

SYMBIOSIS INSTITUTE OF COMPUTER STUDIES AND RESEARCH
MASTER OF SCIENCE (COMPUTER APPLICATIONS)
PROGRAMME STRUCTURE 2015-17

- 1. OBJECTIVES** 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 course offers following areas of specialization:
- i. Software Development
 - ii. Systems Administration
 - iii. Systems Security
- 2. DURATION** Two Years Full Time
- 3. INTAKE** 90 Students
- 4. RESERVATION**
- I. Within the sanctioned intake:
 - a) Scheduled Castes - 15%
 - b) Scheduled Tribes - 7.5%
 - c) Differently abled - 3%
 - II. Over and above the sanctioned intake:
 - a) Kashmiri Migrants - 2 Seats
 - b) International students - 15%
- 5. ELIGIBILITY** Graduate in any discipline of any statutory/recognized university with minimum of 50% marks (45% for SC/ST candidates).
- 6. SELECTION PROCEDURE** Symbiosis National Aptitude Test Score, Group Exercise, Personal Interaction and Writing Ability Test (GE-PIWAT)
- 7. MEDIUM OF INSTRUCTION** English
- 8. PROGRAMME PATTERN** Semester Pattern- 4 Semesters
- 9. COURSES & SPECIALIZATION** As per Annexure A

10. FEE**Indian Students**

Academic Fee p.a.	Rs.	2,70,000
Institute Deposit (Refundable)	Rs.	20,000
Total	Rs.	2,90,000

International Students

Academic Fee p.a.	Rs	4,05,000
Institute Deposit (Refundable)	Rs.	20,000
Total	Rs.	4,25,000

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

Master of Science (Computer Applications) M.Sc. (CA) will be awarded at the end of semester IV examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.

**Annexure A
Semester I**

Catalog Course Code	Course Code	Course Title	Category	Credits	Internal Marks	External Marks	Total Marks
T3009	030142101	Best Programming Practices	C	2	100	-	100
T3012	030142102	Java SE	C	4	120	80	200
T3013	030142103	Javascript	C	2	60	40	100
T3017	030142104	Python Programming	C	3	90	60	150
T3023	030142105	Data Structures and Algorithms	C	4	120	80	200
T3025	030142106	Linux Scripting	C	3	90	60	150
T3115	030142107	Relational Database Management Systems	C	4	120	80	200
T3117	030142108	Software Engineering	C	4	120	80	200
T3272	030142109	Computational Mathematics	C	3	150	-	150
		Total		29	970	480	1450

Semester II

Catalog Course Code	Course Code	Course Title	Category	Credits	Internal Marks	External Marks	Total Marks
T3701	030142201	Dissertation	C	2	100	-	100
T3020	030142202	Advanced Operating System and Kernel Architecture	C	3	90	60	150
T3007	030142203	Web UI Technologies	SD	3	90	60	150
T3114	030142204	Object Oriented Analysis and Design	SD	4	120	80	200
T3120	030142205	Software Project Management	SD	4	120	80	200
T3049	030142206	Internetworking	SA/SS	3	90	60	150

T3051	030142207	Network Infrastructure	SA/SS	3	90	60	150
T3052	030142208	Network Operating Systems	SA/SS	3	90	60	150
T3061	030142209	IT Infrastructure Library	SA/SS	2	60	40	100
T3066	030142210	Network Security	SA/SS	3	90	60	150
T3004	030142211	C# Programming	OPT 1	3	90	60	150
T3018	030142212	R Programming	OPT 1	3	90	60	150
T3021	030142213	ANN Models	OPT 1	3	90	60	150
T3089	030142214	ABAP Programming I	OPT 1	3	90	60	150
T3260	030142215	Java EE - I	OPT 1	3	90	60	150
T3270	030142216	Evolutionary Computation	OPT 1	3	90	60	150
T3003	030142217	Android Technologies	OPT 2	3	90	60	150
T3019	030142218	XML technologies	OPT 2	3	90	60	150
T3022	030142219	Cryptography	OPT 2	3	90	60	150
T3124	030142220	Software Verification and Validation	OPT 2	3	90	60	150
T3279	030142221	Database Administration I	OPT 2	3	90	60	150
				28	880	520	1400
T4005	030142222	*Integrated Disaster Management	C	-	-	-	Letter Grade

Courses in category C are compulsory for all the students. Students opting for Software Development (SD) specialization will have to take all courses from category SD and will have to select any 4 courses from categories OPT 1 and OPT 2 together. Students opting for System Administration (SA) / Systems Security (SS) will have to take all courses under the category SA/SS and will have to take any 3 courses from category OPT 2.

Semester III

Catalog Course Code	Course Code	Course Title	Category	Credits	Internal Marks	External Marks	Total Marks
T3189	030142301	Web Content Management Systems	SD	4	200	-	200
T3293	030142302	Software Architectures	SD	4	120	80	200
T3802	030142303	Pilot Project	SD	2	100	-	100
T3048	030142304	Essentials of System Administration	SA/SS	2	100	-	100
T3053	030142305	Server Security and Hardening	SA/SS	4	120	80	200
T3054	030142306	Vulnerability Assessment and Penetration Testing	SA/SS	4	200	-	200
T3005	030142307	ASP.Net Programming	OPT 1	3	90	60	150
T3008	030142308	Cloud Programming using Web Services	OPT 1	3	90	60	150
T3027	030142309	Soft Computing Algorithms and Applications	OPT 1	3	90	60	150
T3080	030142310	iOS Technologies	OPT 1	3	90	60	150
T3111	030142311	Data Mining and Algorithms	OPT 1	3	90	60	150
T3122	030142312	Software Quality Models	OPT 1	3	90	60	150
T3259	030142313	ABAP Programming - II	OPT 1	3	90	60	150
T3261	030142314	Java EE - II	OPT 1	3	90	60	150
T3269	030142315	Applications of Neural Networks	OPT 1	3	90	60	150

T3271	030142316	System Programming	OPT 1	3	90	60	150
T3281	030142317	Data Warehousing	OPT 1	3	90	60	150
T3032	030142318	Computer Forensics- Detection and Prevention of IT Frauds	OPT 2	3	90	60	150
T3046	030142319	Administration of Cloud	OPT 2	3	90	60	150
T3050	030142320	IS Risk Analysis and System Audit	OPT 2	3	90	60	150
T3056	030142321	Wireless Networks	OPT 2	3	90	60	150
T3063	030142322	Data Centre Infrastructure Management	OPT 2	3	90	60	150
T3065	030142323	Network Operations, Design, Optimization and Management	OPT 2	3	90	60	150
T3015	030142324	Network Programming	OPT 3	3	90	60	150
T3024	030142325	Distributed Systems	OPT 3	3	90	60	150
T3278	030142326	Applied Cryptography	OPT 3	3	90	60	150
T3280	030142327	Database Administration II	OPT 3	3	90	60	150
T3097	030142328	Green IT	C	1	50	-	50
		Total		23	830	320	1150

Courses in category C are compulsory for all the students. Students opting for Software Development (SD) specialization will have to take all courses from category SD and will have to select any 4 courses (based on pre-requisites) from categories OPT 1 and OPT 3 together. Students opting for System Administration

(SA) / Systems Security (SS) will have to take all courses under the category SA/SS and will have to take any 4 courses (based on pre-requisites) from category OPT 2 and OPT 3 together.

Semester IV

Catalog Course Code	Course Code	Course Name	Category	Credits	Internal Marks	External Marks	Total Marks
T3911	030142401	Industry Internship	C	20	600	400	1000
		Total		20	600	400	1000

Summary

Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester I	5	24	29	1450
Semester II	2	26	28	1400
Semester III	7	16	23	1150
Semester IV	-	20	20	1000
Total	14	86	100	5000

*Integrated Disaster Management is mandatory for the award of degree.