SOUVENIR

INTERNATIONAL CONFERENCE ON

EMERGING TRENDS IN STEM EDUCATION

celebrating

175 YEARS OF IIT ROORKEE Estd. 1847

VENUE: THE INSTITUTION OF ENGINEERS(INDIA) AUDITORIUM

organized by

IIT ROORKEE IITR Alumni Association श्रमं विना न किमपि साध्यम्

IIT ROORKEE ALUMNI ASSOCIATION, DEHRADUN CHAPTER

MAY 29, 2022

ओएनजीसी विदेश
ONGC VIDESH

ओएनजीसी विदेश
लगातार
अग्रसर

आज़ादी का अमृत महोत्सव

राष्ट्र की परिकल्पना को इसकी सीमाओं तक नहीं बांधा जा सकता है।

तीन महाद्वीपों में पन्द्रह देशों की पैंतीस परियोजनायें ओएनजीसी विदेश के अंतर्राष्ट्रीय समाकलन और सहयोग को दर्शाती हैं।

/ONGCVideshLtd/
/ongcvideshltd
www.ongcvidesh.com

ओएनजीसी विदेश लि.
पाचवाँ तल, टॉवर बी
दीनदयाल ऊर्जा भवन
5, नेल्सन मंडेला मार्ग, वसंत कुंज
नई दिल्ली 110070, भारत
फोन: +91-11-26129344, 26753411
फैक्स: +91-11-26129345, 26129346
CIN NO: U74899DL1965GOI004343

SOUVENIR

INTERNATIONAL CONFERENCE ON

EMERGING TRENDS IN STEM EDUCATION

celebrating

175 YEARS OF IIT ROORKEE Estd. 1847

Er. S.M. Saxena

Chief Editor

Dr. Naveen Singhal

Editor

Shivam Rai

Designer

IIT ROORKEE IITR Alumni Association श्रमं विना न किमपि साध्यम्

IIT ROORKEE ALUMNI ASSOCIATION, DEHRADUN CHAPTER

MAY 29, 2022

Executive Council IITRAA Dehradun Chapter

Prof. M.P. Jain

President

Er. S.M. Saxena

Vice President

Er. Pradeep Sahariya

Secretary

Er. Ram Kumar Goel

Treasurer

Dr. Naveen Singhal

Joint Secretary

Ar. Vinay Singh

Joint Secretary

Executive Members

Sh. Rajiv Mittal

Sh. S K Gupta

Ms. Himeshwari Sharma

Er. Vipul Jain

EDITORIAL

It is a matter of great pleasure for me to present before you the souvenir on the occasion of celebrations of 175th year of establishment of IIT Roorkee, by Dehradun Chapter of IIT, Roorkee Alumni association on 29th May, 2022. His Highness the Governor of Uttarakhand State has very kindly consented to be the Chief Guest to grace the Inaugural Function. An International Conference on current burning topic "Emerging Trends in STEM education" will make it a memorable event. A colorful Cultural Program will add glamour to the function.

There has been a long journey of IIT, Roorkee since its establishment in 1847 as Roorkee College followed by Thomason College of Civil Engineering and University of Roorkee till it became IIT in 2001. Various degrees awarded by this institute are respected at all levels in India and abroad. Question arises as to what makes it consistently so significant. The simple answer to this question is that this institute focuses on quality education, discipline and above all its traditions. That is why it is 175 and not out.

Our Alma mater is soul of every Alumnus and is universally known to be an integral part of his life. Alumni feel connected with the institute for its development. Dehradun Chapter of IITRAA has emerged as a distinct local chapter for its continuous meetings, cultural programs, picnics and remarkable social cause during Covid pandemic.

I am sure all the participants will be benefited with the views of learned speakers. The outcome of the conference will be very useful for them and the Nation at large.

Feel proud to be a Thomasonian.

Er. S.M. Saxena

Message from Governor

LT GEN GURMIT SINGH
PVSM, UYSM, AVSM, VSM (Retd)
GOVERNOR UTTARAKHAND

सत्यमेव जयते

Message

It gives me immense pleasure to learn that IIT Roorkee Alumni Association, Dehradun Chapter is going to celebrate the 175th year of establishment of their Alma Mater. IIT Roorkee which started its journey as Roorkee College of Engineering way back in 1847 as the first engineering college in the then British Empire, groomed into an university in the year 1949 and finally an IIT in the year 2001.

It is a matter of pride that such a prestigious institute is located in the State of Uttarakhand, which has maintained consistent good reputation in respect of keeping high standards in quality education and producing illustrious engineers and scientists.

Further, I am glad to find that alumni association is organizing an International Conference on Emerging Trends in STEM Education on this occasion, which is quite relevant these days. I hope the outcome of this conference will be beneficial to the society at large.

I wish all success of the Conference.

Gurmit

RAJ BHAWAN
UTTARAKHAND
Phone : 0135-2757400
2757403

Lt Gen Gurmit Singh
PVSM, UYSM, AVSM, VSM (Retd)

24 May, 2022

Message from President

At the outset, I extend my warmest felicitations to the IITRAA Dehradun Chapter for organizing an "International Conference on the Emerging trends in STEM Education" to celebrate 175 years of glorious journey of our beloved Alma mater, IIT Roorkee. We are indeed fortunate to belong to the oldest technical institute in Asia with a global reputation widely acclaimed for high quality education in the fields of Engineering & Technology, particularly Civil Engineering.

I am certain that a seminar of this nature effectively creates a platform for our alumni members around the globe to rejuvenate their bonding, improve connectivity and share wealth of experience for betterment of the current generation of the students, society and our Motherland.

The IITRAA Dehradun Chapter has been doing a commendable job in propagating IITRAA's vision of making our Alumni strong, united and a vibrant community committed to make a difference in various aspects of our lives with huge positive outcomes. Chapter, under the dynamic leadership of Prof. M.P. Jain, has been participating very actively, particularly during Covid times to extend a helping hand to the local community.

I am also certain that large number of our prestigious alumni who have made outstanding contribution in varied fields, made the Alma mater and country proud, shall be a part of this wonderful event at Dehradun dedicated to demonstrate our collective commitment and resolve to inspire the young generation, capable of taking this great country forward on the path of all round progress.

I once again compliment Prof. M.P. Jain and his highly talented team of Dehradun Chapter for their dedication and untiring efforts in organizing this event successfully despite large number of constraints.

Jai Hind.

Lt. Gen. Vishwambhar Singh (Retired), AVSM, VSM

President, IIT Roorkee Alumni Association

Message from Chairman & MD, ONGC

I am glad to know that Indian Institute of Technology (IIT), Roorkee has entered into 175th Year of its establishment. To celebrate the occasion, the Dehradun Chapter of IIT, Roorkee Alumni Association is going to organize an International Conference on Science, Technology, Engineering and Mathematics (STEM) Education on 29th May, 2022 at Dehradun in collaboration with its parent body, IIT Roorkee Alumni Association.

I am told that renowned experts from the fields of academics, industry and engineering will deliver lectures on various sub-themes during the Conference. I am sure these efforts will not only make science and technology education at the premier institute more interesting to the students but also make them more employable and better fit to become successful entrepreneurs in the years to come. I am sure this conference will give a platform to the participants to share their knowledge, experience and views with each other.

It is heartening to note that many of the Alumni have brought laurels to the country and have held many top-level positions in various Central & State Government departments including the PSUs and have excelled in their respective fields. It gives me immense satisfaction when I find many of the Alumni of IIT, Roorkee are serving the country as energy soldiers while working at ONGC and are posted at different locations in India & abroad and HQs Dehradun.

I convey my best wishes to the organizers and the participants of the Conference and appreciate their efforts towards providing holistic technical education to the students.

18/5/2022

Dr. Alka Mittal

Message from MD & CEO, OVL

I am happy to learn that the IIT, Roorkee is celebrating the 175th Year of its Establishment. On this unique milestone the Dehradun Chapter of IIT, Roorkee Alumni Association is organizing an International Conference on STEM Education on 29th May 2022.

The Roorkee College was established on 25th November 1847 as the First Engineering College in the British Empire. Where as the initial objective was limited to providing a regular supply of well-trained Civil Engineers for the construction of the ambitious Upper Ganga canal project, subsequently the college evolved and grew into the Thomason College of Engineering, then the University of Roorkee, before becoming IIT-Roorkee of present times. Numerous alumni of IIT Roorkee have brought laurels to the country and held top-level positions in various Central & States Government departments including PSUs and have excelled in their respective fields. Similar is the case with the private sector, both domestic as well as international, wherein several alumni have reached positions of eminence and won accolades for their organizations as well as themselves.

I understand that renowned experts from Academia, Industry and Engineering shall deliver talks on various sub themes at the Conference, which would broaden the perspectives and enrich the vision of participants. IIT-Roorkee has distinctive strength of focus on Industry-Academia linkages and is fast becoming a breeding ground for entrepreneurship, in line with the current dispensation. Besides holding the numero uno status for its Civil and Architecture branches, its Geoscience stream is also very highly valued.

Many alumni of IIT Roorkee, both in Engineering as well as in Geoscience streams, are working with ONGC and ONGC Videsh Limited. These alumni have distinguished themselves and invariably command the professional respect of their peer groups. ONGC Videsh is pleased to be associated with the Dehradun Chapter of IIT Roorkee Alumni Association to celebrate the event. I convey my best wishes to the organisers and the participants for a memorable conference.

A. K. Gupta

Message from Chapter President

I am indeed overwhelmed by the response we have received from alumni from Dehradun and outside Dehradun for the Amrit Mahotasava being celebrated by Dehradun Chapter. I wish to thank all alumni specially members of organising committee which include executive committee members as well. Every body has worked very hard for more than 2 months day and night.

The International Conference has also received very good response from speakers who have kindly agreed to contribute for the success of this seminar. Participating Speakers include both our alumni and non - alumni. Our National President Lt Gen Vishwambhar Singh ji and Executive Committee of IITRAA have given fullest cooperation in organizing this event and I hope this will become a memorable event to commemorate 175 years of glorious journey of our alma mater.

I wish to thank once again to all those who have contributed in making this event extremely successful and memorable.

Best regards

Sincerely

M P Jain

President

IITRAA Dehradun Chapter

Message from Vice-President

I, on behalf of Team IITRAA, congratulate the IITRAA Dehradun Chapter for organizing an International Conference on the Emerging Trends in STEM Education, which shall serve as a wonderful platform for all the Alumni stalwarts to participate whole-heartedly in a technical event marking the celebrations of this historic year of IIT Roorkee.

The Celebration of the 175th Year of our Alma Mater is a unique opportunity to showcase our strength, to make this occasion memorable, and to represent the global strength of the outstanding and prestigious alumni of IIT Roorkee. The IITR Alumni Association, a body of our prestigious alumni, established in the year 1940, also completes 81 years of its existence this year.

Therefore, I wish them all the success on behalf of IITRAA and may we continue to work together along with all the other IITRAA Local Chapters towards attaining the vision of IITRAA successfully.

Dr. Achal Mittal
Vice President
IIT Roorkee Alumni Association

Message from All India Secretary

It gives me immense pleasure that the IIT Roorkee Alumni Association- Dehradun Chapter is organizing an International Conference on the Emerging trends in STEM Education, on the occasion of the celebrations of 175th year of our Alma mater.

The International Conference provides an opportunity for meeting of Alumni from various fields and offers a premise for global experts to gather and interact intensively on the topic of STEM education.

Our Alumni have added fame, dignity and lustre to the alma mater by their excellence and innovative spirit in varied and diverse fields encompassing the entire fabric of economic and national development, and this is a great technical platform for them to come together and showcase their expertise.

Wishing great success to the celebration of 175 years of IIT Roorkee, and to all members of IITRAA Dehradun Chapter for their dedication and efforts to organize this event. Hoping that all Thomsonians will continue to guard zealously the high reputation of our beloved Alma mater.

Dinesh Singh Pawar

Secretary

IIT Roorkee Alumni Association

Message from Secretary

I am extremely happy that our alma mater has entered into 175th Year of its establishment. It was desired by our parent body at Roorkee that this year may be celebrated by the chapters of IIT Roorkee Alumni Association in a grand way.

In this connection, Dehradun chapter of the association has decided to organise an International Conference on "Emerging Trends in STEM Education" on 29 May, 2022. The importance of the topic appears from the overwhelming response received from the Alumni of the chapter and other chapters. I am extremely obliged to CMD, ONGC and MD & CEO, ONGC Videsh Limited for agreeing to sponsor the event.

I am also grateful to His Excellency Governor of Uttarakhand to accept our invitation to be Chief Guest in the Inaugural function of the event. Further, it is a matter of pride for all of us that Er Alok Gupta, MD & CEO of OVL has agreed to be the Guest of honour in the session.

The eminent speakers from Academics and Industry will be sharing their experiences & thoughts on the sub-themes of the conference. I am sure that the participants will find the event quite informative and useful.

In last but not the least, Iam also thankful to the Executive members of our parent body, particularly President, Vice President and Secretary for all the help and guidance to organise the event.

I wish all the success of the conference.

Pradeep Sahariya

Secretary

Message from Convener

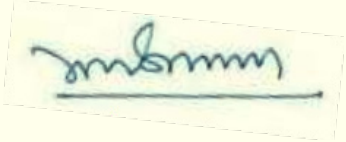
Its my privilege and honor to welcome you all to the "National Conference on Emerging trends in STEM Education" conducted by IIT Roorkee Alumni Association, Dehradun Chapter on 29th of May 2022 and sponsored by ONGC & ONGC Videsh Ltd.

The aim of organizing this conference is to share and enhance the knowledge of each and every individual in this fast-moving Information Era. It will provide an opportunity to the delegates to share their knowledge in the area of current technological expansions and enrich us from their ideas. This will also help participants to learn novel concepts and explore inter-connections possible in their domains. Conference targets to bridge the gap between academia and industry to impact overall growth of education sector in a holistic manner.

I extend my heartfelt thanks in anticipation to the organizing committee members for extending their valuable support in timely planning and executing the program through a well-thought and organized approach. I appreciate the contribution of participants and reviewers for their sparkling efforts and belief in the excellence. As a pledge towards this knowledgeable colloquium.

"Let's share and contribute towards better tomorrow"

Looking forward to cordially welcome all the guests, speakers and attendees to participate with full enthusiasm during the event.



Dr. Naveen Singhal

Convener

Steering Committee

Lt Gen. Vishwambhar Singh, President, IITRAA,	Chairman
Dr Achal Mittal, Vice President, IITRAA,	Convener
Er D.S. Pawar, Hon. Secretary, IITRAA	
Prof. M.P.Jain, President, IITRAA, DDN. CHP.	
Er. S. M. Saxena, Vice President, IITRAA DDN. CHP.	
Er. Pradeep Sahariya, Secretary, IITRAA, DDN. CHP.	

Organizing committee

Prof. M.P. Jain President, IITRAA DDN. CHP.	Chairman
Er. S.M. Saxena, Vice President , IITRAA, DDN. CHP.	Vice Chairman
Er. Pradeep Sahariya, Secretary, IITRAA DDN. CHP.	Organizing Secy.
Dr. Naveen Singhal, Jt. Secy., IITRAA DDN. CHP.	Convener
Ar. Vinay Singh, Jt. Secy., IITRAA DDN. CHP.	
Er. Ram Kumar Goel, Treasurer, IITRAA DDN. CHP.	
Er. S.K. Gupta, Ex. Member, IITRAA DDN. CHP.	
Dr. Achal Mittal, Vice President, IITRAA	
Er. D.S. Pawar, Hon. Secretary, IITRAA	
Dr. Amit Agrawal, Director, APJ Kalam Institute of Technology, Tanakpur	
Er. D.C. Arora, Chairman, IE(I), DDN.	
Er. R.V.S. Chauhan, Past Chairman, IE(I), DDN.	
Er. Pawan Kumar Goel	
Er. Rajiv Mittal	
Er. N.K.Yadav	
Shri Ashish Chauhan, ONGC	
Er Ashok K Kakkar	

Sub-committees

Food & Finance

Er. Ram Kumar Goel, Treasurer

Er. S.K.Gupta, Ex. Member

Registration

Er. S.K.Gupta, Ex. Member

Er. N.K.Yadav

Er. Rajiv Mittal, Ex. Member

Shri Ashish Chauhan, ONGC

Er. Ashok Kakkar

Accommodation, Transportation & Banner

Er. D.C. Arora

Er. N.K.Yadav

Er. Pawan K. Goel

Entertainment

Er. R.V.S.Chauhan

Ar. Vinay Singh

Mrs Ingita Pujari

Protocol Officer to His Excellency:

Er. S. K.Gupta

Stage Management including Flower decoration & Bouquets

Dr Naveen Singhal

Er. Pawan Kumar Goel

Dr. Amit Agrawal

Hall Management

Er. N.K.Yadav

Shri Ashish Chauhan

Er. Sanchit Jain

Security, Transport & Parking:

Er N K Yadav

Press. Media and Photograph

Er. D.C. Arora

Er R V S Chauhan

Dr. Naveen Singhal

Souvenir

Er. S.M.Saxena, Vice President, IITRAA DDN. CHP.

Dr Naveen Singhal

Printing of Broucher, Souvenir and I/Card

Dr. Naveen Singhal, Jt. Secretary, IITRAA DDN. CHP.

Dr. Amit Agrawal

Compering :

Inaugural Function: Er. Pradeep Sahariya

Technical Sessions: Dr Naveen Singhal

Election of Office Bearers

Returning Officer : Er. Sudhir Mittal, Roorkee

Coordination : Er. Pradeep Sahariya, Secretary, IITRAA DDN. CHP

कुलगीत

जयति जयति विद्या संस्थान , (जयति)
हिम गिरी श्रृंगों से अभिनंदित ,
गंगा जल करते कल गान | जयति ||

शिक्षा आदर्शों में उन्नत,
जीवन शिल्पी भू रचना रत ,
'श्रमं विना न किमपि साध्यं' व्रत ,
यन्त्र कला कौशल अभियान | जयति ||

जान जीवन प्रासाद उठाकर ,
सेतु बाँध भू खंड जुड़ाकर ,
अंतरिक्ष में यान उड़ाकर ,
नव युग को देता आह्व ान | जयति ||

सृजन हित जीवन नित अर्पित ,
धरा स्वर्ग शोभा कर निर्मित ,
वैज्ञानिक युग पट में मुर्तित ,
भू पर लाता स्वर्ण विहान | जयति ||

नयी प्रेरणा से दीपित मन,
नव स्वप्नों से हर्षित लोचन,
नए सत्य की उर में धड़कन,
ध्येय राष्ट्र जीवन कल्याण | जयति ||

- सुमित्रा नन्दन पन्त (Sumitra Nandan Pant)

ABSTRACTS

EMERGING TRENDS IN 'STEM' EDUCATION IN INDIA

Harsha Sinvhal

The talk aims to give present scenario and future challenges in Education in India in the fields of Science, Technology, Engineering and Mathematics (STEM) and venture into predicting future areas of potential growth.

Science is a study of the nature, structure and behavior of the physical and natural world and when this is scientifically applied to practical purposes in our daily life, term it as 'Technology'. Using Science and Technology we create or invent something new that is 'Innovation'.

Predications, like Astrology, are always interesting. However, it is fascinating to predict future, knowing well that the predictions are at best guesstimates and may go wrong. It is safer to know the present strengths before assessing the future possibilities, opportunities, challenges and potential. To win you need both "Josh" and "Hosh".

Predicting future trends can best be attempted through Artificial Intelligence and using mathematical tools and models to estimate future demands and possible areas of growth.

Present Scenario: India is second in terms of world population (~1,405,583,141 (as of May/9/2022)). It has the largest young population in the world in the age bracket of 5-24 years with 580 million people, presenting a huge opportunity in the education sector.

As per AICTE report of the year 2021-2022 the India has 8997 technical institutions producing 794923 technically trained manpower annually. In October 2021, the country had around 1.18 billion mobile connections, 700 million Internet users, and about 600 million smartphones one of the highest in the world and India ranked first in the world in terms of the number of digital transactions in 2020.

Challenges: Education is not the learning of facts but training of mind to think. 65% of today's school children will end up at jobs that haven't been invented yet. The illiterates of the 21 st century will not be those who cannot read and write

but those who cannot learn, unlearn and relearn. Education has become learner centric instead of institution centric. Advancement of technology has led to breaking of class barriers and knowledge becoming independent of geographic location. We need to look forward to try and anticipate how technologies might evolve and how we to incorporate them in educational institutions.

Future:

Food (Habits) and **Health** (Pharma industry, new drugs and vaccines, stem cell technologies),.... ??

Infrastructure (Roads, bridges, tunnels), housing (smart cities), education (and continuing) .... ??

Resources (Energy: solar, wind, hydro, geothermal H 2 O, solar panels in space (All our energy needs are ≤ 1% of the annual solar energy received), **water** resources (Rivers and lakes ≤ 3% of available water)..? ,

Manufacturing: Material only crust explored (≈7 km), recycling and new alloys, 3D printing, ...??

Environment (Energy audit, reducing Carbon emission, green technologies, recycling waste).....??

Communication (Defense... weapons of peace) and entertainment.....??

Travel modes (people travelling through tubes to reduce friction, reusable space vehicles etc.....)

IT based industry, web world, miniaturization, 3D printing, ...) .....??

Vision and Leadership of ONGC and ONGC Videsh is reflected in their commitment for fulfilling future energy demands through inshore and offshore energy exploration and optimal reserve utilization

If we transform our population into a trained, focused, balanced and inspired population. India will be a miracle.

Technical Education in India: An Introduction

Professor Vinay K Nangia

The foundation of Technical Education in India coincided with its foundation in Europe.

Technical Education is imparted in India at three different levels, i.e., Industrial Training Institutes (ITIs), which conduct trade courses for skilled workers, Polytechnic Institutes, which conduct diploma programs to produce middle level technicians and Engineering colleges, which conduct undergraduate and postgraduate degree courses in engineering and technology.

The Indian constitution in its original enactment defined education as state subject. Under Article 42 of the constitution, an amendment was added in 1976 and education became a concurrent list subject which enables the central government to legislate it in the manner suited to it. Technical education provided by Industrial Training Institutes and Polytechnics have remained largely under the state governments whereas degree granting technical institutions are being covered by both, Central and State Governments.

Historical Perspective: Major policy initiatives in the pre-independence period included the appointment of the Indian Universities Commission in 1902, issue of the Indian Education Policy Resolution in 1904, and the Governor General's policy statement of 1913 stressing the importance of technical education, the establishment of IISc in Bangalore, Institute for Sugar, Textile & Leather Technology in Kanpur, N.C.E. in Bengal in 1905, and industrial schools in several provinces. 1943 Constitution of the Technical Education Committee of the Central Advisory Board of Education (CABE).1944 Preparation of the Sergeant Report. 1945 All India Council for Technical Education (AICTE) was set up.

However, the growth was slow and tardy till independence in 1947. There was steady growth of polytechnic and degree level courses during 1948-1964. Number of engineering colleges rose from 38 to 136 and polytechnics from 53 to 312 from 1948 to 1965/66. After that there was a lull till 1992.

All India Council for Technical Education (AICTE) was set up in November 1945 as a national-level apex advisory body to conduct a survey on the facilities available for technical education and to promote development in the country in a coordinated and integrated manner. And to ensure the same, as stipulated in the National Policy of Education (1986), AICTE was vested with statutory authority for planning, formulation, and maintenance of norms & standards, quality assurance through accreditation, funding in priority areas, monitoring, and evaluation, maintaining parity of certification & awards and the management of technical education in the country. Technical Education covers programmes in engineering, technology, management, architecture, town planning, pharmacy, applied arts & crafts, hotel management and catering technology.

AS per latest All India Survey of Higher Education Institutions (AISHEI) 2019- 2020 number of Universities is 1043, Colleges is 42343, Standalone Institutions is 11779, students' number is 3.85 crores, number of Teachers is 15.03 Lac. Pupil Teachers ratio stands at 26. There are 522 General, 177 Technical, 63 Agriculture & Allied, 66 Medical, 23 Law, 12 Sanskrit and 11 Language Universities and rest 145 Universities are of other Categories.

As per AICTE website the number of technical institutions in the country is 8997 (10990 in 2019-2020) with a student intake of 2975325 in 2021-22.

First major initiative to have a holistic national education policy resulted in National Policy on Education 1986 which was modified in 1992. A major development after the previous Policy of 1986/92 has been the Right of Children to Free and Compulsory Education Act 2009. Now we have National Education Policy 2020 based on the recommendations of Dr. Kasturirangan Committee Report.

By 2040, when NEP 2020 is expected to be completely implemented, we may expect to see a sea change in the structure, system, format and delivery of Technical Education in India.

Salient Features of STIP 2020

Dharamvir, IAS (Retd.), Formerly Chief Secretary (Haryana)

President, Society for Promotion of Science & Technology in India

During December 2020, Government of India had announced the fifth Science, Technology and Innovation Policy (STIP 2020). The first policy was announced in the year 1958 in form of a resolution passed by the Parliament of India. This was followed by three more policies: Technology Policy Statement 1983, STIP 2003 and STIP 2013. Over the years, the Government of India has built a huge infrastructure in the form of R & D Councils and Laboratories. The STIP 2020 has followed the New Education Policy 2020 and there is synergy between the two. The lecture will highlight the salient and important features of the STIP 2020.

From Taught to Learnt

Prof. Manoj Arora, Vice – Chancellor B M L Munjal University, Gurgaon

Formerly Professor in Civil Engg. IIT Roorkee

For the last many years, the focus of teaching in the classrooms has been rote learning. The memorisation of information is sitting at the core of rote learning. Students are bound to remain within the four walls of a classroom and just remember the facts, theories, and formulae. It was assumed that teachers possessed all the skills and knowledge, as they were the experts. The pitfalls of teaching in the classrooms are now very well known.

However, today's generation is different. They, besides developing an understanding of the content, need to understand how the content is organized and lead to learning skills. Learning includes solving a problem, thinking critically, applying information, and integrating the knowledge. Clearly, the emphasis is not only to memorise the content but how to learn it. In the traditional setting, the teachers often overlook the significance of imparting these skills to the new breed of students.

This requires a new way of thinking and understanding of the new vision of learning the process. For students to learn, they must be given more opportunity and responsibility to engage with the concepts and construct their own understanding.

Moving from mere teaching to learning creates a more interactive and engaging learning environment for teachers and learners. This would require a change in roles of both teachers and learners. Teachers need to change from simple knowledge spreaders to that of facilitators and at times co-learners as well. Instead of becoming controller of learning, they are expected to become creators of learning. On the other hand, learners also have to take the responsibility of their learning. Thus, both the teachers and learners may have to collaborate with each other. No doubt, the teachers might feel vulnerable, as they are expected to partially shift their responsibility of learning to students, especially

for experienced teachers who want complete control of the classroom.

In this process, the curricula also need to be designed and delivered properly i) from simply memorising facts and containing typical tutorial problems to an inquiry based active learning, ii) from a rigid delivery to flexible delivery, and iii) from a single path progression to multi-path progression.

In other words, students not only need to learn content, but they also need to know how they can learn more, which is critical in today's environment where information is easily accessible and exponentially growing.

Fortunately, recent technological advancements in teaching and learning have made the life easier. ICT provides powerful tools to support the shift from teacher centred to learner. Proper integration of ICT into teaching and learning is the way forward. Here, teachers not only have to master the ICT skills but learn how to use these effectively to improve learning, motivate and engage learning, foster exploration, and practice, thus leading to a leaner centred environment; a learning model that encourages initiation, creativity, and independent research. ICT will surely allow teachers to move away from traditional model of teaching to the new learner centred model.

In conclusion, there is a need to move away from the traditional teaching to a learning environment where students are central. The focus is on problem solving, creativity, innovation, and collaboration. Therefore, learning by doing, which encourages these aspects helps the learners to apply knowledge in real life situations. This is even more important when we talk of STEM education.

Emerging Technologies for Digital Transformation

Dr. Lovneesh Chanana, Vice President (Government Affairs), Asia Pacific and Japan SAP

With the constantly shrinking time gap between rapid technology advancements and the impact on individual and businesses, it is important to foresee the directional changes as well as the shift in economic, social and societal fabric to effectively use technology for human good. All of us are aware that digital consumers are a reality today and the recent impact of COVID has accelerated the digitization even faster. With technologies like artificial intelligence, internet of things and blockchain, digital optimization is no longer a recipe for digital transformation. Consumer experience will become a larger differentiator. The new society will evolve with machines as co-workers. And the traditional thinking of processes consuming data will give way to data defining processes. The angle of sustainability through technology will also become a national differentiator.

To take the digital journey from a digital India to a digitally intelligent India, a number of strategic areas will require focus. Some of these include – broadband infrastructure, cyber security, cloud, workforce skilling, modelling of complex systems and regulatory frameworks.

The digital should therefore become a horizontal prescription across all sectors rather than a siloed vertical as an interface to the organizational domains.

Ethics in the world of Artificial Intelligence

Er Anand Prakash, CEO & Co Founder :Farm for Full Potential LLP,

Convener :India Quality Association

Context

Humans have grown their intelligence over the ages . In the recent times few technological terms like Big data, Machine Learning & Artificial Intelligence (AI) have become part of day today vocabulary. AI aka Artificial Intelligence is giving exciting opportunity for human welfare as well creating fears about technology overtaking humans or adversely impacting human life & society.

AI ethics is a system for moral principles & techniques intended to inform the development and responsible use of Artificial Intelligence Technology.

As AI gets integrated to products & service , there is a dire need of 'AI Code of Ethics '

AI code of Ethics

An AI code of ethics, also called an AI value platform, is a policy statement that formally defines the role of artificial intelligence. The purpose of an AI code of ethics is to provide stakeholders with guidance when faced with an ethical decision regarding the use of artificial intelligence.

The Three Laws of Robotics as a means of limiting misuse / abuse of AI.

- The first law forbids robots from actively harming humans or allowing harm to come to humans by refusing to act.
- The second law orders robots to obey humans unless the orders are not in accordance with the first law.
- The third law orders robots to protect themselves as far as doing so is in accordance with the first two laws.

The rapid advancement of AI has spurred groups of experts to develop safeguards for protecting humans against misuse of AI .

AI Principles (out of total twenty-three principles , thirteen are devoted to safety & ethics)

- Safety: AI systems should be safe and secure throughout their operational lifetime, and verifiably so where applicable and feasible.
- Failure Transparency: If an AI system causes harm, it should be possible to as certain why.
- Judicial Transparency: Any involvement by an autonomous system in judicial decision-making should provide a satisfactory explanation auditable by a competent human authority.
- Responsibility: Designers and builders of advanced AI systems are stakeholders in the moral implications of their use, misuse, and actions, with a responsibility and opportunity to shape those implications.
- Value Alignment: Highly autonomous AI systems should be designed so that their goals and behaviours can be assured to align with human values throughout their operation.
- Human Values: AI systems should be designed and operated to be compatible with ideals of human dignity, rights, freedoms, and cultural diversity.
- Personal Privacy: People should have the right to access, manage and control the data they generate, given AI systems' power to analyse and utilize that data.
- Liberty and Privacy: The application of AI to personal data must not unreasonably curtail people's real or perceived liberty.
- Shared Benefit: AI technologies should benefit and empower as many people as possible.
- Shared Prosperity: The economic prosperity created by AI should be shared broadly, to benefit all of humanity.
- Human Control: Humans should choose how and whether to delegate decisions to AI systems, to accomplish human-chosen objectives.
- Non-subversion: The power conferred by control of highly advanced AI systems should respect and improve, rather than subvert, the social and civic

processes on which the health of society depends.

- AI Arms Race: An arms race in lethal autonomous weapons should be avoided.

What can we do?

- Create an advocacy group to promote compliance to principles & guidelines, to research houses and enterprises, involved in design & delivery of AI based products & services
- Understand the agreements for sharing of personal data with organizations analysing these data and create algorithms
- Careful & cautious usage of social media while publishing personal information including pictures
- Promote responsible AI technology developers

Emerging Trends in the Role of STEM Education – Civil Engineering

Dr. Achal Mittal, Chief Scientist & Mentor, Structural Engineering Group, CSIR-CBRI, Roorkee. Global Vice President, IIT Roorkee Alumni Association.

Science, Technology, Engineering, and Maths, collectively known as STEM, are the four primary academic disciplines currently responsible for driving the entire world's economy and maintaining our general well-being. Civil engineering is one of the oldest and most diverse engineering disciplines. Civil engineering is linked to advances in science and mathematics, including material science, information technology, geology, hydrology, physics, transportation, construction, and mechanics. A few futuristic trends are discussed in this talk.

Building Information Modelling (BIM): It has completely revolutionized the industry, bringing a higher level of efficiency to the conventional design process and it has simplified the process of building architectural design and inter-team collaboration. Recently, Digital twin technology uses real-time sensors fitted in the physical object to map out vital areas of functionality, which produce data about object performance. CSIR-CBRI is also actively working on the Heritage BIM using 3-D laser scanning technology.

3D Printing: The advancement in 3D printing technology has made it easier for professionals to create accurate and complex building elements/complete building with minimum loss of material. It covers the production of the 3D model from the digital file by laying down thin layers of material in consequent succession. CSIR-CBRI has taken up project on development of 3-D printed building prototypes for rapid construction.

Drones in Construction: In the past few years, drones have become one of the most compelling construction trends. The industry has experienced tremendous growth in drone use over the years, higher than any other commercial sector. Their aerial vantage point and data collecting abilities make them a viable tool, offering benefits ranging from on-site safety to remote monitoring. CSIR-CBRI

is also using drones for monitoring building structures using thermal imaging techniques.

Net Positive Buildings: Current net-zero building focuses on the balance between energy consumed and energy produced on the site. The ultimate goal is independence from an external energy supply. The building could be off grid and self-sustained, based on renewable energy sources on site, such as solar, wind, and hydro. The net-positive building might not be able to completely cut off the external power supply; however, by utilizing the minimal amount of external energy, individual building within a net-positive network could generate a large quantity of clean power to offset the energy consumption needed from other buildings within the same network. CSIR-CBRI have worked on Zero Net Energy Building and moving towards net positive buildings.

Artificial Intelligence in Civil Engineering: The various disciplines of AI that can be used in the field of civil engineering include Machine Learning, Deep Learning, Fuzzy Logics, Decision Trees, Swarm Optimization, and Evolutionary Computations. All these disciplines of AI find applications in various sub-disciplines of civil engineering. CSIR-CBRI is extensively working on the application of AI is Non-Destructive Testing, Geotechnical Engineering, Concrete Technology etc.

Application of Nano-Technology in Civil Engineering: The employ of nanotechnology has helped and created more efficient and sustainable materials such as high strength, self-cleaning and self-repairing concrete. The use of coatings made from nanotechnology helps improve fire-resistance, corrosion protection, insulation, and countless other applications. CSIR-CBRI have developed Nano Silica and Nano Lime for the high-performance concrete and lime mortar respectively.

Professional Education & Engineering education

Professor Vinay K Nangia

Professional Education: A professional is equipped with requisite educational qualifications, like, a physician or a surgeon with a degree in medicine and surgery, or a lawyer with bachelor's or master's degree in law, and architect with appropriate bachelor's or master's degree in planning and architecture as opposed to a carpenter or a cobbler who possesses necessary skill sets but not a university degree. Conduct of various professionals like chartered accountants, cost and management accountants, doctors, lawyers and architects is regulated and governed by professional bodies like The Institute of Chartered Accountants of India or Medical Council of India or Bar Council of India or Council of Architects. For engineers and managers there is no such professional body or council to regulate and govern their conduct. For the purpose of regulating professional education including engineering and management education All India Council of Technical Education was established as a government institution to promote, develop and regulate technical education in India.

Engineering education started as an apprentice based training and education. The oldest Engineering College in entire commonwealth was College of Civil Engineering at Roorkee in 1847 now IIT Roorkee. Engineering education had started in Europe at many places in the eighteenth century. The postgraduate degree courses started in the erstwhile Roorkee University for the first time in India in 1956. Science is the study of why things work and how they work. It provides the base or foundation through theories, concepts and principles. Application of mathematics and science for manufacturing or construction for larger good like damns, bridges and roads and rails is engineering. When the collection of these techniques, skills, and processes/methods in order to create goods or services is transferable and marketable it may be called technology. The first Indian Institute of Technology IIT Kharagpur was established in 1951, the second IIT Bombay in 1958, the third and fourth IIT Kanpur and IIT Madras were set up in 1959

and IIT Delhi in 1961 was the fifth. After a long gap IIT Guwahati was established in 1994. In 1961 Parliament decreed the IITs as 'Institutes of National Importance'. India's first technical institute, set up in 1847 and known as the Thomson College of Engineering and subsequently the University of Roorkee, was ordained as the seventh IIT in September 2001. In the year 2008, six new IITs were started: IIT Bhubaneswar, IIT Gandhinagar, IIT Hyderabad, IIT Patna, IIT Rajasthan, and IIT Ropar. This was followed by two more IITs in 2009: IIT Indore and IIT Mandi. During the early years, the IITs benefited in varying degrees from material assistance and academic cooperation from developed countries — IIT Bombay from the Soviet Union, IIT Madras from Germany, IIT Kanpur from the United States, and IIT Delhi from the United Kingdom. The new IITs are mentored by old reputed IITs. At present there are 23 Indian Institutes of Technology (IITs), Indian Institute of Science (IISc.) Bangalore and 7 other Indian Institutes of Science Education & Research (IISERs). There are 31 National Institutes of Technology (NITs). There are 5 Indian Institutes of Information Technology (IIITs) and 19 IIITs in Public Private Partnership mode. Additionally there are 3 Schools of Planning & Architecture (SPAs) and National Institute of Industrial Engineering (NIITE).

Professor Vinay K Nangia served IIT Roorkee as a Professor from June 1998 to June 2018. He was Professor Emeritus at NSUT, Dwarka, New Delhi in 2019. Currently, he is Professor of Eminence at Guru Nanak Dev University, Amritsar and a Distinguished Professor at BML Munjal University, Gurugram.

Exploring the Potential of Mathematics in STEM

Prof. Rama Bhargava, Director General, Roorkee College of Engineering

& Formerly Professor (Mathematics) in IIT Roorkee

STEM refers to the integrated teaching and learning of sciences, technology, engineering and mathematics through real world learning experiences. It is directly associated with critical thinking skills and instills a passion for innovations and problem-solving approach. All the four components of STEM, work jointly. Science, Engineering and technology are the streamside by mathematics. The present talk will start with how mathematics has embraced the real-world sciences. Mathematical tools, including models have helped in understanding the scientific intricacies. Quantum computing of today is based on Mathematics. Some simple examples will be taken to understand the role of mathematics.

Engineering is the application of sciences where mathematics is used to obtain the solutions. Simple example of Engineering problems in various branches e.g. Mechanical, Civil, Computer science etc. will be discussed with their mathematical models. If we talk of the technology today, for example, Artificial Intelligence, Machine Learning, they are all based on mathematics concepts. Mathematics is often mentioned as underpinning the rest of the disciplines of the STEM as it serves as a language for Sciences, Engineering and Technology. How this M in STEM is needed to engineers, new technologies and new scientific discoveries, will be discussed here. It is the foundation of skills, learning, Logical thinking and reasoning which are the basic need for the job in 21st century.

Some interesting facts about IIT, Roorkee

Compiled by Er. Pradeep Sahariya

The antecedents of IIT Roorkee can be found in “Roorkee College”. A monograph was printed in 1851, titled “Account of Roorkee College Established for the instruction of Civil Engineers, with a scheme for its Enlargement”.

The necessity has long been felt of some systematic training for Civil Engineers in this country. The western Jamuna canals were commenced in 1817. The Eastern Jamuna canal was commenced in 1822.The work for draining and Irrigation in some parts of the country, have long been maintained by the Government. Several fine roads had been constructed by the Government.

Immediate measures were necessary to meet the emergency and to provide a constant supply of well trained, experienced Civil Engineers, who should be able to face all the difficulties, which are involved in the management of large undertakings of this nature.

Out of this emergency, Roorkee college had its rise. Thus, the college was formally established on 25th November, 1847. However, it is learnt that informally “a class started in 1845 to train native youths in engineering”. That was the seed. This Roorkee College was the First Engineering College in the British Empire.

The then Lieutenant Governor of North-Western provinces was James Thomason and therefore, after his death, Roorkee college became Thomason college of Civil Engineering (1854-1948). The College was given the status of university [University of Roorkee (1949-2001)], by Act No. IX of 1948 of the United Province (Uttar Pradesh) in recognition of its performance and its potential and keeping in view the needs of post-independent India. Observing its versatility and contribution towards the intellectual growth of the Nation, it was given the status of IIT in the year 2001.

The Department of Civil Engineering was established in 1847 and is the oldest engineering department in India. The Electrical Engineering department of the IIT, Roorkee was established in the year 1897, and was one of the earliest such

specializations in the world.

The reputation of the college was so high that the engineers' class (engineering degree) of the college was only for Europeans, upper subordinate class for Europeans and Indians and lower subordinate class for Indians only. The recruitment of the Engineering students was directly controlled by the Public Works Departments (PWD).

From 1934 to 1943, officers of the Indian Army Corps of Engineers received training at the Thomason College of Engineering. Even after the establishment of the School of Military Engineering (SME) at Roorkee in 1943, the Army Engineers continued to receive technical training at the college.

IIT, Roorkee has a Memorandum of Understanding (MOU) with Universities like: National University of Singapore (NUS); Royal Institute of Technology (KTH), Stockholm; Swiss Federal Institute of Technology Switzerland; Swiss Federal Institute of Technology, Switzerland; Technische Universität München (TUM), Germany; Institut National des Télécommunications, France; University of Texas at Dallas, USA; New Jersey Institute of Technology (NJIT), USA; University of Waterloo, Canada; University of Western Ontario, Canada. Every year students from more than 50 countries join IIT Roorkee for full-time or short-term training courses.

In 1955 the department of Water Resources Development and Management (WRDM) was established as an Asian African Centre to honour India's commitment at the Asian African Conference held in Bandung.

IIT Roorkee at present is offering 10-degree courses (Engineering/ Architecture) at under-graduation level, 102 Post graduate courses (Engineering/Architecture / Sciences/ Management etc.), in 55 disciplines besides Doctorate/ post Doctorate programs; to 2216 students through 23 departments, 7 centers and 1 school.

Notable Alumni:

IIT Roorkee has a very famous alumnus. Many of the Alumni have brought laurels to the country and held many top-level positions in various Central & States Government departments including PSUs and have excelled in their respective fields.

Two alumni have won the Padma Vibhushan awards, ten have won the Padma Bhushan awards and twenty-five alumni have won the Shanti Swarup Bhatnagar Prize for Science and Technology.

The institute has produced seven chairmen of the Indian Railway Board, chairman of the Telecom Regulatory Authority of India, more than a hundred secretary-level officers in the Government of India, Chief Election Commissioner of India, two presidents of the Confederation of Indian Industry, Governors of states of India, Members of Parliament, chairmen of University Grants Commission (India), six Directors of the Indian Institutes of Technology, Chancellors and Vice-Chancellors of prominent Indian Universities, CMD/Members/ Directors and Managing Director of PSUs and presidents of Engineering and Scientific organizations like the Indian Institution of Engineers, the Indian National Science Academy and the Indian National Academy of Engineering.

Shri Mangu Singh: Managing Director of Delhi Metro Rail Corporation Limited.

Shri Narendra Patni: founder, chairman, and chief executive officer of Patni Computer Systems.

Frederic Oscar Oertel: Indian art historian and archaeologist

Lawrence Samuel Durrell: Chief Engineer of the Darjeeling Himalayan Railway:

John Underwood Bateman-Champain: British army officer and engineer in India, who was instrumental in laying the first electric, telegraph line from Britain to India by way of the Persian Gulf.

Sir John Aird: 1st Baronet, English civil engineering contractor of the late 19th and early 20th centuries. He also served as Conservative Member of Parliament (MP) for Paddington North from 1887 to 1906, was the first Mayor of Paddington in 1900.

Ravi Sharma: CEO of Adani Power Limited & Former CEO of Videocon.

Amit Singhal: Google Fellow who rewrote the Google search algorithm in 2000.

Dr. Rakesh Agrawal: A Microsoft Fellow and ex-IBM fellow widely known as the 'Father of Data Mining'.

IIT ROORKEE ALUMNI ASSOCIATION

Er. D.S.Pawar, Honorary Secretary, IITRAA

IIT Roorkee Alumni Association (IITRAA) is an Association "of the Alumni". The mission of IITRAA is to create a lifelong and worldwide community of Alumni through increased opportunities for meaningful engagement in order to increase awareness, pride, transparency, participation, volunteer involvement, and philanthropic commitment to our Alma mater and the Society.

The IIT Roorkee Alumni Association was established in the year 1940 when the institution was known as Thomason College of Engineering and since then it has enrolled over 38,000 members. It was called as the "Old Boys Association" and was formed under the patronage of Raja Jwala Prasad. Rai Bahadur Madan Gopal Sardana, the then Principal of the Thomason College of Civil Engineering, was its Founder President, and Dr. Jai Krishna its Founder Secretary. The inaugural meeting of the Old Boys' Association was held on July 14, 1941. In 1943 it was decided that the Old Boys' Day would be celebrated on the Convocation Day, a tradition which continues even today.

To give a new boost to the efficient functioning of the Old Boys' Association, the name was changed to Roorkee University Old Boys' Association and then later in 1970 to Roorkee University Alumni Association. After the University became an IIT in 2001, it was again renamed to IITR Alumni Association.

It has the privilege of having recipients of Padma Vibhushan, Padma Bhushan, Padma Shri, Shanti Swarup Bhatnagar Award, Chairmen Railways Board, IAS officers, Vice-Chancellors, Chairman, AICTE, Directors of institutes of National importance, Presidents of International Association of Earthquake Engineering, & Institution of Engineers (India), Founder President, Indian National Academy of Engineers and many such eminent personalities as its Presidents.

It had and still has many personalities in government and private sector who have contributed immensely in nation building. Personalities like: Sir Ganga Ram and Raja Jwala Prasad were also members of this Association. One of the

President Dr. A. N. Khosla was later appointed as a member of the Rajya Sabha and the Governor of Orissa.

The Alumni Association has been working for the welfare of the Institute, Alumni and the Society since 1940. IITRAA has taken many good initiatives in the last few years for Alumni welfare by introducing clauses regarding alumni welfare and creation of Endowment fund to render financial aid to alumni families in distress. Few of the objectives of IITRAA are to promote and foster mutually beneficial interaction between the Alumni and the Alma Mater, to encourage the formation of chapters to increase participation of Alumni, to undertake activities of Nation building including those of charitable nature, to exchange professional knowledge, organize technical conferences, seminars workshops & training courses, to create and establish Alumni Endowment Fund and render financial aid to deserving alumni family members and to facilitate connecting alumni with their Alma mater. IITRAA has taken many good initiatives in the last few years for Alumni welfare viz. creation of Batch Endowment fund, and is currently working rigorously to finalize and soon launch the Insurance Scheme for Alumni. IITRAA currently has 25 active Local Chapters located in various cities in India and abroad for enhancement of its activities. The Local Chapters have yearly events through which they connect with each other. They also conduct various social service and alumni welfare activities time and again.

A large number of our alumni members are working and settled outside the country and around the globe, especially in USA, UK, Canada, Australia, Hong Kong, Dubai and elsewhere and are making our nation proud globally as well.

The Alumni Association which is now 81 years old has a legacy and history as rich as the University itself and all its alumni members share a strong bond of brotherhood, love and unity.

The Association has been working relentlessly for the welfare of the Alma Mater, the Alumni, the Society and the Nation as a whole since last 81 years and shall continue to do so in the years to come. IITRAA always encourages its members to take interest and promote activities that are instrumental in the progress of its Alma Mater and the Nation.

IITR ALUMNI ASSOCIATION

PRESIDENTS AND SECRETARIES

Year	President	Secretary
2020-2023	Vishwambhar Singh	Dinesh Singh Pawar
2018- 2020	B. K. Chaturvedi	Vikas Goyal
2017-18	B. K. Chaturvedi	R. D. Garg
2014-17	Prem Krishna	Achal Mittal
2014	Prem Krishna	Pradeep Kumar
2013	J. L. Gaindhar	Pradeep Kumar
2012	J. L. Gaindhar	N. K. Samadhiya
2011	P.K. Pande	N. K. Samadhiya
2009-10	D. V. Singh	Ashok K. Ahuja
2007-08	R. K. Singh	Manoj K. Arora
2004-06	V. K. Agnihotri	R. P. Maheshwari
2002-03	Pradip Baijal	S. K. Ghosh
1998-2001	H.S. Agarwal	A. K. Mathur
1997	D.V. Singh	V. K. Goel
1996	D.V. Singh	Surendra Kumar
1995	Ashok Bhatnagar	Surendra Kumar
1994	S.K. Khanna	S. C. Handa
1993	R.P. Singhal	S. C. Handa
1992	Rajendra Prakash	S. C. Handa
1991	Harish Chandra	V. P. Bansal
1990	Raj Kumar Jain	Ashok K. Jain
1989	Bhupal Singh	Ashok K. Jain
1988	G.C. Agarwal	Ashok K. Jain
1987	G.C. Agarwal	S. K. Mittal
1986	R.C. Mangal	S. K. Mittal
1985	Vijendra Singh	S. K. Mittal
1984	K.M.Maheshwari	V. K. Tiwari
1983	O.P. Jain	V. K. Tiwari
1982	D.R. Singh	A. K. Gupta
1980-81	Dinesh Mohan	A. K. Gupta
1979	Hari Krishna	A. K. Agarwal
1978	V.R. Vaish	A. K. Agarwal
1977	K..C. Goyal	V. Charan
1976	J.S. Dhillon	Satish Chandra

Year	President	Secretary
1975	N.D. Gulhati	Shamsher Prakash
1974	Jivan Datt	Shamsher Prakash
1973	S.K. Jain	R. N. Agrawal
1972	H.G. Verma	R. N. Agrawal
1971	Jai Krishna	A. S. Arya
1970	S. C. Katoch	A. S. Arya
1969	J. P. Mital	M. K. Singhal
1968	Baleshwar Nath	Satish Chandra
1967	D. B. Anand	Satish Chandra
1966	D. S. Nag	Satish Chandra
1965	D. C. Baijal	Rajendra Prakash
1964	H. P. Sinha	Rajendra Prakash
1963	Yadav Mohan	Rajendra Prakash
1962	G.K. Agarwal	K. V. Mital
1961	Kanwar Sain	K. V. Mital
1960	P.L. Verma	Dinesh Mohan
1959	Karnail Singh	Dinesh Mohan
1958	Ghananand Pandey	Dinesh Mohan
1957	H.K.L. Sethi	S. N. Gupta
1956	K.N. Kathpalia	S. N. Gupta
1955	M.S. Bisht	S. N. Gupta
1954	M.S. Mathur	S. N. Gupta
1953	Balbir Singh	S. N. Gupta
1952	A.N. Khosla	S. N. Gupta
1951	L.P. Misra	S. N. Gupta
1950	C.A. Hart	Jai Krishna
1949	N.N. Chakravarti	Jai Krishna
1947- 48	B.D. Puri	Jai Krishna
1946	G. Lacey	Jai Krishna
1940- 45	M.G. Sardana	Jai Krishna

IIT Roorkee Alumni Association, Dehradun Chapter

Er. Pradeep Sahariya, Secretary , IITRAA, Dehradun Chapter

IIT, Roorkee Alumni Association Dehradun Chapter is an extension of its parent body 'IITRAA' based at Roorkee. The chapter works as per the Bye- Laws of the Alumni association applicable to Local Chapters. However, Local Chapters are independent in respect of financial matters. Local Chapters work for the objectives laid down by the parent body. The IITRAA is the soul of every alumnus and is universally known to be an integral part of his life.

Dehradun chapter was formed during the session 1983-84 by some alumni. However, the same had gone into defunct state, as the active members were transferred out of Dehradun. To rejuvenate it, some individuals met in July, 2017 and decided to form a group of alumni of IIT, Roorkee. This way the chapter was re-activated in August,2017. Initially, an ad hoc body was formed on August 30,2017, which decided to hold elections to reactivate the chapter's activities. The regular elections took place on 10th of September, 2017 when AGM was called by the ad hoc body.

Dehradun chapter of the association is very active chapter, with more than 150 members, who are pass outs from the Institute as back as 1955 till recent batches. The Chapter organizes family Get Togethers involving interaction, cultural activities, professional advancement sharing, picnics and social activities to help the poor and the needy. The chapter contributed in some socio-economic works like providing track suits to deaf students besides environment protection work etc. During Corona pandemic, this chapter arranged cooked meals to the needy poor, raw food grains to unemployed hawkers and milk pouch to infants. Oxygen cylinders were also made available to the covid affected persons and PPE Kits were provided to Police and Medical departments.

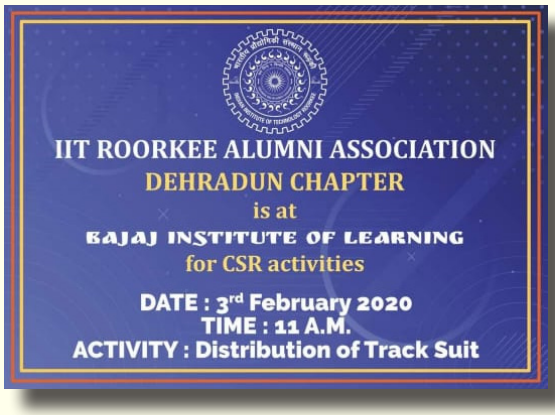
The election of the Executive body was scheduled on 2 occasions in the AGM, but the AGMs got postponed due to spread of Covid and restrictions of local administration on gatherings. It was also decided to continue the existing

Executive Committee till next elections. With the improved conditions, a Get Together was organized on 19th of December, 2021. The outgoing EC in its meeting held on 12.12.2021, elected Prof. M.P. Jain and Er. Pradeep Sahariya, as President and Secretary respectively for the term of 2022-24, in line with constitution/ Bye laws of the Chapter. It was also decided that the election of other positions in EC, will be held in the next AGM.

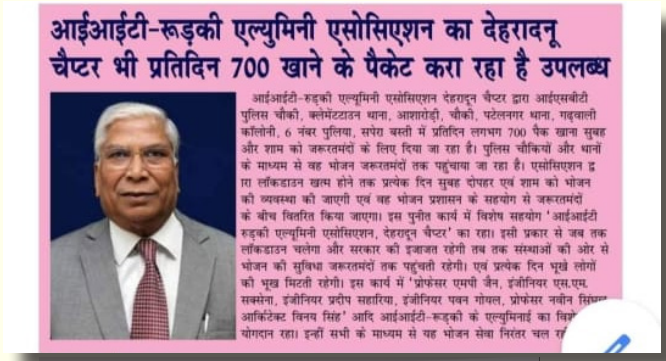
It is a matter of great pride that our Alma Mater IIT, Roorkee has entered into the 175th Year of its establishment. On this occasion, it was decided by the IIT, Roorkee Alumni Association to celebrate the same in a grand way. Dehradun chapter of IITRAA proposed to organize an International Conference on "Emerging Trends in STEM Education" to make it more memorable. The program is going to take place on 29th of May, 2022 (Sunday) in Auditorium of The Institution of Engineers (India), Dehradun. The event is fully sponsored by Oil & Natural Gas Corporation Limited and ONGC Videsh Limited. His Excellency the Governor of Uttarakhand has kindly consented to be the Chief Guest during the Inaugural Function. All the speakers of renowned fame will add color to the Conference on current vibrant topic. Participants from far and wide, dedicated EC team and whole hearted support of Organizing Committee will go a step forward to make it a successful event.

Glimpse of Alumni get together by Dehradun Chapter

CSR Activities by Dehradun Chapter



Services provided by Dehradun Chapter during Covid Period



आईआईटी-रूड़की एल्युमिनी एसोसिएशन का देहरादनू चैप्टर भी प्रतिदिन 700 खाने के पैकेट करा रहा है उपलब्ध

आईआईटी-रुड़की एल्युमिनी एसोसिएशन देहरादून चैप्टर द्वारा आईएसबीटी पुलिस चौकी, क्लेमेंटटाउन थाना, आशारोड़ी, चौकी, पटेलनगर थाना, गढ़वाली कॉलोनी, 6 नंबर पुलिया, सपेरा बस्ती में प्रतिदिन लगभग 700 पैक खाना सुबह और शाम को जरूरतमंदों के लिए दिया जा रहा है। पुलिस चौकियों और थानों के माध्यम से वह भोजन जरूरतमंदों तक पहुंचाया जा रहा है। एसोसिएशन द्वारा लॉकडाउन खत्म होने तक प्रत्येक दिन सुबह दोपहर एवं शाम को भोजन की व्यवस्था की जाएगी एवं वह भोजन प्रशासन के सहयोग से जरूरतमंदों के बीच वितरित किया जाएगा। इस पुनीत कार्य में विशेष सहयोग 'आईआईटी रुड़की एल्युमिनी एसोसिएशन, देहरादून चैप्टर' का रहा। इसी प्रकार से जब तक लॉकडाउन चलेगा और सरकार की इजाजत रहेगी तब तक संस्थाओं की ओर से भोजन की सुविधा जरूरतमंदों तक पहुंचती रहेगी। एवं प्रत्येक दिन भूखे लोगों की भूख मिटती रहेगी। इस कार्य में 'प्रोफेसर एमपी जैन, इंजीनियर एस.एम. सक्सेना, इंजीनियर प्रदीप सहारिया, इंजीनियर पवन गोयल, प्रोफेसर नवीन सिंगल, आर्किटेक्ट विनय सिंह' आदि आईआईटी-रुड़की के एल्युमिनाई का विशेष योगदान रहा। इन्हीं सभी के माध्यम से यह भोजन सेवा निरंतर चल रही है।

600 अधिक जरुरतमन्दों को बांटा निःशुल्क भोजन वितरण

संवाददाता

देहरादून। आईआईटी रुड़की एल्युमिनी एसोसिएशन देहरादून चैप्टर, नेक्स्ट जनरेशन कंप्यूटर टेक्नोलॉजी सोसाइटी एवं डीआईटी यूनिवर्सिटी एल्युमिनी एसोसिएशन देहरादून के द्वारा जिलाअधिकारी के सौजन्य से चलाई जा रही दून हैप्पी मील मुहिम के तहत आज लगभग सौ-सौ पैकेट भोजन तीनों सोसाइटी के माध्यम से जरूरतमंदों के लिए दिया गया। आईआईटी रुड़की एल्युमिनी एसोसिएशन देहरादून चैप्टर के सौजन्य से सुबह के समय दाल-चावल, रोटी एवं संध्या के समय आलू की सब्जी एवं पूरी दी गई। लगभग 500 से अधिक जरूरतमंद व्यक्तियों के लिए खुला भोजन वितरित किया गया जो कि सपेरा बस्ती 6 नंबर पुलिया, कारगी चौक एवं आईएसबीटी के पास बड़ी झुग्गी झोपड़ियों में वितरित किया गया।

लोकडाउन खत्म होने तक प्रत्येक दिन सुबह दोपहर एवं शाम को भोजन की व्यवस्था की तीनों सोसाइटी के माध्यम से की जाएगी। विशेष सहयोग आईआईटी रुड़की एल्युमिनी एसोसिएशन, देहरादून चौप्टर, नेक्स्ट जनरेशन कंप्यूटर टेक्नोलॉजी सोसाइटी एवं डीआईटी यूनिवर्सिटी एल्युमिनी एसोसिएशनका रहा सइसी प्रकार से जब तक लॉकडाउन चलेगा और सरकार की इजाजत रहेगी तब तक संस्थाओं की ओर से भोजन की सुविधा जरूरतमंदों तक पहुंचती रहेगी। आईआईटी रुड़की एल्युमिनी एसोसिएशन, देहरादून चौप्टर के सौजन्य से प्रत्येक दिन सुबह एवं शाम का भोजन जरूरतमंदों तक पहुंचाया जा रहा है। संस्था के माध्यम से यह सेवा लॉकडाउन खत्म होने तक निरंतर चलती रहेगी एवं प्रत्येक दिन जरूरतमंद लोगों को भोजन उपलब्ध होता रहेगा। विशेष सहयोग प्रोफेसर एमपी जैन, इंजीनियर एसएम सक्सेना, इंजीनियर प्रदीप सहारिया, इंजीनियर पवन गोयल, प्रोफेसर नवीन सिंगल, आर्किटेक्ट विनय सिंह का रहा। इन्हीं सभी के माध्यम से यह भोजन सेवा निरंतर चल रही है।

आईआईटी एल्युमनी एसोसिएशन, देहरादून चैप्टर

06 May 2010

मेरी जिम्मेदारी मेरा अहसा कोई भूखा न रहे मेरे आसपास

साथियों आपका साहियोग और हमारे प्रयास से अपनी किचन जारी है,आईएसबीटी चौकी, पटेलनगर चौकी तुन्तोवाला, भुत्ता वाली चौक,नया गांव ट्रांसपोर्ट नगर, और बड़ेप्वाल चौक, तपोवन रोड, रिस्पोंना पुल , नालापानी चौक समेत लगभग 760 पैकेट भोजन वितरित किया गया एवं जरूरतमंदों को निरंतर तीनो समय का भोजन जारी है।

Programme Schedule

Date : 29.05.2022, Sunday

09:30 am :	Registration starts and high tea
10:15 am :	All to occupy their seats in Auditorium
10:30 am :	Arrival of Chief Guest, H.E. Governor of Uttarakhand
10:31 am :	National Anthem
10.34 am :	Lighting of lamp and Saraswati Vandana
10.37 am :	Kulgeet
10.40 am :	Presentation of bouquets
10.43 am :	Welcome and about conference Prof M P Jain
10.48 am :	About IITRAA Dehradun Chapter: Ex. Pradeep Sahariya
10.53 am :	About IITRAA Dinesh Pawar
10.58 am :	Introduction of Er Alok Gupta
11.00 am :	Address by Er Alok Gupta
11.10 am :	Introduction of Lt Gen Vishwambhar Singh
11.12 am :	Address by Lt Gen Vishwambhar Singh
11.22 am :	Introduction of Dr Harsha Sinvhal
11.24 am :	Key note address by Dr Harsha Sinvhal
11.34 am :	Release of Souvenir
11.36 am :	Presentation of mementos
11.38 am :	Introduction of Chief Guest
11.41 am :	Address by Chief Guest
11.56 am :	Vote of thanks by Er. S M Saxena
11.58 am :	National Anthem
12.01 pm :	Departure of Chief Guesthouse
12.05 pm :	Tea
12.20 pm :	Felicitation Session

12:35 pm :	Technical session-I
	Presentation by Er Anand Prakash AI and Ethics
12.50 pm :	Presentation by Lovneesh Chanana Emerging Technologies for Digital Transformation
01:15 pm :	AGM/ Election of Executive Body of Chapter
01:45 pm :	Group photo
02:00 pm :	Lunch
02:30 pm :	Technical session-II
	Presentation by Er Dharam Veer Science and Technology Innovation Policy 2020
2.50 pm :	Presentation by Dr Rama Bhargava
3.20 pm :	Panel Discussion
	Presentation by Er Dharam Veer
3.35 pm :	Presentation by Dr V K Nangia
3.55 pm :	Presentation by Dr Achal Mittal
4.15 pm :	Concluding session
	Presentation of recommendations and formation of task force
4.45 pm :	Tea
7.00 pm :	Cultural program
9.00 pm :	Dinner

IEI CIVIL ENGINEERING LABORATORY

The Institution of Engineers (India)

UTTARAKHAND STATE CENTRE, DEHRADUN

AN ISO 9001:2015 Certified Laboratory

SERVICES

- **Testing of Cement, Sand & Aggregate.**
- **Testing of Soil.**
- **Testing of Bitumen Works.**
- **Economical Concrete Mix Design.**
- **Testing of Admixture & Curing Compound.**
- **NDT & Many More.**

Major Cliental List & Approvals

Uttarakhand Jal Sansthan, UJVNL, Pay Jal Nigam, Riddhi Vinayak RMC etc.

❖ **NABL accreditation is in process.**

Add.: Engineers Bhawan, Near ISBT Flyover, Saharanpur Road, Dehradun
Contact Us: 9412056431, 9027080401,9149122532
Email: iei.testlab@gmail.com, pmn0516@yahoo.com

IIT ROORKEE
IITR Alumni Association
श्रमं विना न किमपि साध्यम्

IIT ROORKEE ALUMNI ASSOCIATION,
DEHRADUN CHAPTER, DEHRADUN

+91 9927100304
+91 8800282288
+91 9410390390
+91 63952 21457

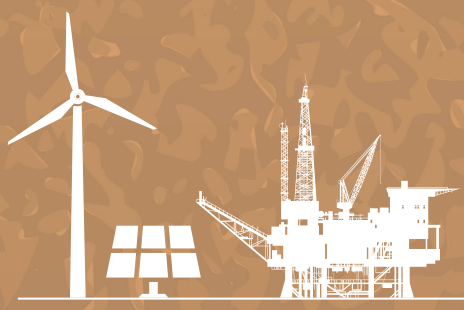
ओएनजीसी
ONGC

आज़ादी का अमृत महोत्सव

The Planet

पर्यावरण के प्रति प्रतिबद्ध ओएनजीसी

We have been consciously working on a plan to save the only known home to life- Planet Earth. That is the reason you will find multiple initiatives by ONGC for a sustainable future.



ONGOING PROGRAMS

Clean Development Mechanism Projects • Global Methane Initiative • Reduction in Gas Flaring • Renewable Energy • LED Program • Rain Water Harvesting • Green Buildings • Paperless Offices

स्वच्छ विकास तंत्र परियोजना • वैश्विक मीथेन पहल • गैस फ्लेयरिंग में कमी • नवीकरणीय ऊर्जा • एलईडी कार्यक्रम • बारिश के पानी का संग्रहण • ग्रीन बिल्डिंग • कागज रहित कार्यालय

UPCOMING PROGRAMS

Carbon Neutrality • Water Neutrality • Carbon Capture, Utilization and Storage

कार्बन तटस्थता • जल तटस्थता • कार्बन कैप्चर, उपयोग और भंडारण

Oil and Natural Gas Corporation Limited

To know more about how we are leaving a greener footprint behind, please visit ongcindia.com