

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

## **Batch 2018 onwards** **(3<sup>rd</sup> -8<sup>th</sup> Semester)**



**By**

**Department of Academics**  
**IK 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		
<b>BTES 301-18</b>	Engineering Science Course	Digital Electronics	3	0	0	40	60	100	3
<b>BTCS 301-18</b>	Professional Core Courses	Data structure & Algorithms	3	0	0	40	60	100	3
<b>BTCS 302-18</b>	Professional Core Courses	Object Oriented Programming	3	0	0	40	60	100	3
<b>BTAM 304-18</b>	Basic Science Course	Mathematics-III	3	0	0	40	60	100	3
<b>HSMC 101/102-18</b>	Humanities & Social Sciences Including Management \Courses	Foundation Course in Humanities (Development of Societies/Philosophy)	2	1	0	40	60	100	3
<b>BTES 302-18</b>	Engineering Science Course	Digital Electronics Lab	0	0	2	30	20	50	1
<b>BTCS 303-18</b>	Professional Core Courses	Data structure & Algorithms Lab	0	0	4	30	20	50	2
<b>BTCS 304-18</b>	Professional Core Courses	Object Oriented Programming lab.	0	0	4	30	20	50	2
<b>BTCS 305-18</b>	Professional Core Courses	IT Workshop*	0	0	2	30	20	50	1
		Summer Institutional Training	0	0	0	0	0	0	Satisfactory/Unsatisfactory
<b>Total</b>			<b>14</b>	<b>1</b>	<b>12</b>	<b>320</b>	<b>380</b>	<b>700</b>	<b>21</b>

\*Syllabus to be decided by respective institute internally. It may include latest technologies.

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**Fourth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
<b>BTCS 401-18</b>	Professional Core Courses	Discrete Mathematics	3	1	0	40	60	100	4
<b>BTES 401-18</b>	Engineering Science Course	Computer Organization & Architecture	3	0	0	40	60	100	3
<b>BTCS 402-18</b>	Professional Core Courses	Operating Systems	3	0	0	40	60	100	3
<b>BTCS 403-18</b>	Professional Core Courses	Design & Analysis of Algorithms	3	0	0	40	60	100	3
<b>HSMC 122-18</b>	Humanities & Social Sciences including Management Courses	Universal Human Values	2	1	0	40	60	100	3
<b>EVS101-18</b>	Mandatory Courses	Environmental Sciences	2	-	-	100	-	100	S/US
<b>BTES 402-18</b>	Engineering Science Course	Computer Organization & Architecture Lab	0	0	2	30	20	50	1
<b>BTCS 404-18</b>	Professional Core Courses	Operating Systems Lab	0	0	4	30	20	50	2
<b>BTCS 405-18</b>	Professional Core Courses	Design & Analysis of Algorithms Lab	0	0	4	30	20	50	2
<b>Total</b>			<b>14</b>	<b>2</b>	<b>10</b>	<b>290</b>	<b>360</b>	<b>650</b>	<b>24</b>

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**Fifth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
<b>BTES 501-18</b>	Engineering Science	Signals & Systems	3	0	0	40	60	100	3
<b>BTCS 501-18</b>	Professional Core Courses	Database Management Systems	3	0	0	40	60	100	3
<b>BTCS 502-18</b>	Professional Core Courses	Formal Language & Automata Theory	3	0	0	40	60	100	3
<b>BTCS 503-18</b>	Professional Core Courses	Software Engineering	3	0	0	40	60	100	3
	Humanities & Social Sciences including Management Courses	Humanities-II*	3	0	0	40	60	100	3
<b>BTCS XXX-18</b>	Professional Elective	Elective-I	3	0	0	40	60	100	3
<b>MC</b>	Mandatory Courses	Constitution of India/ Essence of Indian Traditional Knowledge	2	-	-	100	-	100	S/US
<b>BTCS 504-18</b>	Professional Core Courses	Database Management Systems Lab	0	0	4	30	20	50	2
<b>BTCS 505-18</b>	Professional Core Courses	Software Engineering Lab	0	0	2	30	20	50	1
<b>BTCS XXX-18</b>	Professional Elective	Elective-I Lab	0	0	2	30	20	50	1
<b>Total</b>			<b>18</b>	<b>0</b>	<b>8</b>	<b>330</b>	<b>420</b>	<b>750</b>	<b>22</b>

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**Sixth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
<b>BTCS 601-18</b>	Professional Core Courses	Compiler Design	3	0	0	40	60	100	3
<b>BTCS 602-18</b>	Professional Core Courses	Computer Networks	3	0	0	40	60	100	3
<b>BTCS YYY-18</b>	Professional Elective Courses	Elective-II	3	0	0	40	60	100	3
<b>BTCS ZZZ-18</b>	Professional Elective Courses	Elective-III	3	0	0	40	60	100	3
<b>BTOE ***</b>	Open Elective Courses	Open Elective-I (Humanities)	3	0	0	40	60	100	3
<b>BTCS 603-18</b>	Project	Project-1	0	0	6	60	40	100	3
<b>BTCS 604-18</b>	Professional Core Courses	Compiler Design Lab	0	0	2	30	20	50	1
<b>BTCS 605-18</b>	Professional Core Courses	Computer Networks Lab	0	0	2	30	20	50	1
<b>BTCS YYY-18</b>	Professional Elective Courses	Elective-II lab	0	0	2	30	20	50	1
<b>BTCS YYY-18</b>	Professional Elective Courses	Elective-III lab	0	0	2	30	20	50	1
<b>Total</b>			<b>15</b>	<b>0</b>	<b>14</b>	<b>380</b>	420	800	<b>22</b>

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**Seventh Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
<b>BTCS UUU-18</b>	Professional Elective Courses	Elective-IV	3	0	0	40	60	100	3
<b>BTCS VVV-18</b>	Professional Elective	Elective-V	3	0	0	40	60	100	3
<b>BTOE ***</b>	Open Elective Courses	Open Elective-II	3	0	0	40	60	100	3
<b>BTCS 701-18</b>	Professional Core Courses	Artificial Intelligence	3	0	0	40	60	100	3
<b>BTCS 702-18</b>	Project	Project-II	0	0	8	100	50	150	4
<b>BTCS 703-18</b>	Professional Training	Industrial *Training	-	-	-	60	40	100	2
<b>BTCS UUU-18</b>	Professional Elective Courses	Elective-IV lab	0	0	2	30	20	50	1
<b>BTCS VVV-18</b>	Professional Elective	Elective-V lab	0	0	2	30	20	50	1
<b>Total</b>			<b>12</b>	<b>0</b>	<b>12</b>	<b>380</b>	<b>370</b>	<b>750</b>	<b>20</b>

\* The students will take 6-8 weeks summer training in Industry after semester 6<sup>th</sup>.

**Eighth Semester**

Course Code	Type of Course	Course Title	Hours per Week			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
<b>BTCS XXX-18</b>	Professional Elective Courses	Elective-VI	3	0	0	40	60	100	3
<b>BTOE ***</b>	Open Elective Courses	Open Elective- III	3	0	0	40	60	100	3
<b>BTOE ***</b>	Open Elective Courses	Open Elective- IV	3	0	0	40	60	100	3

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<b>BTCS 801-18</b>	Project	Project-III	0	0	10	100	50	150	5
<b>BTCS XXX-18</b>	Professional Elective Courses	Elective-VI lab	0	0	2	30	20	50	1
<b>Total</b>			<b>9</b>	<b>0</b>	<b>12</b>	<b>250</b>	<b>250</b>	<b>500</b>	<b>15</b>

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**LIST OF ELECTIVES**

**Elective-I**

<b>BTCS 506-18</b>	Programming in Java
<b>BTCS 507-18</b>	Web Technologies
<b>BTCS 508-18</b>	Computational Biology
<b>BTCS 509-18</b>	Computer Graphics_
<b>BTCS 510-18</b>	Programming in Java lab
<b>BTCS 511-18</b>	Web Technologies lab
<b>BTCS 512-18</b>	Computational Biology lab
<b>BTCS 513-18</b>	Computer Graphics_lab

**Elective-II**

<b>BTCS 606-18</b>	Mobile Application Development
<b>BTCS 607-18</b>	Distributed database Systems
<b>BTCS 608-18</b>	Machine Learning
<b>BTCS 609-18</b>	Digital Signal Processing
<b>BTCS 614-18</b>	Mobile Application Development lab
<b>BTCS 615-18</b>	Distributed Database Systems lab
<b>BTCS 616-18</b>	Machine Learning lab
<b>BTCS 617-18</b>	Digital Signal Processing lab

**Elective-III**

<b>BTCS 610-18</b>	Parallel and Distributed Algorithms
<b>BTCS 611-18</b>	Embedded Systems
<b>BTCS 612-18</b>	Data Mining
<b>BTCS 613-18</b>	Cloud Computing
<b>BTCS 618-18</b>	Parallel and Distributed Algorithms lab
<b>BTCS 619-18</b>	Embedded Systems lab
<b>BTCS 620-18</b>	Data Mining lab
<b>BTCS 621-18</b>	Cloud Computing lab

**Elective-IV**

<b>BTCS 702-18</b>	Information Theory and Coding
<b>BTCS 703-18</b>	Distributed Operating System
<b>BTCS 704-18</b>	Soft Computing
<b>BTCS 705-18</b>	Human Computer Interaction
<b>BTCS 702-18</b>	Information Theory and Coding lab
<b>BTCS 710-18</b>	Distributed Operating System lab
<b>BTCS 711-18</b>	Soft Computing lab
<b>BTCS 712-18</b>	Human Computer Interaction lab

**Elective-V**

<b>BTCS 706-18</b>	Computational Number Theory
<b>BTCS 707-18</b>	Ad-Hoc and Sensor Networks
<b>BTCS 708-18</b>	Speech and Natural Language Processing