## Message from Director



Recently the department of Education, Government of India has released a national credit framework (NCrF) in line with the mandate of NEP 2020. In order to implement effectively the intended objectives of NEP 2020, the National Credit Framework (NCrF), has been designed and developed by a High-Level Committee constituted with members pooled from UGC, AICTE, IITs, NCVET, NIOS, CBSE, NCERT, Department of School Education and Learning & Department of Higher Education, Ministry of Education, and Skill Development. This NCrF is a comprehensive credit framework encompassing elementary, school, higher, technical and vocational training, integrating credit system pertaining to learning on academics, vocational skills, and experiential learning including relevant formal and informal professional experience levels acquired from non-academic systems. This framework will definitely be helpful for making education more holistic and flexible by integrating both general and vocational education as it can enable the vertical and horizontal mobility of students between academic and vocational streams seamlessly. The NCrF provides several provisions for providing credits to all learning components including assignments, projects, seminars, case studies, and study tours. Besides this, it has provisions for the accumulation, storage, transfer, and improvement of credits, subject to assessment. This epoch-making credit framework is envisaged to integrate both academic and vocational domains of learning and ensure flexibility and mobility between two different streams as it has made provision for a national credit accumulation and transfer system for both vocational and general education by establishing an academic equivalence between them. It enables mobility within and between them, and its operationalization through the Academic Bank of Credits (ABC). In order to ensure multi-disciplinarity and holistic education across sciences, social sciences, arts, humanities, and sports, a unified approach across the education and skilling frameworks is made that can enable the education and skilling ecosystem in implementing a comprehensive credit-based framework. As a result, NCrF enables multiple entry - multiple exit pathways in both general and vocational

education and thus provides ample chances of flexibility for students to choose various learning trajectories and career choices, including options for mid-way course correction or modification, as per their talents and interests. There is a provision for augmenting blended and online learning which can promote extensive use of technology in teaching and learning, especially in vocational education, training, and skilling for removing barriers even for disabled learners. Internationalization of Indian education has been attempted by enabling equivalence of courses and qualifications, and provisions of credit transfer that can encourage and augur international exchange of students and faculty with foreign universities. Gifted students with special learning abilities can get adequate advantages with the successful implementation of NCrF and NEP 2020. There is provision to recognize prior Learning requirements for the workforce with knowledge and skills acquired informally, through family inheritance, work experience, traditional or other methods and thereby allowing them progression and mobility into the formal education ecosystem. In order to create awareness among technical teachers, one day National Awareness Workshop on National Credit Framework (NCrF) through online mode has been organized at NITTTR-Kolkata on 3rd March 2023 which has helped us to identify niche areas for us to explore and expand it as part of our training program. I am sure that NITTTR, Kolkata can take up the onerous task of training technical teachers about tenets of the national credit framework 2022 that can augur an era of re-establishing our past glory and tradition of knowledge society again for the welfare of the entire mankind. Let us pray to the almighty to have a better future for the entire mankind.

लोकः समस्ताः सुखिनो भवन्तु |

**Prof. Debi Prasad Mishra**
*Director, NITTTR, Kolkata*

# SMART TEXTILES

*Dr. Subrata Mondal*
*Associate Professor and Head, Department of Mechanical Engineering, NITTTR, Kolkata*

## Abstract

Traditional textiles are light in weight, possess improved breathability and comfort, however, they do not provide any added functionalities as per end users demand. On the other hand, smart textile materials and structure are able to sense and react to the surroundings or external stimuli. Fundamental principles of science are now a days increasingly incorporated in the textiles material to develop smart and intelligent textiles.

*Keywords*: Electronic textiles; intelligent textiles; phase change materials; protective textiles; UV protective textiles.

## 1. Introduction

Three basic needs of human beings are roti (food), kapra (clothing or textiles) and makan (home). Textiles is a broad term which includes various fibrous materials namely fibers, yarns, filament, threads, and also different types of fabrics. Basic characteristics of clothing or textiles are protection from various environmental hazards and aesthetics looks. Modern consumers are not only looking for protection and aesthetic value in textiles, but also inbuilt functionalities to meet the end users requirements. Smart textiles are the textiles that are capable to sense and respond to changes in their surroundings. This type of textiles can sense physiological parameters close to the human body, support and assist human being in daily living.

## 2. Basic Principles of Smart Textiles

Smart textiles or electronic textiles or e-textiles or intelligent textiles are advanced materials where textiles play a vital role, however, functionalities of other disciplines are integrated to them. Smart textiles can sense different surrounding conditions, on the other hand, intelligent or e- textiles can not only sense environmental conditions, however, can simultaneously respond to their surroundings or external stimuli such as thermal, chemical, electrical, and mechanical. Electronic textiles integrates electronic and textile materials into apparel which are

capable to recognize, assess, communicate, and trigger [1].

## 3. Classifications of Smart Textiles

Smart textiles can be classified into three subgroups, such as passive smart textiles, active smart times and very active smart textiles. Passive smart textiles are sensors which can only sense the environments, active smart textiles can sense stimuli from the environment and also react to them; finally, the very smart textiles are able to adapt their behaviour to the circumstances [2].

### 3.1 Passive smart textiles

Passive smart textiles can recognize the environment, as they are only sensor. Few examples of passive smart textiles include UV protective textiles, conductive textiles, waterproof textiles etc. Harmful part of ultra violet rays is one of the significant physical carcinogen in our environment. Damage caused by UV rays are cumulative and built up over the years. Excessive exposure of UV rays to the unprotected skin can be hazardous and may possess the health issue, and in extreme case can develop the skin cancer. UV protective textiles can be used to protect the users from the harmful part of UV rays. Several nanomaterials possess excellent UV blocking properties and can be incorporated to the textiles matrix to develop UV protective textiles. Nanomaterials are tiny materials with at least one dimension sized from 1 nm to 100 nm. Multi walled carbon nanotube, zinc oxide (ZnO) nanoparticles, titanium dioxide ($TiO_2$) nanoparticles shows excellent UV blocking properties and can be incorporated into the textile matrix to develop UV blocking textiles. When UV rays fall on textile substrate, there are three parts (Figure 1) *viz.* absorption (a), reflection (b) and transmission (c). In order to make an UV protective textiles, UV rays should not penetrate through the textile substrate and this can be achieved by incorporating UV blocking nanoparticles in the textile substrate [3].
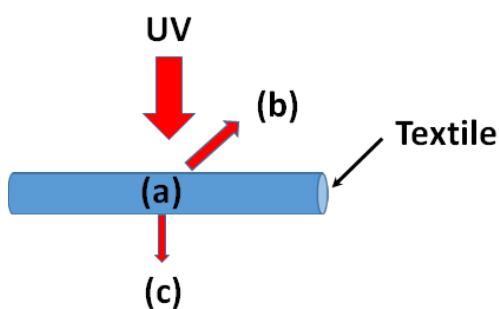


*Figure 1: Interaction of UV rays with textiles substrate. (a) absorption; (b) reflection and (c) transmission.*

### 3.2 Active smart textiles

Active smart textiles respond to the external conditions. Examples of active smart textiles includes phase change materials (PCM) incorporated textiles, shape memory polymer (SMP) incorporated textiles, chromic materials incorporated textiles etc. For an example, PCM can absorb heat and turned to liquid state from solid state. On the other hand, PCMs are solidified from liquid state by releasing the excess heat. PCM containing textiles can react instantly with changes in surrounding temperature as well as with the changes of temperature in different areas of human body. When temperature rises, PCM incorporated textiles react by absorbing heat to keep the human body in a comfortable state. When, the temperature of surroundings drops, stored heat energy from the liquefied PCM released to keep the wearer warm. In order to prevent spreading of PCM in liquefied state, phase change materials are encapsulated (Figure 2) prior to application on textile substrate [4].
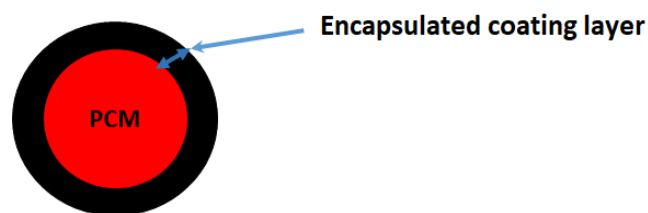


*Figure 2: Core shell structure of encapsulated phase change materials (PCM)*

### 3.3 Very active smart textiles

Very active textiles sense, react and adopt themselves to surroundings. An example of very active smart textiles is wearable smart electronic textiles. Integration of advanced material science, electronics and computer engineering into textiles are promoting a truly intelligent clothing. One example of such very active smart textiles is fabrication of jacket for jogger or walker with a pulse monitor switch to the left cuff. Incorporated senor controlled conductive materials in the back of the jacket can keep the user warm when temperature of jogger or walker has been dropped. Furthermore, electroluminescent wires attached to the pocket and hems to light up in the dark as a safety features [5]. Another example of very smart textile is intelligent gloves for deaf and dumb peoples. Department of Mechanical Engineering, Government Polytechnic College, Kodumbu, Palakkad, Kerala has been developed an intelligent glove for deaf and dumb people (Figure 3). The project has been participated in the grand finale of 2nd National Innovation Talent Contest for Polytechnics, held at the National Institute of Technical Teachers' Training and Research (NITTTR) Kolkata, in the year 2019. The glove can detect high

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Newsletter, National Institute of Technical Teachers' Training and Research, Kolkata, Block-FC, Sector-III, Salt Lake City, Kolkata-700106

pitch sounds and warn the user through a vibration. It can produce voice commands by pressing buttons fitted on the glove. The programs and audio packages have been created and incorporated into the smart glove for the recognition of gestures and playing audio file according to the gesture.



*Figure 3: Intelligent gloves for deaf and dumb people (photo courtesy LRC, NITTTR Kolkata)*

## 4. Conclusions

Advancement of researches in textile field, material science, nanotechnology and miniaturized electronics are making possible to develop smart textile with added functionalities as per the wearer demands. Smart textiles integrates smart materials, nanotechnology, electronic to textile structure which can be able to recognize, analyse, communicate and actuate. Integration of smart materials, nanotechnology, wearable electronics and sensors will be able to make it possible to manufacture intelligent textiles for many fields, especially for clinical monitoring, defense, protective textiles, and textiles for differently abled peoples.

## References

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[4]  S. Mondal, Phase change materials for smart textiles - An overview, Applied Thermal Engineering 28(11-12) (2008) 1536-1550.

[5]  https://technicaltextile.net/articles/wearable-electronic-clothes-3420 (retrived on 15 December 2022).

# Teachers' Training

**Teachers' Training During the period of September - December 2022:** 2962 numbers of Technical Teachers have been trained, through various Short-Term Training Programmes, broadly in the areas of Content Updating, Management, Pedagogy and Professional Skill development. A total of 61 training programs were conducted for the Teachers and Technicians of different Polytechnic colleges and Engineering colleges all over the Country during the last four months of the year 2022. Due to Pandemic mentioned programmes have been conducted primarily in online mode though Contact Mode programs have been conducted from April 2022 along with online mode.

### List of Training Programmes (September-December, 2022)

| Sl. No. | Coordinator | Code | Title | From | To |
|---|---|---|---|---|---|
| 1 | Sheela Yadav Rai | PS34 | Power Generation from Energy Resources | 05/09/2022 | 09/09/2022 |
| 2 | Mithu Dey | CU51 | Application of AutoCAD in Engineering & Basic Sciences | 12/09/2022 | 16/09/2022 |
| 3 | Sukanta Kumar Naskar | PS36 | FDP on Curriculum Development Approaches | 12/09/2022 | 16/09/2022 |
| 4 | Prasanta Sarkar | PS37 | Innovation and Startup in Higher Education Institutions | 12/09/2022 | 16/09/2022 |
| 5 | Sailendra Nath Mandal | PS38 | Wastewater Engineering Lab | 12/09/2022 | 23/09/2022 |
| 6 | Sagarika Pal | CU53 | Sensors, Transducers and Signal conditioning | 19/09/2022 | 23/09/2022 |
| 7 | Kinsuk Giri | SPL11 | Word Processing with Latex | 19/09/2022 | 23/09/2022 |
| 8 | Rayapati Subbarao | PS39 | NBA Accreditation | 19/09/2022 | 23/09/2022 |
| 9 | Subrata Mondal | PS40 | Development of Laboratory Instruction and Manual | 19/09/2022 | 23/09/2022 |
| 10 | Habiba Hussain | PS41 | Evaluating Students' Performance & Designing Question Papers | 19/09/2022 | 30/09/2022 |
| 11 | Samir Roy | SPL06 | Introduction to Fuzzy and Rough Set Theory and Their Applications | 19/09/2022 | 23/09/2022 |

| Sl. No. | Coordinator | Code | Title | From | To |
|---|---|---|---|---|---|
| 12 | Indrajit Saha | CU54 | Fundamentals of Machine Learning and Deep Learning | 26/09/2022 | 30/09/2022 |
| 13 | Urmila Kar | PS42 | National Education Policy (NEP) 2020 – Reforms in Higher Education | 26/09/2022 | 30/09/2022 |
| 14 | Soumitra Kumar Mandal | CU55 | MATLAB Applications in Engineering | 26/09/2022 | 30/09/2022 |
| 15 | Kinsuk Giri & Chandan Chakrabarty | CU56 | Data Analytics with PYTHON | 10/10/2022 | 14/10/2022 |
| 16 | Rayapati Subbarao | SPL14 | NBA Accreditation and SAR Preparation | 10/10/2022 | 14/10/2022 |
| 17 | Mithu Dey | SPL10 | Advanced Pedagogy | 10/10/2022 | 21/10/2022 |
| 18 | Habiba Hussain | SPL12 | Induction Training | 17/10/22 | 28/10/22 |
| 19 | Santanu Bhanja | CU57 | Modelling, Analysis and Design of Buildings with a Versatile Structural Engineering Software | 17/10/2022 | 21/10/2022 |
| 20 | Sailendra Nath Mandal | PS44 | Wastewater Treatment Technology | 17/10/2022 | 21/10/2022 |
| 21 | Indrajit Saha | CU58 | Introduction to Image Processing | 17/10/2022 | 21/10/2022 |
| 22 | Rajeev Chatterjee & Ranjan Dasgupta | CU59 | Network Infrastructure and Cloud Security | 17/10/2022 | 21/10/2022 |
| 23 | Sheela Yadav Rai | PS46 | Induction Training | 17/10/2022 | 21/10/2022 |
| 24 | Nirmal Kumar Mandal | CU62 | Applications of Machine Learning in Engineering | 17/10/2022 | 21/10/2022 |
| 25 | S. K. Naskar | SPL15 | Psychology and Mental Health | 21/10/2022 | 23/10/2022 |
| 26 | Soumitra Kumar Mandal | CU63 | 8085 and 8086 Microprocessor | 24/10/2022 | 28/10/2022 |
| 27 | Sukanta Kumar Naskar & Arpan Kr. Mondal | SPL18 | Advanced Pedagogy | 31/10/2022 | 11/11/2022 |
| 28 | Kinsuk Giri | SPL19 | Word Processing with Latex | 31/10/2022 | 04/11/2022 |
| 29 | Sagarika Pal | SPL08 | Assessment, Evaluation and Preparing Question Papers | 01/11/2022 | 03/11/2022 |
| 30 | Mithu Dey | PS47 | Values and Ethics for Professional | 07/11/2022 | 11/11/2022 |
| 31 | Soumitra Kumar Mandal | CU66 | Solar Photovoltaic | 07/11/2022 | 11/11/2022 |
| 32 | R. S. Rao | SPL16 | NBA Accreditation and SAR Preparation | 07/11/2022 | 11/11/2022 |
| 33 | Nirmal Kr. Mandal | SPL07 | FDP on DATA SCIENCE with MATLAB | 07/11/2022 | 18/11/2022 |
| 34 | Uday Chand Kumar | SPL13 | Institutional Management | 14/11/2022 | 18/11/2022 |
| 35 | Sailendra Nath Mandal | PS48 | Solid and Hazardous Waste Management | 14/11/2022 | 18/11/2022 |
| 36 | U. C. Kumar and S. K. Naskar | SPL13 | Institutional Management | 14/11/2022 | 18/11/2022 |
| 37 | Chandan Chakraborty | CU68 | Artificial Intelligence for Biomedical Engineering | 14/11/2022 | 25/11/2022 |
| 38 | Indrajit Saha, Sagarika Pal, Kinsuk Giri & Arpan Kumar Mondal | PS50 | Introduction to Advanced Pedagogy | 14/11/2022 | 25/11/2022 |
| 39 | Rayapati Subbarao | PS43 | NBA Accreditation and SAR Preparation | 14/11/2022 | 18/11/2022 |
| 40 | Habiba Hussain | PS51 | Soft Skills for Teachers | 21/11/2022 | 25/11/2022 |
| 41 | Subrata Chattopadhyay | CU69 | Bio-Medical Engineering | 21/11/2022 | 25/11/2022 |
| 42 | Rayapati Subbarao | PS78 | Thesis and Research Paper Writing | 21/11/2022 | 25/11/2022 |
| 43 | Arpan Kumar Mondal | CU71 | Mechanical Workshop Practice | 28/11/2022 | 09/12/2022 |
| 44 | Rajeev Chatterjee, Samir Roy & Ranjan Dasgupta | PS52 | ICT Enabled Learning in 21st Century | 28/11/2022 | 02/12/2022 |
| 45 | Sagarika Pal | CU74 | Industrial Process Control | 05/12/2022 | 09/12/2022 |
| 46 | Urmila Kar | SPL17 | NEP 2020 - Reforms in Higher Education | 05/12/2022 | 09/12/2022 |
| 47 | S. N. Mandal | SPL22 | Testing of Drinking water and Human Health | 05/12/2022 | 16/12/2022 |
| 48 | Uday Chand Kumar | CU75 | Laboratory Practice on Bitumen | 12/12/2022 | 16/12/2022 |
| 49 | Indrajit Saha | CU76 | Introduction to Computational Intelligence | 12/12/2022 | 16/12/2022 |
| 50 | Habiba Hussain | PS56 | Developing Research Presentations | 12/12/2022 | 16/12/2022 |
| 51 | Prasanta Sarkar | CU77 | Electricity Rules and Code of Practices | 12/12/2022 | 16/12/2022 |
| 52 | Soumitra Kumar Mandal | CU78 | PLC and LABVIEW | 12/12/2022 | 16/12/2022 |
| 53 | Sheela Yadav Rai | PS57 | Community Development through Technical Institutes | 12/12/2022 | 16/12/2022 |

| Sl. No. | Coordinator | Code | Title | From | To |
|---|---|---|---|---|---|
| 54 | Subrata Mondal | CU79 | Fundamental and Applications of Nanomaterials | 12/12/2022 | 23/12/2022 |
| 55 | Rayapati Subbarao, Kinsuk Giri & Samir Roy | PS58 | Academic Writing and Tools | 12/12/2022 | 23/12/2022 |
| 56 | Mithu Dey | CU80 | Analysis and Design of Structures by Limit State Method using Software. | 19/12/2022 | 23/12/2022 |
| 57 | Sukanta Kumar Naskar | MGT10 | FDP on Essentials of HRM | 19/12/2022 | 23/12/2022 |
| 58 | Urmila Kar | PS59 | Designing Direct and Indirect Assessment Tools | 19/12/2022 | 23/12/2022 |
| 59 | Arpan Kumar Mondal | CU81 | TIG/MIG and Plasma Welding Processes and Testing | 19/12/2022 | 30/12/2022 |
| 60 | Habiba Hussain | PS63 | Induction Training | 19/12/2022 | 23/12/2022 |
| 61 | Santanu Bhanja | CU83 | Course on Commentary for Code on Ductility Design and Detailing of RC structures subjected to Seismic Forces - IS 13920 2016 | 26/12/2022 | 30/12/2022 |

# List of programmes in which Prof. Debi Prasad Mishra, Director has delivered a talk

## A. In programmes organized by NITTTR, Kolkata

1. 8th Regional workshop on Technical Education held at Imphal, Manipur from 31.08.2022 to 02.09.2022
2. Workshop on "Quality Improvement of Training Programmes at NITTTR Kolkata" on 14.09.2022.
3. 11th National Seminar (Hybrid) on Ancient Indian Science, Technology, Engineering and Mathematics (STEM) October 15, 2022.
4. "Vigilance Awareness Week 2022" and "Rashtriya Ekta Diwas" on 31st October 2022
5. Special Faculty Development Programme on "Data Science with Matlab" from 07.11.2022 to 18.11.2022.

## B. In programmes organized by other institutions

1. Chief Guest in the inaugural Ceremony on an online platform on 14.11.2022 for ATAL Faculty Development Program (FDP) on "Bio-Fuels and Its Application in IC Engines" in hybrid mode during 14th to 25th November 2022 organized by Gandhi Institute For Technology (GIFT), Bhubaneswar, Odisha

# Invited Lectures by Faculty Members

Dr. Habiba Hussain delivered a lecture on 13th September on 'Classroom Management' in a 2 week Continuous Professional Development Programme(CPDP) titled "Cyber Security & Digital Forensic" under AICTE Training and Learning (ATAL) Academy from 12th - 23rd September, 2022, organised by School of Engineering and Technology, Mizoram University, Aizawl.

Dr. Indrajit Saha delivered an invited talk on "Classification Techniques", on 20th October, 2022, in a STTP on "Machine Learning" from 17th to 21st October, 2022, organized by National Institute of Technical Teachers' Training and Research, Chennai.

Dr. Indrajit Saha delivered an invited talk on "Machine Learning in Bioinformatics", on 2nd September, 2022, organized by Computer Science and Information Technology (CSIT), Siksha 'O' Anusandhan (SOA) Deemed to be University.

# Publications

Journal
1. Indrajit Saha, N. Ghosh, and D. Plewczynski, "Identification of Human miRNA Biomarkers targeting SARS-CoV-2 Genome", ACS Omega, Vol. 07, pp. 46411–46420, 2022. [Impact Factor: 4.13]
2. N. Ghosh, Indrajit Saha, N. Sharma and S. Nandi, "Bioinformatics Pipeline unveils Genetic Variability to Synthetic Vaccine Design for Indian SARS-CoV-2 Genomes", International Immunopharmacology, Vol. 112, pp. 109224, 2022. [Impact Factor: 4.932]
3. Indrajit Saha, N. Ghosh and D. Plewczynski, "Editorial: SARS-CoV-2: From Genetic Variability to Vaccine Design", Frontiers in Genetics, Vol. 13, pp. 960107, 2022. [Impact Factor: 4.599]
4. Tuhin K. Biswas, Kinsuk Giri and Samir Roy, "ECKM: An improved K-means clustering based on computational geometry", Expert Systems with Applications, Elsevier, 212, 118862, 2022.

5. Tuhin K. Biswas and **Kinsuk Giri**,, "Applications of Computational Geometry in Clustering: A Review", Advances in Modern and Applied Sciences, Scientific Research Pub-USA, p-202, 2022.

6. Ranojit Banerjee , Mrutyunjay Rout ,Amit Karmakar, **Dipankar Bose** -Free Vibration Response of Rotating Hybrid Composite Conical Shell Under Hygrothermal Conditions - Journal of Vibration Engineering &amp; Technologies September 2022 ,DOI: 10.1007/s42417-022-00680-z

7. Kingshuk Mandal, Mukandar Sekh **Dipankar Bose**, Souren Mitra & Soumya Sarkar, Statistical analysis of process parameters and multi-objective optimization in wire electrical discharge machining of Al 7075 using weight-based constrained algorithm-November 2022, International Journal on Interactive Design and Manufacturing (IJIDeM) DOI: 10.1007/s12008-022-01120-8

8. **Subrata Mondal**, Sougata Barik and **Debi Prasad Mishra**, Nanocarbon reinforced aluminum matrix (NRAM) composites: Fabrication, structure and properties, Materials Science and Technology, https://doi.org/10.1080/ 02670836.2022.137949; 2022, SCI, Impact Factor 2.060.

9. Mohammad Hamza and **Subrata Mondal**, Effect of Reinforcement with Ceramic Microparticles on Structure and Properties of Composites with an Aluminum Matrix, Metal Science and Heat Treatment, 64, 163-166, 2022, Impact Factor: 0.566.

10. U. K. Roy and **Subrata Mondal**, Microstructure and Properties of Powder Composites with Aluminum Matrix Reinforced with Carbon Nanomaterials, Metal Science and Heat Treatment, 2022, 64, 156-162, SCI, Impact Factor 0.556.

11. Sujay Kumar Dolai, Arındam Mondal, **Prasanta Sarkar** (2022). Discretization of Fractional Order Operator in Delta Domain, Gazi University Journal of Science Part A: Engineering and Innovation, Volume 9, Issue 4, 401 - 420. https://doi.org/ 10.54287/gujsa.1167156

12. Sujay Kumar Dolai, Arindam Mondal, **Prasanta Sarkar** (2022) A New Approach for Direct Discretization of Fractional Order Operator in Delta Domain, Vol 35, No 3 (2022), 313-331.

13. Bijoy Kumar Jha and **Santanu Bhanja**, "Modifications suggested in IS: 456 (2000) with respect to maximum under-reinforced section with minimum tension reinforcement in beams", The Indian Concrete Journal, 6-17, Vol. 96, No. 10, November 2022.

### Conference

1. Geetika Salwan, **Rayapati Subbarao and Subrata Mondal**, 'Experimental Studies on Ti-6Al-4V Alloy for Its Suitability in Gas Turbine Engines', 9th International and 49th National Conference of FMFP (FMFP-2022), IIT Roorkee, Dec 2022.

2. **Rayapati Subbarao** 'Studies on the Flow Capture Through Blade Rows in a Two-Stage Axial Flow Turbine', 5395, 9 th International and 49 th National Conference of FMFP (FMFP-2022), IIT Roorkee, Dec 2022.

3. Sujay Kumar Dolai, Arindam Mondal, **Prasanta Sarkar** (2022). A Unified Approach for Realization of IIR Filters in Delta Domain, International Conference on 2022 IEEE Electron Device Kolkata Conference organised by IEEE EDS Kolkata Chapter during 26-27, November 2022.

4. Sujay Kumar Dolai, Arindam Mondal, **Prasanta Sarkar** (2022) Realization of Reactance Device using Chaotic Crow Search Algorithm, IEEE International Conference on Knowledge Engineering and Communication Systems ( ICKECS-2022), 28-29, December 2022, organised by SJC Institute of Technology.

5. Anasuya Mondal and **Santanu Bhanja**, "Development of P-M Interaction Chart for Rectangular Shear Walls as per Fundamental Principles", The Indian Concrete Journal, International Conference on Advances in Concrete Materials and Structures (ICCMS 2022), 13-19 December 2022.

### Book chapter Publications:

1. Souvik Ganguli, Gagandeep Kaur, and **Prasanta Sarkar**. A Hybrid Gray Wolf Optimizer for Modeling and Control of Permanent Magnet Synchronous Motor Drives, Editors: Paramartha Dutta, Satyajit Chakrabarti, Abhishek Bhattacharya , Soumi Dutta, Celia Shahnaz Emerging Technologies in Data Mining and Information Security Proceedings of IEMIS 2022, Volume 2, Lecture Notes in Networks and Systems volume 490, Springer, ISSN 2367-3370 ISSN 2367-3389 (electronic) Lecture Notes in Networks and Systems ISBN 978-981-19-4051-4 ISBN 978-981-19-4052-1 (eBook) https://doi.org/ 10.1007/978-981-19-4052-1

# Miscellaneous

### Special lectures

- **Dr. Sukanta Kumar Naskar** arranged special lecture on additive manufacturing and 3-D printing under the initiatives of Students' Alumni Cell of NITTTR, Kolkata. Speaker was Mr. Atul Singh Rajput, research scholar of IIT Guwahati and alumnus of NITTTR, Kolkata during 20.11.22.

## Awards

- **Dr. Subrata Mondal** has been enlisted as top 2% of scientists in Polymers discipline in the past three years, which was published by the Stanford University, USA together with Elsevier BV (https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4). This year (published on 10 October 2022), Dr. Mondal's world rank is 697 in the Polymers discipline.
- A paper on optimization of spot welding parameters by taguchi method written by **Dr. Sukanta Kumar Naskar** jointly with Mr. Sandeep Kumar has been presented at the 10th international conference on advancements in engineering (ICAET) head at Bhai Gurudas Institute of Engineering and Technology, Punjab during 9th Nov.22 and got best paper award.

## Conference attended

- **Dr. Rayapati Subbarao** attended and presented a research paper in the 9th International & 49th National Conference on Fluid Mechanics &amp; Fluid Power (FMFP2022), held from 14th - 16th December 2022 at IIT Roorkee.
- **Dr. Rayapati Subbarao** attended the 11th National Seminar on Ancient Indian Science and Technology (AISTEM 2022) on October 15, 2022.
- A paper on reshaping teaching - learning process during COVI-19 pandemic written by **Dr. Sukanta Kumar Naskar** jointly with Dr. R.Karmakar was presented at the 25th international conference on interactive collaboration learning (ICL) held at Vienna, Austria during 27-30 Sept. 2022.

## Workshop attended

- Dr. Rayapati Subbarao attended the 8th regional (NE) workshop on technical education which was held at Imphal, Manipur from 31st August – 2 nd September 2022.
- Dr. Rayapati Subbarao attended online national level panel discussion on the 'Role of Teachers in Holistic Development of Students' on 8th September, 2022.

## Activity of Learning Resource Centre (LRC)
Activities of LRC during the mentioned period are as follows-
i. **List of educational resources developed/video coverage during the period**

a) Demonstration video of "High Temp. Tubular Furnace" for ME Department - 01
b) Video recording for Induction Training Course, course coordinator Dr. H. Hussain -01

c) Videos recording of the Institutional Program – 03

ii. **Photographs of events during the said period**

During this period, Sixteen events (including Group photo session of ongoing STTP'S) recorded. Some noted events are:

a) Observation of Teachers' Day 2022 on Sept05, 2022.
b) Workshop on "Quality Improvement of Training Programs" held on Sept14, 2022
c) "Hindi Pakhwada 2022"
d) "AISTEM 2022"
e) "Vigilance Awareness Week 2022" & "Rastrio Ekta Diwas"
f) "Janajatiya Gourav Diwas" 0n 15.11.2022

iii) **Any other news item worth publishing.**

Recently LRC has purchase an 85" Touch screen Panel for Director Secretariat. The same installed in the Boardroom at Chanakya Bhvan.



## Attended and presented

*Rayapati Subbarao*

Attended and presented a research paper in the 2nd International Conference on Materials Science & Engineering (ICMSE-2022) conducted by NIT Jalandhar, from June 11 to 12, 2022.

Attended 8th Regional (NE) Workshop on Technical Education, Imphal, Manipur, conducted by NITTTR Kolkata, from 31st Aug-2nd Sept 2022.

## INSTITUTE EVENTS

## हिन्दी प्रकोष्ठ (सेल )की रिपोर्ट (सितम्बर 2022 से दिसम्बर 2022 तक)

प्रिय सहकर्मियों,

हर साल की तरह इस साल भी हमने 01 से 14 सितंबर के बीच **हिंदी पखवाड़े** का आयोजन किया था। इस संबंध में सभी अधिकारियों

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Newsletter, National Institute of Technical Teachers' Training and Research, Kolkata, Block-FC, Sector-III, Salt Lake City, Kolkata-700106

और कर्मचारियों को अवगत कराया गया था । इस शुभ अवसर पर हमने दो महत्वपूर्ण कार्यक्रमों का आयोजन किए थे:

1) निम्नलिखित विषय पर निबंध लेखन प्रतियोगिता:

*आजादी का अमृत महोत्सव - शिक्षा और अनुसंधान की उपलब्धियां।*

2) हिन्दी भाषा के प्रचार-प्रसार के लिए चित्रकारी प्रतियोगिता।

आयोजित दोनों कार्यक्रमों में हमारे कर्मचारियों और छात्रों ने भारी संख्या में भाग लिया। श्री दीपक गुप्ता, सहायक अनुभाग अधिकारी, और श्री राधानाथ राउत एम.टी.एस. निबंध प्रतियोगिता में प्रथम व द्वितीय स्थान प्राप्त किया। तदनुसार उन्हें हमारे संस्थान द्वारा 1,500/- और 1000/-रुपये नकद पुरस्कार के रूप में दिया गया था।

इसी तरह श्री सैफ हुसैन (प्रथम वर्ष एम. टेक छात्र, यांत्रिक अभियांत्रिकी विभाग) और श्री सम्राट हाजरा (प्रथम वर्ष एम. टेक छात्र, यांत्रिक अभियांत्रिकी विभाग) चित्रकारी प्रतियोगिता में प्रथम और द्वितीय स्थान प्राप्त किया। उन्हें भी हमारे संस्थान द्वारा 1500/- और 1000/- रुपये का नकद पुरस्कार दिया गया ।
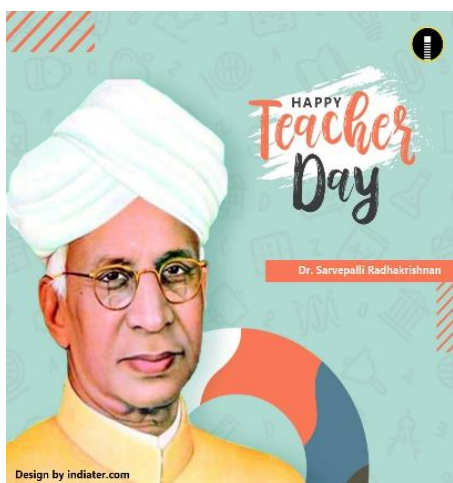
यह कार्यक्रम हमारे हिन्दी प्रकोष्ठ (सेल) द्वारा माननीय निदेशक महोदय के नेतृत्व में आयोजित किया गया था। अध्यक्ष हिन्दी प्रकोष्ठ (सेल) ने इस कार्यक्रम में सक्रिय भागीदारी के लिए सभी संबंधितों का आभार व्यक्त किया है।

आपको धन्यवाद

(आर चटर्जी)

**अध्यक्ष, हिन्दी प्रकोष्ठ (सेल )**

## Celebration of the Teachers' Day



Like yester years, this year also, NITTTR, Kolkata had organized a small but colourful event 05th September 2022 to celebrate the Teachers' Day to commemorate the 135th Birthday of Dr. Sarvepalli Radhakrishnan, an eminent educationist. The programme was organized at the Netaji Subhash Chandra Bose Auditorium of NITTTR, Kolkata. It started with the Inaugural speech of our Hon'ble Director Prof. Debi Prasad Mishra. A number of Students, Staff Members and Faculty Members took part in the programme. One of the Staff Member recited poem on this occasion. A group of students took part in an essay competition organized by the Celebration Committee on a given theme of *"If I would become a teacher"*. Three best entries were awarded with token prizes for taking part in the competition.

## Gandhi Jayanti Celebration

Like the previous years, on 2nd October, 2022, NITTTR Kolkata celebrated 153rd birth anniversary of Mohandas Karamchand Gandhi, fondly known as the 'Father of the Nation'. Students, staff and teachers gathered virtually to mark them with patriotic fervor. The celebrations for Gandhi Jayanti were started by the welcome address of Dr. Kinsuk Giri to the gathering mentioning the significance of the day. The director of the institute Prof. Debi Prasad Mishra addressed the gathering. He emphasized to follow the footsteps of Gandhiji and to be self-reliant like him. Special speeches comprising quotes and messages of Mahatma Gandhi given by Dr. Rayapati Subbarao attracted the attention of all.The celebration is wrapped up with a vote of thanks given by Dr. Kinsuk Giri, the coordinator of the program.

## Vigilance Awareness Week 2022 and Rashtriya Ekta Diwas 2022

National Institute of Technical Teachers Training & Research (NITTTR) Kolkata celebrated the birth anniversary of Shri. Sardar Vallabhbhai Patel on 31.10.2022 as Rashtriya Ekta Diwas. Various Porgrammes were conducted on this occasion. Vigilance Awareness Week 2022 was also observed on the same day in Sri Ramakrishna Paramahansa Mini Auditorium, 3rd floor, Sarvepalli Radhakrishnan Bhavan of the institute.

*Photos of observance of Rashtriya Ekta Diwas 2022.*

*Photos of observance of Vigilence Awareness Week 2022.*

Initially, the faculty, staff and students of the institute were welcomed to the event by Dr. Rayapati Subbarao. After the introduction and purpose of observance, Dr. Urmila Kar of 'Education & Management' department, addressed the gathering on the important aspect of 'Vigilance Awareness'. 'As suggested by the Central Vigilance Commission, Vigilance Awareness Week is observed during the week in which 31st October, the birthday of late Sardar Vallabhbhai Patel falls. This year, Vigilance Awareness Week is being observed from 31st October to 6th November, 2022 with the following theme: "**Corruption free India for a developed Nation**". The objective is to create increased awareness about the perils of corruption' Dr. Kar said. Later, as part of the observance of Vigilance Awareness Week, the integrity pledge was taken by all the faculty, staff and students as shown in Fig. 1. This was coordinated by Prof. S.N. Mandal.





Earlier, "Rashtriya Ekta Diwas Pledge" was taken by the faculty, staff and students in both Hindi and English as shown in Fig. 2. Prof. Dipankar Bose of 'Mechanical Engineering' department, highlighted the importance of *Rashtriya Ekta Diwas* and appreciated the commendable efforts of Sardar Vallabhbhai Patel. 'His involvement in the 'Indian Freedom Struggle' and making India more united at the time of partition is really exemplary. Nearly 547 territories were negotiated by him to see what we have India as today. He was next to Gandhi in the important deeds to make India as strong as any other country. He is really the 'iron man of India'. We need to follow his deeds and see more untied India in the days to come. Hence we are celebrating this day as 'ekta diwas' and it is our responsibility to see India as united as ever' Dr. Bose said.

Later, the head of the institute, honorable Director, Dr. D.P. Mishra was welcomed by all to address the Faculty, Students and Staff. Prof, Misrha talked about the ways 'Sardar' used to make India untied during the days of partition. He added 'The mantra followed by him is useful in the present days as well. It is '*Sama Daan Bheda Dandopay*'. Let us take him as an example to do the institute activities meticulously and make our institute stronger and richer. Also, let us all make our country free from corruption. It is a big challenge and we must do it'.

In the end, Dr. Rayapati Subbarao proposed vote of thanks. He thanked all the faculty members and staff for their presence. He thanked the FICs of PG Cell, Training Cell, LRC and IWS for making the necessary arrangements for smooth running of the programme. He also thanked the administration section lead by SADO for playing the crucial role for the commencement and successful completion of the programme.

### Celebration of Samvidhan Diwas (Constitution Day) in NITTTR Kolkata

As per the direction of the Ministry of education, Govt. of India, different programmes were arranged in the

institute to celebrate the importance of Constitution Day.

1. *Interactive seminar about the importance of Constitution Day*

On 24th Nov, 2022, Interactive seminar about the importance of Constitution Day was organized by Dr. Rayapati Subbarao. Students of all branches along with few staff participated in the seminar. Initially, the importance of the Indian constitution was discussed. Students of ME and CE department students gave their opiniton on how to protet it and how to benefit from it. Later, Dr. Subbarao explained the improtance of celebrating the 'Constitution Day' and talked about the preamble to the Constitution. It was all about being proud to be an Indian. Also, the unity and integrity of the nation has to be taken care during the days of trioble.


*Seminar attended by students and staff.*

2. *Awareness about the preamble to the Constitution*

On the second day, '***awareness campaign about the preamble to the Constitution***' was conducted, in which few students and Dr. Subbarao participated. It was to create awareness among all the members of NITTTR Kolkata, by pasting the preamble in all the departmental notice boards of the institute.


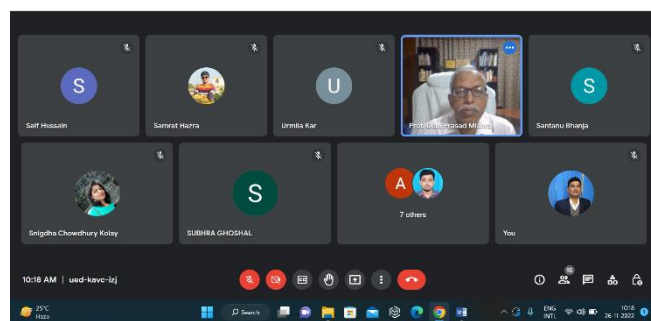*Students and the coordinator pasting the preamble.*

3. *Online programme on 26th November, 2022*

On the 'Constitution Day', i.e. on the 26th November 2022, NITTTR Kolkata conducted an online program as '*Celebration of Samvidhan Diwas(Constitution Day)*' at 10 AM. Please find the google meet link for the programme. The google meet link was: meet.google.com/ued-kavc-izj.

The programme started at 10 AM with 'Vandemataram'. Then, the welcome address about the importance of Constitution Day was given by Dr. Rayapati Subbarao. 'The main aim of celebrating this day is to create awareness among the citizens about the Constitution and its values. And also, to bring awareness of the importance of the Indian Constitution and the people behind its evolution. Mainly, to impart constitutional values among residents. As you all know, the Indian Constitution in its original form has 395 Articles, 22 Sections and 8 Schedules. It was on this 26th November, the Indian Constitution was adopted by the constituent assembly in 1949 and came into effect from 26th January 1950. It provided the establishment of all Indian federations consisting of provinces and princely states as units and divides the power between centre and students' he said.

This followed by the main address of the institute Director, Prof. Debi Prasad Mishra. He covered the aspects of Constitution, Dharam, Democracy, Educated citizens, Values and ethics, Equality among the citizens and about freedom of speech. Also, he identified that India has been a land of unity and diversity. We have to safe guard the country and all the citizens must look towards responsibilities as well so that the nation gets stronger day by day.


*Glimpse of the online program of 'Constitution Day'.*

Then, the faculty, staff and students participated in the reading of the preamble to the constitution, coordinated by Dr. Rayapati Subbarao. This followed a brief talk by Ph.D scholar, Mrs. Snigdha Kolay, who carried on the spirit of the occasion. She stressed upon the duties and responsibilities of the citizens. 'As a student, how one can benefit from it and how one can safeguard it', she mentioned.

The programme ended with all singing the national anthem, '*Janagamana adhinayaka jayahe bharata bhagya vidhata*'.

**NATIONAL INSTITUTE OF TECHNICAL TEACHERS' TRAINING AND RESEARCH, KOLKATA**
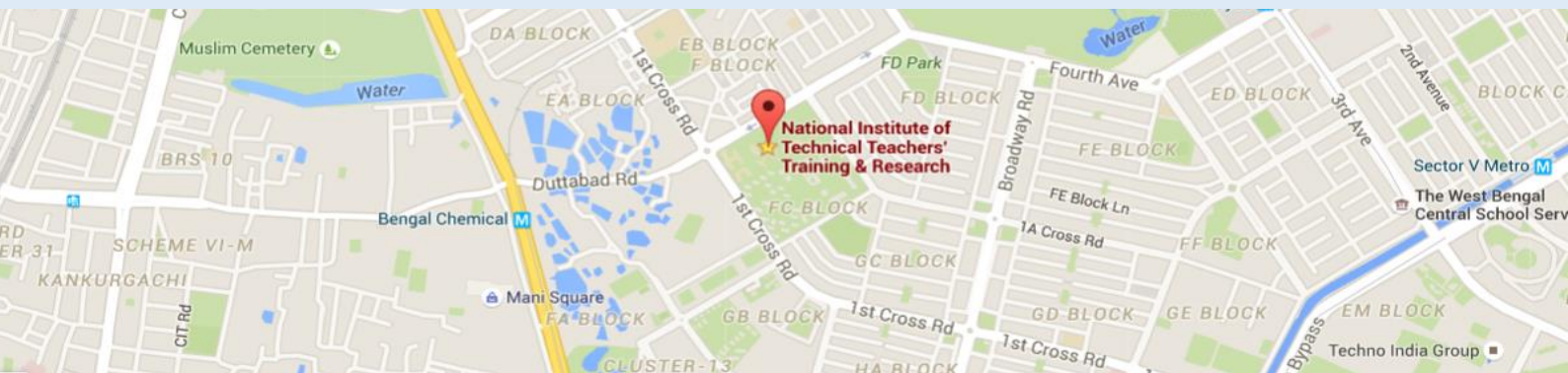Block-FC, Sector-III, Salt Lake City, Kolkata-700106
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**How to Reach NITTTR, Kolkata**
The Institute is located near Labony Bus Stand (Sector-III), FC Block in Salt Lake City, Kolkata 700106 and can be reached by taxi from Netaji Subhas Chandra Bose International Airport and also from Howrah, Shalimar, Sealdah and Kolkata Railway Stations.

**"As human beings, our greatness lies not so much in being able to remake the world – that is the myth of the atomic age – as in being able to remake ourselves"** *– Mahatma Gandhi*



**Distance:**
- From Howrah Railway Station: **42 min** (8.1 km) via Maniktala Main Road
- From Sealdah Station: **26 min** (7.4 km) via Beliaghata Main Road and Broadway Road
- From Kolkata Railway Station: **16 min** (4.8 km) via Canal Circular Road
- From Shalimar Station: **38 min** (18.8 km) via Parama Island Flyover
- From Netaji Subhas Chandra Bose International Airport: **27 min** (11.5 km) via Kazi Nazrul Islam Sarani/VIP Road

Google map link: https://goo.gl/maps/F7gssJoeqxSvffqf9