

## R&D Areas of Activities

Education needs effective innovations of scale that can help produce the needed high-quality learning outcomes across the system. The primary emphasis of educational innovations should be focused on innovative practices of teaching and research based on a solid theoretical foundation of purposeful, systemic research, and a sound pedagogy. It should not only be comprehensive, and sustainable, but it should continuously evolve to meet the challenges of the dynamic and unpredictable globalized world.

For any institution to sustain and progress, the evolution of innovation is essential. Innovations in education are of particular importance because education plays a crucial role in creating a sustainable future. Innovation, therefore, is to be considered an instrument of necessary and positive change. Any institutional activity needs constant innovation to remain sustainable and it is generally understood as “the *successful* introduction of new things or methods”. In education, innovation can appear as a new pedagogic theory, methodological approach, teaching technique, instructional tool, learning process, or institutional structure that produces a significant change in teaching and learning.

## Regulations are applicable in the research and development phase

R&D activities in regulated laboratories are performed in compliance with **GLP**, **GMP (GCP)**, and **SOP** as appropriate. Research and development, also known as R&D, is the process by which an institution works to generate new knowledge that it might use to create new technology, products, services, or systems that it will either use or sell.

### Working in the R&D environment

- **Safety Comes First.** A well-designed lab features lots of critical space for natural movement & flow.
- Safe chemical Storage should be a top priority.
- Instruments location, maintenance, and utility documentation compliance.
- Cleaning and disposal of laboratory waste
- The Right infrastructure support: Furniture, Storage, water, electricity, laboratory space, qualified staff, and communication facilities.

### Nature of Research Conducted in the R&D

- Basic research
- Applied research
- Experimental development.
- Student Centric Projects

### Stages of R&D Development

In general, an R&D project goes through several phases:

- **Conceptualizing the research problem/issue for investigation:** rationale, impact, feasibility, and future line of work.
- **Researchers:** PI, Co-PI, and other departments/laboratories involved.
- **Planning:** Budgeting, instruments, chemicals, biologicals, outsourcing? human resources.
- **Project duration:** the probable time required to complete the experiments, analyze the data and write publications.
- **Experimentation:** Design, data acquiring, analysis of data
- **Upgradation of laboratory facilities:**
- **Publication and presentation:**
- **Patenting and Product release.**
- **Consultation/Marketing:**

### Good Laboratory Practice must be followed:

- **Audit and Inspections.** These must be performed routinely to check that procedures are being followed.
- **Standard Operating Procedures (SOP):**
- **Data Recording instruments/devises:**
- **Correct Use of equipment.**

- **Staff:** authorization to work, etc.
- **Training of staff in the handling of modern:**
- **Healthy Working Environment:**
- **Successful labs are monitored/supervised by the stakeholders:** Keeping an eye on margins, resources, good use of equipment, chemicals, biologicals, and good practices
- **Documentations of outcomes:** visual, analytical, digital, and manual.

### **R&D at RCASC will focus on the following activities**

The R&D centre intended to focus and coordinate on the following activities/areas with the cooperation of all the Departments of RCASC.

#### **Research Publications:**

1. Peer-reviewed research papers
2. Review articles
3. Books
4. Book chapters
5. Laboratory manuals
6. Conference proceedings
7. Popular articles
8. Posters and brochure preparations
9. Development of SOPs

#### **Research training:**

1. Seed money for the competent faculty
2. Applying for externally funded grants
3. Conduction of certificate courses
4. Assisting the completion of PG dissertations
5. Conduction of UG internships

#### **Annual events**

1. Science exhibitions
2. Industrial/corporate visits
3. Technical workshops for faculty
4. National/international conferences/seminars/symposiums
5. Guest lectures from people with national and international reputations

#### **Research facilities**

1. Laboratory space
2. Instruments and instrumentation rooms
3. Centralized chemical storage and distribution
4. Computers with internet facilities
5. Plagiarism check

#### **Entrepreneurship Development Cell:**

1. Incubation facilities
2. Industry-Institution interactions

### **Ongoing activities in RCASC**

1. Seed money projects awarded and under progress
2. List of Faculty Published research papers
3. List of college activities conducted
4. MOUs