

Structured Learning Pathway for Data Science Careers

The program builds students from mathematics, statistics and programming foundations to application development, machine learning, business data management, tools of data science and project-based academic readiness.

<p>4 Academic Levels</p>	<p>8+ Foundation Modules</p>	<p>2 Diploma Tracks</p>	<p>30 Advanced Course Bank</p>
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Program Flow

<p>Foundation Math, statistics, computational thinking, English and Python basics.</p>	<p>Diploma Programming, data structures, DBMS, Java and app development.</p>	<p>Data Science Machine learning, data science tools, business data and projects.</p>	<p>Degree Level AI, deep learning, software engineering, electives and specialization.</p>
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Foundation and Diploma Architecture

<p>LEVEL 1 Foundation Courses</p> <ul style="list-style-type: none"> Mathematics for Data Science I Statistics for Data Science I Computational Thinking English I Mathematics for Data Science II Statistics for Data Science II Programming in Python English II 	<p>LEVEL 2A Diploma in Programming</p> <ul style="list-style-type: none"> Database Management Systems Programming, Data Structures and Algorithms using Python Modern Application Development I Modern Application Development I - Project Programming Concepts using Java Modern Application Development II Modern Application Development II - Project System Commands 	<p>LEVEL 2B Diploma in Data Science</p> <ul style="list-style-type: none"> Machine Learning Foundations Business Data Management Machine Learning Techniques Machine Learning Practice Machine Learning Practice - Project Tools in Data Science Business Data Management - Project Business Analytics / Generative AI Option
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Academic Design:

The first half of the IIT BS pathway creates a strong base in quantitative reasoning, programming, databases, software application development, machine learning and data-driven problem solving through courses and projects.

Mathematics
Statistics
Python
DBMS
Java
Application Development
Machine Learning

Business Data
Data Science Tools

Advanced AI, Data Science and Applications

142

TOTAL CREDITS

Course Architecture - Degree Core, Electives and Career Pathways

Degree Level and Specialization Bank

The advanced stage strengthens professional capabilities through software engineering, AI search, deep learning, NLP, generative AI, algorithms, systems, security, economics, finance, analytics and interdisciplinary technology courses.

Degree Core Courses

1. Software Engineering	BSCS3001
2. Software Testing	BSCS3002
3. AI: Search Methods for Problem Solving	BSCS3003
4. Deep Learning	BSCS3004
5. Strategies for Professional Growth	BSGN3001

Specialization Options

Business Analytics	Option 1
Business Data Management - Project	Option 1
Introduction to Deep Learning and Generative AI	Option 2
Deep Learning and Generative AI - Project	Option 2
Project and practice-based portfolio development	Applied Track

Advanced Elective and Specialization Bank

AI, Data Science and Generative AI

Introduction to Big Data	BSDA5001
Large Language Models	BSDA5004
Introduction to Natural Language Processing (i-NLP)	BSDA5005
Deep Learning for Computer Vision	BSDA5006
Deep Learning Practice	BSDA5013
Mathematical Foundations of Generative AI	BSDA5002
Data Visualization Design	BSCS4001

Computing, Systems and Security

Advanced Algorithms	BSCS4021
Statistical Computing	BSMA3014
Computer Systems Design	BSCS3031
Programming in C	BSCS3005
Operating Systems	BSCS4022
Privacy and Security in Online Social Media	BSCS4003
Speech Technology	BSEE4001

Mathematics, Business and Strategy

Linear Statistical Models	BSMA3012
Mathematical Thinking	BSMA2001
Market Research	BSMS3002
Managerial Economics	BSMS3033
Game Theory and Strategy	BSMS4023
Corporate Finance	BSMS3034
Financial Forensics	BSMS4003

Interdisciplinary and Industry Applications

Algorithmic Thinking in Bioinformatics	BSBT4001
Big Data and Biological Networks	BSBT4002
Design Thinking for Data-Driven App Development	BSMS4002
Industry 4.0	BSMS4001
Applied machine learning projects	Project
Data-driven business problem solving	Applied
Professional and research portfolio building	Career

Graduate Outcome Architecture

This architecture builds strong capability in statistics, mathematics, programming, databases, machine learning, deep learning, generative AI, software engineering, analytics, data visualization, algorithms, systems and industry applications. It supports projects, internships and employability in modern data-driven roles.