

7.2.1 Give two Best Practices of the institution (please see the format in the NAAC Self-study Manuals)

Title of Practice: Best Practice-I

Progression of Scientific Research& Development (R&D) Activities

Objectives of practice:

- To encourage a strong culture of research amongst students and faculty.
- To provide support to all the research efforts of the faculty members and to encourage student research as part of the curriculum.
- To improve the quality of research publications.
- To induce the faculty to present their results in presumed journals / International / National Conferences and refine the on-going research work.
- To create an ecosystem for innovations, foster & encourage entrepreneurship including incubation center, and other initiatives for creation and transfer of knowledge.
- To create awareness about Intellectual Property Rights and Patents, encourage Innovation and motivate them to apply for IPR/Patents.

Context:

- Technical education paves the way for research, innovation and creativity. A strong base for research and development is very important to achieve this. Realizing the importance of research and development, the Institute R&D Centre was established and the same was recognized by the Scientific and Industrial Research Organizations (SIRO), Department of Science and Technology.
- Develop and diversify courses beyond the curriculum so that faculty and students particularly from underprivileged backgrounds may have experience towards different domains of research and has the chance to opt for the same.
- The outcome of the research should be significant to the needs of the community and at least a segment of the society should be the target beneficiaries. Therefore, taking up research activities shapes a person with ethical liability and a value system that enhances his/ her responsibility towards fulfilling the needs of the society.

The practice:

- The R&D Centre of the Institute is recognized by the Scientific and Industrial Research Organizations (SIRO) and the Department of CSE is recognized as a Research Centre by JNTU Hyderabad and established several Centers of Excellence in association with industries of repute.

- Financial support is also extended to all the students and faculty in the form of SEED Money provided through IQAC. SEED Money is provided to carry out preliminary work to improve the possibility of acceptance of funding.
- To encourage good publications, the organizations gives reward/incentives to the faculty and students for publishing their research articles in reputed journals and also refund the publication charges of journal.
- Providing 60% of revenue generated from consultancy project works to the faculty.
- Organizing trainings and workshops that help students to increase the research skills.
- Encouraging students and faculty to use research tools such as software, research equipment etc.
- Memorandums of Association/Memorandums of Understanding have been signed with many industries / agencies and such a practice plays a vital role in interaction of faculty and students with the industries and design research projects in collaboration with them.
- Reputed professors are invited to conduct/give workshops/lectures about the current and the best practices of research methodologies and Ethical Values.
- Research & Development Centre conducts the Research Advisory committee (RAC) meetings timely to review the progress of research activities and also to suggest the activities.
- Annual Quality Assurance Report (AQAR 2019-20) IQAC, CMR College of Engineering & Technology (UGC Autonomous), Kandlakoya, Medchal Road, Hyderabad, Telangana-501401.

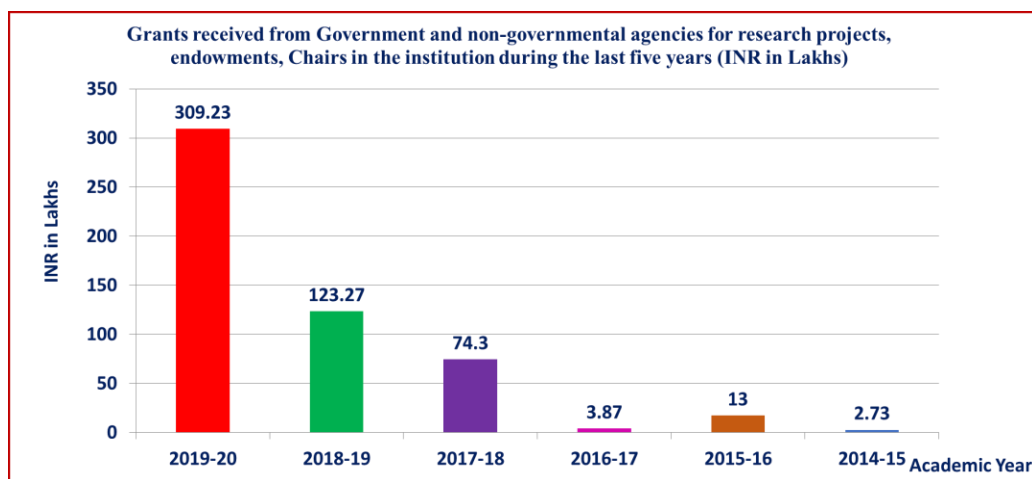
Evidence of success:

- Number of research papers published by the students and faculty has improved (around **187** research papers published in various UGC Journals) in AY 2019-20
- More students and faculty members are participating virtually in national/international level seminars/workshops/conferences for presenting their research works.
- **76** faculty members are there in various departments with Ph. D in the last year and **48** faculty members are energetically engaged in pursuing the Ph.D degree.
- Funds to the tune of 357.57 lakhs have been received by faculty members from various funding agency for research and consultancy works which is boast-worthy for a growing organization like ours.
- An amount of 28 lakhs have been disbursed by the organization as SEED Money to the faculty and students.
- Number of students and faculty enrolling for higher studies in research from our Institution has gone up.

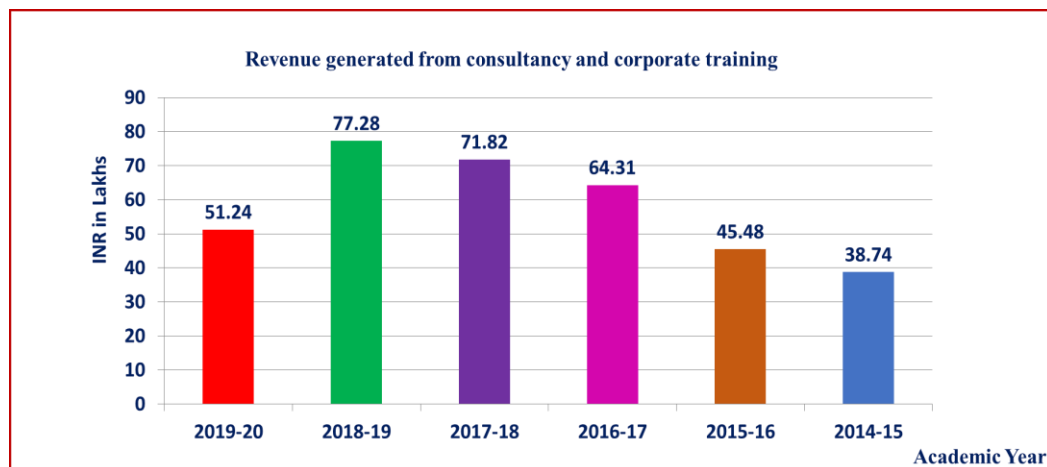
- Particularly the alumni of our Institution have been to research from various countries.
- No of research papers published by the students and faculty has improved in the last five years.

Department	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Total
ECE	49	68	64	52	58	67	358
CSE	16	58	30	44	99	11	258
EEE	54	64	15	21	19	56	229
MECH	05	04	19	28	50	05	111
CIVIL	06	06	06	26	64	13	121
MBA	05	15	21	22	15	25	103
H&S	30	03	04	05	27	10	79
Total	165	218	159	198	332	187	1259

- No of research projects received by the faculty has improved in the last five years.



- No of consultancy projects done by the faculty has improved in the last five years.



Problems encountered:

- Timely response from funding agencies will be encouraging.
- It is difficult to balance teaching and supervising duties especially in research works.
- Institutional support is a support in the helm in preparation and implementation of research particularly for the period of decisive and comprehensive consideration processes and when adhoc responsibilities are assigned.
- Additional liberal seed money advances from the organization for initial work or while awaiting funds from agencies is always welcome.
- If the funding agencies can point out the reason for rejecting the research proposal or recommend suggestions for upgrading, it will go a long way in the development to faculty and hence the students.

Resources required:

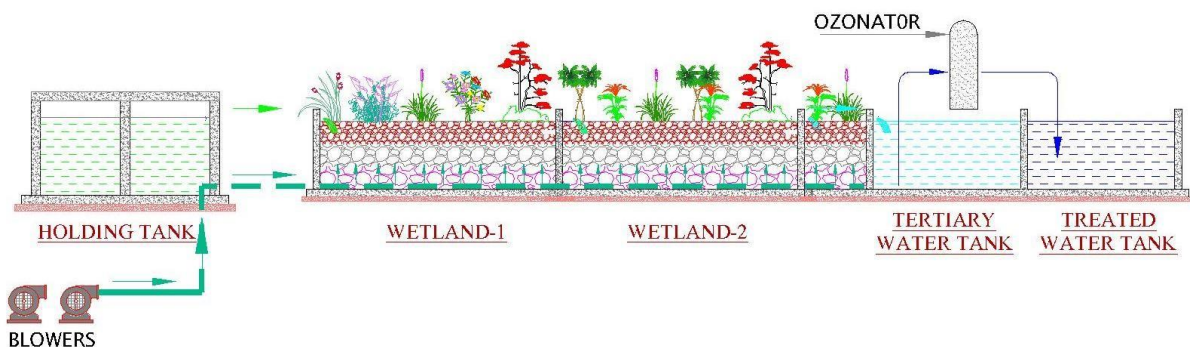
- Infrastructure like department wise research laboratories, Human resource, High-end Servers, meeting rooms, discussion rooms, spatial requirements, and Financial Grants.

Best Practice-II

SEWAGE TREATMENT PLANT (STP)-200 KLD

CONSTRUCTED WETLAND SYSTEM

- Sewage treatment plant of 200 KLD is based on No Chemical and No energy, phytoremediation technique.
- Sewage waste is collected from CMRCET, CMRIT and Girls Hostel.
- It is the most natural way to revitalize the wastewater so that the quality and natural properties of the water are sustained and we get recycled Water in the best form.
- System Consist of Integrated constructed wetlands known as phytoremediation system, globally proven for decades and established across the world.
- These are engineering systems that use the natural functionality of vegetation, sediments, substrate, natural media and microorganisms to purify the wastewater.
- The entire system uses the natural slope of the terrain to transfer wastewater to the natural plant-based twin treatment tank units.
- This plant uses naturally available resources from Mother Nature to transform wastewater into clear water with less energy consumption.
 - **No Chemical**
 - **Low Maintenance**
 - **No Breakdowns**
 - **Longer life span**
 - **Increased efficiencies with time**
 - **No dependency on the technically qualified person**
 - **Cost-effective**
 - **Environmentally Compatible, Green aesthetically**





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SOLID WASTE MANAGMENT

AAGA COMPOSTING UNIT

S.No	Particulars	Value
1	Diameter of each AAGA unit	1.067m
2	Height of each AAGA unit	0.9652m
3	Volume of each AAGA unit	0.862m ³
4	Capacity of each AAGA unit	200kg
	Capacity of two AAGA units	400kg
5	Waste generated from canteen (Vegetable and Fruit peels)	16kg/day
6	Total waste generated from canteen in 2 months to accommodate in two AAGA units	360kg

Technical Note:

- ❖ This aerobic centralized composter makes composting simple, labor saving and hassle free especially for institutions.
- ❖ It requires no electricity to run.
- ❖ The internal 'breathing tower' regulates air flow and controls bad odor.
- ❖ The waste need not to be mixed stirred or shifted.
- ❖ AAGA unit made from UV stabilized, rotomoulded plastic for use on harsh weather conditions and also rodent proof.

Guidelines for Maintenance of AAGA Composting Unit:

- The waste (vegetable and fruit) need to be filled in layers in AAGA unit
- After each layer of waste, coco peat is to be added in AAGA unit
- After 5-6 days of filling the waste in AAGA unit, microbial compost powder is to be added for quick composting of the waste.
- During the process of composting, a liquid waste generated and collected it in bottles and kept for fermentation for 1 month. Fermented waste used for farming the plants.
- After 2months, composted vegetable and fruit peels are kept for drying then used them in the farming.