



SRI VENKATESWARA COLLEGE OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING



Report of the Webinar on
“APPLICATIONS OF PROBABILITY AND STATISTICS IN
GEOTECHNICAL ENGINEERING”

29.03.2023 (Wednesday)

Coordinator

Mr. A. Vijay Vignesh
(AP/Civil Engg.)

Convenor

Dr. R. Kumutha
HoD/Civil Engg.



SRI VENKATESWARA COLLEGE OF ENGINEERING

(An Autonomous Institution affiliated to Anna University, Chennai)

Pennalur, Sriperumbudur Tk – 602 117



DEPARTMENT OF CIVIL ENGINEERING

Report of the Webinar on “Applications of Probability and Statistics in Geotechnical Engineering”

Date : 29.03.2023 (Wednesday)

Time : 02.00 P.M – 03.30 P.M

Mode : Online

Venue: Google meet

Meeting Link: meet.google.com/eyi-jwvy-hti

Speaker

Dr. T. Ashok Kumar

Assistant Professor

Department of Civil Engineering

National Institute of Technology

Puducherry - Karaikal

Convenor & Organizing Secretary

Dr. R. Kumutha, Professor & Head/Civil Engineering

Coordinator

Mr. A. Vijay Vignesh, Assistant Professor/Civil Engineering

Target Audience: Students and Faculty members

Number of Participants benefited: 39

UG Students : 27

Faculty : 11

Others : 1

Total No of Internal Participants – 31

Students – 27, Faculty – 3, Others – 1

Total No of External Participants – 8

Students – 0, Faculty – 8, Others - 0

Brochure - Applications of Probability and Statistics in Geotechnical Engineering

3 messages

Vijay Vignesh CVE <avijayvignesh@svce.ac.in>
To: HOD Civil SVCE <hodce@svce.ac.in>

Mon, Mar 20, 2023 at 9:12 PM

Ma'am,

PI find the attached brochure for your approval and circulation.

--- Thanks and Regards ---


Vijay Vignesh

Assistant Professor - Civil Department,
Sri Venkateswara College of Engineering,
Sriperumbudur

2 attachments



Brochure - Applications of Probability and Statistics in Geotechnical Engineering.png
1102K

 **Brochure - Applications of Probability and Statistics in Geotechnical Engineering.pdf**
5587K

HOD Civil SVCE <hodce@svce.ac.in>
To: Vijay Vignesh CVE <avijayvignesh@svce.ac.in>

Wed, Mar 22, 2023 at 6:24 PM

PI do the correction as suggested by the speaker and send the modified one for circulation.

Thanks and Regards
Dr.R.Kumutha
Professor and Head
Department of Civil Engineering
Sri Venkateswara College of Engineering
Sriperumbudur
Ph:9894125626

----- Forwarded message -----

From: **Dr.AshokKumar T** <ashok.t@nitpy.ac.in>
Date: Wed, 22 Mar 2023, 5:59 pm
Subject: Re: Brochure - Applications of Probability and Statistics in Geotechnical Engineering
To: HOD Civil SVCE <hodce@svce.ac.in>

Dear Professor,

I received the invitation, and okay with the template of the invitation. Please proceed further.

However, I need a minor change in the institute name. It shall be reported as " National Institute of Technology Puducherry- Karaikal."

With Best Regards

Dr. T. Ashok Kumar

Assistant Professor (Geotechnical Engineering)

Department of Civil Engineering

National Institute of Technology Puducherry

Karaikal-609609

(Cont: 8072559852)

From: "HOD Civil SVCE" <hodce@svce.ac.in>

To: "Dr.AshokKumar T" <ashok.t@nitpy.ac.in>

Sent: Tuesday, March 21, 2023 11:59:25 AM

Subject: Brochure - Applications of Probability and Statistics in Geotechnical Engineering

Dear professor

Pl find attached the invitation for the program. If it is fine, I will circulate. Pl let me know.

--

Thanks and Regards

Dr.R.Kumutha

Professor and Head

Department of Civil Engineering

Sri Venkateswara College of Engineering

Sriperumbudur - 602117

TN, India

Ph: 9894125626

Web of Science Profile

Scopus Author Profile

Google Scholar Profile

Vijay Vignesh CVE <avijayvignesh@svce.ac.in>

To: HOD Civil SVCE <hodce@svce.ac.in>

Wed, Mar 22, 2023 at 7:03 PM

Pl find the updated brochure for your approval and circulation mam.

--- Thanks and Regards ---

Vijay Vignesh

Assistant Professor - Civil Department,

Sri Venkateswara College of Engineering,


Sriperumbudur

[Quoted text hidden]

2 attachments



Brochure - Applications of Probability and Statistics in Geotechnical Engineering.png
1104K

 **Brochure - Applications of Probability and Statistics in Geotechnical Engineering.pdf**
5587K

BROCHURE

 **Indian Concrete Institute**
Chennai Centre



SVCCE | Sri Venkateswara
College of
Engineering

(Autonomous - Affiliated to Anna University)
Pennalur, Sriperumbudur Tk. - 602117, Tamil Nadu



Department of Civil Engineering

invites you for a

Webinar

on

Applications of Probability and Statistics in Geotechnical Engineering



Dr. T. Ashok Kumar

Assistant Professor
Department of Civil Engineering
National Institute of Technology
Puducherry - Karaikal

Registration Link:

<https://forms.gle/wYMqJETXWt7385dKA>



Scheduled on
29.03.2023 (Wednesday)

Venue: **Google Meet**

Timings: **10.30 A.M. - 11.30 A.M.**

Faculty Coordinator
Mr. A. Vijay Vignesh
AP/Civil

Convenor & Organizing Secretary
Dr. R. Kumutha
Head of the Department
Civil Engineering

Webinar - "Applications of Probability and Statistics in Geotechnical Engineering" - Civil Department - SVCE

Sri Venkateswara College of Engineering, Sriperumbudur
Department of Civil Engineering

Date: **29.03.2023 (Wednesday)**

Venue: **Google Meet**

Webinar on "**Applications of Probability and Statistics in Geotechnical Engineering**"

Kindly fill this registration form and meeting link will be send through email.

avijayvignesh@svce.ac.in [Switch account](#)



* Indicates required question

Email *

Your email

Name of the Participant (Full Name) *

Your answer

Name of the College/Institution *

Your answer



Designation *

- Student
- Faculty
- Industry Professionals
- Other: _____

Mobile Number (Whatsapp No)

Your answer

Year of Study (for students) *

- UG - 2nd Year
- UG - 3rd Year
- UG - 4th Year
- PG Student
- Other: _____

Department (for faculty and industry professionals)

Your answer

Submit

Clear form

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Google Forms



Dr. Ashok Kumar T

Assistant Professor

Department of Civil Engineering

National Institute of Technology Puducherry

Karaikal, Union Territory of Puducherry- 609609

Email: ashok.t@nitpy.ac.in

Earned Degrees:

Ph.D in Geotechnical Engineering / 2020

Indian Institute of Technology Madras – Chennai, Tamil Nadu.

M.Eng. in Soil Mechanics and Foundation Engineering / 2011

College of Engineering Guindy, Anna University- Chennai, Tamil Nadu.

B.Eng. in Civil Engineering / 2009

Government College of Engineering – Tirunelveli, Tamil Nadu.

Professional Experiences:

18 Aug 2021 – Present : **Asst. Professor** - National Institute of Technology Puducherry, Karaikal.

Jan 2021- 17 Aug 2021: **Asst. Engineering Manager**- Larsen and Toubro Construction – Chennai

July 2020 – Dec 2020 : **Project Officer**- Indian Institute of Technology Madras

July 2013 - Apr 2016 : **Senior Research Fellow**- Indian Institute of Technology Madras

June 2011 – Apr 2013 : **Asst. Professor** - Jeppiaar Engineering College, Chennai

Research Areas :

Probabilistic Characterization of Geomaterials

Soft Clay Engineering

Transportation Geotechnics

Landfill Clay Liner

Ground Improvement

List of Publications

▪ Journals:

1. **Ashok Kumar T**, Ramanandan S, Sundaravel V (2023) Engineering characterization of intermediate geomaterials - A review. **Geomechanics and Engineering**,33(5), 453-462. DOI: [10.12989/gae.2023.33.5.453](https://doi.org/10.12989/gae.2023.33.5.453)
2. **Ashok Kumar, T**, Thyagaraj, T. and Robinson, R. G., (2022). Swell -shrink behaviour of fly ash stabilised expansive soils. Proceedings of the Institution of Civil Engineers-**Ground Improvement**. <https://doi.org/10.1680/jgrim.21.00024>.
3. **Ashok Kumar, T**, Raheena, M., Robinson, R.G. and Thyagaraj,T (2020) A rapid method of determination of swell potential and swell pressure of expansive soils using constant rate of strain apparatus. **Geotechnical Testing Journal, ASTM**, 43(6), 1368-1378. <https://doi.org/10.1520/GTJ20180414>
4. **Ashok Kumar, T**, Robinson, R. G., and Thyagaraj, T. (2018). Distress of an industrial building constructed on an expansive soil: a case study from India. Proceedings of the Institution of Civil Engineers-**Forensic Engineering**, 171(3), 121-126. <https://doi.org/10.1680/jfoen.18.00005>

▪ Book Chapters:

5. **Ashok Kumar, T.**, Thyagaraj, T., and Robinson, R. G. (2022). A Critical Review on Stabilisation of Expansive Soils with Compensating Materials. *Ground Improvement and Reinforced Soil Structures*, 241-247. **Lecture Notes in Civil Engineering**, https://doi.org/10.1007/978-981-16-1831-4_22.
6. **Ashok Kumar, T.**, Thyagaraj, T., Robinson, R.G. (2022). Effect of Lime Treatment on Expansive Soils at High Initial Water Content. In: Dey, A.K., Mandal, J.J., Manna, B. (eds) Proceedings of the 7th Indian Young Geotechnical Engineers Conference. **Lecture Notes in Civil Engineering**, vol 195. Springer, Singapore. https://doi.org/10.1007/978-981-16-6456-4_13

▪ Conference Proceedings:

7. **Ashok Kumar, T**, Thyagaraj, Tⁱ and Robinson, R.G. (2018) Stabilization of swelling soils at

higher water content using deep soil mixing method. *Proceedings of the Conference on Next frontiers in civil engineering: sustainable and resilient infrastructure*, IIT Bombay.77-78

Subjects Taught

Undergraduate

Building Materials and Construction
Geotechnical Engineering
Engineering Surveying
Experimentalists
Highway Engineering
Foundation Engineering
Ground Improvement Techniques
Highway Engineering Laboratory
Earthquake Geotechnical Engineering

Graduate

Advanced
Statistics for

Administrative works

- RO Committee Chairperson - Water treatment unit
- Warden -Bharani Hostel
- Purchase Committee- Department Member

Reviewer of Journals

- International Journal of Geomechanics - ASCE
- Sadhana- Published by the Indian Academy of Sciences - Springer

Invited Guest Lectures

- On 29 March 2023, at Sri Venkateswara College of Engineering Sriperumbudur, on the topic "Application of probability and statistics in geotechnical engineering"
- On 25 May 2023, at National Institute of Technology Puducherry- Karaikal, on the topic "Characterization of site variability for liquefaction analysis"

BRIEF REPORT OF THE WEBINAR

Mr. A. Vijay Vignesh, Assistant Professor, Department of Civil Engineering, Sri Venkateswara College of Engineering has delivered the welcome address and introduced the speaker Dr. T. Ashok Kumar, to all the participants.

The speaker welcomed the gathering and gave a brief overview on various test required to determine the bearing capacity of the soil. Then the speaker highlighted the current approaches involved in designing the geotechnical structures as per Indian standards. He elaborated the uncertainties involved in the soil shear parameters with real time example. He later discussed about the sources of the uncertainties in the designing of geotechnical structures. The speaker highlighted the probability methods to minimize the error in the data and also explained the various sampling techniques involved in the probability and statistical approach. He later explained about the different types of probability distribution and its applications in designing the geotechnical structures with suitable examples.

The speaker concluded the session and discussed on the queries raised by the participants.

The session was interactive, and the questions raised by the participants were answered by the speaker. The session ended with a vote of thanks delivered by Mr.A.Vijay Vignesh, Assistant Professor, Department of Civil Engineering, Sri Venkateswara College of Engineering. The participants also had appreciated the webinar.

SNAPSHOTS OF THE WEBINAR



Recording | ashok kumar is presenting | Press Esc to exit full screen

Descriptive statistics

1. Mean (μ) 2. Standard deviation (σ) 3. Variance 4. Coefficient of Variation (COV)

Variance: The mean of the squares of the deviations from the mean is called Variance. It is denoted by (read as sigma square).

Variance = Mean of squares of deviations

$$= \frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n}$$

$$\text{Variance } \sigma^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}$$

$$\text{Standard deviation } \sigma = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}}$$

$$CV = \frac{\sigma}{\mu} \times 100$$

Soil Properties	COV %
Cohesion (undrained) (clays)	20-50
Angle of friction (sands)	5-15
UCS (kPa)	6-100

11:16 AM | Webinar on "Applications of Probability and S..."

You

CE
17 RETHEKA SHIVAKUMAR...

ashok kumar

11 others

Designing of Geotechnical Structures

Bearing Capacity of soil (Q_u)

Filed investigation:

- SPT
- CPT
- DCPT...etc.,

Output = N-value

$Q_c = f(\text{N-value})$

Lab investigation:

- Unconfined Compressive Strength test
- Direct shear test
- Triaxial compression test

Output = c & ϕ

$Q_c = f(Y, c, \phi)$

$$q_{ult} = cN_c s_c + \gamma DN_q + 0.5\gamma BN_\gamma s_\gamma$$

(Dr Terzaghi's Bearing Capacity equation)

ashok kumar

Program Objectives

The objectives of the workshop are:

- To gain knowledge on the applications of Probability and Statistical functions in designing the Geotechnical structures.

The following Program Outcomes (POs) and Program Specific Outcomes (PSOs) are addressed for the Webinar on “**Applications of Probability and Statistics in Geotechnical Engineering**”

Particulars	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Applications of Probability and Statistics in Geotechnical Engineering	✓	✓		✓	✓							✓	✓	✓

Registration Link: <https://forms.gle/Y8nqmR9jrB4X6MbVA>

Feedback Link: <https://forms.gle/SihHsHjoC7j9bfTRA>

LIST OF PARTICIPANTS

S.No	Name of the Participant	Name of the Institution	Category
1	Dr. LEKHA B M	KVG College of Engineering, Sullia	Faculty
2	Mr. AJITH B T	KVG College of Engineering, Sullia	Faculty
3	Mr. VIJAY H	Bearys Institute of Technology, Mangaluru	Faculty
4	Mr. ANAND KUMAR S	Sengunthar Engineering College	Faculty
5	Dr. LEKHA B M	KVG College of Engineering, Sullia	Faculty
6	Mr. ROHIT SAHU	Bansal Institute of Research and Technology Bhopal	Faculty
7	Mr. DEEPIKA S	Coorg Institute of Technology, Ponnampet, Karnataka	Faculty
8	Mr. LAKSHMINARAYANA N	KVG College of Engineering, Sullia	Faculty
9	CHIRANJEEVI B	Sri Venkateswara College of Engineering	Others
10	AADESHWAR S	Sri Venkateswara College of Engineering	UG Student
11	ABINAYA S	Sri Venkateswara College of Engineering	UG Student
12	BALAJI K	Sri Venkateswara College of Engineering	UG Student
13	HARINI A	Sri Venkateswara College of Engineering	UG Student
14	HARISHKANNEN R	Sri Venkateswara College of Engineering	UG Student
15	KALICHARAN A S	Sri Venkateswara College of Engineering	UG Student
16	KAVIYA R	Sri Venkateswara College of Engineering	UG Student
17	KISHOR M	Sri Venkateswara College of Engineering	UG Student
18	LOMINA R	Sri Venkateswara College of Engineering	UG Student
19	NITHILA M	Sri Venkateswara College of Engineering	UG Student

S.No	Name of the Participant	Name of the Institution	Category
20	PRIYADARSHINI R	Sri Venkateswara College of Engineering	UG Student
21	RAGHAVENDRA B	Sri Venkateswara College of Engineering	UG Student
22	RASHIK AHMED R	Sri Venkateswara College of Engineering	UG Student
23	VELAN S	Sri Venkateswara College of Engineering	UG Student
24	BALAJI M	Sri Venkateswara College of Engineering	UG Student
25	GOPINATH K	Sri Venkateswara College of Engineering	UG Student
26	KAILASH SUNDAR M	Sri Venkateswara College of Engineering	UG Student
27	KUMARAN S	Sri Venkateswara College of Engineering	UG Student
28	SANTHOSH KUMAR N M	Sri Venkateswara College of Engineering	UG Student
29	MANIMARAN A	Sri Venkateswara College of Engineering	UG Student
30	SIDDHARDH K	Sri Venkateswara College of Engineering	UG Student
31	GIRI RAVENDAR M	Sri Venkateswara College of Engineering	UG Student
32	PRAVEEN RAJ A	Sri Venkateswara College of Engineering	UG Student
33	MONICA V	Sri Venkateswara College of Engineering	UG Student
34	AMARAVATHY U	Sri Venkateswara College of Engineering	UG Student
35	AURUDRA ADISESHIAH KRISHNA	Sri Venkateswara College of Engineering	UG Student
36	DHANUSH KANNAN L	Sri Venkateswara College of Engineering	UG Student
37	Mr. HARISWARAN S	Sri Venkateswara College of Engineering	Faculty
38	Dr.R.SATHIA	Sri Venkateswara College of Engineering	Faculty
39	Ms.RUBY FREYA	Sri Venkateswara College of Engineering	Faculty

SUMMARY OF FEEDBACK

Total Number of respondents: 39

Feedback	Strongly Agree	Agree	Neutral	Disagree
The session delivered the information I expected to receive.	31	8	0	0
The subject matter was presented effectively.	32	7	0	0
The pace and duration of the webinar was satisfactory.	33	6	0	0
The resource person is knowledgeable.	35	4	0	0
The resource person presented the information in a clear and logical manner	36	3	0	0
Sufficient time was given for interaction	35	4	0	0
The webinar was well organized	32	7	0	0
As a result of this webinar, I gained new knowledge	36	3	0	0

Additional Comments:

- Informative Session.

YouTube Link: [Webinar on "Applications of Probability and Statistics in Geotechnical Engineering | 29.03.2023 - YouTube](#)

Feedback link - Webinar - "Applications of Probability and Statistics in Geotechnical Engineering" - Civil Department - SVCE

Feedback Form
Department of Civil Engineering

Webinar on "Applications of Probability and Statistics in Geotechnical Engineering"

Date : 29.03.2023
Time: 10:30 A.M - 11.30 A.M (Wednesday)

Speaker Name :
Dr. T. Ashok Kumar
Assistant Professor
Department of Civil Engineering
National Institute of Technology
Puducherry - Karaikal

Kindly provide your valuable feedback.

Email ID *

lakshminarayanan681@gmail.com

Name of the Participant *

Lakshminarayana N

Name of the Department *

K v g College of engineering

Category *

- Second Year Student
- Third year student
- Final year student
- Faculty
- Lab Technician

Mobile number (Whatsapp)

9591722301

Please rate your satisfaction with the content of the Lecture delivered by the speaker by indicating your level of agreement or disagreement with each of the following statements. *

	Strongly agree	Agree	Neutral	Disagree
The session delivered the information I expected to receive.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The subject matter was presented effectively.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The pace and duration of the program was satisfactory.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The resource person is knowledgeable.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The resource person presented the information in a clear and logical manner	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient time was given for interaction	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The program was well organized	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a result of this program, I gained new knowledge	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you interested in attending such programs organized in future by the Department of Civil Engineering of SVCE *

Yes

No

Additional Comments/Feedback *

Session nd talker knowledge excellent

This form was created inside of Sri Venkateswara College of Engineering.

Google Forms

SUMMARY OF FEEDBACK

As a result of this webinar, I gained new knowledge

The webinar was well organized

Sufficient time was given for interaction

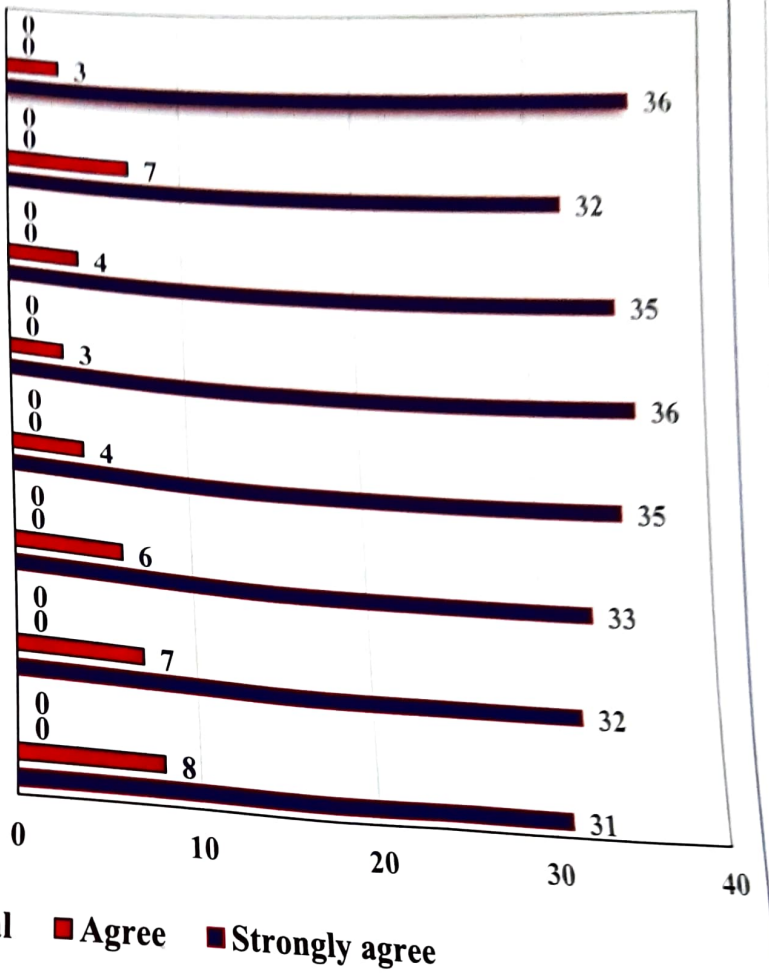
Resource person presented the information clear and logical manner

The resource person is knowledgeable.

The pace and duration of the webinar was satisfactory.

Subject matter was presented effectively.

The session delivered the information I expected to receive.



■ Disagree
 ■ Neutral
 ■ Agree
 ■ Strongly agree

Prepared by

Vijay Vignesh (AP/Civil Engg.)
Coordinator

Approved by

Dr. R. Kumutha (HoD/Civil Engg.)
Convenor & Organizing secretary