

**Course Structure & Syllabus of BSc in Computer Sciences
Applicable Batch: 2023-26**

**DIT UNIVERSITY
Dehradun**



Detailed Course Structure & Syllabus

of

**BSc in Computer Sciences with specialization in Data
Science**

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Course Structure of the BSc in Computer Sciences with specialization in Data Science

Basket/Area	Min Credits To be taken	Credit per course	Courses
Language and Literature (LL) Core: Professional Communication Elective: Choose any 1 more LL course	6	3	2
Core Sciences (CoS) Core: None Elective: Choose any 1 CoS Course	5	5	1
Core Mathematics (CM) Core: Calc1, Probs and Stats	8	4	2
Multidisciplinary (MD) Core: None Elective: Choose any 3 MD courses in the area of Statistics, for a minor in Statistics	12	4	3
*Discipline Core (DC) Core: PPS, DS, CO, DM, Java Programming, OS, DBMS, DAA, CN, Web Technologies Elective: None	40	4	10
*Discipline Elective (DE) Core: None Elective: Choose 4 courses as per your Specialization	12	3	4
Humanities and Liberal Arts (HL) Core: None Elective: Choose any 3 HL Courses	12	3	4
Skill Enhancement Courses (SEC)* Core: TT1 and TT2 Elective: None	8	-	-
Ability Enhancement Courses (AEC) Core: Entrepreneurship and startups, Env. Sc, Indian Constitution Elective: None	8	2	4
Free Electives (FE) Core: None Elective: Choose any 3 FE courses	9	3	3
Capstone Project	0		
Total Credits	120		

*The offering Sequence of DC/DE Course Baskets can be changed

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A SAMPLE PLAN OF STUDY

Year: 1st

Semester: I

Course Category	Course Code	Course Title	L	T	P	Credit
*DC	CAF305	Programming Fundamentals	3	0	2	4
*DC	CAF306	Discrete Mathematics and Its Applications	3	1	0	4
*DC	MAF108	Calculus – I	3	1	0	4
CS	PYF101	Wave & Optics and Introduction to Quantum Mechanics	3	1	2	5
LL	LAF181	Professional Communication	2	0	2	3
Total						20

Year: 1st

Semester: II

Course Category	Course Code	Course Title	L	T	P	Credits
*DC	CAF307	Introduction to Data Structures	3	0	2	4
*DC	CAF308	Computer Organization and Design	3	1	0	4
*DC	MAF202	Probability and Statistics	3	1	0	4
HL	LAF282	Human Values	3	0	0	3
LL	LAF184	Corporate Communication & Softskill	3	0	0	3
AEC	CHF201	Environmental Science	2	0	0	2
Total						20

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Year: 2nd

Semester: III

Course Category	Course Code	Course Title	L	T	P	Credit
*DC	CAF309	Introduction to Object Oriented Programming with Java	3	0	2	4
*DC	CAF310	Operating Systems Principles	3	0	2	4
DE	CAF34	Discipline Elective1	*	*	*	3
MD	SAF106	Statistical Methods I	3	1	0	4
AEC	UCF201	Aptitude and Soft Skills Training	2	0	0	2
FE		Free Elective1	*	*	*	3
Total						20

Year: 2nd

Semester: IV

Course Category	Course Code	Course Title	L	T	P	Credit
*DC	CAF311	Data Communications and Networking	3	0	2	4
DE	CAF34	Discipline Elective2	*	*	*	3
MD		Multidisciplinary2	*	*	*	4
AEC	LAF285	Indian Constitution	2	0	0	2
HL	LAF284	Principles of Management	3	0	0	3
SEC	CAF109	Technical Training -1	2	0	4	4
Total						20

Summer	Course Category	Course Code	Name of Course	L	T	P	Credits
1	SEC	CAF208	Technical Training 2	2	0	4	4

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Applicable Batch: 2023-26

Year: 3rd

Semester: V

Course Category	Course Code	Course Title	L	T	P	Credit
*DC	CAF312	Computer Algorithms	3	0	2	4
*DC	CAF313	Database Systems	3	0	2	4
DE	CAF34	Discipline Elective3	*	*	*	3
AEC	MEF483	Entrepreneurship and Start-ups	0	0	4	2
FE		Free Elective2	*	*	*	3
HL	LAF482	Intellectual Property Rights	3	0	0	3
Total						20

Year: 3rd

Semester: VI

Course Category	Course Code	Course Title	L	T	P	Credit
*DC	CAF314	Web Technologies	3	0	2	4
DE	CAF34	Discipline Elective4	*	*	*	3
HL	LAF381	Positive Psychology & Living	3	0	0	3
MD		Multidisciplinary3	*	*	*	4
FE		Free Elective3	*	*	*	3
Total						16

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Total Credit: 120

Discipline Electives (Min 12 credits to be taken)					
Course Code	Name of Courses	L	T	P	Credit
CAF341	Fundamentals of Data Science	3	0	0	3
CAF342	Python for Data Science	2	0	2	3
CAF343	Data Handling and Visualization	2	0	2	3
CAF344	Machine Learning Techniques	2	0	2	3
CAF345	Big Data Analytics	3	0	0	3
CAF346	Data Mining and Data Analysis	3	0	0	3

Multidisciplinary (min 12 credits to be taken)					
Course Code	Name of Courses	L	T	P	Credit
SAF106	Statistical Methods I	3	1	0	4
SAF107	Probability and Probability Distributions	3	0	2	4
SAF116	Statistical Methods II	3	0	2	4
SAF216	Statistical Quality Control	3	0	2	4
SAF218	Design of Experiments	3	0	2	4
SAF306	Multivariate Analysis and Nonparametric Methods	3	0	2	4
SAF307	Linear Statistical Models	3	0	2	4

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Free Electives(Min 9 credits to be taken)					
Course Code	Name of Courses	L	T	P	Credit
ECF483	Digital Image processing (ECE)	3	0	0	3
CSF381	Software Project Management	3	0	0	3
MEF481	Total Quality Management	3	0	0	3
CSF482	Introduction to Cyber security	3	0	0	3
ECF481	Analogue Electronics (ECE)	3	0	0	3
ECF482	Cellular Communication Network (ECE)	3	0	0	3
MEF482	Renewable Energy Sources	3	0	0	3
PEF492	Health, Safety and Environment in Industry	3	0	0	3
CEF382	Disaster Preparedness Planning & Management	3	0	0	3
CEF481	Environmental Management & Sustainability	3	0	0	3
CEF482	Natural Dynamics	3	0	0	3
CEF484	Resource Dynamics and Economic Implications	3	0	0	3
CSF482	Introduction to Cyber security	3	0	0	3
CSF345	Introduction to Data Science	3	0	0	3

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