

BEST PRACTICE 1: Decentralization and participative management

The institute has decentralized the decision making process of different important areas of operation like regular academics, student affairs, alumni affairs, legal affairs, training & placement, research etc. and delegated considerable authority to selected individuals with knowledge, acumen, interest, ability and leadership quality in respective area. Accordingly the FIC or Faculty In-charge position is created in each functional area and most eligible faculty members are given the responsibility to act as FIC. There are 5 FIC positions as mentioned below.

1. FIC, Academics (A)
2. FIC, Students Affairs and Student Welfare (SA & SW)
3. FIC, Training & Placement (T&P)
4. FIC, Legal Affairs (LA)
5. FIC, Alumni

The power and functions of each FIC is clearly defined and hierarchy-wise FIC reports to Principal and can direct the HODs or for that matter any faculty member or employee of the institute in matters related to its designated functional area. The major function of **FIC, A** is to monitor, advice and support the academic departments in maintaining quality of academics. It is his responsibility to take appropriate decision to fulfil statutory rules and requirements of AICTE, University etc. and apprise the Principal. Activities like feedback analysis, verification of API score of faculty members, publication of academic calendar and class routine, organize academic audit and all other academic activities falls under the purview of FIC, A. **FIC, SA & SW** handles all student related matters ranging from disciplinary issues to student fests. He is responsible for advocating for student's rights and concerns and overseeing the activities and demands of Student Welfare Committee. All decisions regarding student's extracurricular and co-curricular activities and related facilities, financial and infrastructural requirement are given by FIC, SA & SW in the form of recommendation. **FIC, T&P** is responsible for planning and execution of training and placement activities for students and also communicate (with authority) with recruiting companies. **FIC, LA** advises for making institutional decisions having legal implications and essentially in all legal matters, statutory issues etc. **FIC, Alumni** is responsible to develop and strengthen the institutional alumni network, plan and execute alumni activity and ensure alumni contribution towards welfare of the institute. It requires communication (with authority) with the alumni working in different organizations and coordination with the departments and students of the institute. As far as research is concerned a senior faculty is given the authority as **Convener, Research Committee** to coordinate and monitor research activities of the faculty members and motivate young faculty members in submitting research projects, patents, copyrights etc. Similarly the authority of Principal is delegated to **Convener, Entrepreneurship Development Cell** and **Convener, Institutional Innovation Cell** to look after those activities following statutory guidelines.

BEST PRACTICE 2: Social Outreach Activities

The strategic plan includes “Expanding opportunities for social service” as one of the thrust area or activity point. Activity under this head is meant to contribute towards the development and well-being of the under-privileged community in and around the institute free of cost, involving willing students, faculty and staff members. Towards this end the NSS team of RCCIIT has rendered community service in **orphanages** including **Sukanya Home** at Sector V, Salt Lake City, Kolkata, **Gobinda Kr. Home**, Panihati, Kolkata, **Ramakrishna Vivekananda Mission**, Barrackpore, N-24 Parganas, **Child Care Home**, Sector IV, Salt Lake City, Kolkata and at **Howrah station**, Howrah. Since 2015 till date seven such programs were organized by the team. Day-long community service were rendered in these orphanages where foods (cakes & biscuits) donated by 1st year engineering students were distributed among the orphan children of all age group – from standard III to X. The students and staff visited the orphanages, mixed with the children, interacted freely with them and entertained them by playing games and giving small gifts like pens, colour pencils, chocolates etc. Sometimes soap and shampoo were also distributed to the children. In some orphanage blankets were given to the needy people who rendered service to the orphan children. Overwhelming response were received from the orphan children during such interactions and it seemed that these small gifts given to them as token of love & friendship meant a lot for them and brought a fresh air of joy in their monotonous life as they miss the compassion of their near and dear ones.

The NSS team also carried out **environment awareness and cleanliness drive** in the local community as extended opportunity of social work under strategic plan. Last such event organized was in 2018 at **Mathurapur village** of Barrackpore I Block, Kowgachi-II Gram Panchayat, N-24 Parganas. Activities like door to door cleanliness awareness campaign, conducting village/school level meetings and rallies, distribution of pamphlets, waste collection drives, demonstration of development of compost pit, segregation of solid waste into bio-degradable and non bio-degradable parts, process of making manure and much more were carried out over couple of consecutive days. This also fulfilled the Swach Bharat Summer Internship of engineering students. In the process bleaching powder, Chlorine tablets, dustbins, 55 micron recyclable plastic packets and waste collection garbage bags and pamphlets instructing Dos and Don'ts were distributed in the village free of cost.

In addition to these activities, a free **computer literacy program** is also run by the institute to give first hand computer education to the 1st generation learners (class VIII students) of the local community.

Every year the NSS team is encouraged by the institute to involve more and more students, faculty and staff members to add more orphanage or schools of underprivileged children and conduct community service at a greater scale in villages or slum areas around the institute in an effort to expand the opportunity of social service in line with the strategic plan of the institute.

BEST PRACTICE 3: Promotion of Gender Equity

Gender equity in education means that males and females students and staff should have - equal opportunities in: teaching-learning process, educational outcomes and credit/award earned, career development, training and promotion, co-curricular, extra-curricular and outreach activities, representation in departmental and institutional committees, access to resources and common facilities; also both should have: unbiased treatment as student and teacher/staff, equal social and cultural respect and importance. Here equal implies equivalent in terms of rights, benefits, obligations and opportunities. RCCIIT regulation & policy guidelines for admission, recruitment, administrative functioning & academic activities safeguard the interests of the students, faculty & staff without any differentiation to their gender.

RCCIIT maintains an open and transparent system of recruitment of faculty and staff which is purely based on performance in interview by panel of experts following AICTE guideline. We currently have **28 nos. (32%)** of regular female faculty members and **10 nos. (14%)** of regular female staff members in our institution. Male and female faculty/staff members get equal opportunity for career advancement or promotion as applicable as per institute service rules and statutory guidelines. The regular female faculty/staff members of the institute are entitled to additional benefit of **Child Care Leave** (of maximum 3 years) and **Maternity Leave** (180 days) over male faculty/staff members. Many female faculty/staff members have availed or currently enjoying this opportunity.

Male and female faculty members are treated equally by HOD/Principal in terms of allotting class load or additional responsibility (as Program/Module Coordinator and/or Convener/Member of Committee) at departmental or institutional level. Many female faculty holds/held important roles/positions at institutional level e.g. Chairman-Research Committee, Presiding Officer-ICC, Exam OIC/Supervisor, Coordinator-Cultural Sub-Committee (SA & SW), 1st Year Coordinator, HOD, Librarian, TPO, OIC, Principal etc. Many other female members act/acted as members of different committees e.g. IIC, Disciplinary Committee, Anti-Ragging Committee, Grievance Redressal Cell, SC/ST Committee, IQAC, IAC, Social Media Cell, NSS etc. Besides this, equal facility for PhD work (Weekly half day leave) and training (FDP, Workshop) is given to male and female faculty/staff. Certificate of appreciation is given by the management for outstanding achievement by the faculty members and recently 2 faculty members one each in male and female category have been certified.

As regards students, no. of female student in the institute is 579 whereas no. of male student is 1442. No discrimination is done in these two categories of students as far as teaching-learning and educational facilities are concerned. There are separate common rooms for boys and girls, though no hostel facility is available. Both male and female students are allowed to represent student community in some institutional committees like Anti-Ragging Committee, Grievance Redressal Cell, ICC, NSS etc. Recently one female and one male student were nominated by the institute for the **International**

Youth Exchange Programme 2020-21 and the female student namely Miss Avantika Sadhukhan (2nd Yr B.Tech IT) has been selected by the University to represent the state.

Awareness programs and workshops on gender sensitivity are organized by the NSS in the campus and surroundings to generate awareness towards women issues in order to enhance women empowerment. The female faculty members, staff and students are informed about various laws and rights available for their empowerment. The **Internal Complaints Committee (ICC)**, headed by Dr Shilpi Bhattacharya, Associate Professor, EE, ensures gender sensitization, prevention and prohibition of sexual harassment of women employees and students in the institute.

Recently the Women's Day was celebrated by the NSS team where 15 lady faculty members were felicitated.

BEST PRACTICE 4: Maintaining Natural Ecosystem, Fostering Environmental Care and Waste Management Practices

Environmental protection is one of the most important challenges being faced by mankind today. Every individual, institution, and nation need to make a contribution towards betterment of our environment and preservation of natural resources. An educational institution like RCCIIT, where thousands of young students from across the State of West Bengal and outside interact and study can play a very important role in creating awareness towards environmental care in the society.

RCCIIT has initiated several measures towards environmental protection and to foster a sense of environmental care. A few initiatives implemented in the campus include electronic waste or e-waste management, maintaining water bodies and developing greenery across the campus, using solar and wind energy,.

RCCIIT being an IT institute lot of **e-waste** in the form of discarded electronic/electrical components of PC/UPS/Printer, AC/electrical installations/lab equipments & consumables is generated which have harmful metals like mercury, cadmium, lead etc. and elements like polybrominated flame retardants that are detrimental to the environment if not managed in a planned manner. In-line with statutory e-waste management guidelines proper protocol and procedures are followed in terms of collection, segregation (from general waste), handling and disposal. Instruction is given to the departments so that e-wastes are kept in separate designated boxes in the labs/workshop/stores/faculty rooms. At regular interval those wastes are collected from labs/rooms and securely stored at a designated place till those are sold to the retailer as recyclable scrap. Conscious effort is given so that e-waste doesn't mix up with general waste and even if so happens those are segregated as far as possible before general waste is disposed off. A standard system of disposal of **general waste** is also followed whereby **biodegradable** and non-biodegradable wastes are kept in separate bins placed in optimum no. of locations throughout the campus. Every day these two categories of wastes are disposed off to the waste collecting van of the municipality. Garden wastes (dry leaves/branches/flowers/fruits) and waste vegetables or peels are collected and used for making **compost** through natural decomposition. There are instructions displayed in the canteen and other places to not to throw away peels or uncooked vegetable wastes in waste bins, rather drop it in designated buckets. There are also instructions not to throw plastics or other materials in the water bodies and care for the gardens in the campus.

The **ecosystem** of the **water body** in the campus was restored by cleaning the water and relaying the bed with sand, developing embankment with bamboo piles and releasing fish larva and fry. The water body is regularly maintained and deep cleaning done once a year. The **garden** with wide varieties of plants and trees is well maintained with plantation of seasonal saplings and use of fresh soil, fertilizers and plant medicine at regular intervals. The institute regularly takes drive to add to the existing biodiversity by planting more all-season trees.

Many events are organized by the NSS team to foster care for environment amongst the students. Some these events include **tree plantation** program, celebration of **International Day for Preservation of Ozone Layer, Wildlife Week, World Environment Day, Jal Diwas** (to create awareness about water conservation and rain water harvesting) etc. Sit & Draw competitions, poster presentation, plantation by students within the campus and seminar/webinar by experts are organized on these days and students and faculty/staff members participate quite enthusiastically. In some of these programs anti-plastic campaign and promotion of green and clean campus is undertaken by the NSS student members.

RCCIIT has taken a lead in deploying **Solar as well as Wind powered systems** for electricity generation for not only reducing dependence on conventional power supply, but also to build up an awareness among budding engineers about the **Green Energy**. The Electrical Engineering Department of the Institute had also set up an advanced Power Electronics Research Lab, where R&D work is carried out on efficient Power conversion from the **PV –Wind Hybrid System**. At the same time a data logger is also installed in order to record daily generation from either system and peak generation too. Those data are used and may also be used in future for analysis and prediction.

Wind turbine has been installed along with Solar PV Systems not only to compensate the generation at night time but to study on co-generation and **Smart Grid**. Moreover capacity building efforts for harnessing solar power and developing prototype equipment like solar powered Inverter, MPPT have also been initiated.

The institute plans to augment the capacity of existing solar power generation by creating necessary infrastructure with a vision to meet the entire power requirement from **clean source of energy** towards realizing the vision of the Govt. like the **National Solar Mission**. Apart from the above, the institute has also installed a number of **Stand Alone Solar Street Lighting Systems** in the Year 2014 to promote Green Energy applications. Attempts are on to create awareness and interest among the stake holders in reducing carbon footprint and emission of **Greenhouse gases** and preserving natural resources and ecosystem.

The institute has plans to go for a third-party **Green Audit** to quantify the overall visible impact of these environmental conservation practices followed in the campus.

Environmental care is not a one-time activity. RCCIIT has adopted this as a sustained and continuous endeavour with a prolonged strategy but funding has always been an issue for expanding current capacities like – increasing solar power generation capacity by installing solar panels on all the rooftops, implementing rain water harvesting, waste recycling system etc.

BEST PRACTICE 5: Research, Innovation & Entrepreneurship

Since establishment in 1999, RCCIIT has remained committed to research by treating it as a priority next to quality teaching-learning process which is the primary goal for an affiliated institute like RCCIIT. Our Vision statement says: “*To develop RCCIIT as one of the most advanced technical institute by establishing the culture of interdisciplinary research and innovation (to cater to the social needs)*” The following Mission statement also echoes that: *To develop state-of-the-art infrastructure and learning resources for pursuing unhindered research and learning practices.* Accordingly we have prioritized research activity in our strategic plan as:

- *Enhancing student and faculty interest in PRIDE PROJECTS: P [Patents, Products, Publications], R [Research], I [Innovation (Ideation, Incubation)], D[Design] and E[Entrepreneurship]*
- *Enhancing research capacities and outcomes*

So research is one of our thrust areas though we are not a research institute or University. Admittedly, unlike the developed countries, a culture of research is largely missing in our institutions of higher education, which are the major centres for enriching the manpower at all levels. The management of RCCIIT believes that the institute can't reach the next level of excellence if it is confined only in imparting syllabus-based teaching-learning and do not involve its faculty and student in research and projects in the prevalent and upcoming technology. Research is a culture which needs to be inculcated among the young faculty as well as students at UG/PG level; it supplements the learning process and inspires the thinking mind in generating innovative ideas and ways of utilizing the technology – the research attitude and approach to solve new problems is particularly essential for engineers who are supposed to apply technology to solve different real-life problems, be it in industry or in academia.

Keeping this in view, RCCIIT has been making sincere attempts to infuse the research culture right from the UG (B.Tech) level. Obviously, these necessitated active involvement of faculty members in the form of mentoring good student projects or paper with research element and invoke research interests at UG and PG (M.Tech/MCA) levels. At RCCIIT there has always been a **Institutional Research Committee (IRC)** comprising senior faculty members (Professors and those with PhD) from all departments and sometimes leading researchers from Universities or research organizations to frame and implement in-house research/project policies and promote research, innovation and publication by the students and faculty. As per a resolution of the Research Committee **at least one published/accepted conference paper or book chapter in edited volume has been made mandatory for the M.Tech students.** The M.Tech as well as the B.Tech students are encouraged to participate and contribute in the research work of a faculty member in domains or topics matching to their interest or strength. Mostly the students carry out such work as part of their final year B.Tech or M.Tech projects guided by a faculty member. **This has resulted in many research publications of**

the students with faculty as co-authors. The students are given necessary support (funding) to present those papers in conference. This gives a good exposure to the students in real-life research problems and at the same time helps expedite the research/PhD work of the faculty members.

As innovative projects lead to publication and also job opportunities, the IRC has mandated **student project from pre-final year**; as per University curriculum project is only in the final year. Further, to translate the research ideas of UG students, **research labs and central computing labs** are provided where the students from their pre-final year are allowed to design models/software and experiment with trial runs. This has fostered creative thinking among the students (especially at UG levels) and helped them getting awards/laurels in national/international competitions like **Smart India Hackathon, Bengalathon, IBM Master the Mainframe Contest, IIT-Techfest, ACM Project Contest** etc. and in **Conferences**.

It would be worth mentioning that RCCIIT students have been successful in getting **PG and PhD admissions** in top ranking institutes of India and abroad such as NITs, IITs, University of Utah (USA), Texas Tech University (USA), University of Buffalo (USA), University of Illinois (USA) etc. and these achievements have stemmed from their research/project exposure with faculty members during their tenure as student in RCCIIT.

The institute has created the following **research labs** for the benefit of both student and faculty community:

- QualNet 6.1 Research Lab
- IOT Lab
- Computer Architecture and Embedded System Lab
- Renewable Energy Lab – On/Off Grid Wind Solar Hybrid Power Generation
- Wireless Sensor Network Research Lab
- APJ Abdul Kalam Research Lab
- Microwave Anechoic Chamber
- Deep Learning Machine Lab

The faculty members of RCCIIT have significantly improved the quality and quantity of their research publication and filing of patents. IRC regularly keeps track of faculty publications and encourages young faculty members to submit research project (for funding by DST/AICTE/SERB) under the guidance of senior faculty and if possible, in collaboration with faculty of other Universities or research organizations like VECC.

Particular	Numbers
Faculty with PhD	30
Faculty pursuing PhD	26
Publication in UGC listed Journals (in last 5 yrs)	74
Publication in Conference & Book Chapters (in last 5 yrs)	393
Publication of Books (in last 5 yrs)	50+
Patents filed + granted	9
Funded Research Projects	4

Besides IRC, the **Institution's Innovation Cell** or IIC works towards spreading the awareness of **Intellectual Property Right (IPR), Patent, Copyright** etc. and organizes workshop by experts in the field to disseminate the technicalities involved in filing patent or applying for copyright. Interested students are also allowed to attend those workshops to enlighten them about the recognition/rewards of innovative designs and concepts. In 2021 two student groups of UG engineering have filed patent and applied for copyright on Matri Device and Covid prediction S/w respectively.

To promote the research culture in the institute, different departments organize **Conferences** or **Symposiums** on niche areas. In-house faculty and students submit and present their research papers in these conferences which act as a major impetus for the students to get exposed to the world of research community. Since 2014, around **10 international conferences/symposiums have been organized**. The Conference series **ICRCICN** (*International Conference on Research in Computational Intelligence and Communication Networks*) was organized in 5 consecutive years by the IT Dept., each time the proceedings with high-quality peer reviewed presented articles was published in **IEEE Xplore**. The symposium **ISSIP** (*International Symposium on Signal and Image Processing*) was organized in 3 consecutive years and the proceedings were published by **Springer Nature – Advances in Intelligent Systems and Computing (AISC) Book Series**. Last year, during the pandemic, first *International Conference on Research and Applications in Artificial Intelligence* or **RAAI** was organized online by the IT Dept., the proceedings with 36 presented article, was published in **Springer AISC**. The first *International Conference on Industrial Instrumentation & Control (ici2c-2021)* was successfully organized by the Applied Electronics Dept. in online mode in Aug. 2021. In virtual presence of dignitaries and speakers Prof. Anil D. Sahasrabudhe. Chairman, AICTE inaugurated the conference with his enlightening speech.