DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF SCIENCE
A.M.U. ALIGARH

FYUP Course Structure for
B.Sc. (Hons.) Computer Applications
w.e.f. Academic Session 2022-23

Semester I

S. No.	Course No.	Course Title	Credit	Period Per Week		Marks		
				L/P	T	Sessional	End Sem.	Total
Major Subject								
1	CABSMJ1001	Problem Solving using C	04	03	01	30	70	100
2	CABSMJ1002	Introduction to CS and IT	02	01	01	30	70	100
3	CABSMJ1P01	Lab-I (CABSMJ1001)	02	02	01	60	40	100
Minor Subject								
1	CABSMN1003	Introduction to C	04	03	01	30	70	100
2	CABSMN1P01	Lab-I (M) (CABSMN1003)	02	02	01	60	40	100
Generic Elective Course								
1	CABSGE1004	Numerical and Statistical Computing	04	03	01	30	70	100
Semester II								
Major Subject								
1	CABSMJ2001	Data Structures using C	04	03	01	30	70	100
2	CABSMJ2002	Digital System Design	02	01	01	30	70	100
3	CABSMJP02	Lab-II	02	02	01	60	40	100
Minor Subject								
1	CABSMN2003	Data Structures and Algorithms	04	03	01	30	70	100
2	CABSMN2P02	Lab-II (M)	02	02	01	60	40	100
Generic Elective Courses								
1	CABSGE2004	Optimization Techniques	04	03	01	30	70	100
Award of CERTIFICATE (After 1 Year: 44 Credits)								
Semester III								
Major Subject								
1	CABSMJ3001	Object Oriented Programming using Java	04	03	01	30	70	100
2	CABSMJ3002	Computer Architecture	02	02	01	60	40	100
3	CABSMJ3P03	Lab-III	02	01	01	30	70	100

Minor Subject								
1	CABSMN3003	Java Programming	04	03	01	30	70	100
2	CABSMN3P03	Lab-III (M)	02	02	01	60	40	100
Generic Elective Course								
1	CABSGE3004	Discrete Structures	04	03	01	30	70	100
Semester IV								
Major Subject								
1	CABSMJ4001	Database Management System	04	03	01	30	70	100
	CABSMJ4002	Discrete Mathematics	02	01	01	30	70	100
2	CABSMJ4P04	Lab-IV	02	02	01	60	40	100
3								
Minor Subject								
1	CABSMN4003	Database Concepts	04	03	01	30	70	100
2	CABSMN4P04	Lab-IV (M)	02	02	01	60	40	100
Generic Elective								
1	CABSGE4004	Automata Theory	04	03	01	30	70	100
Award of DIPLOMA (After 2 Year: 88 Credits)								
Semester V								
Major Subject								
1	CABSMJ5001	Operating System and Shell Programming	04	03	01	30	70	100
2	CABSMJ5002	Object Oriented Analysis and Design	04	03	01	30	70	100
3	CABSMJ5P05	Lab-V	04	04	02	60	40	100
Elective (Choose Anyone of the following)								
1	CABSXO5003	Parallel and Cloud Computing	04	03	01	30	70	100
2	CABSXO5004	Mobile Programming Languages	04	03	01	30	70	100
3	CABSXO5005	Graph Theory	04	03	01	30	70	100
Elective (Choose Anyone of the following)								
1	CABSXO5P01	Lab-I	02	02	01	60	40	100
2	CABSXO5P02	Lab-II	02	02	01	60	40	100
3	CABSXO5P03	Lab-III	02	02	01	60	40	100
Semester VI								
Major Subject								
1	CABSMJ6001	Software Engineering	04	03	01	30	70	100
2	CABSMJ6002	Analysis and Design of Algorithms	04	03	01	30	70	100

3	CABSMJ6P06	Lab-VI	04	03	01	60	40	100
Elective (Choose Anyone of the following)								
1	CABSXO6003	Cyber Security	04	03	01	30	70	100
2	CABSXO6004	Computer Graphics	04	03	01	30	70	100
3	CABSXO6005	Optimization Techniques	04	03	01	30	70	100
Elective (Choose Anyone of the following)								
1	CABSXO6P04	Lab-IV	02	02	01	60	40	100
2	CABSXO6P05	Lab-V	02	02	01	60	40	100
3	CABSXO6P06	Lab-VI	02	02	01	60	40	100
Award of Bachelor of Sciences (After 3 Years: 132 Credits)								
Semester VII								
Major Subject								
1	CABSMJ7001	Soft Computing	04	03	01	30	70	100
2	CABSMJ7002	Internet and Web Technology	04	03	01	30	70	100
3	CABSMJ7P07	Lab-VII (H)	04	04	02	60	40	100
Elective (Choose Anyone of the following)								
1	CABSMJ7003	Artificial Intelligence	04	03	01	30	70	100
2	CABSMJ7004	Distributed Computing and IoT	04	03	01	30	70	100
3	CABSMJ7005	Web Application Security	04	03	01	30	70	100
Vocational & Skill Enhancement Course								
1	CABSMJ7101	Research Methodology	02	01	01	30	70	100
Seminar								
1	CABSMJ7S01	Seminar	04	03	01	60	40	100
Semester VIII								
Major Subject								
1	CABSMJ8001	Computer Networks	04	03	01	30	70	100
2	CABSMJ8002	Python Programming	04	03	01	30	70	100
3	CABSMJ8P08	Lab-VIII (H)	04	04	02	60	40	100
Elective (Choose Anyone of the following)								
1	CABSMJ8003	Machine Learning	04	03	01	30	70	100
2	CABSMJ8004	Cloud and IoT Security	04	03	01	30	70	100
3	CABSMJ8005	Digital Forensics	04	03	01	30	70	100
Project/Internship/Community Engagement & Services								

1	CABSMJ8D01	Dissertation	06			60	40	100
Award of Bachelor of Science (Hons.) (After 4 Years: 176 Credits)								
Semester VII								
Major Subject								
1	CABSMJ7001	Soft Computing	04	03	01	30	70	100
2	CABSMJ7002	Internet and Web Technology	04	03	01	30	70	100
3	CABSMJ7P09	Lab-IX (R)	02	02	01	60	40	100
Elective (Choose Anyone of the following)								
1	CABSMJ7003	Artificial Intelligence	04	03	01	30	70	100
2	CABSMJ7004	Distributed Computing and IoT	04	03	01	30	70	100
3	CABSMJ7005	Web Application Security	04	03	01	30	70	100
Vocational & Skill Enhancement Course								
1	CABSMJ7102	Research Methodology	04	03	01	30	70	100
Dissertation								
1	CABSMJ7D01	Dissertation-I	04			60	40	100
Semester VIII								
Major Subject								
1	CABSMJ8001	Computer Networks	04	03	01	30	70	100
2	CABSMJ8002	Python Programming	04	03	01	30	70	100
3	CABSMJ8P10	Lab-X (R)	02	02	01	60	40	100
Elective (Choose Anyone of the following)								
1	CABSMJ8003	Machine Learning	04	03	01	30	70	100
2	CABSMJ8004	Cloud and IoT Security	04	03	01	30	70	100
3	CABSMJ8005	Digital Forensics	04	03	01	30	70	100
Dissertation								
1	CABSMJ8D02	Dissertation-II	08			60	40	100
Award of Bachelor of Science(Hons.) with Research (After 4 Years: 176 Credits)								

Credit Framework

Type of Award/Stage of Exit	**Major**	**Minor**	**Generic Elective Courses**	**Elective (Major) Courses**	**Vocational & Skill Enhancement Courses**	**Value Addition Courses/ Project & Dissertation**	**Total**
Certificate (after successful completion of IInd semester)	16	12	08		04	04	44

Diploma (after successful completion of IVth semester)	16	12	08		04	04	88
B.Sc. (after successful completion of VIth semester)	24			12	04	04	132
B.Sc. (Hons.) (after successful completion of VIIIth semester)	24			08	02	10	176
B.Sc. (Hons.) with Research (after successful completion of VIIIth semester)	20			08	04	12	176

Specialization Tracks:

Semester	Track 1 (Artificial Intelligence & Machine Learning)	Track 2 (Cloud and IoT)	Track 3 (Information Security)
VII	**E71:** Artificial Intelligence	**E72:** Distributed Computing and IoT	**E73:** Web Application Security
VIII	**E81:** Machine Learning	**E82:** Cloud and IoT Security	**E83:** Digital Forensics

Note:

Further, the Chairperson is authorized to make necessary changes in the Curriculum/Syllabi of 4-years B.Sc. (Hons.) Computer Applications programme as and when required.

DEPARTMENT OF COMPUTER SCIENCE
ALIGARH MUSLIM UNIVERSITY
ALIGARH, U.P. – 202002
B.Sc. (Hons.) Computer Application

Curriculum Structure (Session 2017-2020)

Effective from 30.05.2018 as per Office Memo No. XM/RU/F.No. 04/18/04 dated 14.02.2018

S. No.	Semester	Course Category (Main)	Paper/Lab	Course No.	Course Title	Credits	Periods+ Tutorials/ Week	Marks Assigned			
								Sessional	Continuous Assessment	Exam.	Total
1	I-Sem.	Main	Paper-I	CCB-152	Fundamentals of Information Technology	2	1+1	30	--	70	100
2		Main	Paper-II	CCB-153	Programming using C	2	1+1	30	--	70	100
3		Main	Lab-I	CCB-1P1	Practical Lab - 1	2	3	--	40	60	100
4	II-Sem.	Main	Paper-III	CCB-252	Data Structures	2	1+1	30	--	70	100
5		Main	Paper-IV	CCB-253	Programming with Python	2	1+1	30	--	70	100
6		Main	Lab-II	CCB-2P1	Practical Lab - 2	2	3	--	40	60	100
7	III-Sem.	Main	Paper-V	CCB-352	Database Management System	4	3+1	30	--	70	100
8		Main	Lab-III	CCB-3P1	Practical Lab - 3	2	3	--	40	60	100
9	IV-Sem.	Main	Paper-VI	CCB-452	Analysis and Design of Information System	4	3+1	30	--	70	100
10		Main	Lab-IV	CCB-4P1	Practical Lab - 4	2	3	--	40	60	100
11		**Open Elective**	Paper-VII	CCB-491	Introduction to IT ***(Open Elective)***	2	1+1	30	--	70	100
12	V-Sem.	Main	Paper-VIII	CCB-551	Operating System and System Programming	4	3+1	30	--	70	100
13		Main	Paper-IX	CCB-553	Web Engineering	4	3+1	30	--	70	100
14		**Elective (Discipline Centric)**	Paper-X	CCB-554	***EL-5E1 (Elective-1)***	4	3+1	30	--	70	100
15		**Elective (Discipline Centric)**	Paper-XI	CCB-564	***EL-5E2 (Elective-2)***	4	3+1	30	--	70	100
16		**Ability Enhancement (Discipline Centric)**	Paper-XIII	CCB-574	***EL-5E3 (Elective-3)***	2	1+1	30	--	70	100
17		**Ability Enhancement (Discipline Centric)**	Lab-V	CCB-5P2	Practical Lab - 5	2	3	--	40	60	100
18		**Ability Enhancement (Discipline Centric)**	Lab-VI	CCB-5S2	Senior Project-I	4	6	--	40	60	100

19	**VI-Sem.**	**Main**	Paper-XIV	CCB-653	Computer Networks	4	3+1	30	--	70	100
20		**Main**	Paper-XV	CCB-654	Discrete Structures	4	3+1	30	--	70	100
21		**Elective (Discipline Centric)**	Paper-XVI	CCB-663	***EL-6E4 (Elective-4)***	4	3+1	30	--	70	100
22		**Main**	Lab-VII	CCB-6P1	Practical Lab - 6	2	3	--	40	60	100
23		**Main**	Lab-VIII	CCB-6S3	Seminar Presentation	4	6	--	40	60	100
24		**Main**	Lab-IX	CCB-6S4	Senior Project-II	6	--	--	40	60	100

List of Electives

EL-5E1 (Elective-1):	CCB-554: Computer System Architecture CCB-555: Computer Graphics and Multimedia CCB-556: Distributed Computing

EL-5E2 (Elective-2):	CCB-563: Linux Administration and Shell Programming CCB-564: Programming using JAVA CCB-565: Programming using MATLAB

EL-5E3 (Elective-3):	CCB-573: Value Education CCB-574: Organizational Behaviour CCB-575: Business and Computing Ethics

EL-6E4 (Elective-4):	CCB-663: Data Mining CCB-664: Artificial Intelligence CCB-665: Internet Security and Forensics

DEPARTMENT OF COMPUTER SCIENCE
ALIGARH MUSLIM UNIVERSITY
ALIGARH, U.P. – 202002
Semester Courses: B.Sc. (Hons.) Computer Application, Session 2015 -2016
Curriculum Structure

S. No.	Semester	Course Category (Main)	Paper/Lab	Course No.	Course Title	Credits	Periods+ Tutorials/ Week	Marks Assigned				
								Sessional	Mid Sem	Continuous Assessment	Exam.	Total
1	I-Sem.	Main	Paper-I	CCB-151	Fundamentals of Computers and Software Packages	4	4+1	10	30	--	60	100
2		Main	Lab-I	CCB-1P1	Practical Lab - 1	2	3	--		40	60	100
3	II-Sem.	Main	Paper-II	CCB-251	Object Oriented Programming Using C++	4	4+1	10	30	--	60	100
4		Main	Lab-II	CCB-2P1	Practical Lab - 2	2	3	--		40	60	100
5	III-Sem.	Main	Paper-III	CCB-351	Data Structure and Algorithm	4	4+1	10	30	--	60	100
6		Main	Lab-III	CCB-3P1	Practical Lab - 3	2	3	--		40	60	100
7	IV-Sem.	Main	Paper-IV	CCB-451	Database Management System Using Oracle	4	4+1	10	30	--	60	100
8		Main	Lab-IV	CCB-4P1	Practical Lab - 4	2	3	--		40	60	100
9		**Open Elective**	**Paper-V**	**CCB-491**	**Introduction to IT**	**2**	**4**	10	30		60	100
10	V-Sem.	**Main**	Paper-VI	CCB-551	Operating System and System Programming	4	4+1	10	30	--	60	100
11		**Main**	Paper-VII	CCB-552	Analysis and Design of Information System	4	4+1	10	30	--	60	100
12		**Elective (Discipline Centric)**	Paper-VIII	**CCB-521**	**Programming in Java**	**4**	**2**	10	30		60	100
13				**CCB-522**	**Visual Programming**							
				CCB-523	**Information Security & Cryptography**							
14		**Elective (Discipline Centric)**	**Paper-IX**	**CCB-524**	**Computer Architecture**	**4**	**4**	**10**	**30**	**--**	**60**	**100**
15				**CCB-525**	**Computer Graphics**							
17		**Ability Enhancement**	**Paper-X**	**CCB-526**	**Technical Report Writing**	**2**	**2**	**10**	**30**		**60**	**100**
18				**CCB-527**	**Organizational Behavior**							
20		**Ability Enhancement**	Lab-V	CCB-5P1	Mini Project/ Computer Lab-5	4	9	--		40	60	100
21		**Ability Enhancement**	Lab-VI	CCB-5P2	Seminar Presentation	2	3	--		40	60	100

22	**VI-Sem.**	**Main**	Paper-XI	CCB-651	Data Communication & Computer Networks	4	4+1	10	30	--	60	100
23		**Main**	Paper-XII	CCB-652	Linux Programming	4	4+1	10	30	--	60	100
24		**Elective (Discipline Centric)**	**Paper-XIII**	**CCB-621**	**Fundamentals of Internet and Web Technology**	**4**	**4**	10	30		60	100
25				**CCB-622**	**Programming Language Theory & Concept**							
26		**Main**	Lab-VII	CCB-6P1	Practical Lab - 6	2	3			40	60	100
27		**Main**	Lab-VIII	CCB-6P2	Viva	2	3	--		40	60	100
28		**Main**	Lab-IX	CCB-6P3	Project	8	--	--		40	60	100

DEPARTMENT OF COMPUTER SCIENCE, AMU. ALIGARH
SCHEME FOR CHOICE BASED CREDIT SYSTEM
B. Sc. (Hons.) (Computer Application)
(2017-2020)

SEM	Foundation Courses		Main /Major Subjects			Subsidiary/Minor/ Generic Elective	Credit
	Compulsory	Elective	Core	Elective (Discipline Centric)	Ability Enhancement (Discipline Centric)		
I	• English Communication(2) **Total:02**	• Urdu(2)/..... • Theology(2)/..... **Total:04**	• Fundamentals of Information Technology (2) • Programming using C (2) • Lab- I(2) **Total:06**			• Mathematics (6) • One of the following 1. Physics(4+2) 2. Statistics(6) **Total:12**	24
II	• English Communication(2) **Total:02**	• Urdu(2)/..... • Theology(2)/..... **Total:04**	• Data Structures(2) • Programming with Python(2) • Lab-II (2) **Total:06**			• Mathematics (6) • One of the following 1. Physics(4+2) 2. Statistics(6) **Total:12**	24
III	• English Communication(2) • Environmental Studies(4) **Total:06**		• DBMS(4) • Lab-III(2) **Total:06**			• Mathematics (6) • One of the following 1. Physics(4+2) 2. Statistics(6) **Total:12**	24
IV			• Analysis and Design of Information System(4) • Lab-IV(2) Physics Lab- IV(2) **Total:06**			• Mathematics (6) • One of the following 1. Physics(4+2) 2. Statistics(6) **Total:12**	18
V		**Open Elective(2)** **Total:02**	• Operating System and System Programming(4) • Web Engineering(4) **Total:08**	• Elective-1(4) • Elective-2(4) **Total:08**	• Elective-3(2) • Lab – 5(2) • Senior Project-I(4) **Total:08**		26
VI			• Computer Networks(4) • Discrete Structures(4) • Practical Lab – 6(2) • Seminar Presentation(4) • Senior Project-II(6) **Total:20**	• Elective-4(4) **Total:04**			24
	Total:10	**Total:10**	**Total:52**	**Total:12**	**Total:08**	**Total:48**	**140**