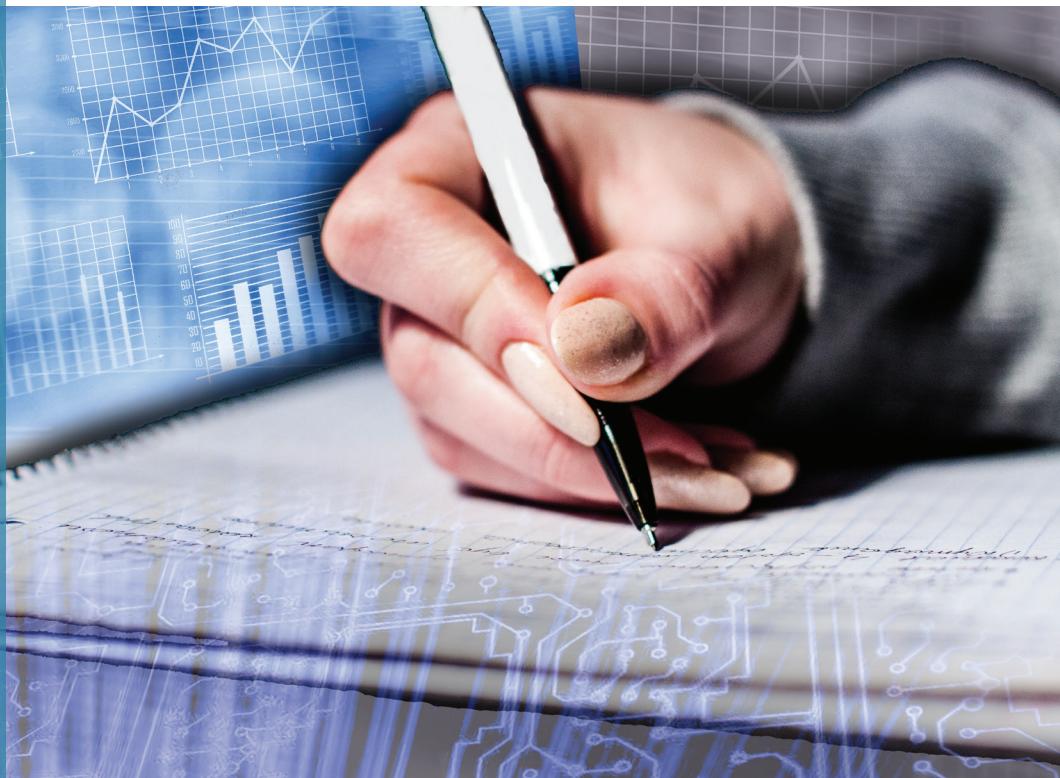


CERTIFICATE PROGRAMME IN TECHNOLOGY AND MANAGEMENT

Data Sciences | Machine Learning



Programme Directors

Professor PD Jose, IIM Bangalore

Professor Andrew Thangaraj, IIT Madras

Professor Balaraman Ravindran, IIT Madras

Starts on : 2nd March 2019
Apply by : 10th January 2019

For successfully leading tomorrow's organizations, an in-depth understanding of technology and management theories are critical. The Certificate Programme in Technology and Management (CTM) was designed with the express purpose of meeting this need. A joint effort by two of India's leading educational institutions, CTM aims to equip students with a deep understanding of recent developments in technology and modern theories of management.

The Certificate Programme in Technology and Management (CTM) is a long duration programme, which aims at expanding learners' technical know-how and broadens the scope for higher-level management opportunities. It brings together a unique, active learning blend of technical and business skills for working professionals. The technical courses are offered by Indian Institute of Technology, Madras and the management courses are offered by Indian Institute of Management, Bangalore.

Objectives

To help professionals achieve a transformation to the highest levels of leadership in their companies.
The programme will help participants to

- Gain a broad overview of the key concepts, tools and techniques needed to successfully meet the challenges of today's global business environment.
- Acquire deep-rooted knowledge on quantitative and statistical tools to make effective decisions.
- Focus on the skills required to work cross-functionally within the organizations.



"A multi-disciplinary education that combines the best of technology and management disciplines can empower young leaders of tomorrow. The Certificate Programme in Technology and Management is a great way for young working professionals to acquire domain and business understanding, while being employed, with the help of specially crafted MOOCs. IIM Bangalore is proud to launch this programme in partnership with IIT Madras"

- G Raghuram, Director, IIM Bangalore.

“

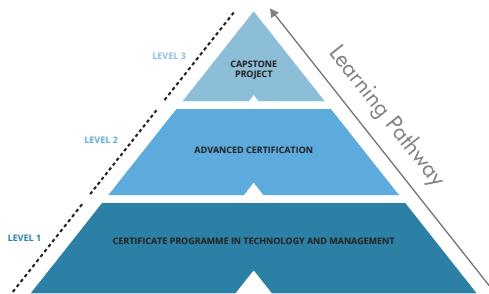
“

"The Certificate Programme in Technology and Management from IIT Madras and IIM Bangalore is a breakthrough for professionals who aim to excel in the fields of technology and management. This fusion will turn an ordinary learner into a dynamic intellectual"

- Bhaskar Ramamurthi, Director, IIT Madras.



Learning Path



This is an online, blended programme that covers both technology and management domains, following a three-tier stackable credential system, intended to give a strong foundation, advanced knowledge, and real-world experience to the learner.

Certificate Programme in Technology and Management is the first step in this stackable credential system.

Programme Structure

CTM is a 10-month long programme, offered in three modules. Each module spans for about three months, comprising technical and management courses. At the end of each module, proctored exams will be conducted. On successful completion of the programme, the candidate receives a 'Certificate in Technology and Management'.

The programme consists of six core management courses and two technical disciplines, **Data Sciences** and **Machine Learning**.

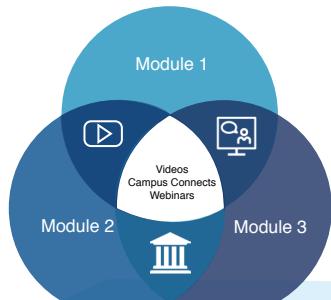
1. The **Data Science** stream will equip you to venture into data-driven computing and will cover all the essential topics such as Mathematical Foundations, Data Visualization and Machine Learning.
2. The **Machine Learning** stream will prepare you to start a career in AI. This will cover the fundamental concepts as well as exciting directions such as Deep Learning and Reinforcement Learning.

While the management courses are mandatory, the learner has the option to choose one of the two technical specialization streams.



Programme Pedagogy

A balanced mix of asynchronous sessions comprising videos and synchronous interactive sessions, along with projects and case discussions for a hands-on experience.



Programme Curriculum

1 Accounting and Finance

This business course helps the student read and understand financial statements to evaluate how business performance is affected by four fundamental drivers of profitability viz., asset management, cost management, leverage management and tax management. It will also help you to identify areas for improvement. The second part of this finance course deals with managing costs. You will learn how to prepare cost sheets, budget and make cost-based decisions.

The third part of the course provides an overview of financial markets to raise capital of different types. You will develop the ability to prepare and evaluate finances for your business plan and manage working capital.

Instructor: Professor MS Narasimhan, IIM Bangalore

3 Introduction to Machine Learning

This course introduces the fundamentals of machine learning. The course dives deep into supervised (linear regression, logistic regression, neural networks, KNN etc.) and unsupervised (clustering, dimensionality reduction etc.) learning paradigms. Use of examples and visual interpretations will reinforce the learning in beginners. By the end of this course, you should have a strong understanding to follow the current happenings in the area.

Instructor: Professor Balaraman Ravindran, IIT Madras

5 Introduction to Deep Learning

Deep Neural Networks are behind the recent significant impact of AI systems. In this course, we will cover the fundamentals of neural networks and the basic deep neural architectures such as convolutional networks and recurrent networks. The course will also introduce learners to popular deep learning tools and will have many case studies.

Instructor: Renowned expert in the area of Deep Learning



I was searching for a programme from premier institutes and when I found CTM, I knew this was the one to enhance my skills, while being employed. 6 weeks into the course and the journey has been tough but rewarding. Campus connect sessions and the live discussions with the IIM/IIT Faculty is an ultimate experience. Weekly assignments with strict deadlines ensures that I stay on my toes and learn with the similar pace as others. I believe these 10 months will help me become a better professional in several areas.

Ranjeet Singh
CTM Batch 1

2 Data Visualization

This course is designed to explain and explore data. Few topics covered in the course are

1. Performing exploratory data analysis and create static reports, with data visualization.
2. Creating group charts and static dashboards, through flex dashboard.
3. Creating interactive dashboards using R Shiny.

This course will also cover grammar of graphics, design principles and guidelines to pick relevant charts depending on the analysis. Real-time data sets will be used to come up with interesting stories.

Instructor: Mr Kathirmani, Co-founder, Quelit

4 Introduction to Reinforcement Learning

Reinforcement Learning (RL) methods have achieved significant successes recently by marrying the representation learning power of deep networks and the control learning abilities of RL. This has resulted in some of the most significant recent breakthroughs in Artificial Intelligence such as the Atari game player and the Alpha Go engine from Deepmind. This success has renewed interest in the RL community and enabled new applications. This course will introduce the basic reinforcement learning paradigm and methods for solving the reinforcement learning problem. We will motivate the concepts through practical examples.

Instructor: Professor Balaraman Ravindran, IIT Madras.

6 Managerial Economics

To make professionally sound decisions, it is important to understand the market forces that impact the business world. Most modern societies depend on markets to organize economic activity; in other words, they are market economies. This course will give you an introduction to managerial economics and use minimum mathematics.

Instructor: Professor Subhashish Gupta, IIM Bangalore



Continuous education is essential for career success and self-development. However, I could not decide between the several courses that were available in the market. Nevertheless, I am convinced that CTM, with a mix of modern management theories and latest technologies is the perfect program that I was looking for.

Ashwini Kumar Viswanathan
CTM Batch 1

7 Marketing Management

While the significance of marketing in today's business world can never be overstated, it is the precise understanding and appreciation of marketing management that needs to be accentuated. Marketing management allows an organization to track, review and analyze their marketing resources and activities. In this marketing course, you will learn the fundamentals of marketing management, as you gradually learn advanced theories and applications through real world business examples, illustrations, cases and exercises.

Instructor: Professor Ashis Mishra, IIM Bangalore

9 Organizational Design

In this course, the student will learn how to design control systems, decision-making processes, and a culture that enables value-creation and the development of sustainable competitive advantage. The relationship between an organization's strategy and structure, leveraging design elements, and understanding how best to manage structural changes will be explored.

Instructor: Professor Sourav Mukherji, IIM Bangalore

11 Parameter Estimation and Linear Regression

The course is aimed at imparting the basics of estimation theory to the learner. Specifically, we shall obtain answers to three broad questions, namely,

- What is the role of estimation in the field of data science?
- How do we estimate (problem formulation and methodology) unknowns in a sound manner?
- How do we characterize the goodness of estimates (confidence levels)?

It is pitched at a beginner's level and designed to provide a healthy balance of theory and practice. The lectures, consequently, comprise the necessary formalizations interwoven with illustrative and worked out examples. Software support for this course is provided by R (a free, open-source computational and statistical software), which is available on all three major operating platforms (Windows, Mac OS and Linux) at <https://cran.r-project.org/>

Instructor: Professor Arun Tangirala, IIT Madras



I find CTM to be an important part of my career. The learning experience is great. The faculty and staff are best in class, enthusiastic and supporting.

Ravikumar Patel
CTM Batch 1



CTM is much more than a Certification program. The near classroom experience with best in-class teachers, challenging assignments, always approaching deadlines, collaborative peer group, campus connect sessions and highly supportive course coordinators make it truly unique. The entire setup of the course feels customized as per the needs of industry and keeping in mind convenience of working professionals.

Vinita Pancholi
CTM Batch 1

8 Operations Management

In this course, you will learn how to design control systems, decision-making processes, and a culture that enables value-creation and the development of sustainable competitive advantage. You will also explore the relationship between an organization's strategy and structure, learn to leverage design elements, and understand how best to manage structural change.

Instructor: Professor B. Mahadevan, IIM Bangalore

10 Strategic Management

Managing a firm implies that you will have to conduct an analysis of the industry in which you operate, and work towards creating and sustaining a competitive advantage. This course will show you how a business views itself in its "totality" and in the context of its environment. The course will be taught from the perspective of a manager or chief executive officer (CEO).

Instructors: Professor PD Jose, Professor Sai Yayavaram, Professor Rejje George, IIM Bangalore

12 Probability and Statistics for Data Sciences

This course seeks to present the participants with the fundamentals of probability and statistics. As a segment in the data sciences module, the primary goal of this course is to present content which will serve as precursors for more advanced concepts in machine learning and statistics. The secondary goal is to provide the participants with the knowledge base to solve various real-world problems using the self-contained concepts taught at the end of this course. The course will be useful for participants who are exploring these topics for the first time, as well as those looking to bolster the fundamentals that they may have learnt in the past.

Instructor: Professor Nandan Sudarsanam, IIT Madras

Eligibility



- An undergraduate degree in any stream.
- At least 2 years of work experience.

Admission



The programme follows a comprehensive admission procedure to ensure that the learners' goals are oriented towards a challenging experience, simultaneously achieving diversity in both technical and management aspects. Participants are carefully chosen through interview and online test.

Programme Fees

The programme fee for CTM is **₹ 5,00,000 + applicable Tax**, payable in multiple instalments, as per the schedule indicated below.

Partial scholarship may be provided to deserving candidates.

Fees	Indians	International Students	Deadline
On Confirmation	50,000	USD 1000	On Accepting the offer
1st Instalment	2,00,000	USD 3500	31st Jan 2019
2nd Instalment	2,50,000	USD 4500	31st May 2019

Important Dates

Registration Closure:

15 November 2018

Announcement of 1st admission list:

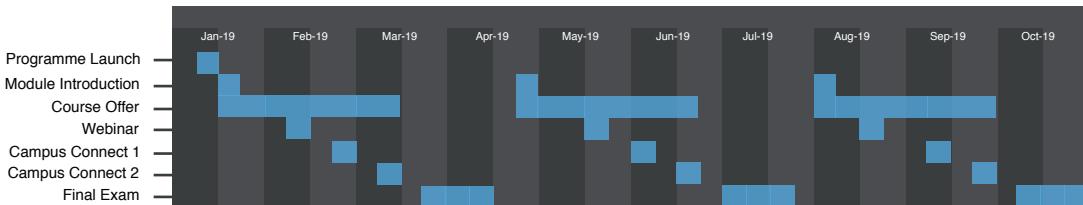
05 December 2018

Announcement of 2nd admission list:

31 December 2018

Programme Commences On:

21 January 2019



PROGRAMME FACULTY



Arun Tangirala

Professor
IIT Madras



Ashis Mishra

Associate Professor
IIM Bangalore



Kathirmani Sukumar

Data Scientist, Gramener
and Co-founder, Quelit



B. Mahadevan

Professor
IIM Bangalore



Subhashish Gupta

Professor
IIM Bangalore



MS Narasimhan

Professor
IIM Bangalore



Nandan Sudarsanam

Professor
IIT Madras



P D Jose

Professor
IIM Bangalore



Sai Jayavaram

Professor
IIM Bangalore



Sourav Mukherji

Professor
IIM Bangalore



Balaraman Ravindran

Professor
IIT Madras



Rejie George Pallathita

Professor
IIM Bangalore



P D Jose

Professor
IIM Bangalore



Andrew Thangaraj

Professor
IIT Madras



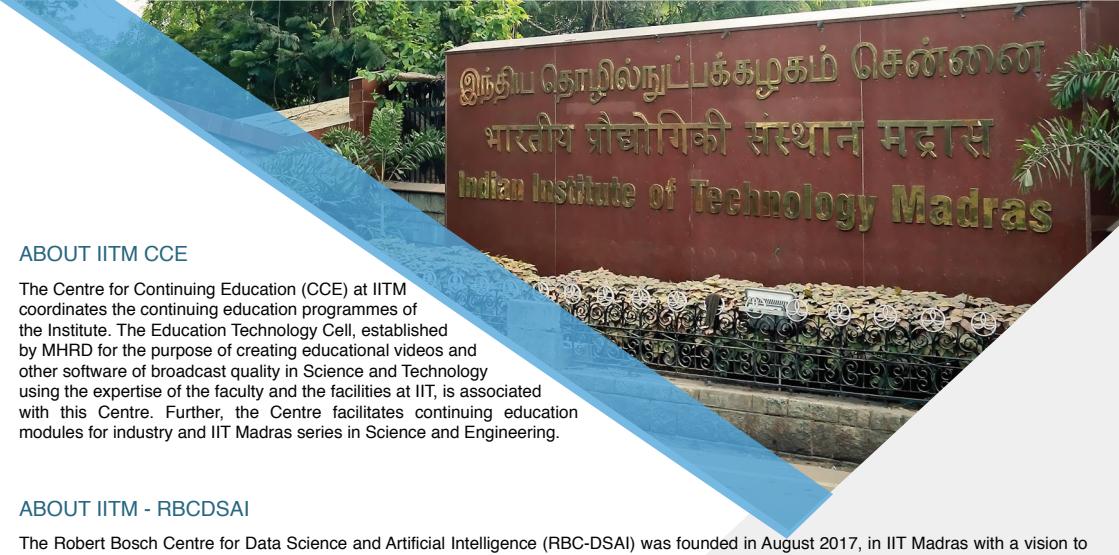
Balaraman Ravindran

Professor
IIT Madras

P D Jose is Professor of Corporate Strategy and Policy at the IIM Bangalore. He is a fellow of IIM Ahmedabad. His research interests include strategy formulation and implementation, crisis management and organizational renewal, corporate sustainability and CSR management.

Andrew Thangaraj has been with the Department of Electrical Engineering, IIT Madras since 2004 and is currently a professor there. He received his B.Tech in Electrical Engineering from the IIT Madras, and a PhD in Electrical Engineering from the Georgia Institute of Technology, Atlanta, USA.

Balaraman Ravindran is a professor at the Department of Computer Science and Engineering, IIT Madras and the head of Robert Bosch Center for Data Science and Artificial Intelligence at IIT Madras. He is a PhD in Computer Science from University of Massachusetts and currently pursues his research in broader areas of Machine Learning.



இந்திய தொழில்நுட்பக்கழகம் சென்னை �ாரதீய பிரைடாரிகி ஸ்தாந மாதாஸ் Indian Institute of Technology Madras

ABOUT IITM CCE

The Centre for Continuing Education (CCE) at IITM coordinates the continuing education programmes of the Institute. The Education Technology Cell, established by MHRD for the purpose of creating educational videos and other software of broadcast quality in Science and Technology using the expertise of the faculty and the facilities at IIT, is associated with this Centre. Further, the Centre facilitates continuing education modules for industry and IIT Madras series in Science and Engineering.

ABOUT IITM - RBCDSAI

The Robert Bosch Centre for Data Science and Artificial Intelligence (RBC-DSAI) was founded in August 2017, in IIT Madras with a vision to expand and further the research, education and outreach activities in the areas of Data Science and Artificial Intelligence. RBC-DSAI comprises faculty from several departments across the Institute, who carry out research in various areas of data science and artificial intelligence. The long-term vision of RBC-DSAI is to become a world leader in data science research, where long-standing fundamental research problems, cutting across disciplines, are targeted and solved.

ABOUT IIMBx

IIMBx is founded on the philosophy that management education has strong potential to transform our educational systems and that high-quality education must be available to all unconstrained by limitations imposed by location, finances or prior educational background. The vision of the IIMBx programme is to use digital learning to enable widespread access to management education. Led by the faculty at IIM Bangalore, IIMBx offers online courses and programmes covering core and advanced business and management subjects.

IIMB – Vision

To be a global renowned academic institution fostering excellence in management, innovation and entrepreneurship for business, government and society.



080 - 26993894 | +91 9632626707



ctm-admissions@iimbx.edu.in



<http://ctm-iitm.iimbx.edu.in>



Indian Institute of Management Bangalore Bannerghatta Road, Bengaluru, India Pin Code: 560 076

Indian Institute of Technology Madras Sardar Patel Road, Adyar, Chennai, India Pin Code: 600036

