

Symbiosis Institute of Computer Studies and Research, Pune
Master of Science (Computer Applications)
Programme Structure 2019-21

1.	OBJECTIVE	This programme will equip students with knowledge highly relevant to emerging technologies. This programme aims to provide a comprehensive framework for understanding by integrating theoretical foundations with extensive practical work in the labs and hands-on experience. The programme offers following areas of specializations: i. Software Development ii. Systems Administration iii. Data Science			
2.	DURATION (IN MONTHS)	24 (Full Time)			
3.	INTAKE	30			
4.	RESERVATION	I. Within the sanctioned intake	a) SC (In Percentage)	b) ST (In Percentage)	c) Differently abled (In Percentage)
			15	7.5	3
		II. Over and above the sanctioned intake	a) Kashmiri Migrants (In Seats)	b) International Students (In Percentage)	
			2	15	
5.	ELIGIBILITY	Graduate from any recognised University/ Institution of National Importance with a minimum of 50% marks or equivalent grade (45% marks or equivalent grade for Scheduled Caste / Scheduled Tribes).			
6.	SELECTION PROCEDURE	Symbiosis National Aptitude Test, Group Exercise, Personal Interaction and Writing Ability Test (GE-PIWAT)			
7.	MEDIUM OF INSTRUCTION	English			
8.	PROGRAMME PATTERN	Semester			
9.	COURSE & SPECIALIZATION	Attached as Annexure A			
10.	FEE		Academic Fee p.a	Institute Deposit	Total
		Indian Students	370000	20000	390000
		International Students (USD equivalent to INR)	555000	20000	575000
11.	ASSESSMENT	All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 60% internal component and 40% component as external [University] examination.			
12.	STANDARD OF PASSING	The assessment of the student 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	Master of Science (Computer Applications) will be awarded at the end of 4th semester examination by taking into consideration the performance of all 4 semesters' examinations after obtaining minimum 4.00 CGPA out of 10.00 CGPA.
14.	NATURE WISE DISTRIBUTION OF CREDITS	
* Satisfactory completion of the letter grade course 'Integrated Disaster Management' is mandatory for award of degree.		

Programme Structure is approved by the Academic Council subject to its norms & conditions. Any provision in the Programme Structure which violates the basic rules & regulations is deemed to be termed "Null & Void".

Head-Academics

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Annexure A

Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
Semester : 1							
Generic Core Courses							
T3017	030142101	Python Programming		3	90	60	150
T3555	030142102	Operating System Fundamentals		3	90	60	150
T3545	030142103	Fundamentals of Computer Networking		3	90	60	150
T3573	030142104	Data Structures		3	90	60	150
T3574	030142105	Design and Analysis of Algorithms		3	90	60	150
T3580	030142106	Relational Database Management System		3	90	60	150
Total				18	540	360	900
Specialization Core Courses : Software Development							
T3012	030142107	Java SE	Software Development	4	120	80	200
T3575	030142108	Software Engineering (Agile Practices)	Software Development	4	120	80	200
Total				8	240	160	400
Specialization Core Courses : System Administration							
T3049	030142109	Internetworking	System Administration	3	90	60	150
T3051	030142110	Network Infrastructure	System Administration	3	90	60	150
T3061	030142111	IT Infrastructure Library	System Administration	2	60	40	100
Total				8	240	160	400
Specialization Core Courses : Data Science							
T3012	030142107	Java SE	Data Science	4	120	80	200
T3575	030142108	Software Engineering (Agile Practices)	Data Science	4	120	80	200
Total				8	240	160	400
Semester : 2							
Generic Core Courses							
T3527	030142201	Big Data: Systems, Programming and Management		4	200	0	200
T3009	030142202	Best Programming Practices		2	100	0	100
T3701	030142203	Dissertation		2	100	0	100
T4005	030142204	Integrated Disaster Management *		0	0	0	Letter Grade
Total				8	400	0	400
Specialization Core Courses : Software Development							
T3114	030142205	Object Oriented Analysis Design	Software Development	4	120	80	200
T3120	030142206	Software Project Management	Software Development	4	120	80	200
Total				8	240	160	400
Specialization Core Courses : System Administration							
T3052	030142207	Network Operating Systems	System Administration	3	90	60	150
T3537	030142208	Scripting Language	System Administration	3	90	60	150
T3420	030142209	Essentials of Vulnerability Assessment and Penetration Testing	System Administration	2	60	40	100

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Total				8	240	160	400
Specialization Core Courses : Data Science							
T3120	030142206	Software Project Management	Data Science	4	120	80	200
T3576	030142210	Computation Methods	Data Science	2	60	40	100
T3577	030142211	Data Analysis Using Python	Data Science	2	60	40	100
Total				8	240	160	400
Specialization : Software Development							
T3003	030142212	Android Technologies	Software Development	3	90	60	150
T3281	030142213	Data Warehousing	Software Development	3	90	60	150
T3025	030142214	Linux Scripting	Software Development	3	90	60	150
T3356	030142215	NOSQL Databases	Software Development	3	90	60	150
T3018	030142216	R Programming	Software Development	3	90	60	150
T3124	030142217	Software Verification and Validation	Software Development	3	90	60	150
F0003	030142218	Flexi-Credit Course	Software Development	3	150	0	150
Total Required Credits				6	180	120	300
Specialization : System Administration							
T3356	030142215	NOSQL Databases	System Administration	3	90	60	150
T3124	030142217	Software Verification and Validation	System Administration	3	90	60	150
T3279	030142220	Database Administration - I	System Administration	3	90	60	150
T3022	030142219	Cryptography	System Administration	3	90	60	150
F0003	030142221	Flexi-Credit Course	System Administration	3	150	0	150
Total Required Credits				6	180	120	300
Specialization : Data Science							
T3281	030142213	Data Warehousing	Data Science	3	90	60	150
T3025	030142214	Linux Scripting	Data Science	3	90	60	150
T3356	030142215	NOSQL Databases	Data Science	3	90	60	150
T3018	030142216	R Programming	Data Science	3	90	60	150
T3268	030142222	Fuzzy Logic	Data Science	3	90	60	150
T3567	030142223	Data Analysis and Visualization	Data Science	3	90	60	150
F0003	030142224	Flexi-Credit Course	Data Science	3	150	0	150
Total Required Credits				6	180	120	300
Semester : 3							
Specialization Core Courses : Software Development							
T3293	030142301	Software Architectures	Software Development	4	120	80	200
T3536	030142302	Web UI and Content Management	Software Development	4	120	80	200
T3802	030142303	Pilot Project	Software Development	2	100	0	100
Total				10	340	160	500

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Specialization Core Courses : System Administration							
T3053	030142304	Server Security and Hardening	System Administration	4	120	80	200
T3418	030142305	Advanced Vulnerability Assessment and Penetration Testing	System Administration	2	60	40	100
T3416	030142306	Computer Forensic - Detection & Prevention of Frauds	System Administration	2	60	40	100
T3048	030142307	Essentials of System Administration	System Administration	2	100	0	100
Total				10	340	160	500
Specialization Core Courses : Data Science							
T3802	030142303	Pilot Project	Data Science	2	100	0	100
T3578	030142308	Image Processing	Data Science	4	120	80	200
T3579	030142309	Machine Learning Algorithms	Data Science	4	120	80	200
Total				10	340	160	500
Specialization : Software Development							
T3008	030142310	Cloud Programming using Web Services	Software Development	3	90	60	150
T3111	030142311	Data Mining and Algorithms	Software Development	3	90	60	150
T3015	030142312	Network Programming	Software Development	3	90	60	150
T3122	030142313	Software Quality Models	Software Development	3	90	60	150
T3271	030142314	Systems Programming	Software Development	3	90	60	150
F0003	030142315	Flexi-Credit Course	Software Development	3	150	0	150
Total Required Credits				6	180	120	300
Specialization : System Administration							
T3015	030142312	Network Programming	System Administration	3	90	60	150
T3280	030142316	Database Administration - II	System Administration	3	90	60	150
T3050	030142317	IS Risk Analysis and System Audit	System Administration	3	90	60	150
T3065	030142318	Network Operations, Design, Optimization and Management	System Administration	3	90	60	150
T3278	030142319	Applied Cryptography	System Administration	3	90	60	150
T3419	030142320	Cloud Development and Administration	System Administration	3	90	60	150
T3056	030142321	Wireless Networks	System Administration	3	90	60	150
T3063	030142322	Data Centre Infrastructure Management	System Administration	3	90	60	150
F0003	030142323	Flexi-Credit Course	System Administration	3	150	0	150
Total Required Credits				6	180	120	300
Specialization : Data Science							
T3008	030142310	Cloud Programming using Web Services	Data Science	3	90	60	150

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Catalog Course Code	Course Code	Course Title	Specialization	Credit	Internal Marks	External Marks	Total Marks
T3566	030142324	Artificial Neural Network and Deep Learning	Data Science	3	90	60	150
T3568	030142325	Natural Language Processing	Data Science	3	90	60	150
T3569	030142326	Data Science for IOT	Data Science	3	90	60	150
T3448	030142327	Text Analytics	Data Science	3	90	60	150
F0003	030142328	Flexi-Credit Course	Data Science	3	150	0	150
Total Required Credits				6	180	120	300
Semester : 4							
Generic Core Courses							
T3916	030142401	Industry Internship		16	480	320	800
Total				16	480	320	800

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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Software Development				
Semester1	0	26	26	1300
Semester2	8	14	22	1100
Semester3	5	11	16	800
Semester4	0	16	16	800
Total	13	67	80	4000
System Administration				
Semester1	0	26	26	1300
Semester2	8	14	22	1100
Semester3	5	11	16	800
Semester4	0	16	16	800
Total	13	67	80	4000
Data Science				
Semester1	0	26	26	1300
Semester2	8	14	22	1100
Semester3	5	11	16	800
Semester4	0	16	16	800
Total	13	67	80	4000