BITSOM
BITS SCHOOL
OF MANAGEMENT

masai.

CERTIFICATION PROGRAM IN
ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
FROM BITS SCHOOL OF MANAGEMENT

About BITSoM

BITSoM (BITS School of Management), an integral part of the esteemed BITS Pilani legacy, stands as a beacon of excellence in business education. Located in the Mumbai Metropolitan Region, BITSoM offers a transformative learning experience driven by world-class faculty who bring expertise from top global institutions. With a foundation in entrepreneurial spirit and academic rigor, BITSoM nurtures future leaders equipped to excel in an ever-changing global business landscape.

Why Choose This Course?

- **Beginner Level:** Designed for students with basic knowledge of programming and mathematics, no prior AI experience needed.

- **Placement Opportunities:** Get resume reviews, career coaching, and placement support to land your dream role. (Eligibility: 7 CGPA+ in the program)

- **Capstone Project:** Solve real-world problems, apply your learning, and collaborate with peers on an impactful final project.

- **Showcase BITSOM Certificate:** Earn an official certificate from BITSOM to boost your resume and demonstrate your expertise to top employers.

What Will You Learn?

In this program, you'll build a strong foundation in programming, mathematics, and statistics, then advance to key areas like machine learning, neural networks, deep learning, and big data analytics. Through hands-on projects and real-world case studies, you'll learn to apply AI and data science techniques to solve complex problems. The program culminates in a capstone project, enabling you to showcase your skills and prepare for high-demand roles in this rapidly evolving field.

Toolkit

Course Details

Course Duration	Time Commitment
6 Months	8-10 hours per week

Certification
From BITS School of Management

| Course Curriculum

Module 01: Mathematics for Data Science

- Linear Algebra: Vectors, matrices, system of equations, eigenvectors, orthogonality
- Calculus: Functions, derivatives, chain rule, gradient, Jacobian, Hessian
- Probability & Statistics: Conditional probability, Bayes' theorem, random variables, expectation & variance, CLT, LLN
- Optimization: Convex sets & functions, constrained/unconstrained optimization
- Tools: Python (NumPy, SciPy)

Module 02: Machine Learning Fundamentals

- Supervised Learning: Regression (Linear, Ridge, Lasso), classification (Logistic Regression, SVM, Decision Trees, k-NN)
- Unsupervised Learning: Clustering (K-Means, GMM), Dimensionality Reduction (PCA)
- Model Evaluation: Accuracy, Precision, Recall, F1, ROC, AUC, Cross-validation, Bias-Variance Trade-off
- Neural Networks Basics: Perceptrons, loss functions, forward/backpropagation
- Training Methods: SGD, Adam, Batch Norm, Dropout, Regularization
- Tools: Python, Scikit-learn, Google Colab

Module 03: Advanced Deep Learning & AI Applications

- Deep Learning Architectures: CNNs (ResNet, Inception), RNNs (LSTM, GRU), Transformers (BERT, GPT)
- Generative Models: VAEs, GANs (CycleGANs, Conditional GANs)
- Reinforcement Learning: Agents, rewards, Q-Learning, Policy Gradients, Deep RL (DQN, Actor-Critic)
- Applications: NLP (tokeniation, word embeddings, sentiment analysis, NER), Computer Vision (Object Detection, Segmentation)
- Emerging Trends: Self-supervised learning, multi-task learning, ethics in AI
- Tools: TensorFlow, PyTorch, Hugging Face Transformers

Module 04: Capstone Project + Industry Expert Sessions

- Develop an end-to-end AI solution using real-world data.
- Domains: NLP Chatbots, Computer Vision Apps, Recommendation Engines, Generative Models
- Monthly live sessions with industry mentors for project feedback and career guidance.
- Final presentation & deployment with faculty evaluation.

| Instructor & Industry Experts

Dr. Saravanan Kesavan
Dean and Professor of Operations, BITSoM

Dr Saravanan Kesavan, a PhD from Harvard business school, has a tenure of 16 years at the University of North Carolina (UNC) at Chapel Hill, notably as the Associate Dean of the UNC Kenan-Flagler Business School. He is renowned for his exceptional teaching skills at the Kenan-Flagler Business School's MBA programme. He has been honoured with the MBA All Star Teaching Award on 14 occasions and received the Weatherspoon Award for Excellence in MBA Teaching. Additionally, he was recognized as the Best Teacher for Core Teaching by the Indian School of Business. A dedicated researcher, Dr Kesavan's contributions have appeared in prestigious journals like Management Science, Manufacturing & Service Operations Management (MSOM), and Production & Operations Management. His research has been featured in mainstream media such as The New York Times, The Economist, Forbes and was acknowledged in the 2022 Economic Report of the US President. He has a doctorate in technology and operations management from Harvard Business School, advanced degrees from the University of Massachusetts at Amherst and a B-Tech from IIT Madras.

Meenakshi Balakrishna
Ph.D. Candidate in Quantitative Marketing

Meenakshi Balakrishna is a Ph.D. candidate in Quantitative Marketing at the University of California, San Diego. Her research spans pricing, consumer behavior, causal inference, econometrics, and the application of advanced techniques such as natural language processing, deep learning, and reinforcement learning to marketing problems.

Her work has been published in the Journal of Empirical Legal Studies, where she examined firearm market responses to regulatory changes. Her current research explores new ways to measure household liquidity, the intersection of health and consumer behavior, and the role of sentiment in user-generated reviews.

Meenakshi has extensive teaching experience at UC San Diego, serving as a teaching assistant for courses such as Pricing, Customer Analytics, Quantitative Analysis, Managerial Decision Making, and Business Analytics Consulting. She holds an MBA from UC San Diego and a Bachelor of Engineering in Electronics and Communication Engineering from Anna University, India. She is expected to complete her Ph.D. in 2025.

Shankar Prakash
Adjunct Professor, Indian Institute of Management Udaipur

Shankar Prakash is an independent educator and adjunct professor at the Indian Institute of Management Udaipur. With over two decades of experience spanning academia, consulting, and corporate strategy, he brings a unique blend of academic rigor and practical business insights to the classroom.

Prior to academia, Shankar held senior leadership roles at IBM, where he served as strategy leader for Application Services and Global Delivery. In these roles, he led global strategy, execution planning, and advanced analytics initiatives, driving competitiveness, productivity, and growth across international markets. Earlier in his career, he worked with Ernst & Young, Wipro, and Microland, building expertise in IT services, automation, and business advisory.

At IIM Udaipur, Shankar has taught courses in business strategy, analytics, and decision-making, helping students bridge the gap between theory and practice. His teaching emphasizes real-world application, innovation, and the use of data-driven insights for strategic decision-making. Shankar's passion lies in equipping future leaders with the mindset and skills to navigate complex business environments and create sustainable impact.

Pratik Narang
Associate Professor, Department of Computer Science
& Information Systems, BITS Pilani

Dr. Pratik Narang is a Senior Member of IEEE and an assistant professor in the Department of CSIS at BITS Pilani, Rajasthan, India. His research focuses on building systems using artificial intelligence and machine learning to improve existing technologies in cybersecurity, computer vision, and healthcare. He has executed multiple sponsored R&D projects (funded by the Government of India and industry organizations) in applied deep learning and artificial intelligence. He also collaborates with leading universities (NUS, UIUC, etc.) and industry leaders (IBM, NVIDIA, Google, etc.) across the world. At BITS Pilani, Pratik serves as the faculty advisor for the Google Developer Student Clubs and is a nucleus member of the Sponsored Research and Consultancy Division (SRCD), where he is involved in digitizing SRCD activities.

Pratik completed his undergraduate studies in M.Sc. (Tech) Information Systems at BITS Pilani (Pilani campus) in 2011. From 2012 to 2015, he pursued his doctoral research at BITS Pilani (Hyderabad campus) under the supervision of Prof. Chittaranjan Hota and co-supervision of Prof. V. N. Venkatakrishnan (University of Illinois at Chicago). His doctoral work was funded by grants from the Ministry of Electronics & IT, Government of India.

Before joining BITS Pilani, Pratik worked at Bennett University, where he was a founding member and coordinator of the Machine Intelligence Research Group. Earlier, he held research positions at the National University of Singapore (as part of his postdoctoral research) and at New York University, Abu Dhabi, UAE, where he carried out a portion of his Ph.D. research.

Admission Process

Clear Qualifier Test
You must pass the exam to confirm your seat for the program.

Complete Counselling
Only shortlisted candidates go through the counselling process.

Start Learning
Learn from India's top educators and stand out from the crowd.

Fees Structure

Qualifier Test Fee (Non-Refundable)	₹99

	Option 1	Option 2
	Upfront	**EMI** (Through our NBFC partners)
Secure Seat Fee (Non-Refundable)	₹4,000	₹4,000
Remaining Course Fee (Non-Refundable)	₹56,000	₹6,844 x 9 months
Total Program Fee	₹60,000 + GST*	₹65,596 + GST*

*GST at 18% extra, as applicable