

Institute Code	Institute Name	Program Code	Program Name	Catalog Course Code	Catalog Course Name	Course Type	Batch 2020	Batch 2021	Change in T-Code Yes / No	Change in course/ Nature	Change in Pedagogy	Change in evaluation	Change in instruction method	Add on course	Changes Yes: Revised No: Not Revised
301	SICSR, Pune	30121	BCA/BCA(Hons)	GEN002	Project	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)			Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	GEN003	Internship	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	GEN005	Non Catalog Courses	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)			Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	P1939	Cloud Administration	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	P1940	Cloud Programming and Application Development	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	P1942	Fog Computing	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	P1943	Web Performance Analysis	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T1234	Information Technology and Regulatory Compliance	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T2495	Business Communication	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T2883	Core Environmental Studies	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T2981	Introduction to Startup	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3009	Best Programming Practices	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3198	Introduction to Python	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3200	Linux Shell Scripting	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3201	Mobile Programming	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3202	Object Oriented Programming	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3204	Server Side Web Technology	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3205	Web Development using CMS	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3206	Advanced Programming in Python	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3209	Data Structures	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3213	Introduction to Operating System	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3220	Information Security	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3221	Introduction to Cloud Computing	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3222	Introduction to Vulnerability Assessment Penetration Testing	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)			Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3224	Network Essentials	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3237	Foundations of Data Warehousing and Data Mining	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3238	Human Computer Interaction	Core	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3244	Introduction to Database Management System	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3258	Current Trends and Practices in IT	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3322	Elements of Mathematics	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3371	Introduction to Java Enterprise Framework	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3381	Information System Security Audit	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3387	Introduction to Design Patterns	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3412	Cloud Security	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3474	Web Development using Python	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3486	Network Infrastructure Essential	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3487	Network Security Essentials	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3521	Advanced Internet of Things	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3540	Identity and Access Management	Core		Added	Yes						



Emi

Institute Code	Institute Name	Program Code	Program Name	Catalog Course Code	Catalog Course Name	Course Type	Batch 2020	Batch 2021	Change in T-Code Yes / No	Change in course/ Nature	Change in Pedagogy	Change in evaluation	Change in instruction method	Add on course
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3586	Web Technologies	Core	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3587	Advance Web Scripting	Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3588	Game Design	Elective	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3589	IoT Application Development	Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3590	Design of Content Management System	Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3593	Computational Thinking	Core	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3595	Design and Implementation of Algorithms	Core	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3596	Real Time Operating System	Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3599	Cloud Application Development	Elective	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3600	Cloud Architectures and Security	Elective	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3601	Network Administration	Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3602	Network Monitoring and Troubleshooting	Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3605	Elements of System and Software Development	Core	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3606	Software Engineering Practices	Core		Added	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)			Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3607	Software Project Practices	Core		Added	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)			Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3608	Software Testing	Core		Added	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)			Elective	Base PS	Dropped	Yes					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3609	Structured Query Language	Core	Base PS	No Change	No					
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3610	Applications of Spreadsheets in Business	Core	Base PS	No Change	No					

am



Institute Code	Institute Name	Program Code	Program Name	Catalog Course Code	Catalog Course Name	Course Type	Batch 2020	Batch 2021	Change in T-Code Yes / No	Change in course/ Nature	Change in Pedagogy	Change in evaluation	Change in instruction method	Add on course	Changes Yes: Revised No: Not Revised
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3612	Data Visualization	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3647	Data Analytics using MS-Excel	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3663	Introduction to Mobile Concepts	Elective		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T3684	Advanced Big Data Analytics	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T4005	Integrated Disaster Management	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6096	Creative Writing	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6099	An Overview of World Literature	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6181	Understanding Cinema	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6182	Appreciating Cinema	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6246	Music in Media I	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6255	Introduction to Theatre	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6274	Foundations of Ethics	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6307	Basic Psychology	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6334	Basic Sociology	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T6850	Python for Data Science	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T7473	Artificial Intelligence	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T7527	Internet of Things	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T7529	Machine Learning	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	T7573	Image Processing & Pattern Recognition	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7019	Big Data Analytics	Elective	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7023	Machine Learning	Elective	Base PS	Dropped	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7097	Neural Network	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7103	Natural Language Processing	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7249	Cloud Computing Platforms	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7250	Cloud Environment in Public Model	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7265	Introduction to Data Science	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7296	Software Security	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7457	Cyber Security	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7487	Deep learning	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TE7538	Statistics for Data Science	Core		Added	Yes						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TH4095	Smart Fitness for Life	Core	Base PS	No Change	No						
301	SICSR, Pune	30121	BCA/BCA(Hons)	TH4272	Certificate in COVID-19 Care for the Community	Core		Added	Yes						



**SYMBIOSIS INSTITUTE OF
COMPUTER STUDIES AND RESEARCH**
Symbiosis International (Deemed University)

(Established under section 3 of the UGC Act, 1956)

Re-accredited by NAAC with 'A' grade (3.58/4) | Awarded Category - I by UGC

Founder: Prof. Dr. S. B. Mujumdar, M. Sc., Ph. D. (Awarded Padma Bhushan and Padma Shri by President of India)



Celebrating 50 Years of Excellence

Syllabus revision AY 2020-2021 to 2021-2022

Name of the Institute : Symbiosis Institute of Computer Studies and Research

Name of the Program : Bachelor of Computer Applications

INDEX

Academic Year	Particulars	Page Number
2021 - 2022	Modification Table	1 - 3
2020 - 2021	Program Approved Letter	5
2020 - 2021	Approved Program Structure	6 - 11
2021 - 2022	Program Approved Letter	12
2021 - 2022	Approved Program Structure	13 - 23

Dr. Priti Kulkarni

Asst Professor, BCA Program Coordinator



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, MSc, Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

SIU/U-110(SICSR,Pune)/2020/1823 (A)

Date: 09/06/2020

To
The Director
Symbiosis Institute of Computer Studies & Research, Pune

Subject: Approval of the Programme Structure/s for the academic year 2020-2021

Dear Sir/Madam,

This is to inform you that the following Programme Structure has been duly approved by the Academic Council for the Academic Year 2020-2021.

Sr.No.	Programme	Batch
1	Bachelor of Computer Applications	2020-2023

You may download the same using your login credentials using the link and the path mentioned-

Link: <http://eduwiz.intechsolutionspune.in/eduwiz/login.html>

Path: [Academics->Catalogue->Programme Structure-> View Course Structure -> Select Institute -> Select Academic Year -> Select Programme -> Select Batch -> Show Course Structure -> Print Programme Structure.](#)

Thanking you.

Sincerely,

Dr. Pravin Dange
Head- Academics

Copy to: Controller of Examinations, SIU



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications
Programme Structure 2020-23

1.	OBJECTIVE	BCA offers the prequalification for professionals heading for smart career in the IT field, which measures up to international standards. On completing this course one can do higher studies such as MCA, MBA etc., in any UGC recognized universities or in any other reputed institution in India or abroad.				
2.	DURATION (IN MONTHS)	36 (Full Time)				
3.	INTAKE	60				
4.	RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)	d) Defence (In Percentage)
			15	7.5	3	5
		II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)		b) International Students (In Percentage)	
			2		15	
5.	ELIGIBILITY	Passed Standard XII (10+2) or equivalent government approved Diploma in Engineering/ Technology from any recognised Board with a minimum of 50% marks or equivalent grade (45% marks or equivalent grade for Scheduled Caste/ Scheduled Tribes)				
6.	SELECTION PROCEDURE	Symbiosis Entrance Test, Personal Interaction and Writing Ability Test (PI-WAT)				
7.	MEDIUM OF INSTRUCTION	English				
8.	PROGRAMME PATTERN	Semester				
9.	COURSE & SPECIALIZATION	As per Annexure A				
10.	FEE		Academic Fee p.a	Institute Deposit	Total	
		Indian Students	165000	10000	175000	
		International Students (USD equivalent to INR)	250000	10000	260000	
11.	ASSESSMENT	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% external component [University] examination.				
12.	STANDARD OF PASSING	The assessment of students for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students				

		securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.
13.	AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE	Bachelor of Computer Applications will be awarded at the end of semester VI examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.

14. CLASSIFICATION OF CREDITS

Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	18	0	0	0	0	1*	18
2	20	0	0	0	0	1*	20
3	10	12	0	0	0	2*	22
4	14	14	0	0	0	0	28
5	4	12	0	0	0	0	16
6	0	16	0	0	0	0	16
Total	66	54	0	0	0	0	120

* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management', 'Fitness for Life', 'Core Environmental Studies' and 'Certificate in COVID-19 Care for the Community' is mandatory for the award of degree.

The revised programme structure supersedes the previously approved programme structure dated 07/07/2022 for the programme.

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council. Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Head - Academics

THIS IS SYSTEM GENERATED DOCUMENT AND REQUIRES NO SIGNATURE.



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications
Programme Structure 2020-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
Semester : 1							
Generic Core Courses							
T3586	0301210101	Web Technologies		4	100	0	100
T3593	0301210102	Computational Thinking		4	40	60	100
T2495	0301210103	Business Communication		2	50	0	50
T3322	0301210104	Elements of Mathematics		2	50	0	50
T3244	0301210105	Introduction to Database Management System		2	50	0	50
T3213	0301210106	Introduction to Operating System		2	20	30	50
T3198	0301210107	Introduction to Python		2	20	30	50
T4005	0301210108	Integrated Disaster Management *		0	0	0	Non Letter Grade
Total				18	330	120	450
Semester : 2							
Generic Core Courses							
T3610	0301210201	Applications of Spreadsheets in Business		4	100	0	100
T3206	0301210202	Advanced Programming in Python		2	50	0	50
T3209	0301210203	Data Structures		2	20	30	50
T3200	0301210204	Linux Shell Scripting		2	20	30	50
T3224	0301210205	Network Essentials		2	50	0	50
T3205	0301210206	Web Development using CMS		2	50	0	50
T3238	0301210207	Human Computer Interaction		2	50	0	50
T3605	0301210208	Elements of System and Software Development		2	20	30	50
T3609	0301210209	Structured Query Language		2	20	30	50
T2883	0301210210	Core Environmental Studies *		0	0	0	Non Letter Grade
Total				20	380	120	500
Semester : 3							
Generic Core Courses							
T3202	0301210301	Object Oriented Programming		4	40	60	100
T3595	0301210302	Design and Implementation of Algorithms		4	40	60	100
T3474	0301210303	Web Development using Python		2	20	30	50
TH4095	0301210312	Fitness for Life *		0	0	0	Non Letter Grade
TH4272	0301210313	Certificate in COVID-19 Care for the Community *		0	0	0	Non Letter Grade



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications
Programme Structure 2020-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
Total				10	100	150	250
Generic Elective Courses Group							
T3606	0301210304	Software Engineering Practices		4	40	60	100
T3596	0301210305	Real Time Operating System		4	40	60	100
T3486	0301210306	Network Infrastructure Essential		4	40	60	100
T3221	0301210307	Introduction to Cloud Computing		4	40	60	100
T3587	0301210308	Advance Web Scripting		4	40	60	100
T3237	0301210309	Foundations of Data Warehousing and Data Mining		4	40	60	100
T3201	0301210310	Mobile Programming		4	40	60	100
TE7019	0301210311	Big Data Analytics		4	40	60	100
Total Required Credits				12	120	180	300
Semester : 4							
Generic Core Courses							
T8000	0301210401	Service Learning		4	100	0	100
T3258	0301210402	Current Trends and Practices in IT		3	75	0	75
T3803	0301210403	Project		3	75	0	75
T3371	0301210404	Introduction to Java Enterprise Framework		2	20	30	50
T3649	0301210405	Introduction to Blockchain Technologies		2	50	0	50
Total				14	320	30	350
Generic Elective Courses Group - I							
T7527	0301210406	Internet of Things		4	40	60	100
T3487	0301210407	Network Security Essentials		4	40	60	100
T3204	0301210408	Server Side Web Technology		4	40	60	100
TE7023	0301210409	Machine learning		4	40	60	100
T3589	0301210410	IoT Application Development		4	40	60	100
T3599	0301210411	Cloud Application Development		4	40	60	100
T3601	0301210412	Network Administration		4	40	60	100
T3607	0301210413	Software Project Practices		4	40	60	100
Total Required Credits				12	120	180	300
Generic Elective Courses Group - II							
T6096	0301210414	Creative Writing		2	50	0	50
T6181	0301210415	Understanding Cinema		2	50	0	50
T6182	0301210416	Appreciating Cinema		2	50	0	50
T6246	0301210417	Music in Media I		2	50	0	50



Celebrating 50 Years of Excellence

Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications
Programme Structure 2020-23

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
T6255	0301210418	Introduction to Theatre		2	50	0	50
T6274	0301210419	Foundations of Ethics		2	50	0	50
T6334	0301210420	Basic Sociology		2	50	0	50
T6307	0301210421	Basic Psychology		2	50	0	50
Total Required Credits				2	50	0	50
Semester : 5							
Generic Core Courses							
T1234	0301210501	Information Technology and Regulatory Compliance		2	20	30	50
T5514	0301210502	Design Thinking and Problem Solving		2	20	30	50
Total				4	40	60	100
Generic Elective Courses Group							
T3222	0301210503	Introduction to Vulnerability Assessment Penetration Testing		4	40	60	100
T3521	0301210504	Advanced Internet of Things		4	40	60	100
T3588	0301210505	Game Design		4	40	60	100
T3590	0301210506	Design of Content Management System		4	40	60	100
T3612	0301210507	Data Visualization		4	40	60	100
T3600	0301210508	Cloud Architectures and Security		4	40	60	100
T3602	0301210509	Network Monitoring and Troubleshooting		4	40	60	100
T3608	0301210510	Software Testing		4	40	60	100
Total Required Credits				12	120	180	300
Semester : 6							
Choose any One Group							
Generic Elective Courses Group - I							
T3912	0301210601	Industry Internship		12	120	180	300
T2352	0301210602	Business Modeling and Business Plan		4	40	60	100
Generic Elective Courses Group - II							
T2352	0301210602	Business Modeling and Business Plan		4	40	60	100
T3808	0301210603	Project		8	80	120	200
T3009	0301210604	Best Programming Practices		2	20	30	50
T3387	0301210605	Introduction to Design Patterns		2	20	30	50
Total Required Credits				16	220	180	400



Celebrating 50 Years of Excellence

Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications
Programme Structure 2020-23

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	10	8	18	450
Semester 2	12	8	20	500
Semester 3	0	22	22	550
Semester 4	14	14	28	700
Semester 5	0	16	16	400
Semester 6	0	16	16	400
Total	36	84	120	3000



head academics <head_academics@siu.edu.in>

First Approval Letter

head_academics@siu.edu.in <head_academics@siu.edu.in>

Tue, Jun 15, 2021 at 11:57 AM

To: director@sicsr.ac.in, coe@siu.edu.in, ar@siu.edu.in, pradipkumar.borate@siu.edu.in, head_academics@siu.edu.in, ar_academics@siu.edu.in



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

SIU/U-110(SICSR,Pune)/2021/2282

Date: 15/06/2021

To
The Director
Symbiosis Institute of Computer Studies & Research, Pune

Subject: Approval of the Programme Structure/s for the academic year 2021-2022

Dear Sir/Madam,

This is to inform you that the following Programme Structure has been duly approved by the Academic Council for the Academic Year 2021-2022.

Sr.No.	Programme	Batch
1	Bachelor of Computer Applications	2021-2024

You may download the same using your login credentials using the link and the path mentioned-

Link:

<http://eduwiz.intechsolutionspune.in/eduwiz/login.html>

Path:

Academics->Catalogue->Programme Structure-> View Course Structure -> Select Institute -> Select Academic Year -> Select Programme -> Select Batch -> Show Course Structure -> Print Programme Structure.

Thanking you.

Sincerely,



Dr. Pravin Dange
Head- Academics

Copy to: Controller of Examinations, SIU



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications (Honours)
Programme Structure 2021-24

1. OBJECTIVE	<p>BCA offers the prequalification for professionals heading for smart career in the IT field, which measures up to international standards. On completing this course one can do higher studies in any UGC recognized universities or in any other reputed institution in India or abroad.</p> <p>BCA (Honours) with specialization will prepare students to progress their career in the software industry, academia, research, entrepreneurial pursuit and other Information technology enabled services in one of the area in Data Science, Artificial Intelligence and Machine Learning, Cloud Computing, and Data security.</p>				
2. DURATION (IN MONTHS)	36 (Full Time)				
3. INTAKE	180				
4. RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)	d) Defence (In Percentage)
		15	7.5	3	5
	II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)		b) International Students (In Percentage)	
		2		15	
5. ELIGIBILITY	Passed Standard XII (10+2) or equivalent government approved Diploma in Engineering/ Technology from any recognised Board with a minimum of 50% marks or equivalent grade (45% marks or equivalent grade for Scheduled Caste/ Scheduled Tribes).				
6. SELECTION PROCEDURE	Symbiosis Entrance Test, Personal Interaction and Writing Ability Test (PI-WAT)				
7. MEDIUM OF INSTRUCTION	English				
8. PROGRAMME PATTERN	Semester				
9. COURSE & SPECIALIZATION	<p>Annexure A: Bachelor of Computer Applications</p> <p>Students may pursue optional 'Honours' in one of the specialization areas by completing additional 24 credits in Semester: 3,4,5 and 6 as specified in Annexure B for Honours in the respective specialization area.</p> <p>Annexure B: Bachelor of Computer Applications (Honours) in one of the following specializations</p> <ol style="list-style-type: none"> 1. Data Science 2. Artificial Intelligence and Machine Learning 3. Cloud Computing 4. Data Security 				
10. FEE		Academic Fee p.a	Institute Deposit	Total	



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer
Applications (Honours)
Programme Structure 2021-24

	Indian Students	165000	10000	175000
	International Students (USD equivalent to INR)	250000	10000	260000

Note: For additional optional specialization 'Honours' an additional fees of Rs. 35000/- will be charged in the second year.

11. ASSESSMENT	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% external component [University] examination.
12. STANDARD OF PASSING	The assessment of students for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.
13. AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE	Bachelor of Computer Applications (B.C.A.) will be awarded at the end of semester VI examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA. OR Bachelor of Computer Applications (Honours) with specialization in Data Science / Artificial Intelligence and Machine Learning / Cloud Computing / Data Security will be awarded at the end of semester VI examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.

14. CLASSIFICATION OF CREDITS

Semester	Generic Core	Generic Elective	Specialization Core	Specialization Elective	Open Elective	Audit	Total
1	18	0	0	0	0	2*	18
2	20	0	0	0	0	1*	20
3	14	8	0	0	0	1*	22
4	18	10	0	0	0	0	28
5	8	8	0	0	0	0	16
6	0	16	0	0	0	0	16
Total	78	42	0	0	0	0	120
Credits for Honours (Optional)							
Total	0	0	24	0	0	0	24
Grand Total							144

* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management', 'Fitness for Life', 'Core Environmental Studies' and 'Certificate in COVID-19 Care for the Community' is mandatory for the award of degree.

The revised programme structure supersedes the previously approved programme structure dated 28/09/2022 for the programme.

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council. Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Head - Academics

THIS IS SYSTEM GENERATED DOCUMENT AND REQUIRES NO SIGNATURE.



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
Semester : 1							
Generic Core Courses							
T3586	0301210101	Web Technologies		4	100	0	100
T3593	0301210102	Computational Thinking		4	40	60	100
T2495	0301210103	Business Communication		2	50	0	50
T3322	0301210104	Elements of Mathematics		2	20	30	50
T3244	0301210105	Introduction to Database Management System		2	20	30	50
T3213	0301210106	Introduction to Operating System		2	20	30	50
T3198	0301210107	Introduction to Python		2	20	30	50
T4005	0301210108	Integrated Disaster Management *		0	0	0	Non Letter Grade
TH4272	0301210109	Certificate in COVID-19 Care for the Community *		0	0	0	Non Letter Grade
Total				18	270	180	450
Semester : 2							
Generic Core Courses							
T3610	0301210201	Applications of Spreadsheets in Business		4	100	0	100
T3206	0301210202	Advanced Programming in Python		2	20	30	50
T3209	0301210203	Data Structures		2	20	30	50
T3200	0301210204	Linux Shell Scripting		2	20	30	50
T3224	0301210205	Network Essentials		2	20	30	50
T3205	0301210206	Web Development using CMS		2	50	0	50
T2981	0301210207	Introduction to Startup		2	50	0	50
T3605	0301210208	Elements of System and Software Development		2	20	30	50
T3609	0301210209	Structured Query Language		2	20	30	50
TH4095	0301210210	Fitness for Life *		0	0	0	Non Letter Grade
Total				20	320	180	500
Semester : 3							
Generic Core Courses							
T3202	0301210301	Object Oriented Programming		4	40	60	100
T3595	0301210302	Design and Implementation of Algorithms		4	40	60	100
T3606	0301210303	Software Engineering Practices		4	40	60	100
T3474	0301210304	Web Development using Python		2	20	30	50



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
T2883	0301210305	Core Environmental Studies *		0	0	0	Non Letter Grade
Total				14	140	210	350
Generic Elective Courses Group							
T3221	0301210306	Introduction to Cloud Computing		4	40	60	100
T3237	0301210307	Foundations of Data Warehousing and Data Mining		4	40	60	100
T3663	0301210308	Introduction to Mobile Concepts		4	40	60	100
Total Required Credits				8	80	120	200
Semester : 4							
Generic Core Courses							
T8000	0301210401	Service Learning		4	100	0	100
T3607	0301210402	Software Project Practices		4	40	60	100
T3258	0301210403	Current Trends and Practices in IT		3	75	0	75
T3803	0301210404	Project		3	75	0	75
T3371	0301210405	Introduction to Java Enterprise Framework		2	20	30	50
T3649	0301210406	Introduction to Blockchain Technologies		2	50	0	50
Total				18	360	90	450
Generic Elective Courses Group - I							
T3201	0301210407	Mobile Programming		4	40	60	100
TE7019	0301210408	Big Data Analytics		4	40	60	100
T3599	0301210409	Cloud Application Development		4	40	60	100
Total Required Credits				8	80	120	200
Generic Elective Courses Group - II							
T6096	0301210410	Creative Writing		2	50	0	50
T6181	0301210411	Understanding Cinema		2	50	0	50
T6182	0301210412	Appreciating Cinema		2	50	0	50
T6246	0301210413	Music in Media I		2	50	0	50
T6255	0301210414	Introduction to Theatre		2	50	0	50
T6274	0301210415	Foundations of Ethics		2	50	0	50
T6334	0301210416	Basic Sociology		2	50	0	50
T6307	0301210417	Basic Psychology		2	50	0	50
Total Required Credits				2	50	0	50
Semester : 5							
Generic Core Courses							



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
T3608	0301210501	Software Testing		4	40	60	100
T1234	0301210502	Information Technology and Regulatory Compliance		2	20	30	50
F0002	0301210503	Flexi-Credit Course		2	50	0	50
Total				8	110	90	200
Generic Elective Courses Group							
T3588	0301210504	Game Design		4	40	60	100
T3612	0301210505	Data Visualization		4	40	60	100
T3600	0301210506	Cloud Architectures and Security		4	40	60	100
Total Required Credits				8	80	120	200
Semester : 6							
Generic Elective Courses Group (Choose any one group - Group A or Group B)							
Generic Elective Courses Group - A							
T3912	0301210601	Industry Internship		12	120	180	300
F0004	0301210602	Flexi-Credit Course		4	100	0	100
Generic Elective Courses Group - B							
F0004	0301210603	Flexi-Credit Course		4	100	0	100
T3812	0301210604	Project		12	120	180	300
Total Required Credits				16	220	180	400



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure A

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	6	12	18	450
Semester 2	8	12	20	500
Semester 3	0	22	22	550
Semester 4	14	14	28	700
Semester 5	2	14	16	400
Semester 6	4	12	16	400
Total	34	86	120	3000



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure B

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Credits	External Credits	Total Marks
Semester : 3							
Specialization Core Courses : Data Science							
TE7265	0301210309	Introduction to Data Science	Data Science	3	30	45	75
TE7538	0301210310	Statistics for Data Science	Data Science	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Artificial Intelligence and Machine Learning							
T7473	0301210311	Artificial Intelligence	Artificial Intelligence and Machine Learning	3	30	45	75
T7529	0301210312	Machine Learning	Artificial Intelligence and Machine Learning	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Cloud Computing							
TE7249	0301210313	Cloud Computing Platforms	Cloud Computing	3	30	45	75
T3730	0301210314	Fog Computing	Cloud Computing	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Data Security							
T3222	0301210315	Introduction to Vulnerability Assessment Penetration Testing	Data Security	4	40	60	100
T3220	0301210316	Information Security	Data Security	2	20	30	50
Total				6	60	90	150
Semester : 4							
Specialization Core Courses : Data Science							
T6850	0301210418	Python for Data Science	Data Science	4	40	60	100
T3647	0301210419	Data Analytics using MS-Excel	Data Science	2	20	30	50
Total				6	60	90	150
Specialization Core Courses : Artificial Intelligence and Machine Learning							
TE7097	0301210420	Neural Network	Artificial Intelligence and Machine Learning	3	30	45	75
TE7103	0301210421	Natural Language Processing	Artificial Intelligence and Machine Learning	3	30	45	75
Total				6	60	90	150



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure B

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Credits	External Credits	Total Marks
Specialization Core Courses : Cloud Computing							
T3727	0301210422	Cloud Programming and Application Development	Cloud Computing	3	30	45	75
T3725	0301210423	Cloud Administration	Cloud Computing	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Data Security							
TE7296	0301210424	Software Security	Data Security	3	30	45	75
T3540	0301210425	Identity and Access Management	Data Security	3	30	45	75
Total				6	60	90	150
Semester : 5							
Specialization Core Courses : Data Science							
T3684	0301210507	Advanced Big Data Analytics	Data Science	3	30	45	75
T3720	0301210508	Web Performance Analysis	Data Science	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Artificial Intelligence and Machine Learning							
TE7487	0301210509	Deep Learning	Artificial Intelligence and Machine Learning	3	30	45	75
T7573	0301210510	Image Processing & Pattern Recognition	Artificial Intelligence and Machine Learning	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Cloud Computing							
T3543	0301210511	Virtualization and Security	Cloud Computing	3	30	45	75
TE7250	0301210512	Cloud Environment in Public Model	Cloud Computing	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Data Security							
TE7457	0301210513	Cyber Security	Data Security	3	30	45	75
T3022	0301210514	Cryptography	Data Security	3	30	45	75
Total				6	60	90	150
Semester : 6							
Specialization Core Courses : Data Science							



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure B

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Credits	External Credits	Total Marks
T3636	0301210605	Quantum Machine Learning	Data Science	3	30	45	75
T3364	0301210606	Data Management	Data Science	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Artificial Intelligence and Machine Learning							
TE7497	0301210607	Responsible AI	Artificial Intelligence and Machine Learning	3	30	45	75
T3699	0301210608	AI applications in social media	Artificial Intelligence and Machine Learning	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Cloud Computing							
T3726	0301210609	Cloud and AI	Cloud Computing	3	30	45	75
T3412	0301210610	Cloud Security	Cloud Computing	3	30	45	75
Total				6	60	90	150
Specialization Core Courses : Data Security							
T3690	0301210611	Computer Forensics - Detection and Prevention of IT Frauds	Data Security	4	40	60	100
T3381	0301210612	Information System Security Audit	Data Security	2	20	30	50
Total				6	60	90	150



Symbiosis Institute of Computer Studies and Research, Pune
Bachelor of Computer Applications/ Bachelor of Computer Applications
(Honours)
Programme Structure 2021-24

Annexure B

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Data Science				
Semester 3	0	6	6	150
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	6	6	150
Total	0	24	24	600
Artificial Intelligence and Machine Learning				
Semester 3	0	6	6	150
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	6	6	150
Total	0	24	24	600
Cloud Computing				
Semester 3	0	6	6	150
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	6	6	150
Total	0	24	24	600
Data Security				
Semester 3	0	6	6	150
Semester 4	0	6	6	150
Semester 5	0	6	6	150
Semester 6	0	6	6	150
Total	0	24	24	600