Report on Academic Audit at IEM, Kolkata

Peer Team:

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The peer team, constituted by the institute and comprising of the members as above, visited the Institute of Engineering and Management on 7-8 September, 2022 and interacted with the management, faculty members, staff members and students to perform an academic audit for the different programs and facilities of the institute.

The peer team members found the academic environment of the institute to be per excellence with an air of positivity all around. The overall discipline, especially among students in spite of their youthful exuberance, showed how this temple of learning is attractive towards top rankers of the entrance examinations. The faculty members are found to be very much passionate in their teaching and other responsibilities. They are also much enthusiastic in conducting research overcoming the challenges that they face. The administration is supportive to the teachers and students in the academic and co-curricular activities to a great extent. Over the years, the institute has established itself as a premier institute for teaching – learning and is one of the most sought after private institute for engineering education in Kolkata. With more than two decades of glorious past behind it, the institute is poised to take a leap to move to the next orbit and be counted among the top ranking institutes of the state and the country.

The following are some of the important observations and recommendations, and strength and weakness from the peer team members through their interactions in the departments.

Department: Computer Science & Engineering,

Strengths:

1. The available infrastructure in terms of classroom, laboratories, computing systems is satisfactory. Enrolment is highly satisfactory; it is almost 95 percent considering last three academic years.
2. The publications (by faculty members) in quantity and quality are significant. (SCI-E 19, SCI-3, Scopous-1, E-SCI-4, ACM-1, International Conferences- 13)
3. Placement records are also highly satisfactory. Eighty One percent students are placed through campus interview. (199 out of 236).

4. Curriculum is well defined as per AICTE guideline.
5. Mission, Vision statements are well defined but the keyword “Research” should be addressed within Mission statements.
6. Faculty members developed E-Contents and these are available in the Departmental website.
7. Three faculty members are enlisted as Ph.D. supervisor in other Universities; almost fifty percent faculty members have completed the Ph.D. degree.
8. Four workshops have been organized in this academic year.
9. Attempt for patenting is visible.
10. Student performance in examination (with & without backlog) is satisfactory.
11. Active student chapters are visible.

Weakness/Areas of improvement:

1. All necessary components related to OBE are not well maintained within the course file; it needs to be done. Course Outcomes must be carefully defined as per Bloom’s taxonomy and the attainment computations need to be maintained in detail in each course file.
2. Student Faculty Ratio is not satisfactory. (1:26)
3. No provision for visiting/adjunct faculty.
4. Participation in higher studies is minimal.
5. Separate dedicated project laboratory for the students is necessary.
6. Internship must be treated as a mandatory component within the curriculum.
7. Initiative for creating Industry sponsored laboratories is needed.
8. No such externally funded R&D project.
9. Assessment should be based on rubrics. No rubric is involved in the process.
10. Continuous improvement is missing; it needs to be done based on attainment value.
11. Feedback from students in terms of CO should be initiated.

Department: Computer Science & Engineering (AI)

The program was started one year back (2021) and at present the third semester is going on. The intake of the program (sanctioned Strength) is 60. The number of students admitted in this program is 100 percent. The number of faculty members recruited for this course is two and one faculty member from CSE is allotted also. Considering only two dedicated faculty members, the Student Faculty ratio is 1:30 that needs to be improved. The curriculum for this program is not finalized; the detailed description of courses with Outcome Based Education (OBE) needs to be finalized soon. The Program Education Objectives, Program Specific Outcomes are not framed for this program. The faculty members with specialized skill in AI may be able to contribute better for the development of the students.

Department: Information Technology

Strengths:

1. The available infrastructure in terms of classrooms (Four dedicated Classrooms) and laboratories (Eight labs with almost 350 computing devices) are satisfactory.
2. Enrolment is highly satisfactory; it is almost 100 percent.
3. Student Faculty Ratio is within permissible range (1:20). [Students at present =120+60+60 =240 and 12 dedicated faculty members for this program]
4. The publications (by faculty members) in quantity and quality are significant. (SCI-E 02, Scopus-10, Conference 16 Book Chapters 12)
5. Placement records are also satisfactory. (77.34 percent placement)
6. Four faculty members are enlisted as Ph.D. supervisor in other Universities, seven students are doing their research under the supervision of these faculty members.
7. Active IEEE student chapter is visible.

Weakness/Areas of improvement:

1. All necessary components related to OBE are not well maintained within the course file; it needs to be done. Course Outcomes must be carefully defined as per Bloom's taxonomy and the attainment computations need to be defined, exercised and documented in detail in each course file.
2. No provision for visiting/adjunct faculty.
4. Only four out twelve faculties are with Ph.D. degree.
5. Separate dedicated project laboratory for the students is necessary.
6. Internship must be treated as a mandatory component within curriculum.
7. Initiative for creating Industry sponsored laboratories is needed.
8. No such externally funded R&D project.
9. Assessment should be based on rubrics. No rubric is involved in the process.
10. Attempt for patenting is inadequate.
11. Continuous improvement is missing; it needs to be done based on CO, PO attainment values.

Departments: ECE, EE and EEE

The following observations are towards that which may be considered by the institute in phased manner, for the operational constraints within which management team needs to work e.g. funding, ability to hire and retain quality manpower, lack of campus like environment (many faculty members need to spend long hours in to and fro journey) etc..

1. To strengthen its R & D presence, the institute may need to refocus itself by redefining its vision, mission, objectives, strategies, action items which will be based on inherent values of the institute and

working on the feedback mechanism. The goal of the institute and its various units e.g. departments need to be in synchronization. Focussed immersive workshop may be considered for this.

2. It was great to see very senior faculty members, coming with their experience of serving reputed organizations, combining with young faculty members to lead the current R & D initiatives. It is important that the younger faculty members, the future leaders in their respective fields, develop identities of their own in due course of time.

3. Many young faculty members are registered for PhD at different institutes. Some of them registered long back and have the risk of the then defined problem statements becoming irrelevant over time. It is in their interest and, in the institute's interest to have all faculty with PhD, a proactive approach can be taken to complete the PhD work and submit thesis soon.

4. Establishing a research scholar cadre is a welcome initiative by the institute. This can lead to easing burden of some of the faculty members in tutorial, lab. and give more opportunity to them to undertake target oriented R & D activities and increase R & D output as a whole. This scholar recruitment initiative may be popularized in different platforms with realistic targets set before the scholars.

5. There remains a concern about the quality of many R & D publications from the institutes. Also, there is too much concentration of publications in IEM Group conducted conferences. Researchers should come out of their comfort zone and prove themselves in various big platforms. A bad publication in this era of internet search is enough to damage the reputation and the institute will be not in the league of the greats. Strict quality control and awareness are required on this. Long term goals should prevail over short term goals if the institute wants to aim big for which it is well set up now after becoming an established brand.

6. In displaying achievements in public domain, in certain places, majority of the certificates bear IEM-UEM logo which is unbecoming of an institute aspiring to be in the top league. In sponsored project, support to FDP, Conference, Science camp etc. are shown. It is great to see IEM group funding many faculty R & D activities and the list of sponsored projects reflecting that. The share of external funding needs to be increased. In research collaboration list, 5 different collaborations are listed for a faculty member who published a conference paper with 5 co-authors, shown as supporting document, which is not significant. Such things are avoidable.

7. Some very good publications in high impact factor IEEE Transactions that are shown as IEM publications for which research was not carried out at IEM in any way. For example, two such publications from Priyatosh Mahish are IITKGP publications and the person does not appear in IEM faculty list. His LinkedIn profile shows that he was with IITKGP and now a postdoc at IITD. May be he was with IEM briefly.

8. Placement record is not placed properly i.e. what percentage of the graduating students got placed is not revealed. The statement of 153% placement is incorrect which cannot be more than 100%. More than one job offer is a different measure.

9. Module based feedback or mid & end semester feedback semester may be more though provoking from student side and that may help teachers better in improving. In Faculty Feedback data available online, in some places, Prof. A** Das is shown to get, in five different components, absolute score (percentage) of 289 (91.6%), 290 (87.8%), 298 (91.6%), 285 (91%), 280 (90%). For another faculty, Prof. P** De Sarkar, these are 231 (92.4%), 232 (92.8%), 235 (94%), 230 (92%), 232 (92.8%), respectively while a third faculty, S** Khanra gets 236 (84.2%), 222 (79.2%), 227 (81%), 229 (81.6%), 247 (88.2%) in these components. The percentage calculation is misleading.

10. There is a Board of Studies for each Dept. who regularly meets and works on the curriculum. There is representation from industry too, which is welcome. It appears that Electronics & Communication Engineering curriculum has credited only 3 credits for Analog and Digital communication taken together.

Department: Mechanical Engineering

Observations:

- All the faculty members participated in the audit process very passionately and exhibited their outcome very enthusiastically.
- The curriculum and syllabus has been revised several times following the time when the institute achieved the autonomous status. However, it appeared from the interaction that the changes proposed during each revision were marginal.
- The department has sufficient laboratory facilities for undergraduate education. In several laboratories, there are experimental setup developed by the students as a part of their project work during final and pre-final years, which is a welcome development.
- The students participate in extension activities in the form of student chapters of professional bodies like ASHRAE. The students also regularly participate in competitive events and achieve success.
- The department organizes three seminars annually in different domain-specific areas. The students and faculty members of the institute get an opportunity to present their work and also to interact with the researchers from the other institutes participating in the seminars.
- Some students of the last academic session got selected in the Institutes of National Importance (like, IISc, IIMs and IITs) and a few other have also joined reputed foreign universities for higher studies. The placement of the students from the pass out batch is good, though in the core sector the placement is moderate.
- Some of the faculty members have published research articles in journals. A few collaborative research works with industries have been performed.
- The institute has offered seed money to the faculty members in the form of internal project support.
- The students perform the final year project works seriously and the project reports are well documented.
- The Mentor-mentee records are maintained.

Suggestions:

- The department should prepare itself following the NAAC framework to be ready by the time the accreditation is due in 2024.
- The curriculum and the syllabus should be prepared considering the employability focus in the courses.
- The students should be encouraged to participate in Value-added courses and the department should also organize such courses for the overall benefit of the students.
- The faculty members should participate in research more actively. It is desired that all the faculty members complete their PhD as the highest degree of qualification. They should also focus in publishing their research articles in high impact journals.
- The faculty members should collaborate with their peers from the national and international academic institutes of repute for research activities.
- The faculty members should also focus on receiving sponsored research projects and consultancy projects. Industry interaction should be enhanced through a separate cell for such purposes.
- The institute can formulate a testing policy using the available infrastructural facilities.
- The department should try to organize national level reputed conferences in the specialization areas.

Basic Science and Humanities Faculty

Observations:

- The department caters UG teaching load to various Engineering disciplines of the institute.
- The syllabus of the courses offered by the department largely follows AICTE guidelines.
- A large section of the faculty members of the department possess PhD as their highest qualification.
- Some of the faculty members have executed sponsored projects funded by external agencies like DST SERB and others.
- Faculty members are recruiting PhD students for guidance and the institute is offering fellowship to the full time PhD students recruited through a selection process.
- Some of the faculty members have also filed patents with the support of the institute.

Suggestions

- The NAAC criterion towards Curricular aspects should be followed in designing the curriculum and syllabus.
- The faculty members should involve themselves in more PhD guidance and clarify with the Universities regarding the regulations.

Management Department

Observations and suggestions:

- Teaching learning is based on course, syllabus, regulations. As part of a department in an autonomous college under MAKAUT, certain centralised regulations hold good. But some other specific to Management department (for example admission through CAT in MBA and other in MBA General) may be documented in the form of an independent policy document, for benefit of good governance and as a fall back in case of discrepancies.
- Research by Faculty is essence of teaching. While publications, and conference presentations are encouraged by IEM, it may be worthwhile to share research output or contemporary learnings among faculty in internal seminars. A predetermined time slot will include this in a structured manner.
- Additional packages for literature and data bank like Prowess and India Stat (just examples) may be subscribed. However, faculty use of this resource must be encouraged. Even students may use this data base for their term paper/project report.
- Students are provided practical lab based learning which are non-credit, some assessment of student learning may be done through student presentations in interal gatherings.
- Examination system, as reported maintains confidentiality and is sound. Feedback on Student assessment may be shared in the first assessment in qualitative manner.
- Students participation in basketball, yoga, stray dog feeding was reported. Recognising students who engage in co-curricular activities which is not made compulsory by IEM may be useful. This will encourage students to pursue own passion and interests. Study abroad and immersion progarmmes are reported, it may be assessed how far does near transfer of these take place. Students who participate in such immersion should be encouraged to share the utility of such learning in their work life, as an alumni seminar.

Internal Quality Assurance Cell

Observations:

- The IQAC committee meetings have held regularly (four in every year). The minutes of the meetings and the 'Action Taken Reports' are well documented and uploaded in the website.
- IQAC regularly update different activities in the institute websites and keep contact with stakeholders, like alumni, for the betterment of the institute.
- IQAC collects data for different ranking and accreditation frameworks and submit them time to time.
- AQARs are uploaded in the website on a yearly basis.
- The institute could not feature in the top 200 institute list in NIRF 2022, though in the earlier years it was there. IQAC has identified some reasons behind the exclusion.

Suggestions:

- IQAC should prepare a policy document for itself and work according to it.
- IQAC should identify the metrics under different ranking and accreditation frameworks for improvement on short term and long term basis.
- IQAC should also formulate a research policy for the institute. The institute is found to have a lot of scope for improvement in the areas of "Research and Professional Practice" which need special attention to reach the top tier.
- The energy, environment and other audits should be conducted and reports may be uploaded in the website.

Controller of Examination Section

Observations:

- The CoE section has an online system for conducting the examination, preparing the question papers and publishing the results.
- There is provision for a mid-sem and a final examination. A system of question bank is there.
- Outcome Based Education (OBE) system is followed. Questions are formed based on Course Outcome for each course.
- The entire process of examination (from setting the question paper to the publication of results) takes about 6 weeks time.

Suggestions

- A grievance redressal system on examination can be in place
- Course End Feedback from the students as a part of the indirect attainment to be incorporated.

Finally, on 8th September evening the peer team members deliberated with the management and senior faculty members of the institute and shared some of the important observations listed above.

All the peer team members thanked the institute management, principal, IQAC coordinators, HoDs and faculty members for their active cooperation during the audit.