भारतीय प्रौद्योगिकी संस्थान गुवाहाटी
INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

Credit Linked Program in Data Science *from* Daksh Gurukul - IIT Guwahati

Program Overview

The **Credit Linked Program in Data Science** is designed to provide students with a solid foundation in data science techniques, tools, and methodologies. It equips students with essential skills for data analysis, machine learning, and data visualization, preparing them for careers or advanced studies in the data-driven world.The program focuses on real-world applications, enabling students to work on practical data science problems, and gain hands-on experience in analyzing, processing, and interpreting data. By the end of the program, students will be well-versed in the fundamental concepts of data science and their applications across various domains.

Key Highlights:

- Learn directly from IIT Professors
- Access to IIT Guwahati Campus and Events
- Graduation ceremony at IIT Guwahati Campus
- Access to IIT Guwahati Daksh Gurukul Email Id and ID card
- Get 15 program credits
- Assured Placement Opportunities after Course Completion
- Access IIT Guwahati Daksh Gurukul Alumni Network

Course Objectives

Eligibility Criteria	12th Pass
Course Type	Part Time
Course Credits	15 Credits*
Type of Degree	Equivalent to a Minor
Live Classes from IIT Faculty	☑
Campus Events and Festivals	☑
Graduation Ceremony at the IIT Guwahati Campus	☑
Placement Opportunities	☑
Join Daksh Gurukul - IIT Guwahati Alumni Community	☑

**Credits earned will be deposited in your Academic Bank of Credit and shall be transferrable in a degree program as per NEP, NCrF, UGC, NCVET approved guidelines.*

Program Structure

15
Credits

3
Courses

36 Weeks (12 + 12 + 12)
Course Duration

Evaluations (Per Course)
2 Quiz | 1 End Semester | 1 Mid Semester

10 Hours
Weekly Commitment

4 Weeks (2 + 2)
Break Duration

Course Details

Code	Course	Credits	L	T	P	S
DA101	Introduction to Data Science	5	3	1	4	2
DA201	Machine Learning Fundamentals	5	3	1	4	2
DA301	Advanced Data Science Topics	5	3	1	4	2

L - Lectures | T - Tutorials | P - Practicals | S - Self Study

DA101 - Introduction to Data Science

This course introduces the fundamentals of data science, including data collection, cleaning, and preprocessing. Students will learn about exploratory data analysis, statistical methods, and the basics of data mining. The course emphasizes hands-on practice with Python and libraries such as Pandas and NumPy.

DA201 - Machine Learning Fundamentals

This course provides an in-depth understanding of the key machine learning algorithms used in data science, such as linear regression, decision trees, clustering, and neural networks. Students will learn how to apply these algorithms to real-world data, evaluate model performance, and improve predictions using feature engineering and cross-validation.

DA301 - Advanced Data Science Topics

This course explores advanced topics in data science, including deep learning, natural language processing (NLP), time series analysis, and big data technologies. Students will delve into more complex machine learning models such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), as well as study real-time data processing frameworks like Apache Spark.The course will also cover ethical considerations in data science and model interpretability, preparing students for cutting-edge research or industry applications.

Course Syllabus

TRIMESTER 1

DS101 | Introduction to Data Science

- Overview of Data Science and Its Applications
- Python Programming Fundamentals
- Data Types and Data Structures in Python
- Introduction to NumPy for Numerical Computing
- Data Collection Techniques
- Working with Pandas for Data Manipulation
- Data Cleaning and Preprocessing
- Exploratory Data Analysis (EDA)
- Data Visualization with Matplotlib and Seaborn
- Introduction to Statistical Concepts
- Probability Fundamentals
- Correlation and Regression Analysis
- Introduction to Data Mining
- Working with Time Series Data
- Final Project: Applying Data Science Techniques

TRIMESTER 2

DS201 | Machine Learning Fundamentals

- Introduction to Machine Learning
- Data Preparation for Machine Learning
- Linear Regression Models
- Logistic Regression for Classification
- Decision Trees and Random Forests
- K-Nearest Neighbors Algorithm
- Support Vector Machines (SVM)
- Clustering Techniques
- Introduction to Neural Networks
- Training Neural Networks
- Model Evaluation Metrics
- Overfitting and Underfitting
- Cross-Validation Techniques
- Feature Engineering and Selection
- Capstone Project: Building Machine Learning Models
- End-to-end project involving model selection, training, evaluation, and optimization.

TRIMESTER 3

DS301 | Advanced Data Science Topics

- Deep Learning Foundations
- Convolutional Neural Networks (CNNs)
- Recurrent Neural Networks (RNNs)
- Advanced NLP Techniques
- Transformers and Attention Mechanisms
- Time Series Analysis and Forecasting
- Introduction to Big Data Technologies
- Working with Apache Spark
- Real-Time Data Processing
- Scalable Machine Learning
- Model Interpretability and Explainable AI
- Ethical Considerations in Data Science
- AutoML and Hyperparameter Optimization
- Introduction to Reinforcement Learning
- Research Project: Advanced Applications in Data Science

Mentorship from Industry Experts

Shubhendu Shishir
SDE 3
amazon

Ashish Verma
SDE 2
Microsoft

Aman Raj
Senior Software Engineer
ORACLE

Kunal Singhal
SDE
Google

Soumak Maj
SDE 3
Walmart

Admission Process

1. Clear Entrance Test
2. Complete Onboarding
3. Start Learning

Fees Structure

	OPTION 1 **Upfront**	OPTION 2 **EMI** Through our NBFC partners
Entrance Test Fee	₹99	₹99
Secure Seat Fee (Non-Refundable)	₹4,000	₹4,000
Remaining Course Fee (Non-Refundable)	₹56,000	₹8,400 X 8 months
Total	₹60,099	₹71,299

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