

*Artificial  
Intelligence is  
changing Job  
Scenarios, are  
you prepared  
for the future?*

*Elimination of  
1.8 million jobs  
by 2018 but  
2.3 million jobs  
will be created  
by 2020.*

*Offsets deficit*

*– Gartner reporting in  
the Hindu in Oct 2017.*

*Re-skilling/  
Up-skilling/  
Re-tooling will  
ensure future  
relevance &  
employability*



**Come & Join.....**  
Indian Institute of Technology (ISM), Dhanbad  
in collaboration with Ativitti AI Technologies Pvt. Ltd. present  
**CERTIFIED COURSE on**



# Data Analytics for Machine Learning with R

**Line-up for rewarding careers in emerging technologies and become experts with IIT(ISM) Professional Development Program to gain knowledge, practical know-how to solve complex business problems.**

## Program Overview

This IIT Certified Intensive Lab Oriented Course is focused on building industry ready Data Scientist who can work on machine learning, data mining, and statistical modelling for predictive and prescriptive enterprise analytics. This program will enable you to develop deep understanding of and experience with machine learning and data analysis. Familiarity with common tools for data management and analysis including machine learning can be applied on real world problems for building predictive models using machine learning on your own.

R is the most popular data analytics tool owing to it being open-source, its flexibility, packages and community. "R" wins on Statistical Capability, Graphical capability, Cost, rich set of packages and is the most preferred tool for Data Scientists.



**IIT (ISM) 6 day (48 hours) Full Time, Lab Oriented PROFESSIONAL DEVELOPMENT PROGRAM on 'DATA ANALYTICS for MACHINE LEARNING.'**

IBM Predicts Demand For Data Scientists Will Soar **28% By 2020**, the number of jobs for all US data professionals will increase by **364,000 openings to 2,720,000** according to IBM

Top notch IIT professors to train the industry professionals imparting real-world skills to improve their capabilities in dealing with emerging technologies in areas of Data Analytics for Machine Learning & helping re-engineer the business sense and the economy.



# Program Highlights

- ✓ Especially developed in collaboration with academia & AI Industry experts to reskill and retool working professionals towards Artificial Intelligence space, this program offers the following benefits:
- ✓ Top notch IIT Faculty Led Sessions: 6days/48 Hours of Intensive Classroom & Lab oriented Classes. Program content & structure designed by IIT (ISM) in conjunction with Industry
- ✓ Real-life Case: Live project based on any of the selected use cases, involving implementation of R tool providing hands-on exposure
- ✓ Assignments: Each class has practical assignments which shall be finished before the next class and helps you to apply the concepts taught during the class.
- ✓ Access to LMS: You get access to Learning Management System (LMS) where presentations, quizzes, installation guide & class recordings are there.
- ✓ 24 x 7 Expert Online Support team to resolve all your technical queries
- ✓ Certification: IIT (ISM) certifies you as a 'Data Analyst for Machine Learning' based on your project performance, reviewed by our expert panel.



## Course Delivery Methodology

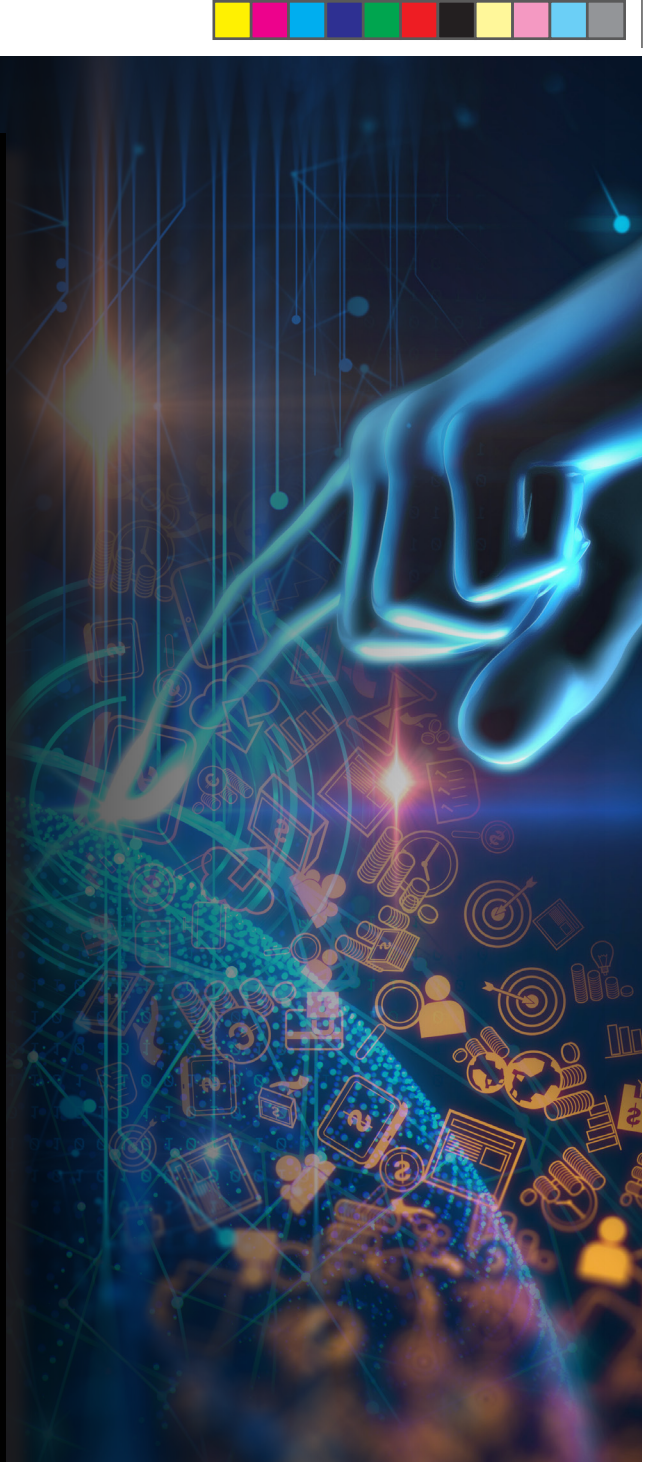
(48 hours of intensive classroom & lab lessons focussed over 6 days)

Full-time classroom based course led by IIT faculties focused on Problem-based-learning methodology allowing students to become more active learners as they figure out which information is needed to solve a problem. There are many advantages to students in using this approach, as it allows them to:

- Develop transferable skills and enhance their employability
- Improve communication and team working

- Practice research and information processing
- Develop Machine Learning analytical skills

All enrolled participant's will be provided access to other learning aids, reference materials, assessments and hands on workshops as appropriate. During the course students will also be allocated Project work that is designed to provide adequate practical and hands on experience in implementing the concepts learned during the course.



# Program Content

**Data Analytics for Machine Learning with R is organized in twelve modules over 6 full days. The course will be in two parts**

- **Introduction to R, Data Visualization & statistics with hands on lab sessions.**
- **Building predictive models & introduction to latest tools/ technologies for solving real-life problems.**

## DAY 1 BASICS OF ARTIFICIAL INTELLIGENCE, MACHINE LEARNING & DATA ANALYTICS WITH R

SESSION	METHODOLOGY	TIME
<ul style="list-style-type: none"> <li>• Introduction to Artificial Intelligence (Evolution of Technology)</li> <li>• Branches of Artificial Intelligence and what is Machine Learning.</li> <li>• Supervised, Unsupervised &amp; Reinforcement Learning.</li> </ul>	Tutorial: Machine Learning & Activity	09:00-10:45
<ul style="list-style-type: none"> <li>• How machine learning can be applied in technology, science, trading etc.</li> </ul>	Discussion about the Machine Learning	11:00-12:00
<b>Lunch</b>		12:00-01:00
<ul style="list-style-type: none"> <li>• Comparison B/W R, Python &amp; SAS.</li> <li>• Why Learn R?</li> <li>• Introduction to R.</li> <li>• R Overview, R Interface, R Work Space, Help, Variables, Programming</li> </ul>	Discussion about the R programming	01:00-02:45
<ul style="list-style-type: none"> <li>• Install R.</li> <li>• Running a few simple programs.</li> </ul>	Lab Session	03:00- 05:00

## DAY 2 BASIC PROGRAMMING IN R

SESSION	METHODOLOGY	TIME
<ul style="list-style-type: none"> <li>• Some Common Terms &amp; Basics in R <ul style="list-style-type: none"> <li>• Data Types</li> <li>• Importing Data</li> <li>• Keyboard Input, Database Input, Export Data</li> <li>• Variable Labels, Value Labels, Missing Data, date Values</li> </ul> </li> </ul>	Lab - Basics of R.	09:00-10:45
<ul style="list-style-type: none"> <li>• R Iteration &amp; Conditional Constructs.</li> <li>• R Packages: installation and Usages.</li> </ul>	R programming Lab	11:00-12:00
<b>Lunch</b>		12:00-01:00
<ul style="list-style-type: none"> <li>• Data Manipulation <ul style="list-style-type: none"> <li>• Creating New Variable</li> <li>• Operators</li> <li>• Built-in functions</li> <li>• Control Structures</li> <li>• User Defined Functions</li> <li>• Sorting Data</li> <li>• Merging Data</li> <li>• Aggregating Data</li> <li>• Reshaping Data</li> <li>• Sub-setting Data</li> <li>• Data Type Conversions</li> </ul> </li> <li>• Hands On Session</li> <li>• Some Advance Programs using Data from R Data repository.</li> </ul>	Discussion about the R programming  Lab	01:00-02:45  03:00-05:00

## DAY 3 DATA VISUALIZATION AND BASIC STATISTICS

SESSION	METHODOLOGY	TIME
<ul style="list-style-type: none"> <li>• Introduction to Data Visualization</li> <li>• Basic Graphics: line, bar, box, histogram plots</li> <li>• Trellis</li> <li>• Scatter plots</li> </ul>	Instructor Data visualization	09:00-10:45
<ul style="list-style-type: none"> <li>• Basic Statistics: mean median, mode, percentile, quantile</li> <li>• Frequency Distribution, Histogram Analysis</li> </ul>	Instructor Machine Learning	11:00-12:00
<b>Lunch</b>		12:00-01:00
<ul style="list-style-type: none"> <li>• Data: Distribution</li> <li>Types of Data Distribution</li> <li>Hypothesis Testing</li> </ul>	Instructor discuss about Data analysis in R Lab Session	01:00-02:45 03:00-05:00

## DAY 4 BASIC STATISTICS

SESSION	METHODOLOGY	TIME
<ul style="list-style-type: none"> <li>• Basic Statistics using R <ul style="list-style-type: none"> <li>• Sample Data: Summarizing Samples</li> <li>• Cumulative Statistics</li> <li>• Summary Statistics for Data Frames</li> <li>• Summary Statistics for Matrix objects</li> </ul> </li> </ul>	Instructor Basics of Statistics in R	09:00-10:45
Hands on Practice	Instructor Machine Learning	11:00-12:00
<b>Lunch</b>		12:00-01:00
<ul style="list-style-type: none"> <li>• Basic Statistics using R <ul style="list-style-type: none"> <li>• Summary Statistics for Lists</li> <li>• Summary for Table objects</li> <li>• Hands on Practice</li> </ul> </li> </ul>	Instructor Basics of Statistics in R Lab Session	01:00-02:45 03:00-05:00

## DAY 5 BUILDING PREDICTIVE MODEL

SESSION	METHODOLOGY	TIME
<ul style="list-style-type: none"> <li>• Introduction to Predictive Models <ul style="list-style-type: none"> <li>• Linear Regression</li> <li>• Logistic Regression</li> <li>• Decision Tree</li> <li>• Random Forest</li> </ul> </li> </ul>	Instructor Predictive Model	09:00-10:45
<ul style="list-style-type: none"> <li>• Implementation of Predictive Models using R</li> </ul>	Instructor Machine Learning Algorithms	11:00-12:00
<b>Lunch</b>		12:00-01:00
<ul style="list-style-type: none"> <li>• The Art of Feature Engineering. Pattern recognition</li> <li>Principal component analysis.</li> </ul>	Instructor discuss about the Feature Engineering Lab Session	01:00-02:45 03:00-05:00

## DAY 6 INTRODUCTION TO LATEST TOOLS & TECHNOLOGIES

SESSION	METHODOLOGY	TIME
<ul style="list-style-type: none"> <li>• Classification &amp; Clustering <ul style="list-style-type: none"> <li>• Supervised Learning <ul style="list-style-type: none"> <li>K- Nearest Neighbors</li> </ul> </li> <li>• Unsupervised Learning <ul style="list-style-type: none"> <li>K – means Clustering</li> </ul> </li> <li>• Reinforcement Learning</li> </ul> </li> </ul>	Instructor Machine Learning & Activity	09:00-10:45
<ul style="list-style-type: none"> <li>• Implementation of Classification &amp; Clustering Using R</li> </ul>	Instructor Machine Learning	11:00-12:00
<b>Lunch</b>		12:00-01:00
<ul style="list-style-type: none"> <li>• Introduction to Neural Networks</li> <li>• Introduction Deep Learning.</li> <li>• Implementation of Neural Network using R <ul style="list-style-type: none"> <li>• Multi layer Perceptron (MLP)</li> <li>• Support Vector Machine (SOM)</li> </ul> </li> </ul>	Instructor Machine Learning	01:00-02:45 03:00-05:00



## FACULTY



**DR. SUSANTA MUKHOPADHYAY**  
Associate Professor  
Department of Computer  
Science and Engineering,  
Indian Institute of Technology (ISM)  
Dhanbad



**DR. DIPANKAR RAY**  
System Programmer  
Indian Institute  
of Technology  
(ISM)  
Dhanbad



**DR. SUBHASHIS CHATTERJEE**  
Associate Professor  
Department of Applied  
Mathematics  
Indian Institute of Technology (ISM)  
Dhanbad

## Program Outcome

On completion of the program, students will have developed a world-class skillset in their selected technology domain that provides "Employability Enhancing" skills and capabilities thereby substantially increasing their earning potential and compensation benchmarks.

Candidates can expect to be hired in positions such as:

- Machine Learning Specialist
- Data Science Researcher
- Data Engineer

### IIT (ISM) CERTIFICATE

On the payment of course fees of (₹80,000/- plus GST @ 18% = ₹94,400/-; For international Students : US\$ 1500 plus GST (@18%) and upon satisfying the requisite attendance and other evaluation criteria of the Professional Development Program in Data Analytics for Machine Learning with R, participants will be awarded a Certificate of Completion issued by IIT (ISM), Dhanbad.

## Prerequisites

- Mathematics as a subject up to Class XII.
- Programming knowledge will be preferable
- Though full-fledged Lab access will be provided at IIT (ISM) facility, it will be preferable to bring your own laptop

### HOW TO APPLY

For admissions, students can register at our website [www.ativitti.in](http://www.ativitti.in)

**Total Tuition Fee**  
₹80,000  
plus GST @ 18%

For international Students:  
US\$ 1500  
plus GST @18%

### For Course Payment

Please pay to IIT (ISM) account, details of which are as follows:  
Name of Account Holder : IIT(ISM), Dhanbad  
Bank Name : CANARA BANK  
Bank Account No. : 0986101009746, IFSC Code : CNRB0000986  
Branch Address : Canara Bank, Saraidhela Branch, Shree Shyam Bhawan, Main Road, Distt. Dhanbad, Pin 828127, Jharkhand  
MICR Code : 826015003

### DURATION OF PROGRAM

14th -19th May 2018  
Course Fee: ₹80,000/- plus  
GST @18% = ₹94,400 ;

For international Students:  
US\$ 1500 plus GST @18%

For Outstation Students, (at their own cost)  
their stay can be arranged at negotiated rates at  
Hotel Crown Plaza, Okhla Phase-1, New Delhi

### DURATION

6 Days/48-Hours  
From Monday till Saturday,  
every day from 9:00AM to 05.00PM

## WHO SHOULD ATTEND

- ❖ Professionals who want to learn the practical aspects of data handling across applicable areas like Machine Learning, IT Services, Marketing, eCommerce, Research etc.
- ❖ Project Managers, Business Managers and Senior Leaders managing large data analytics machine learning based projects interested in gaining understanding of AI/ML domain.
- ❖ Executives, young professionals & managers with analytical aptitude who are interested in and want to learn Data
- ❖ Individuals who aspire to switch to or embark on a career in Business Analytics & Machine Learning

## ELIGIBILITY CRITERIA

- ✓ For Indian Participants – Graduates (10+2+3) or Diploma Holders (only 10+2+3) from a recognized university (UGC/ AICTE/State Government) in any discipline.
- ✓ For International Participants – Graduation or equivalent degree from any recognized University or Institution in their respective country.
- ✓ For Indian and International Participants – Interns or Working professionals.



ATIVITTI AI TECHNOLOGIES  
PRIVATE LIMITED

### Address for Communication

Ativitti AI Technologies Pvt. Ltd, IIT (ISM)  
Centre, 4th Floor, Unit # 401, NBCC Centre,  
Plot # 2, Okhla Phase -1, New Delhi 110020

For any enquiry, please write to us at:  
[enquiry@ativitti.ai](mailto:enquiry@ativitti.ai)  
Call us at: +91- 9267999473;  
+91- 9267994573