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

ADVANCED DATA ANALYTICS FOR MANAGERS

STARTS SEPTEMBER 30, 2022 I 10 MONTHS I LIVE ONLINE SESSIONS

BATCH #5

IIM Kozhikode Advantage

IIM Kozhikode programmes designed by world-class faculty with their cutting-edge thought leadership and industry-leading insights empower participants to manage and lead complex business challenges with confidence and informed decision-making ability. Our growing global footprints acknowledged and accredited by leading institutions of the world are a testimony to growth we have achieved in our 25-year journey of academic excellence.

At this juncture, it is also pertinent to share that both future and past are integral to the path taken by an institution on this journey of excellence. Having a wide, far-seeing vision is not an indulgence but an activity that is necessary to give meaning to our present, to give this Institution a sense of purpose, direction and imagination. That is why we have chosen to think in terms of what IIM Kozhikode will be able to contribute to India and the world some three decades from now with 'Vision 2047: Globalizing Indian Thought'. The sheer scale, scope and potential impact that India will have on 21st century business makes us believe that this is a legitimate aspiration.

Further, it is no secret that Data is one of the most important commodities in the world today and the knowledge of how to analyse, extrapolate and segregate it is of paramount importance across industries. The right use of data can help propel your organisation and career to new heights, to make the most of this commodity, the Indian Institute of Kozhikode has launched the Advanced Data Analytics for Managers programme. This programme will empower Team Leads, Managers and Business Head to elicit the most out of data through topics such as Data Visualisation, Statistical Inferences, Basics of Modelling, Text Mining & Social Media Analysis among others. This programme curriculum is designed around the importance of being industry-ready in a data-driven future.

Wishing you all the very best!

Debashis Chatterjee

Prof. Debashis Chatterjee,
Director IIM Kozhikode

Overview

Starts On
September 30, 2022*

Duration
10 Months

Format
Live Online Sessions

Programme Fee

INR 1,81,500 + GST

Begins with an introduction to the platform

The concept of data and analytics is now part of the business lexicon. Yet only a minority of business managers have perfected the practice of using data to manage information and performance.

IIM Kozhikode's Professional Certificate Programme in Advanced Data Analytics for Managers is a guidepost to spur your understanding of analytics. This programme will help you manage and maximize a company's data assets, integrate analytics into decisions and processes, and power innovation for businesses.

This programme's focus on real-world examples, case studies, and practical sessions will ensure that you build a strong foundation in business analytics and make high-output business decisions.

The Indian analytics industry is predicted to grow to a market size of $98.0 billion by 2025 and $118.7 billion by 2026.
(Analytics India Magazine, 2021)

By 2024, over 50% of enterprises will replace outdated operational models with cloud-centric models that facilitate rather than inhibit organizational collaboration, resulting in better business outcomes.
(IDC, 2021)

The most in-demand skills currently are Data Analytics, Digital Literacy, Sales & Influencing, Data-based Decisions and Innovative Thinking.
(Economic Times, 2021)

Who is this Programme for?

- This programme is best suited for mid to senior-level professionals seeking to gain cutting-edge analytical skills to establish a career in Business data Analytics and Data Science.

- Professionals looking to develop a data-driven decisionmaking approach and the ability to leverage analytics for business growth and scale will also benefit from the programme.

> **Data reveals impact, and with data, you can bring more science to your decisions.**
>
> - Matt Trifiro, CMO, Vapor IO
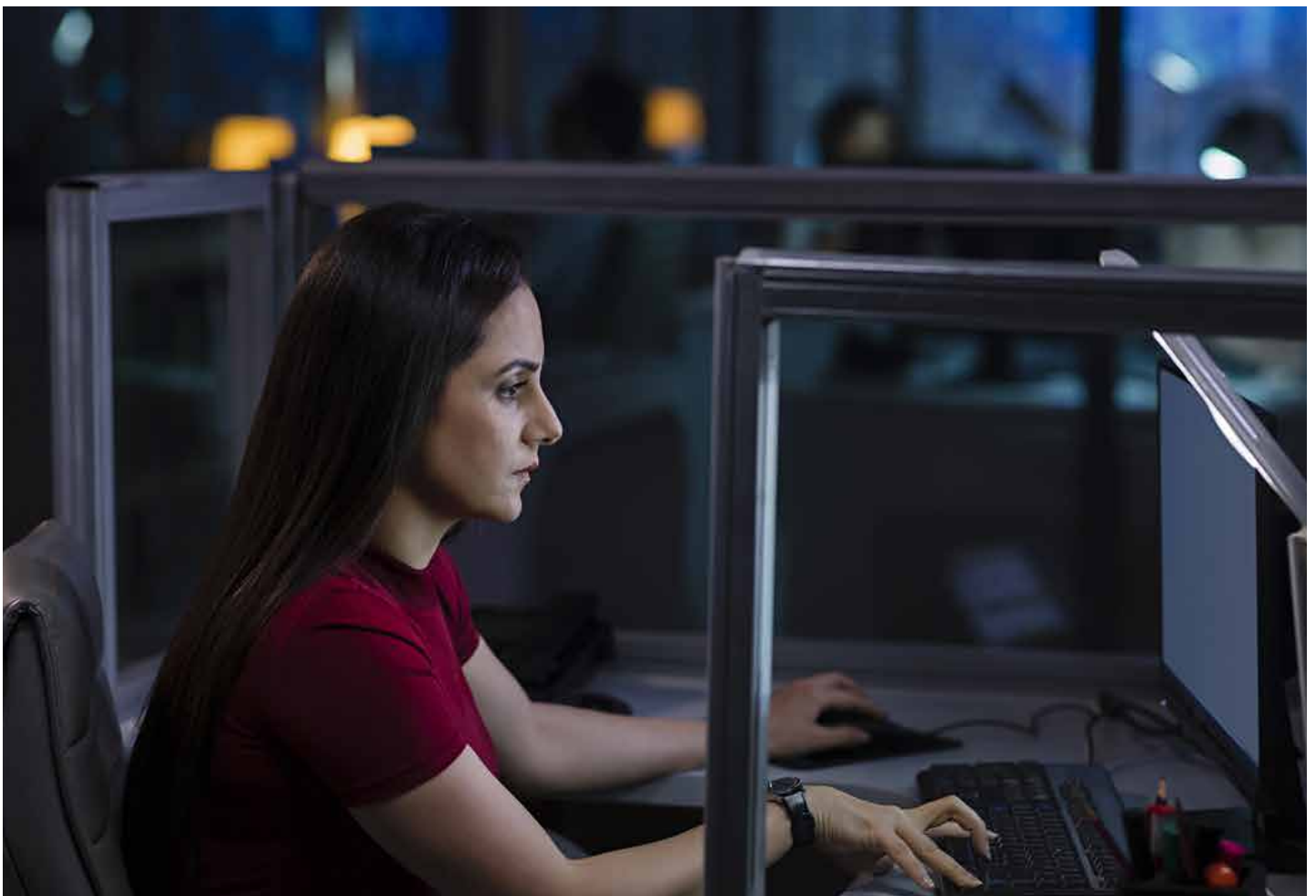
Programme Highlights

IIM Kozhikode's Professional Certificate Programme equips participants with a comprehensive understanding of advanced data science tools so that they can effectively manage and lead high-performing data science and analytics teams.

Develop a data-driven mindset to manage, visualise and analyse data effectively

Hands-on exercises using real-world data sets & practical sessions

Immersive learning journey with real-world case studies, business decision-related projects & Capstone Project

Taught by eminent IIM Kozhikode faculty, Emeritus global faculty & renowned industry experts

Certificate of Completion from IIM Kozhikode, one of India's Leading B-Schools

Receive Lifelong Executive Alumni Status & Networking Opportunities

Tools

R | python™ | tableau® SOFTWARE | Power BI

Note:
- R will be the primary tool for Data Science
- Tableau will be the primary tool for Data Visualisation

Programme Director

Prof. Sreejesh S, PhD

Programme Director & Associate Professor,
Marketing Management

Professor Sreejesh's primary research interests include marketing analytics, brand management, services marketing, and online marketing & advertising. His publications have appeared in Journal of Brand Management, Industrial Marketing Management, European Journal of Marketing, Computers in Human Behaviour, Journal of Travel and Tourism Marketing, International Journal of Contemporary Hospitality Management, Internet Research, Journal of Product and Brand Management, Journal of Service Theory and Practice, International Journal of Bank Marketing, etc. He serves on the editorial board of International Journal of Consumer Studies. He has also authored books of international repute with Pearson India and Springer International. Prof. Sreejesh S is currently working as an Assistant Professor of Marketing Management at IIM Kozhikode.

Note: Programme Directors might change due to unavoidable circumstances, and revised details will be provided closer to programme start date.

Programme Directors' Message

The Professional Certificate Programme in Advanced Data Analytics for Managers will equip professionals to have practical and interlocking competencies that maximise the best use of data and interpret the insights generated from the data, which will drive them to have better business decisions in their day-to-day business scenario. Moreover, the machine learning focus of the programme using powerful data analytics platforms will develop industry-ready professionals with in-depth expertise in extracting meaningful insights from the complex data.

Programme Modules

MODULE 1: INTRODUCTION TO DATA ANALYTICS & R

- Introduction R environment
- IDE-R studio
- Installing packages and loading packages in R
- Creating variables
- Scalars, vectors & matrices
- List, data frames & data types
- Converting between vector types
- Cbind & Rbind
- Attach and detach functions
- Reading .csv and .txt files
- Importing data from excel
- Loading and storing data with a clipboard
- Saving in R data, loading R data objects
- Writing data into the file
- Writing text and output from analyses to file
- Rmarkdown

MODULE 2: UNDERSTANDING DATA STRUCTURE

- Data subsets
- Selecting rows/observations
- Rounding a number
- Creating a string from variable
- Factor labels
- Selecting columns/fields
- Merging data
- Relabelling the column names
- Data sorting, data aggregation, and finding and removing duplicate records
- Application of dplyr package (select, arrange, mutate, aggregate, summarise, and group)

MODULE 3: DATA VISUALISATION

- Basics of data visualisation using ggplot2
- Aesthetic mappings
- Common problems
- Facets
- Geometric objects
- Position adjustments
- Coordinate systems
- The layered grammar of graphics
- Combining plots
- Execution of various types of plots (box plot, histogram, pie chart, line chart, scatterplot, word cloud, probability plots, mosaic plots, correlograms, and interactive graphs)

MODULE 4: PRE-PROCESS THE DATA

- Data cleaning
- Handling missing data
- Data imputation
- Feature filtering
- Categorical feature filtering
- Identifying misclassifications
- Data transformation
- Min-max normalisation
- Z-score
- Standardisation
- Decimal scaling
- Transformations to achieve normality
- Outliers
- Graphical methods for identifying outliers
- Numerical methods for identifying outliers
- Flag variables
- Transforming categorical variables into numerical variables
- Binning numerical variables reclassifying categorical variables
- Adding an index field
- Removing variables that are not useful
- Data balancing techniques

Programme Modules

MODULE 5: EXPLORATORY DATA ANALYSIS

- Hypothesis testing versus exploratory data analysis
- Getting to know the data set
- Exploring categorical variables
- Exploring numeric variables
- Exploring multivariate relationships
- Selecting interesting subsets of the data for further investigation
- Using EDA to uncover anomalous fields
- Binning based on predictive value
- Deriving new variables: flag variables
- Deriving new variables: numerical variables
- Using EDA to investigate correlated predictor variables
- Need for dimension-reduction in data mining
- Principal components analysis (PCA)
- Application of PCA

MODULE 6: STATISTICAL INFERENCES

- Statistical inference
- Confidence interval estimation of the mean
- The margin of error
- Confidence interval estimation of the proportion
- Hypothesis testing for the mean
- Assessing the strength of evidence against the null hypothesis
- Using confidence intervals to perform hypothesis tests
- One-sample t-test
- Paired sample t-test
- Chi-square test for goodness of fit of multinomial data
- Analysis of variance (ANOVA)

MODULE 7: BASICS OF MODELLING

- Supervised versus unsupervised methods
- Statistical methodology and data mining methodology
- Cross-validation
- Overfitting
- Bias-variance trade-off
- Balancing the training data set
- Establishing baseline performance
- Simple regression analysis
- Model formulation
- Verifying the regression assumptions
- Inference in regression
- Multiple regression analysis
- Dummy variable
- Stepwise regression analyses

MODULE 8: CLASSIFICATION

- k-nearest neighbour algorithm
- Decision tree
- Random forest
- Neural networks for estimation and prediction
- Application of logistic regression for estimation and prediction
- Naïve bayes and Bayesian networks

Programme Modules

MODULE 9: CLUSTERING

- Hierarchical Clustering Methods
- k-Means Clustering
- Measuring Cluster Goodness
- Affinity Analysis
- Market Basket Analysis

MODULE 10: TEXT MINING & SOCIAL MEDIA ANALYSIS

- Text mining and sentiment analysis
- Social media analytics (Twitter)
- Lexicon analysis
- Social network analysis

Holistic Curriculum

This comprehensive programme curriculum is integrated with a judicious blend of immersive learning tools such as live online lectures, hands-on exercises using data, real-world case studies, business decision-related projects as well as a final capstone project to reinforce an advanced understanding of data analytics in decision-making. Taught by renowned IIM Kozhikode faculty, this engaging learning experience will empower participants to implement data-driven analytics for making insightful and impactful business decisions in their organisation.

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

Capstone Project

With the capstone project, participants will gain hands-on learning experience in conducting data analysis scientifically and make insightful and powerful connections between quantitative data analysis and real-world business challenges. This project will provide participants with an opportunity to integrate their theoretical and practical understanding of data science and explore ways to apply their learnings in a real-world competitive business scenario.

Real-world Case Studies

Understanding Text Mining and Sentiment Analysis in Hotel Booking by Rasha Kashef, Sakariya Ahmed (Harvard Business Publishing)

This case study explores the unpleasant experience of a management science professor with a hotel she stayed at in New York City. Consequently, she wanted to figure out if hotel ratings were enough to recommend a hotel, or if customers' text reviews could be used as more important and accurate indicators of customers' hotel experiences.

Predicting Earnings Manipulation by Indian Firms Using Machine Learning Algorithms by Dinesh Kumar Unnikrishnan, Tousif Ahmed Inayath Syed, Suresh Ganeshan (Harvard Business Publishing)

This case explores how Sachin Kumar, Director at MCA Technology Solutions, was approached by one his clients, a commercial bank, to assist them in detecting earnings manipulators among the bank's customers with the help of machine learning algorithms to get better accuracy compared to the other traditional models such as Beneish model used for predicting earnings manipulation.

Armacord Incorporated: Combatting Money-laundering Using Data Analytics by Davit Khachatryan (Harvard Business Publishing)

This case focuses on enhancing students' understanding and appreciation of data analytics for fraud detection in financial institutions. It explores a predictive analytic solution, in the form of a time series model, for combating money laundering at a regional bank.

Data Science at Target by Srikant M. Datar, Caitlin N. Bowler (Harvard Business Publishing)

The case explores the technological and organisational challenges faced by Paritosh Desai, VP of Business Intelligence, Analytics & Testing, and the trade-offs he considered in his four-year journey to develop the larger retail business into a data science organisation.

Note: The programme curriculum includes more such case studies for integrated learning.

Learning Outcomes

Gain an in-depth understanding of data structures and data analysis to explore and visualise data for meaningful insights and identify relationships between large data sets

Learn to use analytical tool such as R to manipulate and analyse complex data sets and become proficient in building machine learning models using R

Explore text mining analysis/techniques to understand the influence of social media applications

Understand the nuances and applications of descriptive, predictive, and prescriptive analytics to enhance analytical skills and make real-time, data-driven business decisions
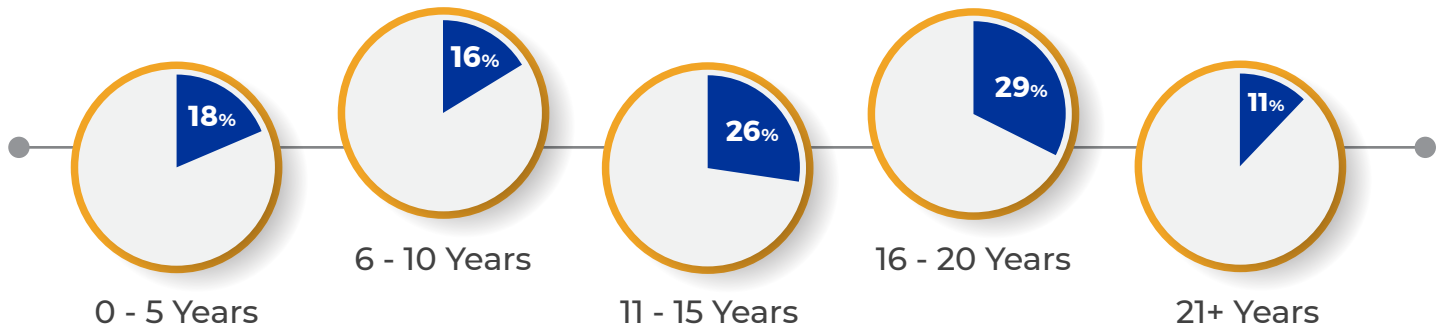
Gain the skills and knowledge required to manage data science and analytics teams or projects at your organisation

Get the managerial expertise of the tools and techniques used in Data Analytics and Machine Learning for business applications
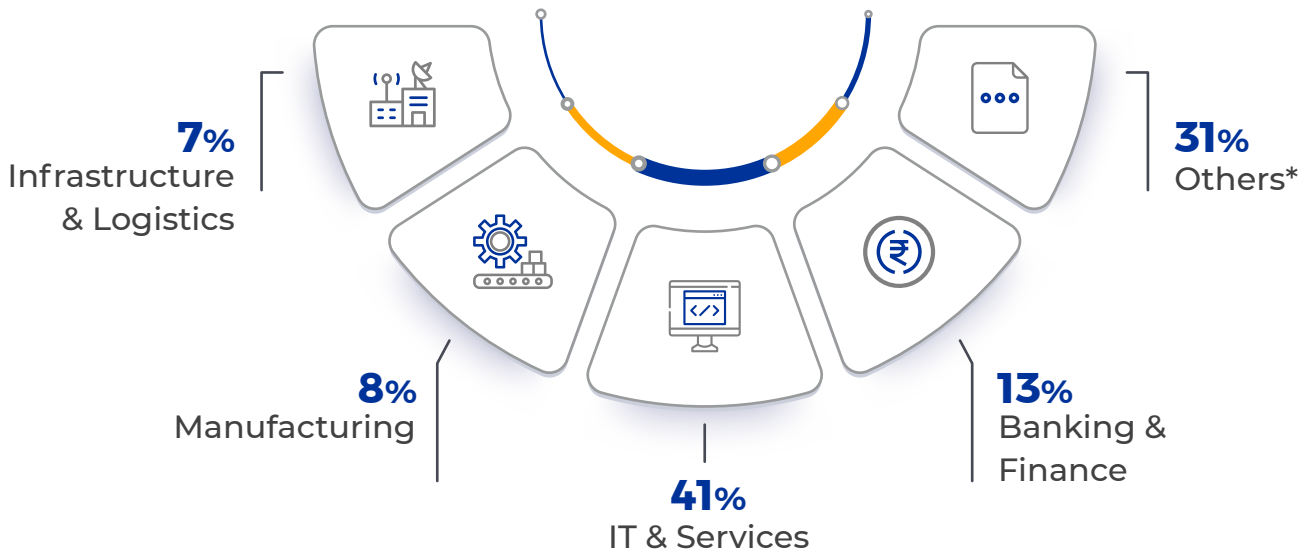
Past Participant Profiles

Work Experience

18% — 0 - 5 Years

16% — 6 - 10 Years

26% — 11 - 15 Years

29% — 16 - 20 Years

11% — 21+ Years

Industry

7% Infrastructure & Logistics

8% Manufacturing

41% IT & Services

13% Banking & Finance

31% Others*

Others include Healthcare & Pharmaceuticals Shipping, Retail, Media, Consulting, etc.

Functions

34% Management

19% Operations

11% Finance & Accounting

5% Marketing & Sales

31% Others#

#Others include Customer Service, Engineering, Consulting, Legal etc.

Participant Testimonials

Course content was well curated for a Manager's need. Prof. Sreejesh is an excellent Teacher and he took immense efforts in ensuring everyone understood the lessons. The course was excellent. I do not have any prior experience in Data Science domain, this course provided me confidence to manage Data Science Projects.

- Harikumar Vasudevan Nair

I personally liked the following aspects of the program, The Faculty, Professor Sreejesh's ability to teach such a difficult subject so effectively to a diverse audience from the industry is amazing and commendable. The platform is glitch-free and we have never faced any issues while using it. The timeliness of all communications.

- Kapil Chourasiya

IIM Kozhikode Executive Alumni Status

On successful completion of the programme, participants will be eligible for the prestigious IIM Kozhikode Executive Alumni Status. These participants will subsequently receive the alumni registration details from IIM Kozhikode.

Note: The Executive Alumni benefits are subject to the discretion of IIM Kozhikode.

Certificate

Participants who successfully complete all evaluation components with minimum pass marks and meet the requisite 75% minimum attendance criteria will be awarded a Certificate of Completion from IIM Kozhikode. Participants who are unable to clear the evaluation criteria but have the requisite attendance will be awarded a Participation Certificate.

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

Eligibility

Graduates (10+2+3) or Diploma Holders (only 10+2+3) from a recognised university in any discipline with a minimum of 1 year of work experience (after graduation) as on September 30, 2022.

Evaluation

There will be periodic evaluations built-in throughout the programme at regular intervals. These may be in the form of a quiz, assignment, project, case studies or other objective/subjective assessments. A minimum of 75% attendance is a prerequisite for the successful completion of this programme. The participants will have to secure the minimum pass marks in the respective evaluation components.

Programme Details

Programme Fee INR 1,81,500 + GST

Academic Orientation Oct 09, 2022

Instalment Schedule

Particulars	Remarks	Amount
Booking Amount	Within 7 days post selection	INR 18,500 + GST
Instalment I	Sept 30, 2022	INR 36,000 + GST
Instalment II	Jan 30, 2023	INR 73,000 + GST
Instalment III	May 30, 2023	INR 54,000 + GST

Round-wise Application Dates

Particulars	Application Fee	Dates
Round 1	INR 1,500 + GST	Aug 03, 2022
Round 2	INR 2,000 + GST	Aug 31, 2022

Note: Postage charges for books and study materials sent to locations outside of India will be paid for by the student.

Programme Schedule

Live Online Sessions
- 3 hours / week
  Sunday, 6:45 PM to 9:45 PM

Attendance
- Minimum 75%

Note
- Admissions are on a first-come, first-serve basis. There might not be subsequent rounds if seats are filled in the initial rounds.

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.execed@emeritus.org**

Note:
- The actual programme schedule will be announced closer to the programme start.
- Some sessions with faculty and/or industry experts could be rescheduled at a different time, in case of exceptional circumstances.

Application Requirements

Applying to the programme? We suggest you keep the following 3 documents ready.

1. Your Photo ID Proof:

- You can submit a scanned copy of **ANY ONE** of: PAN Card or the first two pages of your Passport.

2. Your Graduation/Degree:

- You can submit a scanned copy of **ANY ONE** of: Degree certificate, provisional Degree certificate, marks transcript or score transcript.

3. Your Work Experience Certificate:

- You can submit scanned copy(ies) of document(s) which demonstrate that you have the minimum work experience required by the programme.
- You can confirm the minimum work experience requirement of a programme under the heading **'Eligibility'** in the brochure or the programme website
- Examples of documents you can submit are joining letter, relieving letter, Bonafide work experience letter from your HR, salary slips etc.
  - These documents must be issued by your company.
  - Please ensure that the document(s) you submit contain a **date of joining** and a **date of leaving** or a **statement** about the **number of years** you have worked at the company.

System Requirements

This programme includes live online classes. To attend a live online class you will need to have a PC/Laptop/Mac with

- Speakers and microphone: built-in or a USB plug-in or wireless Bluetooth

- Webcam: built-in or USB plug-in

- Processor: with Dual Core 2Ghz or higher (i3/i5/i7 or AMD equivalent)

- RAM: 4 GB or higher

- OS: Either MacOS 10.7 or higher OR Windows 8 or higher

- An internet connection: Minimum bandwidth of 3.0 Mbps (up/down)

- Browser: IE 11+, Edge 12+, Firefox 27+, Chrome 30+

- Zoom software client installed on your PC/Laptop/Mac

We use the Zoom software application to conduct live online classes. Zoom works on a variety of PCs/ Laptops/Mac systems and also on phones and tablets.

You can join your live online class from a phone or tablet if it supports the Zoom client.

We recommend that you attend classes from a PC/Laptop/Mac.

About IIM Kozhikode

IIM Kozhikode is ranked 4th as per the latest NIRF India Rankings 2021: Management. The Institute also made its global debut for its flagship MBA (101+ globally, 7+ in Asia) and EMBA programme (101+ globally, 15+ in Asia) in the 2020/21 QS World University Rankings. It is also ranked No.2 in the CFIs (non-Technical) category in the Atal Innovation Rankings (ARIIA 2021) released recently by the Ministry of Education, Govt. of India. IIM Kozhikode is globally accredited by EQUIS (EFMD) and AMBA (UK). Since its inception, IIM Kozhikode has successfully carved its niche in 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 Emeritus

IIM Kozhikode is collaborating with online education provider Emeritus to offer a portfolio of high-impact online programmes. Working with Emeritus gives IIM Kozhikode the advantage of broadening its access beyond their on-campus offerings in a collaborative and engaging format that stays true to the quality of IIM Kozhikode. Emeritus' approach to learning is built on a cohort-based design to maximise peer-to-peer sharing and includes video lectures with world-class faculty and hands-on project-based learning. More than 250,000 students from over 160 countries have benefitted professionally from Emeritus' courses.

Apply for the programme here

APPLY NOW

For registration and any other information please get in touch with at iimk.execed@emeritus.org

🔵 **WhatsApp an advisor on +91 74120 81081***

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

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