

Criteria 7.3: Institutional Distinctiveness

Criteria 7.3.1: Portray the performance of the Institution in one area distinctive to its priority and thrust

In accordance with its vision and mission, NBNSCOE has taken unique initiative by establishing 'Centre for Research and Technology Development (CRTD)', at the institute under the able guidance of former Vice Chancellor and Emeritus Scientist Prof. Dr. S. H. Pawar. This centre is monitoring the research and technical activities in the institute by constituting various committees, where the students and the staff of the institute are also involved in these committees and such activities. CRTD has outlined various areas as Energy, Environment, Health Science, Atmospheric Nano-science, Water resource management and Cloud Physics with thrust on Nano-science engineering and Material Science to address the most challenging societal problems that have been highlighted by policy makers at the national level.

This initiation has helped the institute for a research attitude among staff and students. This has helped for developing outstanding research talents capable of understanding and exploring the development of innovative technologies for rural development. Scientists and engineers involved in these research areas work together alongwith the staff, students of NBNSCOE and partner organizations to find answers to society's most challenging problems.

Research activities initiated by institute

1) To fetch the research grant from Government organization, CRTD had applied for the funding to the Department of Science and Technology (DST). Institute has received a research grant of 33.30 Lac from DST, for the project titled 'A novel approach developing silver iodide embedded silica aerogels seeding material for cloud seeding application (SIESA)'. This project has been successfully completed and the report is also submitted to DST.

2) A unique scheme named 'UG Research Scholar' is also initiated for undergraduate students of this institute to do research on frontier technology with a multidisciplinary approach which provides a golden opportunity to become a "Young Researcher". CRTD focuses on thrust areas such as:

1. Alternatives to Li-Ion Batteries
2. Modifying Electric Cookers/pan to suit Indian cooking method
3. Green hydrogen for mobility
4. Carbon capture
5. Solar thermal energy

6. Solid state refrigerator
7. Nanotechnology for EV battery
8. Turboelectric generator
9. Super capacitor with silk fibroin

The student groups are finalized as per their area of interest and mentors are assigned to each group for smooth work. Total 60 students from the institute are selected as research scholars based on their performance in the selection process.

3) The team of students and staff members of NBNSCOE has designed, developed, and deployed a project on 'Organic Farming' on the farm of Mr. Mahesh More in the nearby village named 'Kondi'. In this project, the complete cycle of lifting the water from the well, storing it in a tank, then steering of 'Jivamrut', collecting this Jivamrut in a filter tank and then providing this organic fertilizing based water to crop by drip irrigation, through completely automated process was done by our research team. Padmbushan Dr. Vijay Bhatkar (Initiator of Indian Super Computer 'Param') has also visited this project and appreciated the work done by our team. This project has received the grant of Rs. 50,000/- from Agriculture Technology Management Agency (ATMA) of Solapur and Institute has also contributed the same amount for establishment of this entire project.

Other Initiatives of CRTD:

- CRTD has planned International conference on 'Silk Fibroin and Sericulture Resources - A Multi Mega Event with Emerging Trends' for researchers
- As a government initiative to provide global opportunities for SC community & make them employable, CRTD has submitted proposal on "Science Technology and Innovation in North Solapur and Mohol Block, Solapur District Maharashtra state of Rs. 3.2 Cr to the Department of Science & Technology (DST) under STI Hub.
- Also submitted proposal of 51 Lac to Biotechnology Industry Research Assistance Council (BIRAC) in collaboration with industry on 'Formulation of JasadBhasma based Phototherapeutic Ayurvedic Drugs for SARS Disease'.
- Faculty members are encouraged to participate and conduct different research activities, Research grants, Consultancy, technical book publications, and presentation of research papers at national and international conferences for knowledge sharing.
- To make awareness about research publications a conference is conducted for undergraduate students as UGCON-2023.

- CRTD has signed MoUs with 1) School of physical science, Punyashlok Ahilyadevi Holkar Solapur University Solapur and 2) Vishwachaitanya Ayurvedic Rasshala Baramati Dist. Pune.
- A Book is published on “Silk Fibroin: Advances in Applications and Research”, Nova Publishers, USA.
- A Book on “NanoScience” is published by Nova Publishers, USA
- A Book “Nanotechnology Applications in Medicinal Plants and Their Bio Nanocomposites: A New Perspective in Ayurveda”, submitted to Cambridge Scholars Publishing, UK.
- Institute has also submitted six research proposals to Government of India's SERB – SURE scheme worth Rs. 1.5 Crore

Unique Initiative of NBNSCOE:

Being a drought prone area in Solapur district (average rainfall in the region is 400 mm), receives less precipitation which is ill-spread and precarious in nature. Indian Institute of Tropical Meteorology (IITM) Pune, Government of India's initiative under Ministry of Earth Science has signed MoU with NBNSCOE to establish the research facility in the institute's premises for the Cloud Seeding Experiment. This entire project is named as 'Cloud Aerosol Interaction and Precipitation Enhancement Experiment' (CAIPEEX). The students and the staff members are supporting and experimenting with IITM for doing their project. Two engineering scientist students working in IITM have completed their PG from the institute. Number of projects at UG level is also being guided by scientists of IITM and students are allowed to use their newly established research lab on campus equipped with C-Band Radar, Rain-Guages, wind profiler, sensor based balloons, etc. and high end atmospheric research based software. In the recently published report of IITM they have mentioned contribution of NBNSCOE in their project.

Along with above initiatives, institute also supports the staff and students for attending STTPs, FDPs, Workshops, Conferences and Project Competitions. Financial support is also provided for these activities. Therefore, institute could have 104 journal publications, 72 conference articles, 16 books and book chapters, 13 copyrights, 13 IPRs and could fetch the research funding of 36.94 Lac during last five years. Also students of this institute could be the winners at national level completions such as SIH, Avishkar, Ideathon, Skillathon, etc.



Centre for Research & Technology Development (CRTD) Office



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