

BEST PRACTICE-I

1. Title: Promotion of Research and innovation with interdisciplinary/multidisciplinary thrust areas

2. Objectives of the Practice

Assam Science and Technology University (ASTU) established a Central Research Hub (CRH) to promote research culture, balancing teaching-learning and research. The objectives are:

To provide state-of-the-art research facilities supporting interdisciplinary and multidisciplinary research, while building industry-academia collaboration and addressing societal needs.

To embed a research-oriented culture among faculty and students of the university.

To provide a platform for faculty members, students and research scholars to exchange ideas through conferences, seminars and workshops.

3. The Context

To align with SDG 4, SDG 7 and SDG 13, ASTU recognized the need to promote research and innovation across affiliated and constituent institutes. In line with its Vision and Mission, ASTU established a central research hub balancing pedagogy and research, while immersing students in interdisciplinary research. ASTU has taken multiple initiatives over the years few years to nurture research-oriented culture among the students and faculty.

4. The Practice

The university formed the university research committee (URC) with representatives from the affiliated institutes and senior officials to monitor research activities. Under the guidance of experienced faculty, ASTU established a CRH with four specialized laboratories:

- Multi-disciplinary Experimental & Testing Accessible Laboratory
- Energy Research Laboratory
- Material Science Research Laboratory
- Tribology Laboratory

Additionally, the CRH includes an IC Engine Research Laboratory and a Computational Research Laboratory.

To strengthen the faculty competency in teaching, research, and administration to present research and build network ASTU organized numerous faculty development program (FDP), short-term courses, training programs-cum-internship programs, conference, seminar etc. These initiatives included such FDPs on topics like “Research Methodology and Pedagogy in Teaching Learning”, “Familiarization with Latex: A powerful tool for Technical Writing”, hands-on programs for ANSYS software, LabVIEW, and MATLAB, “National Conference on Recent Advances in Science & Technology (NCRASST)”, “International Conference on Renewable & Alternate energy (ICRAE)”, innovation challenge event “Sandhan”, etc. ASTU also offered grants of Rs 1.5 to Rs 3.0 Lacs under “Collaborative Research Project Scheme” to support faculty research. Internship is offered by the Department of Energy Engineering.

5. Evidence of Success

ASTU received grant of Rs. 20cr from MHRD under TEQIP-III. Faculty members have published a good number of research papers in reputed journals. Dr. Bharat Kakati has received a grant from Science and Technology Department, Assam for plasma pyrolysis plant. ASTU funded around 100

research projects of its own departments and affiliated institutes. Several patents have been filed and granted. The university has a total of seven Centres, 110 PhD supervisors and 210 research scholars including 10 AICTE doctoral fellows (ADF) contributing ongoing research and extension activities.

6. Problems Encountered and Resources Required

The lack of sanctioned posts for faculty members and technical staffs, limited research grants and resources for upgrading research facilities hinder the university's momentum in teaching and research. Although the university generates some revenue by providing research services at minimal fee, further infrastructural and logistical support is necessary for the continuous improvement of the research facilities.

BEST PRACTICE-II

1. Title: Academic reforms

2. Objectives of the Practice

Academic reforms are essential to meet the contemporary challenges in higher education and equip students with the knowledge and skills necessary for employability, entrepreneurship and research.

The objectives of academic reforms are:

To implement interdisciplinary choice-based curricula and research domains.

To design a student-centric, job-oriented curriculum that makes them industry ready.

To execute NEP 2020 guidelines for both technical and non-technical courses.

To inculcate a culture of lifelong learning through innovation, critical thinking, and problem solving approach.

To implement effective monitoring and evaluation mechanism for academic programs.

3. The Context

The university recognized the limitations of the rigid educational model and introduced innovative teaching and learning methods. These include choice-based credit systems (CBCS), flexible learning options, industry and research integration, student-centered teaching approaches, access to Massive Open Online Courses (MOOCs), etc.

4. The Practice

The university has updated its curriculum in line with AICTE-Outcome-Based Education Policy and NEP 2020. All UG engineering courses span 4 years (i.e. 8 Semester), with PEOs, POs and Cos designed to meet academic and industry needs. Key features of the revised curriculum include:

- A Student-centric, flexible and multidisciplinary learning-based curriculum.

Compulsory courses such as Skill Enhancement Course, Value Added Course, Product Design and Development, and Compulsory Internship.

Emphasis on Human Values, Ethics, Soft Skills, Gender Sensitivity, Environmental awareness and societal responsibility.

According to NEP 2020, Multiple Exit and Multiple Entry provisions for UG courses.

The CBCS promotes interdisciplinary education and holistic development, allowing students to select elective courses from various disciplines. The university adheres to a uniform Academic

Calendar and has an automated course registration and grade entry portal in ERP system for timely declaration of results and efficient academic administration, ensuring an average gap of 30 days between evaluation and declaration of results. The university regularly conducts convocation to offer the degree to the students.

The university promotes MOOCs, refresher courses, and encourages faculty to participate in UGC supported orientation programs. Furthermore, the Academic Bank of Credits (ABC) facilitate the academic mobility of students, allowing "credit transfer" between institutions under NEP 2020 provisions.

To enhance industry-academia links, the university mandates compulsory industrial training, includes industry experts in program boards, organizes industry-academia meets, and has signed MoUs with industries for internships and skill development.

5. Evidence of Success

Interdisciplinary learning has allowed students to connect ideas and concepts across different disciplines, fostering critical thinking and real based problem-solving skills. Students have received awards for paper and poster presentations at conferences or workshop. The University organized academic lectures by industry experts, webinars, online training programs, industry visit, etc. to enhance students' readiness for industry.

6. Problems Encountered and Resources Required

Inadequate budgetary, low fee structures, frequently changing criteria by apex bodies, appointment of faculty members, lack of vision in some areas and shortage of qualified personnel have impacted the pace of academic reforms implementation. Despite these issues, ASTU has successfully introduced several key academic reforms in recent years.