



M.Sc in Computer Science
with specialization in
Networking and Cyber Security/ Data Analytics

Faculty of Science
Department of Computer Science
St. Xavier's University, Kolkata

M.Sc Computer Science - Curriculum

Programme Educational Objectives

PEO 1: Providing a strong foundation on theoretical aspects of Computer Science by strengthening mathematical and scientific competencies

PEO 2: Acquiring expertise in latest technological tools for development and experimentation

PEO 3: Building cutting-edge solutions to challenging societal problems that meets industry-standards

PEO 4: Forming research bent of mind in areas of interest

PEO 5: Encouraging students to take up higher education, research and entrepreneurship

Programme Outcomes

PO 1: Ability to apply mathematical, statistical and programming knowledge to tackle challenging problems

PO 2: Gaining keen understanding of the hardware aspect of a system and its relationship with software

PO 3: Conducting rigorous experimentation to analyze and interpret data

PO 4: Building models which are technically robust and in-line with best computing practices

PO 5: Understanding the internal details of a computational process for identification and correction of erroneous scenarios

PO 6: Analyzing the proposed solution to a problem based upon well-defined computational parameters

PO 7: Learning to document research findings in a scientific and systematic manner

PO 8: Recognizing learning as a lifelong process and the need to be self-taught

M.Sc. Computer Science with specializations in:

1. Networking and Cyber Security
2. Data Analytics

Semester	Core Courses			Elective Course			Total Credits
	No. of Papers	Credits(L+T+P)	Total Credits	No. of Papers	Credits(L+T+P)	Total Credits	
I	5	15+0+9	24	0	0	0	24
II	6	14+0+10	24	0	0	0	24
III	5	8+2+6	16	2	8+0+0	8	24
IV	3	0+12+0	12	3	12+0+0	12	24
Total Credits for the Program							96

Total Marks : 2200

Semester wise Details

Semester-I							
Number of Papers: 5							
Coursecode	CourseTitle	Course Type	Credits in each course				Max. Marks
			Theory	Practical	Tutorial	Credits	
MCSC 101	Advanced Analysis of Algorithm	Core	3	2	0	5	100
MCSC 102	Distributed System	Core	3	2	0	5	100
MCSC 103	Automata and Compiler Design	Core	4	0	0	4	100
MCSC 104	Statistical Analysis using Python	Core	2	3	0	5	100
MCSC 105	Artificial Intelligence and Soft Computing	Core	3	2	0	5	100
Total			15	9	0	24	500

Semester-II

Number of Papers: 6							
Course code	CourseTitle	Course Type	Credits in each course				Max. Marks
			Theory	Practical	Tutorial	Credits	
MCSC 201	Cryptography	Core	3	1	0	4	100
MCSC 202	Machine Learning	Core	3	2	0	5	100
MCSC 203	Embedded and Real Time Systems	Core	2	2	0	4	100
MCSC 204	Advanced Software Engineering	Core	3	2	0	5	100
MCSC 205	Operation Research	Core	2	2	0	4	100
MCSC 206	Research Methodology	Core	1	1	0	2	50
Total			14	10	0	24	550

Semester–III

Number of Papers: 5+2							
Course code	Course Title	Course Type	Credits in each course				Max. Marks
			Theory	Practical	Tutorial	Credits	
MCSC 301	Computer Vision	Core	2	2	0	4	100
MCSC 302	Data Warehouse and Mining	Core	2	2	0	4	100
MCSC 303	Mobile and wireless Computing	Core	4	0	0	4	100
MCSE 301	Elective 1	Elective	4	0	0	4	100
MCSE 302	Elective 2	Elective	4	0	0	4	100
MCSC 304	Project – Phase 1	Core	0	0	2	2	50
MCSC 305	Smart Analytics System Design Lab	Core	0	2	0	2	50
Total			16	6	2	24	600

Semester–IV

Number of Papers: 3+3							
Course code	Course Title	Course Type	Credits in each course				Max. Marks
			Theory	Practical	Tutorial	Credits	
MCSE 401	Elective 3	Elective	4	0	0	4	100
MCSE 402	Elective 4	Elective	4	0	0	4	100
MCSE 403	Elective 5	Elective	4	0	0	4	100
MCSC 402	Term Paper	Core	0	0	2	2	50
MCSC 403	Project – Phase II **	Core	0	0	8	8	150
MCSC 404	General Viva-Voce	Core	0	0	2	2	50
Total			12	0	12	24	550

** Publication of at least ONE research paper in UGC recognized Journal is Desirable.

Total Marks: 2200

Total Credits: 96

Specialization 1:

Networking and Cyber Security

Elective Papers:

1. Cloud Computing
2. Network Security
3. Cyber Law and Ethics
4. Cloud Security
5. IOT and Smart Systems

Specialization 2:

Data Analytics

Elective Papers:

1. Business Intelligence
2. Deep Learning
3. Bio-informatics
4. NLP and Text Analytics
5. Social Network Analytics