



Indian Institute of Technology Delhi

CEP Short-Term Course

Machine Learning in Civil and Mechanical Sciences: Theory and Applications

IIT Delhi Sonipat Campus, Haryana 15th – 17th February 2019



About IIT Delhi

IIT Delhi is one of the oldest technological institutes in India. The institute has nearly 35 academic units that imparts knowledge on Engineering, Science, Design, Social Science, among others. IIT Delhi has been instrumental in providing solutions to the technological and societal problems through its academic and research activities. IIT Delhi has been consistently placed among top academic universities around the globe, and as per the recent QS University ranking, the institute stands at 64th in the list of Engineering and Technology domain. The institute has been expanding its infrastructure and the extended campus of IIT Delhi at Sonipat in Haryana is now functional. Situated at a distance of around 60 kms from IIT Delhi, the Innovation Centre for Education (ICE), spread over 10 acres, is being created as a modern eco-friendly 'Gurukul' to consolidate and enhance teaching-learning/pedagogical research activities and conduct the same more effectively for a greater impact on the educational landscape.

Scope of the Course

The aim of the course is to introduce the relevance of machine learning in a wide range of academic and industrial problems relevant to civil, chemical and material science applications. This will be achieved through lectures and hands-on sessions, which will include the basics of widely used algorithms for linear and non-linear regressions such as elastic net, principal component regression support vector machine and artificial neural networks.

Learning Outcomes

- ✦ Appreciate the role of machine learning in engineering disciplines
- ✦ Use data mining to predict hidden trends
- ✦ Make appropriate decisions employing data-based modelling
- ✦ Gain hands-on experience on open source packages for machine learning algorithms

Course Contents

Data Analysis; Probability Distributions – Discrete and Continuous; Estimation and Hypothesis Testing. Linear Regression and its Derivatives – Partial Least Squares, PCA, Lasso Ridge and Elastic Net; Estimation and Inference; Non-Linear Regression, Support Vector Machine, Artificial Neural Networks, Gaussian Process Modelling; Classification and Clustering; Engineering Applications and Hands-on sessions..

Important Dates

The last date for the receipt of duly filled registration form is **31/01/2019** and the selected candidates will be intimated on **01/02/2019**.

Course Faculty

The following faculty members will deliver lecture during the course

Dr. N.M. Anoop Krishnan, Department of Civil Engineering, IIT Delhi

Dr. Manoj M., Department of Civil Engineering, IIT Delhi

Dr. Hariprasad K., Department of Chemical Engineering, IIT Delhi

Target Audience

The course is designed for faculty members, consultants, students, researchers, start-up aspirants, working professionals and industrialists. Selection of 33 candidates will be done on a first-come, first-served basis after shortlisting candidates based on their background and interest in the subject.

Accommodation

Boarding and lodging will be arranged for the selected candidates, as per CEP norms, in Sonipat campus on twin-sharing basis. All rooms are air-conditioned and equipped with basic amenities. Participants who need onsite accommodation are requested to indicate the same in the application form.

Course Fee

The total fee payable is INR 35,400 /- [INR 30,000 + 18% GST].

Use the following information for the payment.

Name of the Beneficiary:	IITD CEP Account
Name of Bank:	State Bank of India
Branch:	IIT, Hauz Khas, Delhi-110016
Beneficiary A/C No.:	36819334799
Bank MICR Code:	110002156
Bank IFS Code:	SBIN001077

Fee can also be submitted online using the procedures outlined in the CEP website. For further details, see: <http://cepqip.iitd.ac.in/payment.html>

Please **submit the soft copy of the payment acknowledgement** along with your application form.

Organising Team

Prof. N. M. Anoop Krishnan & Prof. Manoj M. (Course Coordinators) Department of Civil Engineering Indian Institute of Technology Delhi Hauz Khas, New Delhi – 110016 Ph: 011-2659-1219 Email: manojm@civil.iitd.ac.in Ph: 011-2659-1223 Email: krishnan@civil.iitd.ac.in	Prof. Hariprasad Kodamana (Course Coordinator) Asst. Professor Department of Chemical Engineering Indian Institute of Technology Delhi Hauz Khas, New Delhi – 110016 Ph:011-265961024 Email: kodamana@chemical.iitd.ac.in
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Registration

Interested candidates are requested to fill the particulars requested in the registration form available at <https://goo.gl/forms/qxiYpQuJH2gfMUpu2>. For further information related to the course or for accommodation enquiries, please contact us at teqip3.iitd@gmail.com.
