Date: 25/08/2020

Report on Outreach and Exchange Initiative:
Online Workshop on Mathematics and Data Science (5 Days)
12th July 2020 to 26th July 2020

Introduction:

As per the initiatives of Ministry of Human Resource Development and AICTE, Thakur College of Engineering and Technology conducted Outreach and Exchange Initiative. It gives an opportunity for students to broaden their knowledge on their study of choice from a different institute. This also gives them a chance to develop their work experience by seeing how the course they are studying is being practiced in another institute. It helps them to understand the working philosophy of another institute and also enhances their ability to work in collaboration with students of other institute. The purpose of the program is to learn the culture, working styles, social customs, food habits and such other aspects of the social and cultural affairs of each other's institute along with learning technical skills regarding a latest technology.

Due to high computational machine, human race has generated a lot of data in every field of lives, which has created or rather evolves a field of data science. The generation of data give rise to many concerns and provides a strong base to the human to take decision. To analysis this big data, fundamental concepts of mathematics are required only then a computational machine can extract the correct information from a data. To understand data science, it is imperative to understand the basic concepts of mathematics and apply it in computation. As per the initiatives of Ministry of Human Resource Development and AICTE, Thakur College of Engineering and Technology conducted an Online Workshop on Mathematics and Data science under Outreach and Exchanges Initiative.

Objective:

1. To Remove the fear from the mind of students and faculties and encourage them to learn the new technology of data science.
2. To amalgamate mathematics with computations
3. To encourage the students to do collaborative projects in the fields of data science.
4. To enhance outreach and students exchange programme of Institute

Duration of the program: 12th July 2020 to 26th July 2020(5 Days)

![Thakur College of Engineering & Technology header]

THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY

Zagdu Singh Charitable Trust's (Regd.)

Autonomous College Affiliated to University of Mumbai
Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra(GoM)

Conferred Autonomous Status by University Grants Commission (UGC) for 10 years w.e.f. A.Y 2019-20
Amongst Top 200 Colleges in the Country, Ranked 193rd in NIRF India Ranking 2019 in Engineering College category
* ISO 9001:2015 Certified • Programmes Accredited by National Board of Accreditation (NBA), New Delhi*
* Institute Accredited by National Assessment and Accreditation Council (NAAC), Bangalore*

Website : www.tcetmumbai.in

Activities under Program: In the exchange program, Online Workshop on Mathematics and Data Science was conducted.

Venue: Online Platform (Zoom and YouTube)

Institute Participated: Total 334 participants of around 100 colleges all over India registered for the workshop.

Overall coordinator:

- Dr. Lochan Jolly (Dean SSW)
- Dr. Vivek Mishra (Activity Head – Advocacy, Outreach and Extension program)
- Dr. Megharani Patil (Activity Head – National Initiative Program)
- Mr. Yogesh Bhalekar (Depty HOD - ES&H Dept)

Details of the Event:

Day 1:

a. Description of the event:

The workshop was conducted for five days in two sessions morning and afternoon. The first day on 12th July 2020 comprised of inaugural lecture on Linear Algebra and then the session was on Data Science using R programming. Participants of different colleges throughout India participated. The basics of linear algebra and its use in data science was focused upon in the session. The basics of R programming and its use in research industry was also introduced to the participants.

b. Faculty Involved:

- Dr. Vivek Mishra (ES&H Dept): Overall Coordinator
- Dr. Megharani Patil (COMP Dept): Overall Coordinator
- Mr. Amol Dapkekar (ES&H Dept): Inauguration Ceremony coordinator
- Mr. Yogesh Bhalekar (ES&H Dept) : Speaker
- Dr. Anand Khandare (COMP Dept) : Speaker
- Ms. Jalpaben Pandya (ELEX Dept) : Moderrator

c. Number of Participants Attended: Morning (300), Afternoon (114)

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Day 2:

a. Description of the event:

The second day on 18th July 2020 comprised of lecture on Calculus for Data Science and then the session was on Data Science using R programming. Participants of different colleges throughout India participated. An introduction to multivariate differential and its use in data science was highlighted upon. Vector operations on R programming was introduced to the participants in the afternoon session

b. Faculty Involved:

- Dr. Vivek Mishra (ES&H Dept) : Overall Coordinator
- Dr. Megharani Patil (COMP Dept) : Overall Coordinator
- Dr. Nita Jain (ES&H Dept) : Speaker
- Mr. Yogesh Bhalekar (ES&H Dept) : Overall Coordinator
- Dr. Anand Khandare (COMP Dept) : Speaker
- Mr. Vaibhav Madane (MECH Dept) : Observer

c. Number of Participants Attended: Morning (136), Afternoon (68)

Day 3:

a. Description of the event:

The third day on 19th July 2020 comprised of lecture on Probability and Distributions with examples. Basic concepts of Sampling and Hypothesis testing were also introduced. Importance of sampling and its techniques like probability sampling and non-probability sampling techniques were focused upon. Participants of different colleges throughout India participated. Implementation of regression models on R programming was introduced to the participants in the afternoon session.

b. Faculty Involved:

- Dr. Vivek Mishra (ES&H Dept) : Overall Coordinator
- Dr. Megharani Patil (COMP Dept) : Overall Coordinator
- Dr. Nita Jain (ES&H Dept) : Co-Coordinator

- Mr. Yogesh Bhalekar (ES&H Dept): Overall Coordinator
- Dr. Vinita Agarwal (ES&H Dept) : Speaker
- Dr. Vivek Bharatiya (External) : Speaker
- Dr. Anand Khandare (COMP Dept) : Speaker
- Ms. Kalpana Gangwar (COMP Dept) : Observer

c. Number of Participants Attended: Morning (126), Afternoon (83)

Day 4:

a. Description of the event:

The fourth day on 25th July 2020 comprised of lecture on Least squares for Data Science. Goodness of fit, One-way analysis of variance and Cluster analysis along with case studies was introduced. Linear regression, least square method and their applications in data science was also emphasized upon. A case study on telecom customer churn, the concept of churn its significance and ways in which churn can be monitored and predicted was elaborated in detail in the afternoon session.

b. Faculty Involved:
- Dr. Vivek Mishra (ES&H Dept) : Overall Coordinator
- Dr. Megharani Patil (COMP Dept) : Overall Coordinator
- Dr. Nita Jain (ES&H Dept) : Co-cordinator
- Mr. Yogesh Bhalekar (ES&H Dept) : Overall Coordinator
- Dr. Anand Khandare (COMP Dept) : Speaker
- Mr. Arpit Vyas (CIVIL Dept) : Observer

c. Number of Participants Attended: Morning (102), Afternoon (60)

Day 5:

a. Description of the event:

The fifth day on 26th July 2020 comprised of lecture on Fundamentals of Data Science. Various fundamentals of data science and its use in data science, introduction to data, concept of data, Big Data, collection of data from web, finance, online trading & purchase,

social networking, etc. was introduced to the participants. Application of data science in the field of Agriculture, Healthcare & Finance was discussed in the afternoon session.

b. Faculty Involved:
   • Dr. Vivek Mishra (ES&H Dept) : Overall Coordinator
   • Dr. Megharani Patil (COMP Dept) : Overall Coordinator
   • Dr. Nita Jain (ES&H Dept) : Co-cordinator
   • Mr. Yogesh Bhalekar (ES&H Dept) : Overall Coordinator
   • Dr. Debratta Dutta ((External) : Panelist
   • Dr. Vivek Bharatiya (External) : Panelist
   • Dr. Sheetal Rathi (COMP Dept) : Panelist
   • Mr. Ashwin Pathak (ES&H Dept): Observer

c. Number of Participants Attended: Morning (102), Afternoon (60)

Outcome:

1. The workshop was interactive and impactful. It provided an insight about the fundamentals of data science.

2. The session by experts explained the usefulness or practical application of data science in the field of agriculture, healthcare, finance, telecom, etc.

3. The workshop gave an opportunity to participants to collaboratively work on projects on Mathematics and data science

4. Certificates are issued to 58 participants who have attended 50% and more sessions with interactions. Also submitted all quizzes and feedback.

Conclusion:

1. A positive, motivating feedback was received from audience. The session was impactful and informative. The session imparted knowledge about the importance and fundamentals of data science.

2. The session on project discussion highlighted the use of the data science in research community which was appreciated by the audience.

Glimpses of the event:

Sd/-

(Dr. B. K. Mishra)

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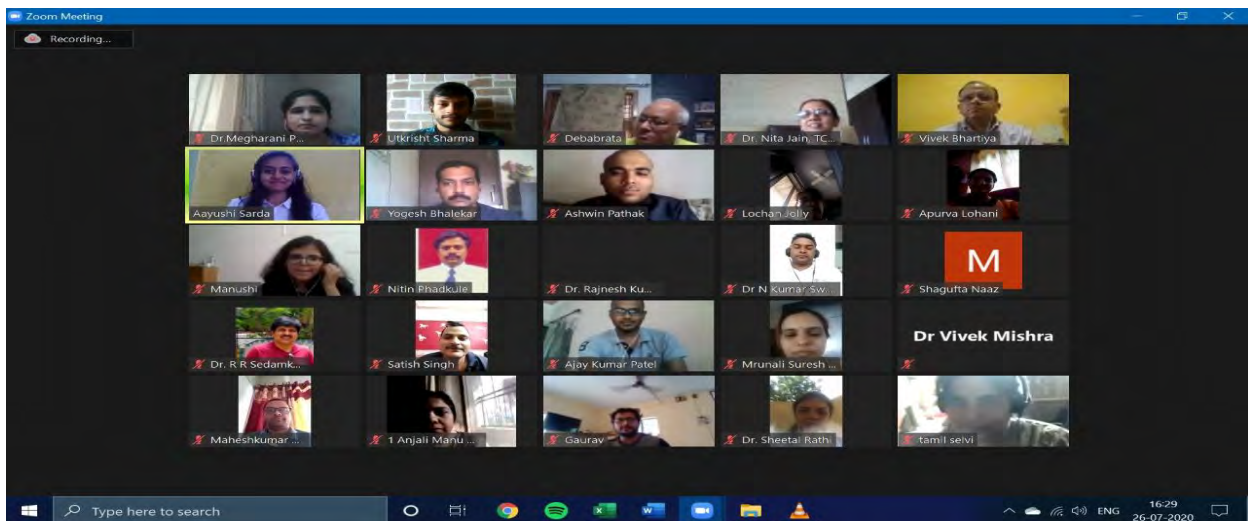• *ISO 9001:2015 Certified* • *Programmes Accredited by National Board of Accreditation (NBA), New Delhi*
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Date: 4/8/2020

The list of eligible candidates for certificate of online workshop on mathematics and data science.

Sr. No.	Name of the candidate	College/Institute name	Attd. %
1	Dr. Seema Kolkur	Thadomal Sahani Engineering College	100.0%
2	Dr. Ajay Kumar	IIT(BHU), Varanasi	100.0%
3	Mr. Chetan Bhoyar	Prof. Ram Meghe Institute of Technology and Research Badnera Amravati	100.0%
4	Dr. Kawita Thakur	Government college of engineering, Amravti	100.0%
5	Ms. Priti Uttamrao Panchal	M. B. E. S College of Engineering, Ambajogai	100.0%
6	Mr. Ajay Kumar Patel	IIT(BHU), Varanasi	100.0%
7	Mrs. Nidhi Dharmesh Sharma	School of Biotechnology and Bioinformatics, D Y Patil University, Navi Mumbai	100.0%
8	Mr. Bharat Sitaram Potdar	Gharda Institute of Technology, Ratnagiri	100.0%
9	Dr. Nitin Jaykumar Phadkule	Govt. College of Engineering, Amravati	100.0%
10	Mrs. Anjali Manu Nambiar	S.S.J.C.E.T Asangaon	100.0%
11	Ms. Apurva R. Lohani	Goa College of Engeenering, Farmagudi Ponda	100.0%
12	Ms. Manushi Gupta	IIT(BHU), Varanasi	100.0%
13	Mrs. Richa Shrivastava	ISBM UNIVERSITY, Gariyaband	100.0%
14	Dr Vivek Ranjan Bhartiya	Thakur College of Engineering and Technology	100.0%
15	Dr. Nita Jain	Thakur College of Engineering and Technology	100.0%
16	Mr. Yogesh Bhalekar	Thakur College of Engineering and Technology	100.0%
17	Ms. Usha Bag	Shree L R Tiwari College of Engineering	90.0%
18	Mrs. Mrunali Suresh Sonwalkar	M. B. E. S College of Engineering, Ambajogai	90.0%
19	Ms. S. Priyanka	Aurora's scientific technological and research academy, Hyderabad	90.0%

20	Dr. Ramanna Havinal	Maharaja Institute of Technology, Mysore	90.0%
21	Mr. Saddam husain	Aligarh Muslim University, Aligarh	90.0%
22	Mrs. R. Kalaiarasi	Shree L R Tiwari College of Engineering	90.0%
23	Ms. Saumya Philip	Shree L R Tiwari College of Engineering	90.0%
24	Dr. Vinita Agarwal	Thakur College of Engineering and Technology	90.0%
25	Ms. Shagufta Naaz	Aurora's scientific technological and research academy, Hyderabad	90.0%
26	Dr. Vivek Mishra	Thakur College of Engineering and Technology	80.0%
27	Prof. Mohammed Abdul Qadeer	Aligarh Muslim University, Aligarh	80.0%
28	Prof. Kumaresan Gajarajan	Shinas college of technology, Sultanate of Oman	80.0%
29	Mr. Padega Bharath Kumar	Aurora's scientific technological and research academy, Hyderabad	70.0%
30	Ms. Kalyani Bhilare	Fegussan College, Pune	70.0%
31	Mr. Deepang Gaurang Desai	School of Engineering and Applied Sciences, Ahmedabad	70.0%
32	Prof. Pramila Chawan	VJTI College of Engineering, MUMBAI	70.0%
33	Mr. Umang Parekh	BKM Science College, Valsad	70.0%
34	Mr. Bhavesh Sondagar	Thakur College of Engineering and Technology	70.0%
35	Ms. Harshada Pratham	Pillai HOC College of Engineering and Technology, Rasayani	70.0%
36	Mr. Maheshkumar Dilip Kudre	Mahatma Education Society's Pillai College of Engineering, Navi Mumbai	70.0%
37	Mr. Vishnu Patil	Aurora's scientific technological and research academy, Hyderabad	60.0%
38	Mr. Gulab Patel	IIT(BHU), Varanasi	60.0%
39	Mr. Sunny Kumar	Government Engineering College, Nawada	60.0%
40	Mrs. Shubhangi Ranjit Kanbarkar	D. Y. Patil College Of Engineering and Technology, Kolhapur	60.0%
41	Dr. Alka Singh	Banasthali Vidyapith, Jaipur	60.0%
42	Dr. R. Suryanarayana	Vishnu Institute of Technology, Bhimavaram	60.0%
43	Prof. Sanjeev Kumar Maurya	University of Allahabad	60.0%
44	Mr. Sagar P. Bhilare	Smt. Kashibai Navale College of Engineering, Pune	60.0%
45	Prof. S. Tamil Selvi	MGM's College of Engineering &	60.0%

		Technology, Navi Mumbai	
46	Dr. Satish Singh	Thakur College of Engineering and Technology	60.0%
47	Mr. Praveen Kumar Yadaw	ISBM UNIVERSITY, Gariyaband	50.0%
48	Mrs. Neha Kumari	Government Engineering College, Nawada	50.0%
49	Prof. Prasad Bhagchand Jare	SVERI'S College Of Engineering, Pandharpur	50.0%
50	Dr. Mohammad Rafiq Agrewale	Automotive Research Association of India (ARAI), Pune	50.0%
51	Mr. Jaihind Bakelal Yadav	Thakur College of Engineering and Technology	50.0%
52	Mr. Harshal Sanjay Patil	Sandip foundation SITRC, Nashik	50.0%
53	Mr. Pragun Mukesh Tiwari	Thakur College of Engineering and Technology	50.0%
54	Mr. Gaurav Upadhyay	IIT(BHU), Varanasi	50.0%
55	Mrs. Rupali Sherekar	Prof R Meghe Institute of Technology and Research, Amravati	50.0%

Prepared By   Checked by   Verified by

Mr. Yogesh Bhalekar   Dr. Megharani Patil   Dr. Lochan Jolly

Deputy Head H&S   Activity Head NIP   Dean SSW