS ZZZ-C: Elective-III

BTCS 710-D	Ethical Hacking
BTCS 711-D	Ethical Hacking Lab
BTCS 712-D	Distributed databases
BTCS 713-D	Distributed databases Lab
BTCS 714-D	Computer Vision
BTCS 715-D	Computer Vision Lab
BTCS 716-D	Agile Software Development
BTCS 717-D	Agile Software Development Lab

BTCS SSS-C: Elective-IV

BTCS 810-D	Data Mining & Data Warehousing
BTCS 811-D	Data Mining & Data Warehousing Lab
BTCS 812-D	Gen AI and Prompt Engineering
BTCS 813-D	Gen AI and Prompt Engineering Lab
BTCS 814-D	Digital Image Processing
BTCS 815-D	Digital Image Processing Lab
BTCS 816-D	Computational Biology
BTCS 817-D	Computational Biology Lab

BTCS TTT-CC: Elective-V

- BTCS 818-D** Blockchain Technologies
- BTCS 819-D** Blockchain Technologies Lab
- BTCS 820-D** Parallel Computing
- BTCS 821-D** Parallel Computing lab
- BTCS 822-D** Adhoc and Wireless sensor networks
- BTCS 823-D** Adhoc and Wireless sensor networks lab
- BTCS 824-D** Quantum Computing
- BTCS 825-D** Quantum Computing lab

BTCS UUU-C: Elective-VI

- BTCS 826-D** Augmented and Virtual reality
- BTCS 827-D** Augmented and Virtual reality Lab
- BTCS 828-D** Malware Analysis and Reverse Engineering
- BTCS 829-D** Malware Analysis and Reverse Engineering Lab
- BTCS 830-D** Social Network Analysis
- BTCS 831-D** Social Network Analysis Lab
- BTCS 832-D** Big Data
- BTCS 833-D** Big Data Lab

Open electives offered by CSE department

Offered in ODD Semesters:

- BTCS 901-C** Data Structures & Algorithms
- BTCS 902-C** Object-Oriented Programming
- BTCS 903-C** Database Management System
- BTCS 904-C** Computer Networks
- BTCS 905-C** Network Security and Cryptography

Offered in EVEN Semesters:

- BTCS 906-C** Operating system
- BTCS 907-C** Machine Learning
- BTCS 908-C** Cloud Computing
- BTCS 909-C** Data Science