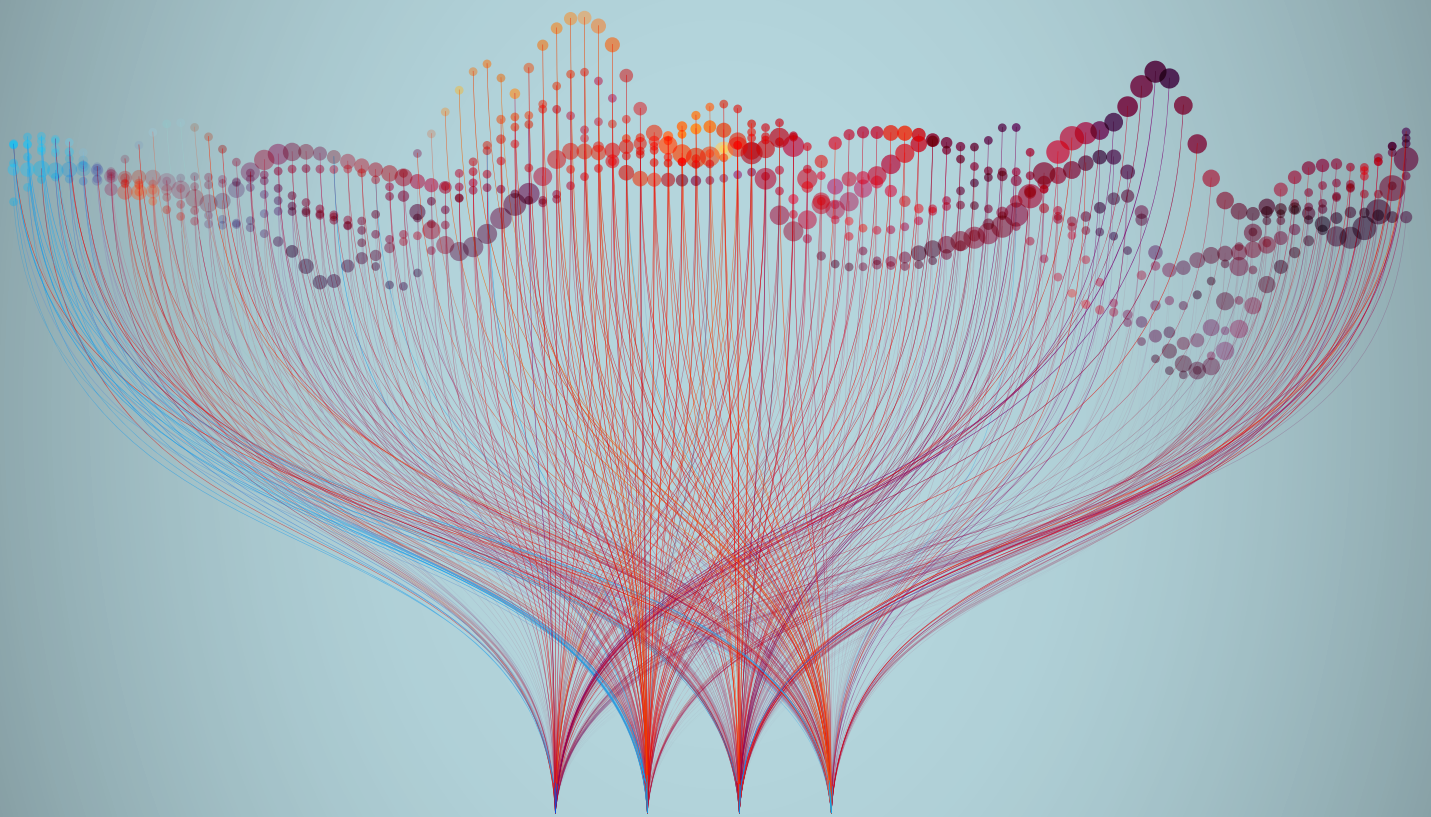भारतीय प्रबंध संस्थान कोषिक्कोड
Indian Institute of Management Kozhikode
Globalizing Indian Thought

CERTIFICATE PROGRAMME IN
DATA SCIENCE

3 MONTHS, ONLINE

Overview

Today, data is at the heart of every successful organisation, with data professionals playing a pivotal role in business decisions. The World Economic Forum predicts that by 2022, skills will be more important than job titles as the labour market moves towards multi-faceted professionals rather than singularly specialised ones. Keeping in mind this growing trend, now is the time to upskill so that the world is your oyster.

To help you learn the skills required to be successful in a data-driven world, IIM Kozhikode has launched the **Certificate Programme in Data Science.**

This programme is designed for professionals from any domain looking upskill in order to advance their careers. It will provide you with tools that will give you an insight into modern data science practices. Understand how to quantify data, implement algorithms, use data tools for problem-solving, and how to gain a better understanding of how data can improve your business and drive revenue.

Starts On

October 28, 2021

Duration

3 Months (4-5 hours/ week)

Format

Online Video Lectures
3 Webinars with Faculty

Programme Fee

INR 71,750 + GST

Who is this Programme for?

This cutting-edge programme is a must-have skillset for:

- Business Leaders who look to data science to drive organisational transformation across teams.
- Professionals looking to understand Data Science methodologies and implement them to achieve team/ organisation goals.
- Project Leaders who want to lead data-driven projects and teams within their organisation.
- Professionals who aspire to lead data-driven disruptions in businesses across various domains like Retail, Pharma, Healthcare, Material Sciences, etc.

Programme Director

Prof. Anjan Kumar Swain, PhD

Professor, Information Systems

Professor Swain has a PhD from the University of Sheffield, United Kingdom. His research interests include managerial implications of state-of-the-art methods of digital transformation, blockchain technology, artificial intelligence and other upcoming technologies. His publications are in the fields of mathematical modelling, Space Robotics, AI-based methods for decision-making, and multi-criteria decision-making, amongst others.

Prof. M.P. Sebastian, PhD

Professor & Area Chair, Information Systems

Professor Sebastian received both his masters degree and PhD from the Indian Institute of Science, Bangalore. His research interests include artificial intelligence, machine learning, cybersecurity, healthcare ICT etc. He has published many research papers in reputed journals. He has guided many PhD candidates and is a reviewer for journals such as Nature Communications, International Journal of Medical Informatics, Government Information Quarterly among others.

> **Data is an important asset for every organisation, helping today's business leaders to take decisions based on facts and figures. Data science is emerging as one of the most promising career paths for business professionals. This course lays the foundation for businesses to arrive at the most appropriate decisions in increasingly complex and dynamic business environments.**
>
> - M.P. Sebastian and A.K. Swain, Professors, Information Systems

Programme Modules

MODULE 1: Data Analytic Thinking

- Outline the importance of data in making business decision
- Describe types of data and data catagories
- Describe the people and processes involved in data cycle
- Compare the characteristics of small data and big data
- Discuss the importance of data analytic for business decision making
- Identify actions taken during the cross industry standard process of data mining
- Discuss the data science links with other discipline

MODULE 2: Data Analysis with Excel

- Describe the benefits of using Microsoft Excel for making data-driven decisions
- Calculate stastical averages using Microsoft Excel functions
- Apply basic Microsoft Excel tools for data analysis
- Perform different analysis on data using techniques like what-if analysis, goal seek
- analysis, sensitivity analysis
- Use filter function to remove duplicates and calculate subtotals

MODULE 3: Data Analysis with Python

- Review and delineate the evolution and purpose of Python
- Describe and set up Python development environment
- Practice coding with basic Python commands, operators and conditional statements
- Explore and apply Python data structure concepts such as array, list, tuple, set and dictionary
- Import python modules and packages
- Import Python libraries such as NumPy, Pandas

MODULE 4: Data Analytic Thinking

- Describe the need of data preparation
- Describe the sources of data
- Evaluate and improve quality of data
- Differentiate between hypothesis testing and exploratory data analysis
- Explore categorical variables

MODULE 5: Types of Data Analytics

- Describe spectrum of business analytics
- Describe application of descriptive analytics
- Draw conclusions from a given set of data by using descriptive analytic techniques
- Describe application of diagnostics analytics
- Draw conclusions from a given set of data by using diagnostics analytic techniques
- Describe application of predictive analytics
- Draw conclusions from a given set of data by using predictive analytic techniques
- Describe application of prescriptive analytics
- Draw conclusions from a given set of data by using prescriptive analytic techniques

MODULE 6: Data Modeling: Predictive Modeling

- Discuss Cross Industry Standard Process in Data Modeling
- Discuss a Generic data modeling process
- Apply prior knowledge the address the business problems

MODULE 7: Data Modeling: Fitting a Model

- Discuss overfitting modeling
- Explain data driven modeling
- Describe decision tree and its types
- Design a classification tree to resolve uncertainties

MODULE 8: Data Clustering

- Describe concepts of clustering and visualize data
- Apply K-means algorithm to cluster the data
- Apply Z-score method to standardise the data
- Interpret the cluster centre and create product segment
- Use Dendrogram and Elbow Curve for estimating the number of clusters
- Estimate the quality of clustering using Silhouette scores

MODULE 9: Data Clustering: Hierarchical clustering

- Explain the limitations of K-means clustering
- Apply hierarchical clustering to the product segmentation and the Gaussian distributed dataset
- Describe the DBSCAN clustering technique and its benefits
- Apply K-Means, Hierarchical and DBSCAN clustering to the moon dataset
- Discuss the limitations of clustering algorithms and techniques to address them

MODULE 10: Association and Co-occurences: Items That go Together

- Discuss correlation and its characteristics
- Perform association analysis by generating general association rules between market variables
- Apply association rule to restrict frequently appearing data items
- Apply association rule to identify frequency of conditional probability

MODULE 11: Association and Co-occurences: Measuring Suprises

- List the measures of surpise
- Use Naïve method for measuring leverage
- Use Apriorism algorithm for measuring leverage

MODULE 12: Project Brief and Course Summary

Note: Modules/ topics are indicative only, and the suggested time and sequence may be dropped/ modified/ adapted to fit the total programme hours.

Programme Highlights

3-hours of Live Sessions with IIM Kozhikode Faculty

121 Video Lectures and Demos

32 Assignments and 7 Discussions

Office Hours with an Industry Expert

Peer Learning and Feedback

1 Final Project

Learning Outcomes

Outline the importance of data in making a business decision.

Describe the people and processes involved in the data cycle.

Get guided, hands-on experience with Excel and Python to analyse data.
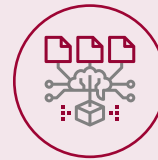
Learn how to use descriptive, predictive and prescriptive analytics to drive growth.

Describe the spectrum of data analytics in business decisions.

Use analytics to extract insights out of datasets and draw conclusions.

Understand hierarchical clustering and get the big picture of large data sets.

Past Participant Profiles

Work Experience

44%
0 - 05 Years

21%
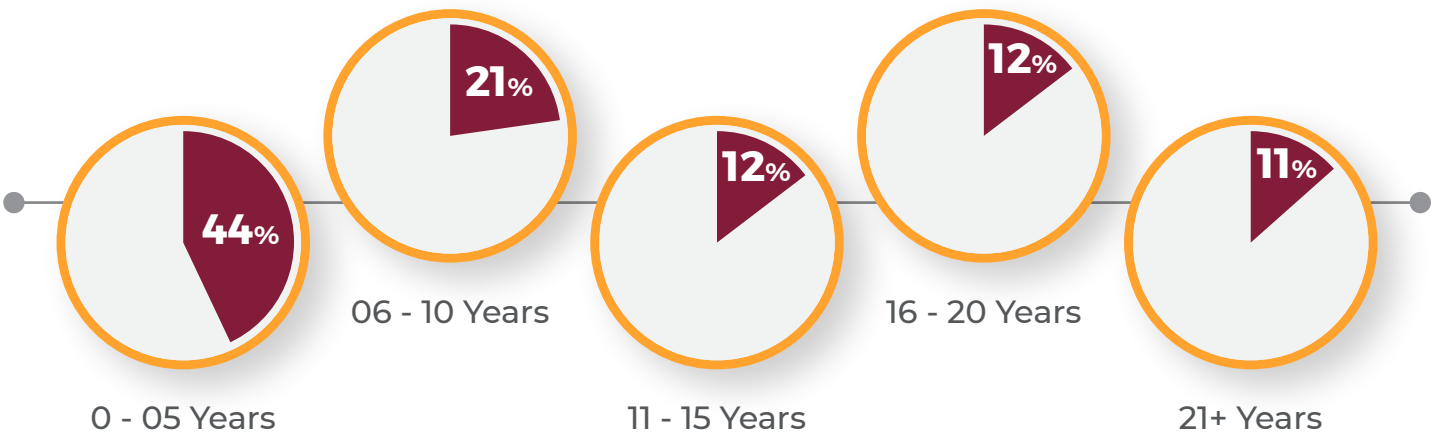06 - 10 Years

12%
11 - 15 Years

12%
16 - 20 Years

11%
21+ Years

Industries

10%
Manufacturing

6%
Pharmaceuticals /
Biotechnology / Healthcare

45%
Information Technology /
Services

25%
Banking, Finance
& Consulting

14%
Others*
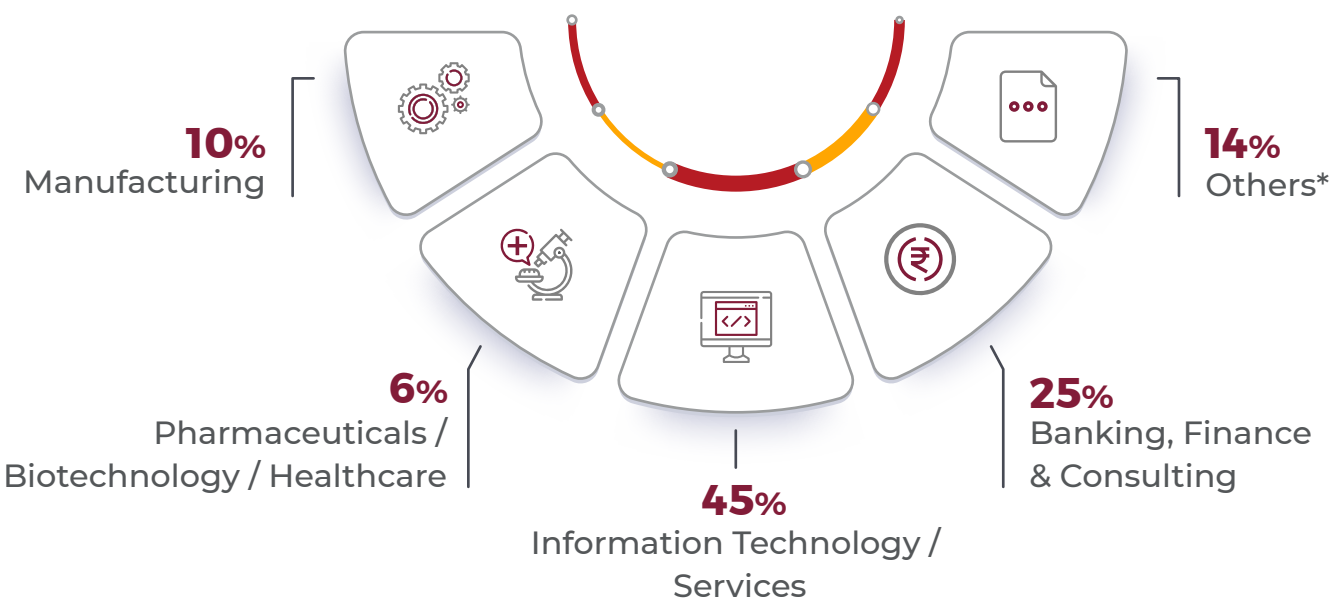
Others include Education, Shipping, Media, E-commerce etc.

Functions

Information
Systems/
Technology
39%

20%
Consulting /
Finance &
Accounting

Marketing
& Sales
9%

13%
Operations &
Manufacturing

Others#
19%

#Others include Government Affairs, Risk & Compliance, HR, Teaching, etc.

Certificate

Participants will be awarded a Certificate from IIM Kozhikode on the successful completion of the programme with a 70% of score. The evaluation methodology is at the discretion of the faculty and includes online exams, case analysis, assignments and any other components as decided by the faculty.

Note: All certificate images are for illustrative purposes only and may be subject to change at the discretion of IIM Kozhikode.

Programme Details

Programme Start October 28, 2021

Programme Fee INR 71,750 + GST

Instalment Schedule

	Remarks	Amount
Booking Amount	Within 7 days post selection	INR 17,750 + GST
Instalment I	Dec 02, 2021	INR 27,000 + GST
Instalment II	Jan 04, 2022	INR 27,000 + GST

Note:
- Admissions are on a first-come, first-serve basis.
- The actual programme schedule will be announced closer to the programme start.

Eligibility

- Graduate or Diploma (10+2+3) in any discipline

Programme Format

- Online Video Lectures
  3 Webinars with Faculty

Application Requirements

Your Graduation/Degree:

You can submit a scanned copy of ANY ONE of: Degree certificate, provisional Degree certificate, marks transcript or score transcript.
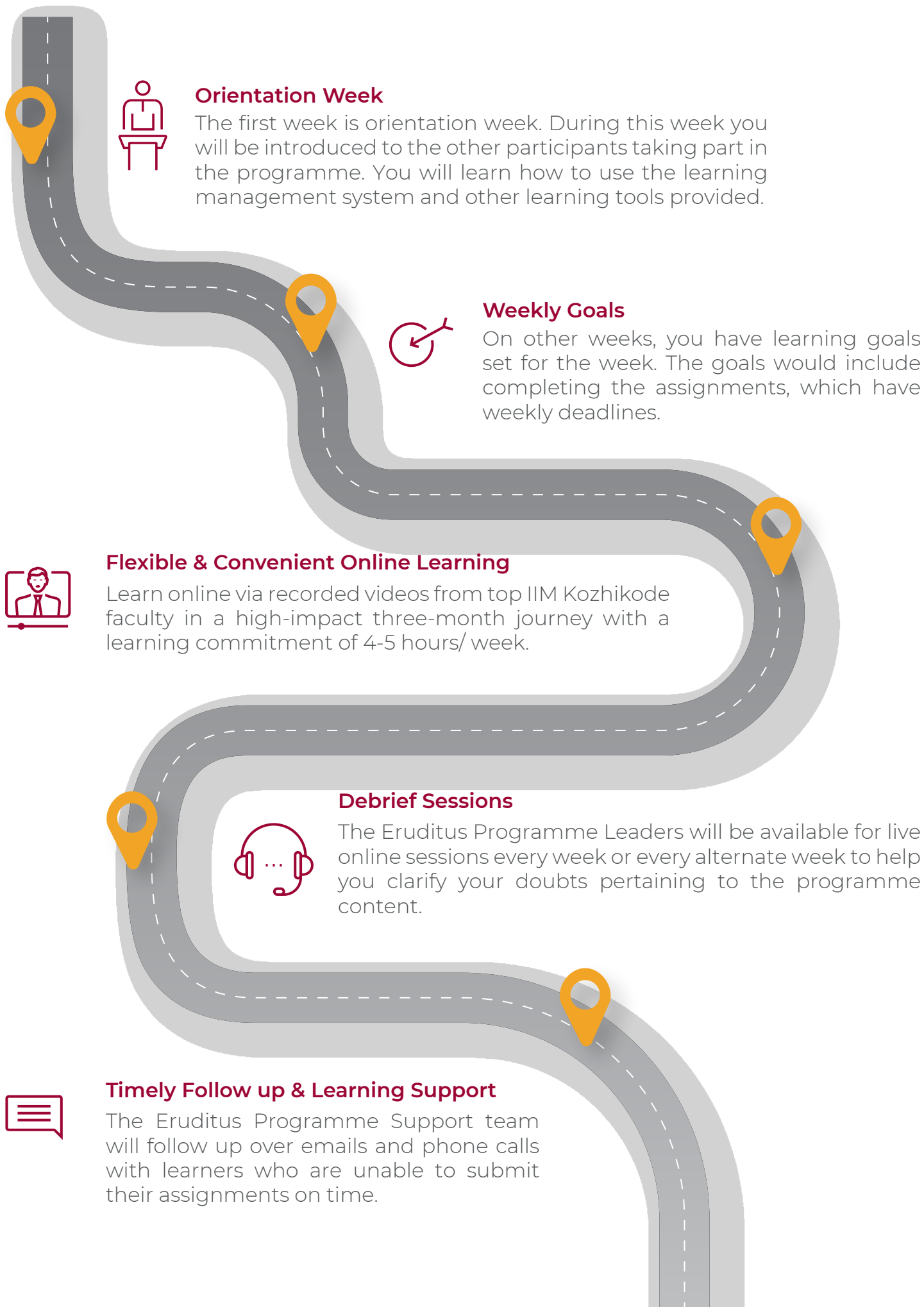
Programme Application Link

Click here to apply to the programme.

Finance options available. Click here to learn more.

For more information, please email at iimk@eruditus.com

Note: Admissions are on a first-come, first-serve basis.

Learning Journey

Orientation Week
The first week is orientation week. During this week you will be introduced to the other participants taking part in the programme. You will learn how to use the learning management system and other learning tools provided.

Weekly Goals
On other weeks, you have learning goals set for the week. The goals would include completing the assignments, which have weekly deadlines.

Flexible & Convenient Online Learning
Learn online via recorded videos from top IIM Kozhikode faculty in a high-impact three-month journey with a learning commitment of 4-5 hours/ week.

Debrief Sessions
The Eruditus Programme Leaders will be available for live online sessions every week or every alternate week to help you clarify your doubts pertaining to the programme content.

Timely Follow up & Learning Support
The Eruditus Programme Support team will follow up over emails and phone calls with learners who are unable to submit their assignments on time.

About IIM Kozhikode

IIM Kozhikode ranks 15th in Asia Pacific and #101+ globally in the QS World University Global Executive MBA Rankings 2020. Since its inception, IIM Kozhikode has successfully carved its niche in the area of management education, through a judicious blend of academics and real-world practice. The Institute continually adapts to the rapid influx of changes in the Indian business landscape by providing cutting-edge Management Development Programmes with innovative pedagogy and content to impart industry-relevant knowledge and skills to its executive education participants. Last year, IIM Kozhikode trained more than 3,400 executives through a wide gamut of programmes uniquely crafted for agile minds interested in thought-provoking questions and learning centred on business transformation and growth.

About Eruditus

Eruditus Executive Education offers customised and open programmes in India, Singapore, Dubai and other global locations in collaboration with MIT Sloan, Columbia Business School, INSEAD, Harvard Business School (HBS), Kellogg Executive Education, Berkeley Executive Education, Wharton Executive Education, IIM Lucknow Executive Education, IIM Calcutta Executive Education and Emeritus. Our world-class executive education programmes, supported by eminent programme experts, provide an immersive learning experience integrated with actionable insights and practical business applications. The meticulously curated programmes are delivered in a different range of formats; in-class, online, as well as blended programmes. Our extensive portfolio also includes short 2-4 day in-class workshops, online courses of 2-3 months duration as well as comprehensive learning journeys that run over 6-9 months, customised to an organisation's requirement.

Apply for the programme here

APPLY NOW

For registration and any other information,
please get in touch with us at **iimk@eruditus.com**

WhatsApp an Advisor On +91 7208889990*

* This number does not accept any calls. Please message your queries.

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