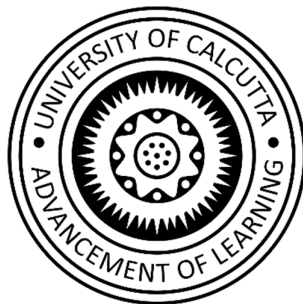




University of Calcutta

**B.Sc. (Honours and
Honours with Research),
4 - Years degree program
in Computer Science under
credit framework (CCF).**

**Semester – I, II, III, IV, V,
VI, VII and VIII**

Curriculum Structure for a 4-Year Bachelor of Science or Bachelor of Arts (Honours or Honours with Research) Degree under CCF as per CSR/52/2025.

Amendments in Course structure, as mentioned in Admission Regulations for 4-Year B.A./ B.Sc.--Honours & Honours with Research (clause no. 9 of CSR/05/2023, dt. 23.07.2023)

Revised Course Structure for 4-Year Honours & Honours with Research (semester-1 to 6)-CCF, 2022

	DSCC/ Core (Major)	Minor (m1 & m2)	IDC	AEC	SEC	CVAC	Summer Internship	Total Credit
Semester	15x4= 60	8x4= 32	3x3= 9	4x2= 8	3x4= 12	4x2= 8	1x3= 3	172
1	1x4= 4 3TH+1P/TU	1x4= 4 (m1) 3TH+1P/TU	1x3= 3 2TH +1P/TU	1x2= 2 2TH +0P/TU	1x4= 4	2x2= 4		21
2	1x4= 4 3TH+1P/TU	1x4= 4 (m1) 3TH+1P/TU	1x3= 3 2TH +1P/TU	1x2= 2 2TH +0P/TU	1x4= 4	2x2= 4		21
3	2x4= 8 2x(3TH+1P/TU)	1x4= 4 (m2) 3TH+1P/TU	1x3= 3 2TH +1P/TU	1x2= 2 2TH +0P/TU	1x4= 4			21
4	4x4= 16 4x(3TH+1P/TU)	1x4= 4 (m2) 3TH+1P/TU		1x2= 2 2TH +0P/TU				22
5	4x4= 16 4x(3TH+1P/TU)	m1/m2 2x4= 8 2x(3TH+1P/TU)						24
6	3x4= 12 3x(3TH+1P/TU)	m1/ m2 2x4= 8 2x(3TH+1P/TU)						23
Credits	15x4= 60	8x4= 32	3x3= 9	4x2= 8	3x4= 12	4x2= 8	1x3=3	132
Marks	15x100=1500	8x100=800	3x75=225	4x50=200	3x100=300	4x50=200	1x75=75	Total Marks =3300

Marks= 25 marks per credit.

Summer Internship has to be undertaken in semester-2/4/6.

Minor Courses will come from two subjects of same broad discipline as Major (m1 & m2)

Students shall study two papers from a single Minor subject (both either from m1 or from m2) in semester-V and shall study two papers from another Minor subject (both either from m1 or from m2) in semester-VI

The Minor subject to be studied in semester-6 shall be different from the Minor subject studied in semester-5.

Revised Course Structure (semester-7 & 8) under CCF, 2022

4-YEAR B.A./ B.Sc. HONOURS COURSES OF STUDIES

SEMESTER	DSCC/ CORE from Major subject 4 CREDITS (3 TH+1 P/ TU) each			Total credits
* 7	5 papers x 4 credits = 20 credits			20
SEMESTER	1 st paper & 2 nd paper From Major subject (4 Credits each) 2 papers x 4 credits = 8 credits	3 rd paper & 4 th paper From Major subject (4 Credits each) 2 papers x 4 credits = 8 credits	5 th paper From Major subject (4 Credits) 1 paper x 4 credits = 4 credits	Total credits
# 8	2 Core papers (3 TH+1 P/ TU) Or 2 papers of Research Methodology (RM-1 & RM-2) (3 TH+1 viva)	2 Core papers (3 TH+1 P/ TU)	1 Core paper (3 TH+1 P/ TU) Or 1 paper of Project/ Review (3 TH+1 viva)	20

Revised Course Structure (semester-7 & 8) under CCF, 2022

4-YEAR B.A./ B.Sc. HONOURS WITH RESEARCH COURSES OF STUDIES

SEMESTER	DSCC/ CORE from Major subject 4 CREDITS (3 TH+1 P/ TU) each			Total credits
* 7	5 papers x 4 credits = 20 credits			20
SEMESTER	1 st paper & 2 nd paper From Major subject (4 Credits each) 2 papers x 4 credits = 8 credits	3 rd paper From Major subject (4 Credits) 1 paper x 4 credits = 4 credits	4 th paper From Major subject (8 Credits) 1 paper x 8 credits = 8 credits	Total credits
#8	2 papers of Research Methodology (RM-1 & RM-2) (3 TH+1 viva)	Research Internship (3 TH+1 viva)	Dissertation / Project (6 TH+2 viva)	20

Note:-

* In semester-7:

The 5 DSCC/ Core papers to be studied in the 7th semester of the Honours Programme shall be identical with core papers to be studied by the students pursuing Honours with Research programme.

In semester-8:

The 2 papers of Research Methodology (RM-1 & RM-2) to be studied in the 8th semester of the Honours with Research Programme, shall be identical with 2 papers of Research Methodology (RM-1 & RM-2) to be studied by the students pursuing Honours programme.

**Curriculum Structure for a 4-Year Bachelor of Science (Honours or Honours with Research)
Degree in **Computer Science under CCF (Major discipline).****

Semester	Course Code	Core Subjects, (DSCC) Computer Science as Major Discipline		SEC
		Theory Paper Credits – 03 (75 marks)	Practical paper Credits – 01 (25 marks)	Theory – 02 credits Practical – 02 credits
1	DSCC-1	Computer fundamentals & Digital Logic	Digital Logic Circuit Lab	Data Visualization using spreadsheets
2	DSCC-2	Problem Solving Using C	Problem Solving using C Lab	Web Development
3	DSCC-3	Data Structures	Data Structures using C	Mobile App Development
	DSCC-4	Computer Architecture & Organization.	Digital Computer Design Lab	

Semester	Course Code	Core Subjects, (DSCC) Computer Science as Major Discipline		Optional Papers	
		Theory Paper Credits – 03 (75 marks)	Practical paper Credits – 01 (25 marks)		
4	DSCC-5	Computational Mathematics	Numerical Methods lab	Not Applicable	
	DSCC-6	Microprocessor and Its Applications	Programming Microprocessor 8085		
	DSCC-7	Operating System	Shell Programming		
	DSCC-8	Object Oriented Programming	Programming in Java		
5	DSCC-9	Design & Analysis of Algorithms	Graph algorithms Lab using C++	Not Applicable	
	DSCC-10	Data Communication and Networking	Networking Lab		
	DSCC-11	Theory of Computation	Tutorial		
	DSCC-12	Database Management System (DBMS)	RDBMS Lab		
6	DSCC-13	Software Engineering	Tutorial	Not Applicable	
	DSCC-14	Programming in Python	Programming in Python		
	DSCC-15	Linear Algebra & Statistical Methods	Linear Algebra & Statistical Methods using Python		
7	DSCC-16	Compiler Design	Tutorial	Not Applicable	
	DSCC-17	Machine Learning	Machine learning Lab using Python		
	DSCC-18	Computer Graphics	Computer Graphics Lab		
	DSCC-19	Embedded Systems and IoT	Embedded Systems and IoT/Project based		
	DSCC-20	Advanced DBMS	Advanced DBMS Lab		
8	DSCC-21	Digital Image Processing	Digital Image Processing using Python and Open CV.	OR	RM-1*
	DSCC-22	Deep learning	Deep learning Lab	OR	RM-2**
	DSCC-23	Cryptography & Cyber Security	Cryptography & Cyber Security using Python	OR	RI [#]
	DSCC-24	Cloud Computing	Cloud Computing Lab		
	DSCC-25	Mobile & Wireless Computing	Mobile & Wireless Computing lab	OR	Project

Note:

RM-1* - Research Methodology-1
 RM-2** - Research Methodology-2
 RI[#] - Research Internship

Curriculum Structure for Computer Science as a Minor subject/discipline of study for students opting for a different major discipline in a 4-Year Bachelor of Science (Honours or Honours with Research) Degree.

Semester	Paper Code	M1 – Theory (03 credits, 75 marks)	M1 – Practical (01 credit, 25 marks)	Paper Code	M2 – Theory (03 credits, 75 marks)	M2 – Practical (01 credit, 25 marks)
I	MN1	Computer Fundamentals & Digital Logic	Digital Logic Circuit Lab		Not Applicable	Not Applicable
II	MN2	Problem Solving Using C	Problem Solving Using C Lab		Not Applicable	Not Applicable
III		Not Applicable	Not Applicable	MN1	Computer Fundamentals & Digital Logic	Digital Logic Circuit Lab
IV		Not Applicable	Not Applicable	MN2	Problem Solving Using C	Problem Solving Using C Lab
V	MN3	Data Structures	Data Structures using C, Shell Programming	MN3	Data Structures	Data Structures using C, Shell Programming
VI	MN4	Data Structures	Data Structures using C, Shell Programming	MN4	Data Structures	Data Structures using C, Shell Programming

Curriculum Structure for a 3-Years Bachelor of Science in Multidisciplinary Course (MDC) in Computer Science

COURSE STRUCTURE-MDC

	CC1	CC2	Minor	IDC	AEC	SEC	CVAC	Summer Internship	Total Credit
Semester	8x4= 32	8x4= 32	6x4= 24	3x3=9	4x2= 8	3x4=12	4x2=8	1x3= 3	128
1	1x4= 4 3TH+ 1P/TU	1x4= 4 3TH+ 1P/TU		1x3=3 2TH +1P/TU	1x2= 2 2TH +0P/TU	1x4= 4	2x2=4		21
2	1x4= 4 3TH+ 1P/TU	1x4= 4 3TH+ 1P/TU		1x3=3 2TH +1P/TU	1x2= 2 2TH +0P/TU	1x4= 4	2x2=4		21
3	1x4= 4 (3TH+ 1P/TU)	1x4= 4 3TH+ 1P/TU	1x4= 4 3TH+1P/ TU	1x3=3 2TH +1P/TU	1x2= 2 2TH +0P/TU	1x4= 4			21
4	2x4=8 4x(3TH+ 1P/TU)	2x4= 8 2x(3TH+ 1P/TU)	1x4= 4 (3TH+1P/ TU)		1x2= 2 2TH +0P/TU				22
5	2x4= 8 2x(3TH+ 1P/TU)	1x4= 4 3TH+ 1P/TU	2x4= 8 2x(3TH+ 1P/TU)						20
6	1x4= 4 (3TH+ 1P/TU)	2x4= 8 2x(3TH+ 1P/TU)	2x4= 8 2x(3TH+ 1P/TU)						20
Credits	8x4= 32	8x4= 32	6x4= 24	3x3= 9	4x2= 8	3x4= 12	4x2= 8	1x3= 3	128
Marks	8x100= 800	8x100= 800	6x100= 600	3x75= 225	4x50= 200	3x100= 300	4x50= 200	3x25= 75	Total Marks =3200

Marks= 25 marks per credit.

Total credit=125+3 (for summer internship) = 128

Summer Internship: As mentioned in clause no. 8 (G)

Curriculum Structure for a 3-Years Bachelor of Science in Multidisciplinary Course (MDC) and Computer Science as one of the subjects.

Semester	Paper Code	If taken as CC1	Paper Code	If taken as CC2	If taken as Minor	SEC	IDC
1	MN1	Computer fundamentals & Digital Logic, (Th-3/P-1)*	MN1	Computer fundamentals & Digital Logic, (Th-3/P-1)	Not Applicable	Web Development (Th-2/P-2)	Fundamentals of Computer Science and their Applications. (Th-2/P-1)
2	MN2	Problem Solving Using C (Th-3/P-1)	MN2	Problem Solving Using C (Th-3/P-1)	Not Applicable		
3	MN3	Data Structures (Th-3/P-1)	MN3	Data Structures (Th-3/P-1)	Computer fundamentals & Digital Logic. (Th-3/P-1)		
4	MN4	Operating System (Th-3/P-1)	MN4	Operating System (Th-3/P-1)	Problem Solving Using C, (Th-3/P-1)	Not Applicable	Not Applicable
	MN5	Object Oriented Programming (Th-3/P-1)	MN5	Object Oriented Programming (Th-3/P-1)			
5	MN6	Database Management System (DBMS) (Th-3/P-1)	MN6	Database Management System (Th-3/P-1)	Database Management System (DBMS), (Th-3/P-1)		
	MN7	Data Communication and Networking (Th-3/P-1)			Data Communication and Networking, (Th-3/P-1)		
6	MN8	Programming in Python (Th-3/P-1)	MN7	Software Engineering (Th-3/P-1)	Software Engineering (Th-3/P-1)		
			MN8	Programming in Python (Th-3/P-1)	Programming in Python, (Th-3/P-1)		
Credit	Theory + Practical (4 x 8 = 32)		Theory + Practical (4 x 8 = 32)		Theory + Practical (4 x 6 = 24)	Theory + Practical (4 x 3 = 12)	Theory + Practical (3 x 3 = 9)
Marks		8 x 100 = 800		8 x 100 = 800	6 x 100 = 600	3 x 100 = 300	3 x 75 = 225

- (Th – Theory, P – Practical), Theory - 01 credit = 1 contact hour/week, Practical - 01 credit = 2 contact hour/week
- 1 Credit = 25 marks.
- Syllabus remains the same as prescribed semester-wise in 4 Year B.Sc (Honours or Honours with Research) in Computer Science.

Computer and other hardware recommended for laboratory (Upgrade/New installation)