



**TRIBHUVAN COLLEGE
OF
ENVIRONMENT & DEVELOPMENT SCIENCES
NALANDA UNIVERSITY CENTRE, NEEMRANA**



Program Structure

B.Sc. (Hons.) Data Science

Academic Year: 2025-26 Onwards

Department of Computer & Computational Sciences

**Tribhuvan College of Environment and Development Sciences
Nalanda University Centre
Neemrana, Rajasthan – 301705**



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B.Sc. (Hons) Data Science
Program Structure
(2025-26 Onwards)

Sr. No.	Heading	Particulars
1	Title of the course	B.Sc. (Hons) Data Science
2	Eligibility for admission	12th or Equivalent
3	Passing percentage	40%
4	Semesters	I to VIII
5	Level	UG
6	Pattern	04 years & 08 semesters CBGS
7	To be implemented from	Academic year 2025-26 (in a progressive manner)



B.Sc. (Hons) Data Science

(To be implemented from Academic Year- 2025-26)

SEMESTER I			
Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC101	Introduction to Data Science	Major	4 (3+0+1)
DSC102	Applied Mathematics-1	Major	4 (3+1+0)
DSC103	Problem Solving through C Programming	Major	4 (3+0+1)
SEC103	Excel for Data Analysis	Skill Enhancement	3 (2+0+1)
MDC102	Management Principles & Practices	Multidisciplinary	3 (3+0+0)
AEC101	English and Communication Skills - I	Ability Enhancement	2 (2+0+0)
VAC101	Constitutional Values, Rights and Duties	Value Added	2 (2+0+0)
Semester Credits			22



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SEMESTER II

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC201	Data Structure	Major	4 (2+1+1)
DSC202	Applied Mathematics-II	Major	4 (3+1+0)
DSC203	Artificial Intelligence	Major	3 (3+0+0)
SEC201	Python Programming	ncement	3 (2+0+1)
MDC202	Communication in Environment Sciences & Sustainability	Multidisciplinary	3 (3+0+0)
AEC201	English and Communications Skills-II	Ability Enhancement	2 (2+0+0)
VAC201	Introduction to Indian Knowledge Systems	Value Added	2 (2+0+0)
Semester Credits			21
UG Certificate Credits			43

SEMESTER III

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC301	Discrete Mathematics	Major	4 (3+1+0)
DSC302	Database Management System	Major	4 (2+1+1)
DSC303	OOP with C++	Major	4 (2+1+1)
SEC303	Data Visualization with Tableau and Power BI	Skill Enhancement	3 (2+0+1)
MDC301	Innovation and Entrepreneurship	Multidisciplinary	3 (2+1+0)
AEC301	Academic Writings	Ability Enhancement	2 (2+0+0)
VAC301	Health and Wellness	Value Added	2 (2+0+0)
Semester Credits			22



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SEMESTER IV

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC401	Computer Organization and Architecture	Major	3 (3+0+0)
DSC402	Theory of Computation	Major	3 (2+1+0)
DSC403	Design and Analysis of Algorithm	Major	4 (3+0+1)
DSC404	Java Programming	Major	4 (2+1+1)
AIG401 / IOT401	Machine Learning / Internet of Things	Minor	4 (2+1+1) / 4 (2+1+1)
AEC401	Basics of Intellectual Property Rights	Ability Enhancement	2 (2+0+0)
VAC401	Ethics and Values	Value Added	2 (2+0+0)
SIS401	Summer Internship	-	3 (0+0+3)
Semester Credits			25
UG Diploma Credits			90



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SEMESTER V

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC501	Operating System	Major	3 (3+0+0)
DSC502	Computer Networks	Major	4 (3+0+1)
DSC503	Software Engineering	Major	3 (3+0+0)
DSC504 / MOC501	Probability Statistics & Linear Programming / Optimization Theory and Algorithms	Major / MOOC	3 (3+0+0) / 3 (3+0+0)
AIG501 / IOT501	Deep Learning / Microcontroller Programming	Minor	4 (3+1+0) / 4 (2+1+1)
AIG502 / IOT502	Data Preprocessing and Feature Engineering / Sensors and Actuators	Minor	4 (2+1+1) / 4 (2+1+1)
Semester Credits			21

SEMESTER VI

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC601	Statistical Modeling and Data Analytics	Major	4 (3+0+1)
DSC602	Data Warehousing and Data Mining	Major	4 (3+0+1)
DSC603	Research Methodology	Major	4 (3+1+0)
AIG601 / IOT601	Time Series Analysis and Forecasting / Security in IoT Systems	Minor	4 (2+1+1) / 4 (2+1+1)
AIG602 / IOT602	Reinforcement Learning / IoT Data Analytics	Minor	4 (2+1+1) / 4 (2+1+1)
Semester Credits			20
UG Degree Credits			131



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SEMESTER VII

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DSC701 / MOC701	Business Intelligence / Generative AI and Large Language Models	Major / MOOC	3 (3+0+0) / 3 (3+0+0)
DSC702	Big Data Analytics	Major	4 (3+0+1)
AIG701 / IOT701	Natural Language Processing / IoT Communication Protocols	Minor	4 (2+1+1) / 4 (2+1+1)
AIG702 / IOT702	Image Processing / Edge and Fog Computing	Minor	4 (2+1+1) / 4 (2+1+1)
AIG703 / IOT703	Computer Vision / Recent Advancement in IoT	Minor	4 (2+1+1) / 4 (2+1+1)
DIS701	Project Based Learning	--	2 (0+0+2)
Semester Credits			21

Semester VIII

Course Code	Course Title	Type/Stream	Credit (L+T+P)
DIS801	Dissertation / Internship Progress Evaluation	--	02 (0+0+2)
DIS802	Dissertation and Viva Voce / Internship Report and Viva Voce	--	18 (0+0+18)
Semester Credits			20
B.Sc. (Hons) Computer Science Credits			172



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Major Stream Credits	81
Minor Stream Credits	32
Multidisciplinary Course Credits	09
Skill Enhancement Course Credits	09
Ability Enhancement Course Credits	08
Value Added Course Credits	08
Summer Internship	03
Project Based Learning	02
Dissertation	20
Total Credits [B.Sc. (Hons) Computer Science]	172

Note: -

- I. Practical's will be based on the theory courses taught during the semester (Only applicable to courses that include practical components).
- II. For gold medal a student has to pass in all the subjects (major, minor stream, multidisciplinary, skill enhancement, ability enhancement, value added courses)