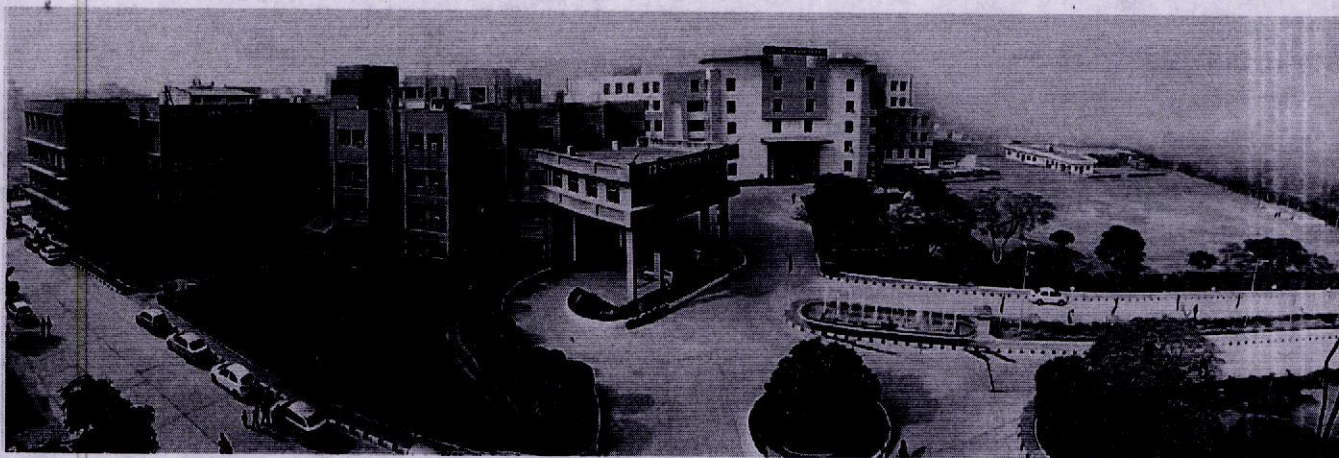


**SGT University, Chandu-Budhera, Gurugram**  
**Faculty of Engineering & Technology**  
**Department of Computer Science & Engineering**



**Bachelor of Computer Applications**  
**Cloud Computing**  
**Scheme & Syllabus (2021-22 Onwards)**

**Vision of SGT University**

**“Driven by Research & Innovation, we aspire to be  
amongst the top ten Universities in the Country by 2022”**

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**Budhera, Gurugram**



### Bachelor of Computer Application (Cloud Computing)

S. No.	Subject Code	Subject Name	Semester	L	T	P	C	Category A (Core/ ID/ VAC	Category B (Compulsory/ DE/ BSC/ EAS/ OE/ MC/ II/ MOOC)	Internal	External	Theory/ Practical
1		Discrete Mathematics	1st	3	0	0	3	Core	Compulsory	40	60	Theory
2		Computer Fundamental	1st	3	0	0	3	Core	Compulsory	40	60	Theory
3		Entrepreneurship	1st	3	0	0	3	ID	EAS	40	60	Theory
4		Object Oriented Programming	1st	3	0	0	3	Core	Compulsory	40	60	Theory
5		Computer Network	1st	3	0	0	3	Core	Compulsory	40	60	Theory
6		Computer Fundamental Lab	1st	0	0	2	1	Core	Compulsory	60	40	Practical
7		Object Oriented Programming Lab	1st	0	0	2	1	Core	Compulsory	60	40	Practical
8		Professional Communication Lab	1st	0	0	2	1	ID	EAS	60	40	Practical
9		Mandatory Course- I	1st	2	0	0	2	ID	MC	40	60	Theory
10		Value Added Courses-I	1st	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>19</b>	<b>0</b>	<b>6</b>	<b>22</b>					
1		Information Security Fundamentals	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
2		Java Programming	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
3		Basics of Data Structure	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
4		Web Development	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
5		Computer Architecture	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
6		Medical Measurement & measuring instruments	2nd	3	0	0	3	ID	EAS	40	60	Theory
7		Java Programming Lab	2nd	0	0	2	1	Core	Compulsory	60	40	Practical
8		Basics of Data Structure Lab	2nd	0	0	2	1	Core	Compulsory	60	40	Practical
9		Web Development Lab	2nd	0	0	2	1	Core	Compulsory	60	40	Practical
10		Industrial Internship-I	2nd	0	0	4w	2	Core	II	60	40	Practical
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>23</b>					

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1		Database Management Systems	3rd	3	0	0	3	Core	Compulsory	40	60	Theory
2		Software Engineering	3rd	3	0	0	3	Core	Compulsory	40	60	Theory
3		Cloud Computing	3rd	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-I	3rd	3	0	0	3	Core	DE	40	60	Theory
5		Open Elective-I	3rd	4	0	0	4	ID	OE	40	60	Theory
6		Database Management Systems Lab	3rd	0	0	2	1	Core	Compulsory	60	40	Practical
7		Software Engineering Lab	3rd	0	0	2	1	Core	Compulsory	60	40	Practical
8		Cloud Computing Lab	3rd	0	0	2	1	Core	Compulsory	60	40	Practical
9		Department Electives Lab-I	3rd	0	0	2	1	Core	DE	60	40	Practical
11		Value Addition Course-II	3rd	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>8</b>	<b>22</b>					
1		Operating System	4th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Design and Analysis of Algorithm	4th	3	0	0	3	Core	Compulsory	40	60	Theory
3		Cloud Computing Architecture & Deployment Models	4th	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-II	4th	3	0	0	3	Core	DE	40	60	Theory
5		Medical imaging techniques	4th	3	0	0	3	ID	EAS	40	60	Theory
6		Mandatory Course - II	4th	2	0	0	2	ID	MC	40	60	Theory
7		Operating System Lab	4th	0	0	2	1	Core	Compulsory	60	40	Practical
8		Design and Analysis of Algorithm Lab	4th	0	0	2	1	Core	Compulsory	60	40	Practical
9		Deployment Models Lab	4th	0	0	2	1	Core	Compulsory	60	40	Practical
10		Department Electives Lab-II	4th	0	0	2	1	Core	DE	60	40	Practical
11		Industrial Internship-II	4th	0	0	4w	2	Core	II	60	40	Practical
		<b>Total</b>		<b>17</b>	<b>0</b>	<b>8</b>	<b>23</b>					
1		Theory of Computation	5th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Basics of Machine Learning	5th	3	0	0	3	Core	Compulsory	40	60	Theory
3		IoT development application of Cloud	5th	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-III	5th	3	0	0	3	Core	DE	40	60	Theory
5		Open Elective-II	5th	4	0	0	4	ID	OE	40	60	Theory
6		Medical informatics	5th	3	0	0	3	ID	EAS	40	60	Theory
7		Basics of Machine Learning Lab(Python)	5th	0	0	4	2	Core	Compulsory	40	60	Theory
8		IoT development application of Cloud Lab	5th	0	0	2	1	Core	Compulsory	60	40	Practical
9		Department Electives Lab-III	5th	0	0	2	1	Core	DE	60	40	Practical
10		Value Addition Course-III	5th	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>21</b>	<b>0</b>	<b>8</b>	<b>25</b>					



1		Compiler Design	6th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Virtualization and Cloud Security	6th	3	0	0	3	Core	Compulsory	40	60	Theory
3		Hadoop	6th	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-IV	6th	3	0	0	3	Core	DE	40	60	Theory
5		Open Elective-III	6th	4	0	0	4	ID	OE	40	60	Theory
6		Compiler Design Lab	6th	0	0	2	1	Core	Compulsory	60	40	Practical
7		Virtualization and Cloud Security Lab	6th	0	0	2	1	Core	Compulsory	60	40	Practical
8		Hadoop Lab	6th	0	0	2	1	Core	Compulsory	60	40	Practical
9		Mandatory Course - III	6th	2	0	0	2	ID	MC	40	60	Theory
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>21</b>					
		<b>Overall Total</b>	<b>1st to 6th</b>				<b>136</b>					

**Note:**

1. Mooc Course: Student will be offered various available SWAYAM MOOC Courses in lieu of various regular core (Compulsory and Department Electives) courses. A student can opt
2. Student can opt for Honours degree by earning 18 - 20 additional credits through SWAYAM MOOC courses but with prior permission of the department and limit to the courses related to the
3. A student can have Honours degree WITH SPECIALIZATION in the particular of his/her branch by earning 18-20 additional credits in particular specialization through MOOC or
4. Courses Highlighted in green need to be fixed according to the group (ME+CE in one group and CSE+ECE other group. Value added, RM and Mandatory courses also need to be fixed in

**Abbreviation Used:**

ID	Interdisciplinary
VAC	Value Addition Course
DE	Department Electives
BSC	Basic Science Courses
EAS	Engineering Applied Science
II	Industrial Internship
MC	Mandatory Courses

Credit Distribution	
Core	99
Other (Interdisciplinary + VAC)	37
<b>Total</b>	<b>136</b>

Core Credits	
Compulsory	80
Department Electives	15
Industrial Internship	4
<b>Total</b>	<b>99</b>

Other Credits	
Interdisciplinary	25
VAC	6
MC	6
<b>Total</b>	<b>37</b>

Interdisciplinary Credits	
Engineering Applied Science	13
Open Elective	12
<b>Total</b>	<b>25</b>



## Bachelor of Computer Application(Cloud Computing with Research)

S. No.	Subject Code	Subject Name	Semester	L	T	P	C	Category A (Core/ ID/ VAC	Category B (Compulsory/ DE/ BSC/ EAS/ OE/ MC/ II/ MOOC)	Internal	External	Theory/ Practical
1		Discrete Mathematics	1st	3	0	0	3	Core	Compulsory	40	60	Theory
2		Computer Fundamental	1st	3	0	0	3	Core	Compulsory	40	60	Theory
3		Entrepreneurship	1st	3	0	0	3	ID	EAS	40	60	Theory
4		Object Oriented Programming	1st	3	0	0	3	Core	Compulsory	40	60	Theory
5		Computer Network	1st	3	0	0	3	Core	Compulsory	40	60	Theory
6		Computer Fundamental Lab	1st	0	0	2	1	Core	Compulsory	60	40	Practical
7		Object Oriented Programming Lab	1st	0	0	2	1	Core	Compulsory	60	40	Practical
8		Professional Communication Lab	1st	0	0	2	1	ID	EAS	60	40	Practical
9		Mandatory Course- I	1st	2	0	0	2	ID	MC	40	60	Theory
10		Value Addition Courses-I	1st	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>19</b>	<b>0</b>	<b>6</b>	<b>22</b>					
1		Information Security Fundamentals	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
2		Java Programming	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
3		Basics of Data Structure	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
4		Web Development	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
5		Computer Architecture	2nd	3	0	0	3	Core	Compulsory	40	60	Theory
6		Medical measurement & measuring instruments	2nd	3	0	0	3	ID	EAS	40	60	Theory
7		Java Programming Lab	2nd	0	0	2	1	Core	Compulsory	60	40	Practical
8		Basics of Data Structure Lab	2nd	0	0	2	1	Core	Compulsory	60	40	Practical
9		Web Development Lab	2nd	0	0	2	1	Core	Compulsory	60	40	Practical
10		Industrial Internship-I	2nd	0	0	4w	2	Core	II	60	40	Practical
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>23</b>					

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1		Database Management Systems	3rd	3	0	0	3	Core	Compulsory	40	60	Theory
2		Software Engineering	3rd	3	0	0	3	Core	Compulsory	40	60	Theory
3		Cloud Computing	3rd	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-I	3rd	3	0	0	3	Core	DE	40	60	Theory
5		Open Elective-I	3rd	4	0	0	4	ID	OE	40	60	Theory
6		Database Management Systems Lab	3rd	0	0	2	1	Core	Compulsory	60	40	Practical
7		Software Engineering Lab	3rd	0	0	2	1	Core	Compulsory	60	40	Practical
8		Cloud Computing Lab	3rd	0	0	2	1	Core	Compulsory	60	40	Practical
9		Department Electives Lab-I	3rd	0	0	2	1	Core	DE	60	40	Practical
10		Value Addition Course-II	3rd	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>8</b>	<b>22</b>					
1		Operating System	4th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Design and Analysis of Algorithm	4th	3	0	0	3	Core	Compulsory	40	60	Theory
3		Cloud Computing Architecture & Deployment Models	4th	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-II	4th	3	0	0	3	Core	DE	40	60	Theory
5		Medical imaging techniques	4th	3	0	0	3	ID	EAS	40	60	Theory
6		Mandatory Course - II	4th	2	0	0	2	ID	MC	40	60	Theory
7		Operating System Lab	4th	0	0	2	1	Core	Compulsory	60	40	Practical
8		Design and Analysis of Algorithm Lab	4th	0	0	2	1	Core	Compulsory	60	40	Practical
9		Deployment Models Lab	4th	0	0	2	1	Core	Compulsory	60	40	Practical
10		Department Electives Lab-II	4th	0	0	2	1	Core	DE	60	40	Practical
11		Industrial Internship-II	4th	0	0	4w	2	Core	II	60	40	Practical
		<b>Total</b>		<b>17</b>	<b>0</b>	<b>8</b>	<b>23</b>					



1		Theory of Computation	5th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Basics of Machine Learning	5th	3	0	0	3	Core	Compulsory	40	60	Theory
3		IoT development application of Cloud	5th	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-III	5th	3	0	0	3	Core	DE	40	60	Theory
5		Open Elective-II	5th	4	0	0	4	ID	OE	40	60	Theory
6		Medical informatics	5th	3	0	0	3	ID	EAS	40	60	Theory
7		Basics of Machine Learning Lab(Python)	5th	0	0	4	2	Core	Compulsory	40	60	Theory
8		IoT development application of Cloud Lab	5th	0	0	2	1	Core	Compulsory	60	40	Practical
9		Department Electives Lab-III	5th	0	0	2	1	Core	DE	60	40	Practical
10		Value Addition Course-III	5th	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>21</b>	<b>0</b>	<b>8</b>	<b>25</b>					
1		Compiler Design	6th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Virtualization and Cloud Security	6th	3	0	0	3	Core	Compulsory	40	60	Theory
3		Hadoop	6th	3	0	0	3	Core	Compulsory	40	60	Theory
4		Department Electives-IV	6th	3	0	0	3	Core	DE	40	60	Theory
5		Open Elective-III	6th	4	0	0	4	ID	OE	40	60	Theory
6		Compiler Design Lab	6th	0	0	2	1	Core	Compulsory	60	40	Practical
7		Virtualization and Cloud Security Lab	6th	0	0	2	1	Core	Compulsory	60	40	Practical
8		Hadoop Lab	6th	0	0	2	1	Core	Compulsory	60	40	Practical
9		Mandatory Course - III	6th	2	0	0	2	ID	MC	40	60	Theory
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>21</b>					
1		Programming in Python	7th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Research Methodology	7th	3	0	0	3	ID	EAS	40	60	Theory
3		DE-V	7th	3	0	0	3	Core	DE	40	60	Theory
4		OE-IV	7th	4	0	0	4	ID	OE	40	60	Theory
5		Mobile App Development	7th	3	0	0	3	Core	Compulsory	40	60	Theory
6		Programming in Python Lab	7th	0	0	4	2	Core	Compulsory	60	40	Practical
7		DE-V Lab	7th	0	0	2	1	Core	DE	60	40	Practical
8		Mobile App Development Lab	7th	0	0	2	1	Core	DE	60	40	Practical
9		Value Addition Course-IV	7th	2	0	0	2	VAC	VAC	40	60	Theory
		<b>Total</b>		<b>18</b>	<b>0</b>	<b>8</b>	<b>22</b>					



1		DE-VI	8th	3	0	0	3	Core	Compulsory	40	60	Theory
2		Embedded systems in Medicine	8th	3	0	0	3	ID	EAS	40	60	Theory
3		DE-VI Lab	8th	0	0	4	2	Core	Compulsory	60	40	Practical
4		Dissertation	8th				12	Core	Research Track	100	100	Practical
		<b>Total</b>		<b>6</b>	<b>0</b>	<b>4</b>	<b>20</b>					
		<b>Overall Total</b>	<b>1st to 8th</b>				<b>178</b>					

**Note:**

1. Mooc Course: Student will be offered various available SWAYAM MOOC Courses in lieu of various regular core (Compulsory and Department Electives) courses. A student can
2. Student can opt for Honours degree by earning 18 - 20 additional credits through SWAYAM MOOC courses but with prior permission of the department and limit to the courses
3. A student can have Honours degree WITH SPECIALIZATION in the particular of his/her branch by earning 18-20 additional credits in particular specialization through MOOC or
4. Courses Highlighted in green need to be fixed according to the group (ME+CE in one group and CSE+ECE other group. Value added, RM and Mandatory courses also need to be

**Abbreviation Used:**

ID	Interdisciplinary
VAC	Value Addition Course
DE	Department Electives
BSC	Basic Science Courses
EAS	Engineering Applied Science
II	Industrial Internship
MC	Mandatory Courses

Credit Distribution	
Core	129
Other (Interdisciplinary +)	49
<b>Total</b>	<b>178</b>

Core Credits	
Compulsory	94
Department Electives	19
Industrial Internship	4
Research Track	12
<b>Total</b>	<b>129</b>

Other Credits	
Interdisciplinary	41
VAC	8
<b>Total</b>	<b>49</b>

Interdisciplinary Credits	
Engineering Applied Science	19
Open Elective	16
MC	6
<b>Total</b>	<b>41</b>




## List of Program Elective

Specialization	IoT	Blockchain	Data Analytics	Cyber Security & Forensics
DE-I	Wireless Ad-hoc and sensor Networks	Cryptography Fundamentals	Applied Statistical Analysis	Cryptography Fundamentals
DE-II	Embedded System Architecture	Introduction to Blockchain	Data Mining and Predictive Modeling	Network Security
DE-III	Privacy & Security in IoT	Blockchain Architecture Design and Use Cases	Data Warehouse & Multidimensional Modeling	Android Security
DE-IV	Sensors and Actuator Devices	Public Blockchain- Ethereum	Business Intelligence	Disaster recovery and business continuity management
DE-V	Software defined Networks	Blockchain and Distributed Ledger Technology	R programming	Digital Watermarking and Steganography
DE-VI	Architecting smart IoT Devices	Crypto Currency Technologies	Social, Web & Mobile Analytics	Biometrics
DE-VII	Design of Smart Systems	Design and Development of Blockchain Applications	Programming for Data Science	Cyber Forensics and investigation
DE-VIII	Application of IoT in Robotics	Programming Fundamentals : Golang and Solidity	Big Data Technologies	Mobile Application Security & Penetration Testing

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