



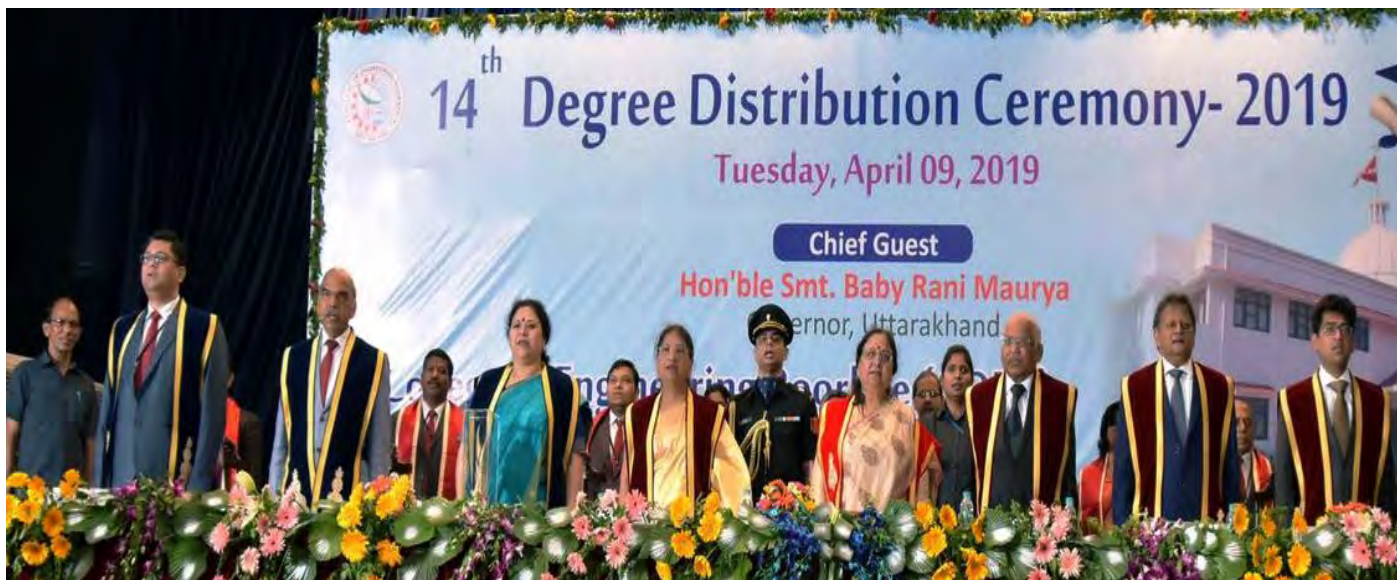
# STRATEGIC DEVELOPMENT PLAN

(2020-21 - 2024-25)



## College of Engineering Roorkee

7th K.M. on Roorkee- Haridwar Road (NH-58), Rehmadpur  
Vardhmanpuram, Roorkee, Uttarakhand- 247667



Honble Governor Uttarakhand, Baby Rani Maurya at 14th Degree Distribution Ceremony at COER



Hon'ble Chairman is with Hon'ble Chief Minister of Uttarakhand Shri Trivendra Singh Rawat Ji

## Strategic Development Process

College of Engineering Roorkee (COER), founded by Seth Roshan Lal Jain Trust, was established in 1998 with a vision to impart knowledge to the diverse sections of the society. It was the first self-financed Engineering College in Roorkee, other than the famed University of Roorkee (now IIT Roorkee). In the past 22 years under the visionary and dynamic leadership, COER grew by leaps and bounds. In the beginning 4 departments were set up. It was initially planned that approximately 300 students would be admitted annually to four-year undergraduate courses. Facilities were planned for admitting 500 students each year to B.Tech programs, and a student population of approximately 2000 was envisaged. The campus was to be residential for willing students and academic staff. The campus came up in a picturesque site of about 75 acres out of which 25 acres are the built-up area. Starting as an undergraduate engineering institution, COER has diversified its educational offerings and increased its focus on postgraduate education over the years. Today, the Institute is running 12 departments offering degree programs viz. M. Tech (CSE, ME), B.Tech (CE, CSE, IT, ME, EN (EEE), ET, ME, PPE), Diploma (CE, EE, ME), MBA (HR, Finance, IB, IT, Marketing), MCA, MCA(LE), BBA, BCA, B.Com (CFA), and B.Sc (Agriculture). Last two decades brought many technical advances in the lifestyle of the people. Gradually, the technology became integral part of the lives of the people in the nation for example using smartphones, electric appliances and social media. The Industry is gradually shifting to its 5.0 version whereas the daily life of the population become more technology driven with each passing day. All these dynamic changes have led to a redefinition of the role of technology in India. Being a technical institution, it becomes necessary for us to review the strategies periodically under these circumstances of change.

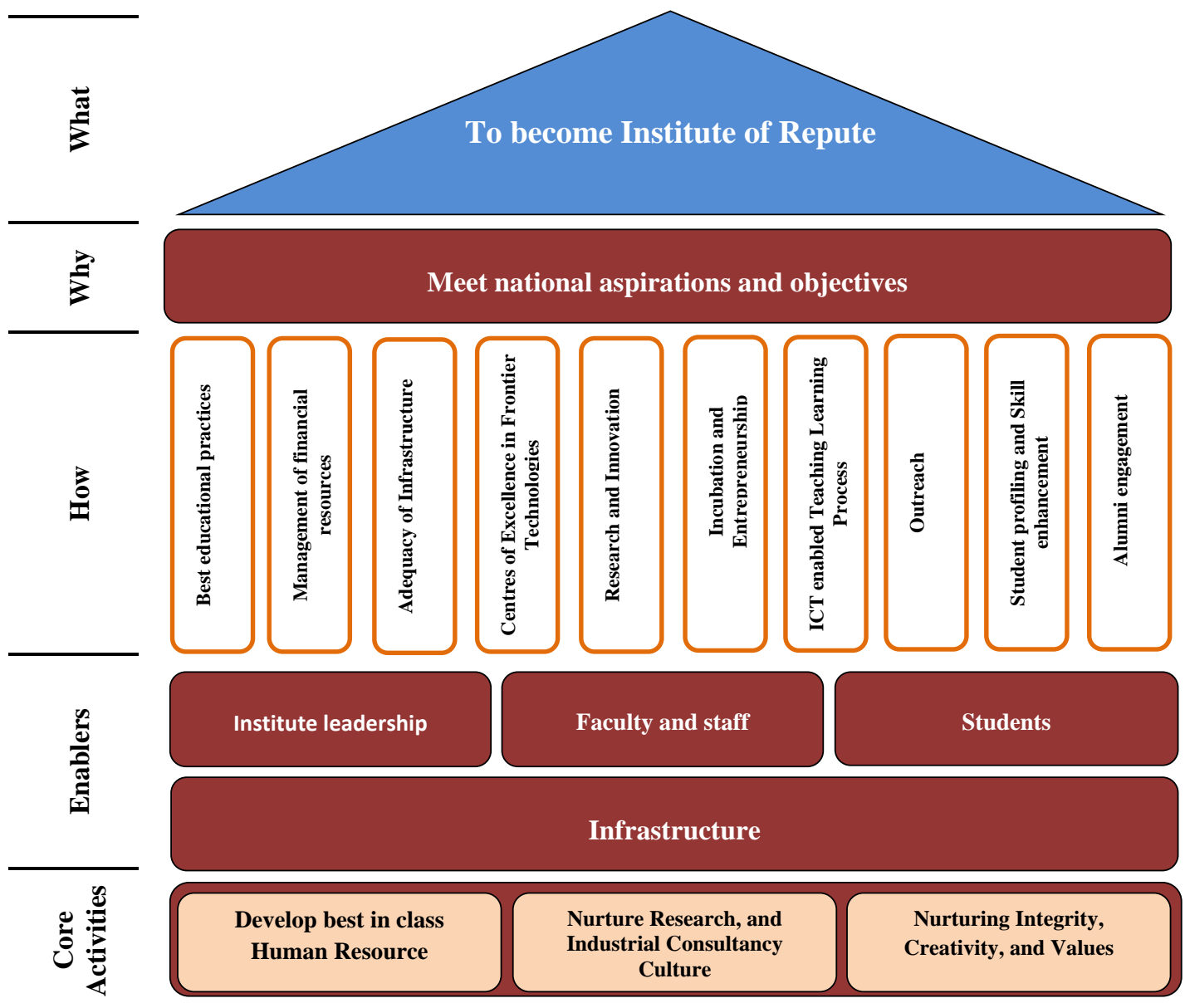
In this context, the Chairman, Secretary, and the members of the Board of Governors (BoG) felt the need of a formal document of Strategic Development Plan for next five years. The mandate was given to the Director-General to develop a five-year Strategic Development Plan. The team under the leadership of Director General met several times and discussed the COER's strategic goals to be achieved by 2025. and proposed a comprehensive Strategic Plan upto 2025. This enunciates COER's aim of being recognized as a reputed institution in the region. This plan seeks to leverage the strengths that COER has developed over the past two decades and to build upon them and develop new strengths. In particular, the strategic plan proposes to nurture the large groups of faculty working on transformational technologies that have the potential to address the societal challenges faced in India today-specifically in areas such as water, energy, healthcare, and education. It outlines steps to increase the quality and quantity of research output through an increase in research intensive activities, faculty strength, PG students enrolment, infrastructure, engagement with industry and international collaborations. The targets of the strategic plan to be achieved by 2025 are the following:

- Become an Institute of Repute (IoR) and a leading technological Institute in the nearby region ranked in the national top 100 in all disciplines
- To implement 100 % online lecture delivering system in a situation like COVID-19 pandemic
- Establish a track record in creating innovative technologies to meet the industrial challenges
- Become known in the northern region of India for transformational technologies that impact lives of people
- Be a model campus in terms of sustainability, usage of energy and recycling of materials



- Be an institute that is sought for national and international collaborations leading to exchange of students and faculty and joint degree programmes

The following Figure summarizes the whole Strategic Development Plan. Leadership at the COER believes that the improvement is an incremental and steady process. The Figure outlines the important steps such as the core activities, enablers and the outcomes.



COER-VISION 2025



Vardhman Auditorium at COER

## Chairman Message



It is heartening to note that the College of Engineering Roorkee has embarked upon a scientific way of formulating the SDP-2025. A progressive institution like COER must spell out and articulate vision, mission, and set the direction. COER has made its mark and is the most preferred institution in the state of Uttarakhand as well as at the National level. This is the right time that the institute decides its direction of growth for the next decade. I am confident that the distinguished faculty members under the leadership of Director General, Deans, and Heads have brought out a detailed vision, mission, goals, strategies, and implementation plan. Any good strategic plan will be successful when fully implemented and its outcomes are evaluated. I am sure that this leadership will implement the strategic plan in its total spirit. I take this opportunity to congratulate all the leadership team, HoD, Faculty, and staff who relentlessly worked towards bringing out this Strategic Development Plan document for the next five years.

Best Wishes

**Er. J.C. Jain**



Hon'ble Chairman, Managing Director, COER

# Director-General Perspective



COER is one of the most admired institution in the state of Uttarakhand. The Institution has aimed at achieving the centre of excellence status among contemporary institutions. COER plans to secure ranking at the national level by 2025. It is heartening to note that all the hard work by Deans, HODs, Faculty, and Staff has resulted in having a well articulated and clearly defined strategic plan document for next five years period (2020-21 - 2024-25). The theme for the Strategic Development Plan covers all critical aspects of the Institution. The implementation in its full spirit is expected to lead this institution towards one of the preferred institutions in the India. The Strategic Development Plan (SDP) formulates a clear vision, mission, quality policy, core values, institutional strategic goals, strategies, and goals. The SDP-2025 document will serve the purpose of aligning all the stakeholders of the Institute towards a set of common goals so that the sum total of our efforts and achievements is much more than our individual contributions. I trust that COER will become the pride of our state and that each one of us will enjoy the satisfaction that comes from doing our part to enable our Institute to achieve its rightful place among the best in state and the nation. The key aspect of the SDP is in its successful implementation and evaluation aspects. I have utmost confidence in my colleagues and management support for its implementation. My heartfelt appreciation to all the members who are directly and indirectly involved in making an implementable document.

Best Wishes

**Prof. S.P.Gupta**

## Director Perspective



COER has an impeccable track record of being one of the preferred destination for pursuing quality technical education among the students. The institution aims to provide support to faculty and students to attain the knowledge as well as the skills that they aspire for. Also, the institution aims at a good governance framework towards improving the quality of technical education to the next level. It is the reason that COER continuously enhances the existing capacities. COER is aligning itself with rapid economic and technological developments in new areas by emphasizing on the enhancement of postgraduate education and Research in addition to outcome-Based Education (OBE) for undergraduate programs. The mandate is also good governance at all levels focusing on the improvement of the quality of learning, teaching, and research outcomes. Good governance focuses on effective leadership, planning, ethics, responsibilities, and accountabilities, both within and outside the institution. Towards achieving Good Governance, an attempt has been made with the involvement of management, all heads of department, and senior faculty members to prepare this SDP-2025. I am sure the SDP report will give us direction and confidence in accomplishing the vision and mission of our Institution.

Looking at a future with excellence!

**Prof. B.M.Singh**



# Vision and Mission

## Vision

### Vision Statement

To impart technical education in Engineering and Management with training, skill up-gradation, and research in futuristic technologies and niche areas.

COER believes in the all round development of its students and leaves no stone unturned to achieve this. Every effort is made whether it is in the maintenance of the rich library, induction of highly qualified faculty, nurturing a healthy learning environment, and running rigorous personality development programs to improve the performance of students in placement related interaction with recruiters. COER stands out as a pioneer of engineering education in Uttarakhand for more than two decade and it has been successful in maintaining its reputation in the state. Our motive is to continuously keep a track of futuristic technology and keep our students ready to meet the changing industry requirement. Learning at COER is a transformative process; a developmental experience that combines intellectual growth with practical knowledge and sound judgment. This possibly is the reason that bright young talents with diverse backgrounds who desire to pursue a well-recognized career in engineering or management come to make a career at COER. The vision of COER is to be an institution of education par excellence in the contemporary context. COER provides a world-class global educational experience to students. It aims to come in the top 100 research institutions of India, providing technical education. To achieve these objectives it will strive to attract and sustain a cadre of faculty, who is committed to leadership, honesty, dedication, and excellence.



COER school of Management

## Mission

### Mission Statement

**COER mission is to contribute to the society through education, learning, and research at the highest levels of excellence with the following objectives:**

- To groom professionals with technical competencies so that they can serve the Society and Industry and face global challenges
- To impart education based on the latest knowledge, analytical skills, management competence through advanced methods of Training, Research, and Strong Institute-Industry interface
- To help create innovative and entrepreneurial professionals
- To inculcate strong moral values for disciplined professional growth

We strive to maintain an environment which encourages the students to develop competencies for lifelong learning with the following inputs:

- State-of-the-art infrastructure
- Industry-Academia Interface
- Faculty and staff development programs
- Moral values and ethical behaviour
- Research & Development activities

We maintain close interaction with the industries for on the job training of the students as well as for fine-tuning our academic programs in accordance with the industries. Excellence in teaching and molding the students for their all-round development has remained a hallmark of COER. We closely work with many industries such as IBM, Infosys Technologies, Microsoft Corporation, and Oracle Corporation where our students are provided with opportunities to learn and imbibe their work culture. The institute plays a vital role in strengthening their strategic thinking abilities and grooming them as future technologists and managers. COER's mission is to provide 100% placements to the students in the companies of repute, all across India.

## Goals

**Through this Strategic Development Plan, COER is aiming to**

- Become an Institute of Repute (IoR) and a leading technological Institute in the nearby region ranked in the national top 100 in all disciplines
- To implement 100 % online lecture delivering system in a situation like COVID-19 pandemic
- Establish a track record in creating innovative technologies to meet the industrial challenges
- Become known in the northern region of India for transformational technologies that impact lives of people
- Be a model campus in terms of sustainability, usage of energy and recycling of materials
- Be an institute that is sought for national and international collaborations leading to exchange of students and faculty and joint degree programmes

In addition to the broad range of activities that the Institute carries out in pursuit of its mission, the following activities are identified to be given special emphasis in the strategic plan:

1. Best Educational Practices
2. ICT based teaching learning process with special emphasis on web based learning
3. Management of financial resources
4. Adequacy of Infrastructure
5. Center of Excellence in frontier technologies
6. Research and Innovation
7. Incubation and Entrepreneurship
8. Outreach to Connect with Society
9. Student Profiling and Skill enhancement
10. Alumni Engagement

COER aspires to achieve the goal to be an Institute of Repute in this region by 2025 through performing these 10 activities. Each activity is separately discussed with key identifiers for successful implementation and current status at the COER campus.

## 1. Best Educational Practices

The practices which add commendable value to an institution and its various stakeholders are the best practices. As higher education is becoming an international service, quality and recognition of education become a growing concern. The best practices in education address this concern. This is the reason why the COER continues to adopt these practices. The key identifiers and the implementation steps for the best practices at COER are the following:

### Key Identifiers:

- Quality teaching to the students
- Professional skills and value-added programs
- Incorporating ethical values through various committees and NGOs
- Participation of faculty in Conferences, Faculty Development Programs, and symposiums
- Creating a culture of excellence in research, innovation, and entrepreneurship
- Developing relations with reputed national/international institutions through collaborations and student exchange programs
- Minimum (2-4) % of students developed as entrepreneurs on completion of the program
- At least one international academic activity of COER every year such as Faculty visiting abroad for conference, post doctoral work, students visiting abroad for internship, Experts from overseas visiting COER for lectures, conference etc.

### Status of Implementation:

- Concepts are built in the lecture and practical classes through state-of-art pedagogy whereas technology updates in the subject area are met through workshops, guest lectures, and interaction at Centres of Excellence
- Value-added programs for various courses have been provided
- Global Collaboration: MoU with Kuban State Agrarian University, Russia has been signed; Faculty exchange on short-time basis implemented
- Professional training programs for students have been conducted

## 2. ICT based teaching learning process with special emphasis on project based learning:

COER emphasizes on the smart classroom methodology and a project based learning (PBL) approach. During this COVID-19 pandemic, the web based learning became an indispensable need. At COER, we have Books, Journals, Periodicals, Magazines Online access to E-media and Departmental library books to facilitate Learning practice. Our plan is to complement contemporary classroom teaching-learning culture with the web based learning gradually. Though, all class rooms are equipped with projectors and internet connection, we are planning to make our classrooms capable of web based learning.





Students in Lab



Students in class

### Key Identifiers:

- Quality teaching learning environment for faculty and students
- Professional skills and value-added programs
- Incorporating ethical values through various committees and NGOs
- Participation of faculty in Conferences, Faculty Development Programs, and symposiums.
- Creating a culture of excellence in research, innovation, and entrepreneurship
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Students performing experiment



NABL accredited laboratory



Students in Library

### 3. Management of financial resources:

Financial planning plays an important role in the sustainability of self-financed Institution like COER. Funds are required for future growth and to increase the existing infrastructure. COER believes that the Institution itself should be self-sustained. Resource management and good financial planning is essential for the expansion of the Institution. We are targeting to become self-sustained Institution by 2025.

#### Key Identifiers:

- Outcome-oriented Budgeting: Department wise Budget planning of all heads of accounts.
- Fee collection (Major Source)
- Center for continuing education: Internal revenue through executive training programs, short term courses, consultancy, and sponsored research
- Endowment fund generation through Alumni

#### Status of Implementation:

- Budget formulation and approval through Finance committee
- Monthly Audit (Internal /External ) checks- balances
- Devise a framework to invite donations for Institutions welfare

### 4. Adequacy of Infrastructure:

Presently, COER has sufficient infrastructure required to cater the need of its stake holders. As the new programs would come up, we are committed to augment the existing infrastructure. Special emphasis will be given to the hostel area to make campus life of the student enjoyable and attractive. Existing facilities will be augmented for students' participation in all major sports, including informal sports. Students will have increased access to training staff as well as to the teachers of music, dance and art. Hobby clubs and nature appreciation activities will also be fostered. Each student will be encouraged and provided opportunities to cultivate at least one interest in addition to academics. First year students in particular will be encouraged to take up new activities and nurture their innate talents.



Students playing Table Tennis



Students in their Hostel Rooms

We are planning to develop wellness centre for students which will provide essential aid support and counselling facility. All steps will be taken to ensure that timely, effective counselling is available to students in times of crisis.

The scope of counselling will also extend to long term aspects such as career planning and building life skills. Counselling services will reinforce the point that extra-curricular activities need to be pursued as a part of all-round development.

**Key Identifiers:**

- To augment the existing waste water treatment towards zero discharge
- Energy conservation measures to be implemented
- Use of renewable energy sources will be encouraged
- Progressively, measures will be introduced to minimize energy consumption for air-conditioning

**Status of Implementation:**

- Systems are being strengthened to improve waste disposal and handling processes and to ensure recycling of all materials
- Measures are being taken to dispose of hazardous waste safely
- Land use is being optimized through full life cycle planning of built infrastructure
- New indoors game facilities are being created

**5. Center of Excellence in Frontier Technologies:**

The gap between industry and academic institutions in India, specially in our region, has been identified in surveys carried out by reputed corporate houses. COER perceives it as an urgent need and we are trying to bridge this gap by regularly inviting guest speakers from renowned industries and letting students interact with them and decipher the latest trends and challenges industry faces. Furthermore, there are a number of useful industrial visits to provide real knowledge of working and thereby making students more employable. Apart from maintaining a synergy between curriculum and the Industrial need through various value added programs, COER developed a vision to provide hands on industrial trainings to its students. Creation of Centre of Excellence (CoE) is a giant step in this direction which aims to prepare student industry ready just after graduating. These are capacity centres for multidisciplinary and cross functional integration to nurture the latest technological innovation with defined process management and experts with an arrangement of best tools and practices at its most matured states. Centre of Excellence is a separate department at COER premises under which various hands on practical industrial training programs are executed under one roof. Its benefit is that we provide students as well as industry people to undergo different training programs that are industry oriented so that people can walk in pace with the new advancement of technology.



### Key Identifiers:

- Encouraging experts from industry to visit COER to deliver lectures on current trends
- Participation of experts from industry in curriculum development, collaborative degree programs
- Arranging visits of staff members to various industries
- Professional consultancy by the faculty to industries
- Industrial testing by faculty & technicians at site or in laboratory
- Joint research programs and field studies by faculty and people from industries

### Status of Implementation:

- 15 Centres of Excellence (CoE) are created.
- Trained approx 500 students and 50 faculty members through faculty development and student development programmes in last one year.
- Renowned Industrial personalities and the academicians in the vicinity have visited the CoE and delivered the lecture viz. Mr. Sanjay Sharma, Plant Head ITC, Haridwar, Ms. Vandana Mohan, Director, Anuvidyut Pvt. Ltd. Roorkee and Prof A. Ramesh, Prof. Partha Pratim Roy, IIT Roorkee etc.



Glimpses of various activities in Centers of Excellence at COER campus



## 6. Research and Innovation:

To achieve goals related to raising the quantum of research output and improving its quality, COER will adopt a multi-pronged strategy addressing the issues of enhancing the number of Post Graduate research scholars and the faculty strength and of augmenting resources. Some measures are already being implemented. A number of measures are planned that are aimed at improving research.

### Key Identifiers:

- Improving the research input in terms of both human and physical resources
- To strengthen the post graduate in Engineering (M. Tech.) program
- Creating a better ambience for research by providing greater flexibility to encourage performance of faculty members and scholars while continually improving research infrastructure
- A process for continuous performance improvement at the Institute, department, group and personal levels to achieve excellence.
- Publication in top journals and presentation at venues where the worlds leading researchers are present will be encouraged
- Research output will be assessed periodically, and early-career faculty members will be assisted in every way possible to enhance their productivity

New gateways are being opened to attract the top M.Tech and M.Sc students from GATE/JAM to a career in research. Prospective research scholars will have more flexible options in accounting for their prior academic preparation, such as ease of credit transfer and waiver of courses.

### Status of Implementation:

- A dedicated research cell has been established to intensify research activities.
- The COER Journal TEJAS is aimed to publish annually instead of existing Biannually
- A fellowship of Rs. 10, 000/month is being offered to deserving M. Tech students admitted in 2020-21
- The Research Cell of COER is publishing an e R &D newsletter giving details of research achievements

## 7. Incubation and Entrepreneurship:

COER aspire to be known among the leading institutes for its strong industry linkages. Recently, COER has been Identified as Incubation Centre by the Uttarakhand Government. To promote Incubation and Entrepreneurship, a 24 × 7 Do-it-Yourself (DIY) lab has been set up. This lab acts as a playground for manifestation of ideas, where instruments, tools and consumables can be accessed in all engineering domains free of cost (No limit of funds on Research and Development of Innovative Projects). Students from different disciplines can create a product of their interest using the facilities of this lab. However, some of our students have started their own start-ups (Like implementation of CCTV camera commercially etc.). We would



College bus running on Bio-Diesel prepared by COER students and Faculties

like to facilitate more such activities to promote Entrepreneurship culture among the young budding minds.

#### **Key Identifiers:**

- More Start-ups to come up
- To enable all facilities for product development
- To help Students in documentation
- To help students with some amount as seed money
- Engage alumni in Incubation and Entrepreneurship

#### **Status of Implementation:**

- 24 × 7 DIY lab in the premises
- Arrangement of guidance from the Industry experts
- Gave business to the start up started by our students

### **8. Outreach to connect with society and industry**

Over the past two decades, COER has been proactively involved in outreach activities Viz. work-life balance workshop, awareness about women empowerment in rural areas. The Institute will enhance its role in this regard in the coming years and actively contribute its expertise to help for improvement in the quality of life of the people nearby and speed up development through various Govt. schemes like Unnat Bharat Abhiyan, and Swachh Bharat Abhiyan etc.

#### **Key Identifiers:**

- Provision of informed technical opinion
- Offering short term courses and workshops for professionals, particularly in industry, to enable them to stay up-to-date and get qualified further
- Providing technical solutions to pressing issues of public importance

The objectives of these outreach activities are to contribute directly to society at large and to spread awareness in the community about the important contributions of COER.

### Status of Implementation:

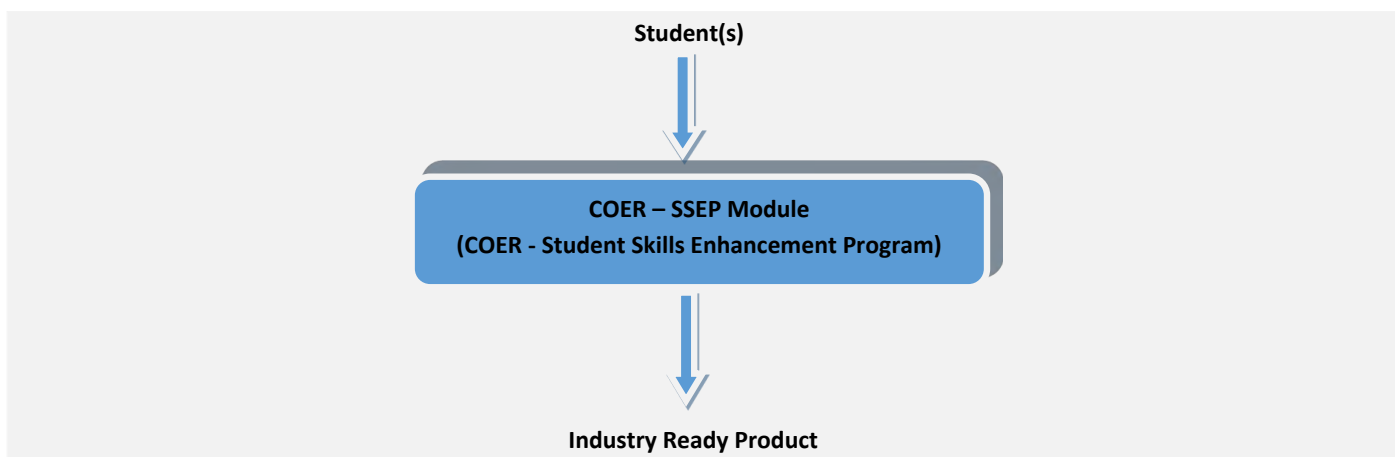
- Awareness about the COVID-19 was being spread in nearby villages with the help of Pradhan of Gram Panchayats
- Activities under NSS to spread awareness on current issues are being carried out periodically
- 4 villages viz. Narsan Kalan, Bajuheri, Brahmpur, and Badheri Rajputan have been adopted under Unnat Bharat Abhiyan (UBA)
- PRAHARSH - an independent committee of the COERians - is working for promoting education in the deprived and under privileged



Glimpses of various outreach works during COVID-19 under Unnat Bharat Abhiyan Scheme

### 9. Student Profiling and Skill Enhancement:

Professional courses generate impactful and fascinating career options. Young and enthusiastic professionals are in high demand in Industrial revolution. Fourth industrial age established variety of career options and created numerous verticals of jobs categories. Core domain jobs are more in quantities but still less recruitment is resulted globally. By performing several analyses, surveys and introspections on this, COER identified the Problem Statement and designed the solution. The objective of proposed solution is to grow the Placement Band and Placement Quality by increasing Employability Index. This module is named as COER SSEP - Student Skill Enhancement Program. It is a module which takes student(s) as an input and to process them through specifically designed evaluation stages. After passing through these stages, complete data about student is gathered and pushed to evaluation stages for concluding decision on individual student or set of students.



Aim of this SSEP module is to prepare students for the career of their choice. Through this plan we are expecting to increase our existing placement percentage.

#### **Key Identifiers:**

- Identify the career options for the students in the field of their choice
- Counsel them about the current trends of the recruitment drives of reputed companies
- Train them for placement drives on/off campus
- Arrange mock tests for recruitment

#### **Status of Implementation:**

- This plan in all new form will be floated in this academic year (2020-2021).



Group photo after a successful placement activity



#### 10. Alumni engagement:

COER will continue to build mutually beneficial relations with its alumni during 2020 - 2025. Alumni will be encouraged to support activities of COER in multiple dimensions: nurturing Institute - industry relations, facilitating interactions between aspiring students, faculty entrepreneurs and alumni entrepreneurs, transforming fund-raising to a professionally managed development effort and, in the case of alumni faculty members of foreign universities, catalysing collaborations. A range of modes of engagement can be explored to achieve this objective. Some of these are the following:

##### **Key Identifiers:**

- Increasing the presence of the Institute in social media to promote engagement between alumni, students and faculty members
- Telecasting and other personalized efforts to actively engage with alumni.
- Increasing the number of face-to-face meetings
- Creating more opportunities for alumni to spend time on campus and engage with students and faculty.

##### **Status of Implementation:**

- Alumni meet is being organized annually.
- Telephonic conversation is being carried out with the alumni.
- Devise a framework to invite donations for Institutions welfare



Group photo of alumni meet

The College of Engineering Roorkee will have to be vigilant to maintain a strong connect with the society and industry. The recommendations made under the 10 activities would need periodic reexamination. It is expected that they may need mid-course corrections, if the national and international scenarios are different from what has been foreseen. It is recommended that the recommendations are revisited comprehensively once in a year. The system should be flexible enough to adapt to changing scenarios. This will ensure that COER moves with time and provide leadership role in higher education. It is hoped this document will be found useful as an instrument to monitor the progress of the Institute.



Arial view of COER