

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WB
Syllabus of B. Sc. Cyber Security
(Effective for 2020-2021 Admission Session)
Choice Based Credit System
140 Credit (3-Year UG) MAKAUT Framework
w.e.f 2020-21

CBCS – MAKAUT UG degree (Hons) 140 Credit FRAMEWORK (Revised)

Subject Type	Semester I	Semester II	Semester III	Semester IV	Semester V	Semester VI
CC	C1, C2	C3, C4	C5,C6, C7	C8, C9, C10	C11, C12	C13, C14
DSE					DSE1, DSE2	DSE3, DSE4
GE	GE1	GE2	GE3	GE4		
AECC	AECC 1	AECC 2				
SEC			SEC 1	SEC 2		
	4 (20)	5 (20)	4 (26)	5(26)	4 (24)	4 (24)

B.Sc in Cyber Security

Program Outcomes or Graduate Attributes of B.Sc Cyber Security Program under MAKAUT :

Graduates will be able to demonstrate the following program outcomes:

PO1- Cyber Security Knowledge: Apply the knowledge of computer systems, networking,data systems and cyber security specializations to the solution of complex cyber security problems.

PO2- Design/Development of Solutions: Identify, formulate, review and research design solutions for complex cyber security problems and design security components or processes to meet the specified needs with appropriate consideration for the public and private data security and the cultural, societal and environmental considerations.

PO3- Cyber Security Professional and Society: Create,select and apply techniques, resources and modern cyber security tools and techniques to assess societal,health,safety,legal and cultural issues and the consequent responsibilities relevant to the professional cyber security service

PO4- Individual and team work: Apply ethical principles and commit to professional ethics and responsibilities and norms of the cyber security practice as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

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PO5- Communication: Communicate effectively on complex cyber security activities with the cyber security & IT community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO6- Lifelong Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadcast context of technological change.

Program Outcomes (PO) Mapping

PO #	Program Outcome	Mapped courses
1	Cyber Security Knowledge	CYS101, CYS102, CYS201, CYS202, CYS301, CYS302, CYS402, CYS602
2	Design/Development of Solutions	CYS301, CYS265, CYS302, CYS401, CYS402, CYS403, CYS455, CYS501, CYS502, CYS543, CYS544, CYS601, CYS602, CYS643, CYS644
3	Cyber Security Professional & Society	CYS301, CYS265, CYS302, CYS303, CYS401, CYS455, CYS501, CYS502, CYS601
4	Individual and Team Work	CYS 164, CYS301, CYS354, CYS543, CYS544, CYS602, CYS643, CYS644
5	Communication	CYS164, CYS354, CYS543, CYS544, CYS602, CYS643, CYS644
6	Life-Long Learning	CYS301, CYS302, CYS303, CYS401, CYS403, CYS455, CYS501, CYS502, CYS601

*GE Courses are not in the above mapped list. Based on the choice of the learner that would necessarily be part of PO6 and the relevant PO's

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Curriculum Structure
1st Semester

Subject Type	Course Name	Course Code	Credit Distribution			Credit Points	Mode of Delivery			Proposed Moocs
			Theory	Practical	Tutorial		Offline	Online	Blended	
CC 1	Fundamental of Computing – using C Language	CYS (T) 101	4	0	0	6	✓			As per MAKAUT Notification
		CYS 191	0	2	0					
CC 2	Mathematics and Statistics	CYS (T) 102	4	0	0	6	✓			
		CYS 192	0	2	0					
GE 1	Students will have to choose from the GE Basket				6			✓		
AECC 1	English Communication	CYS 164	2	0	0	2	✓			
Semester Credits						20				

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2nd Semester

Subject Type	Course Name	Course Code	Credit Distribution			Credit Points	Mode of Delivery			Proposed Moocs
			Theory	Practical	Tutorial		Offline	Online	Blended	
CC 3	Computer Architecture & Object Oriented Concepts	CYS (T) 201	4	0	0	6	✓			As per MAKAUT Notification
		CYS 291	0	2	0					
CC 4	Data Structures & Algorithms	CYS (T) 202	4	0	0	6	✓			
		CYS 292	0	2	0					
GE 2	Students will have to choose from the GE Basket					6			✓	
AECC 2	Environmental Science	CYS 265	2	0	0	2	✓			
Semester Credits						20				

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3rd Semester

Subject Type	Course Name	Course Code	Credit Distribution			Credit Points	Mode of Delivery			Proposed Moocs	
			Theory	Practical	Tutorial		Offline#	Online	Blended		
CC 5	Ethical Hacking and Systems Defence	CYS (T) 301	4	0	0	6	✓			As per MAKAUT Notification	
		CYS 391	0	2	0						
CC 6	Cyber Systems & Cyber Threat and Modelling	CYS (T) 302	4	0	0	6	✓				
		CYS 392	0	2	0						
CC 7	Vulnerability Analysis, Penetration Testing, and Incident Handling	CYS (T) 303	4	0	0	6	✓				
		CYS 393	0	2	0						
GE 3	Students will have to choose from the GE Basket					6			✓		
SEC 1	Operating System and Linux	CYS 354	0	2	0	2	✓				
Semester Credits						26					

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4th Semester

Subject Type	Course Name	Course Code	Credit Distribution			Credit Points	Mode of Delivery			Proposed Moocs
			Theory	Practical	Tutorial		Offline#	Online	Blended	
CC 8	Cryptography and Information Security	CYS (T) 401	4	0	0	6	✓			As per MAKAUT Notification
		CYS 491	0	2	0					
CC 9	Software Engineering & Software Design with UML	CYS (T) 402	4	0	0	6	✓			
		CYS 492	0	2	0					
CC 10	Advanced Computer Network & Security	CYS (T) 403	4	0	0	6	✓			
		CYS 493	0	2	0					
GE 4	Students will have to choose from the GE Basket				6			✓		
SEC 2	Database Management	CYS 455	0	2	0	2	✓			
Semester Credits						26				

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5th Semester

Subject Type	Course Name	Course Code	Credit Points	Credit Distribution			Mode of Delivery			Proposed MOOCs	
				Theory	Practical	Tutorial	Offline #	Online	Blended		
CC 11	Cyber Forensics	CYS 501	6	5	0	1	✓			As per MAKAUT notification	
CC 12	Malware Analysis	CYS 502	6	5	0	1	✓				
DSE 1 (Any One)	Cloud Computing	CYS 503(A)	6	5	0	1	✓				
	Design and Analysis of Algorithm	CYS 503(B)	6	4	0	0	✓				
		CYS 593(B)		0	2	0	✓				
DSE 2 (Any One)	Information and Coding Theory	CYS 504(A)	6	5	0	1	✓				
	Introduction to AI and Machine Learning	CYS 504(B)	6	4	0	0	✓				
		CYS 594(B)		0	2	0	✓				
Semester Credit			24								

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6th Semester

Subject Type	Course Name	Course Code	Credit Points	Credit Distribution			Mode of Delivery			Proposed MOOCs
				Theory	Practical	Tutorial	Offline #	Online	Blended	
CC 13	Artificial Intelligence	CYS 601	6	5	0	1	✓			As per MAKAUT notification
CC 14	Digital Commerce	CYS 602	6	5	0	1	✓			
DSE 3 (Any One)	Introduction to Data Science	CYS 603(A)	6	5	0	1	✓			
	Digital Image Processing	CYS 603(B)	6	4	0	0	✓			
		CYS 693(B)		0	2	0	✓			
DSE 4 (Any One)	Major Project	CYS 681(A)	6	1	5	0	✓			
	Internship	CYS 681(B)	6	1	5	0	✓			
Semester Credit			24							

Note:

Major Project/Internship- (Students have to engage in a full length/capstone project with a pre-specified Internal Guide (faculty member) throughout the semester). Industry collaboration is highly encouraged in case of Internship.

(At least two-three times progress needs to be checked and evaluation needs to be done through PCA.) It will be followed by a report submission and viva as part of University examination.