Best Practice 1

1.1 Title of the Practice

Institutional Support for Qualification Enhancement and Skill-Upgradation

1.2 Objective of the Practice

❖ Knowledge-upgradation in the respective field of engineering.
❖ Professional growth of faculty-members.
❖ Acquaintance with present skill-sets required by the industry.
❖ Enhancing Practical-orientated and Research-based teaching.

1.3 Need Addressed and the Context

Institute's vision is to provide modern technical education for developing self-sustainable professionals. To accomplish this, better qualified and knowledgeable faculty members on roll is essential. There is a scarcity of good qualified faculty members in academics. The rate-of-technology change is rapid, to adapt to these changes updating regularly about technology is essential.

Institute strongly believes that, faculty members' professional growth is equally important and it can be done through motivating faculty members to pursue research, attend training programmes and conferences, to align with rapid changes in technologies.

1.4 The Practice

Faculty knowledge-enrichment is possible mainly through qualification upgradation as per institute policy and minimum-qualification requirement by statutory body. Institute devised a policy of sponsorship for qualification-upgradation to ME/M.Tech and Ph.D. from year 1998-1999. Institute also supports those faculty-members who are willing to do the post-doctoral work.

Sponsorship Policy

Faculty members are sponsored from each department for M.E/M.Tech. and Ph.D. program with full salary as per the seniority. During their period of study (two-years for M.E/M.Tech. and 3-5 years for Ph.D.), they are relieved from all administrative works and their teaching load is reduced to 6-10 hrs per week. They have to enter into a mutual bond with the institute for 2-years for M.Tech. and 5 years for Ph.D. of service after graduation.

Training and Conference Support Policy

Institute encourages faculty members to attend training programs, NPTEL, Swayam online courses, national conferences and international conferences in India/abroad. Duty-Leaves, third-AC to-and-fro rail-fare and registration-fees are given to the faculty members to attend the training programs and conferences in India. However, full registration-fee and one-way

economy class air-fare are given to the faculty members traveling abroad for attending the international-conferences.

R&D Support Policy

Institute motivates faculty members to carry out research work by making budgetary provision up-to Rs. 12,00,000/-.

Incentive Mechanism Policy

Institute has clearly laid down incentive mechanism policy based on individual contribution in the research activity, consultancy work/R&D, book writing and receiving patent. The faculty members can avail incentives for professional society membership or subscribing to a journal.

Road-Map

To enhance growth in the research-work, upgrade knowledge and skill in their domain areas, faculty members prepare activities map for next five-years as road-map, which has started from the year-2017.

1.5 Evidence of Success

Following table shows qualification upgradation of faculty members through institute sponsorship policy.

No. of faculty-members sponsored-for ME/M.Tech	No. of faculty-members who completed ME/M.Tech Under Sponsorship	No. of faculty-members sponsored for Ph.D.	No. of faculty completed Ph.D. Under Sponsorship
55	46+7*	31	10+4*

*Left-the-institute.

The impact of institute-support in quality-enhancement are:

- ❖ Many faculty-members completed higher studies
- ❖ High Retention (Average-experience within-the-institute is around 16-years.)
- ❖ Attending more training-program
- ❖ Higher number of publication (Around 700 Journal and Conference publication in last 5-years).

1.6 Problem Encountered and Resources Required

It was observed that faculty members started leaving the institute after completing their higher qualification before completing bond-period. To retain members in the institute, amendment in the service bond took place in the year 2009-10.

Resources mainly in terms of human, finance and laboratory are essential for effective implementation.

Human Resources

Institute has sufficient number of faculty to manage teaching-load of sponsored faculty-member for higher-studies. Salary expenses is taken care through budgetary provisions.

Financial Resources

Institute sanction Rs. 12,00,000/- as Research-Fund in every financial-year. Expenses towards travelling and registration for attending training-program and conferences are paid to faculty members and financial provisions are made in the institute budget.

Laboratory and Instrumentation

Laboratory-infrastructure is augmented for future research activities continuously through budgetary provision. Exclusive area is provided for research work in Project and R&D labs. In addition to this other laboratories are open after college working-hours.

1.7 Notes

Intent of the management is to provide quality education through qualified and knowledgeable faculty members by providing the required resources. Faculty members should have positive approach towards self-growth and contribute towards progress of institute by aligning with institutes' vision. For effective implementation proper monitoring of all activities related to faculty growth is essential.

Best Practice 2

2.1 Title of the Practice

Integration of IT based Solution for Continuous Evaluation of Students

2.2 Objectives of the Practice

Continuous evaluation of the students is very critical in education system as it brings scope for introducing further actions required to be taken for effective implementation of Teaching-Learning process. Effective learning by students helps them in developing their analytical, logical, and creative thought process along with necessary technical-skills. Use of IT-based solutions helps in efficiently analyzing the learning by the students and planning further necessary actions.

Objectives:

1. To develop in-house IT-platform for CO-PO attainment-computations, uploading study-material, conducting various feedbacks, etc.
2. To inculcate habit of effective-and-focused learning in classroom;
3. To develop analytical, logical, and creative abilities along with necessary technical-skills;
4. To identify slow and fast-learners for further action;
5. To prepare the students to cope-up work-pressure.

2.3 The Context

1. How to convert existing unique model into in-house developed IT-platform for computation of outcome-attainments, monitoring students' academic-performance and attendance -record, automated term-work marks calculations, collecting various feedbacks, etc. at the click-of-mouse.
2. How to identify slow-learners and what additional support-mechanism needs to be developed for them?
3. How to identify fast-learners and what additional benefits can be offered to them for sustaining their motivation?
4. Based on students' feedback on Teaching-Learning what further actions are needed by teacher for improvement in teaching-process resulting in enhanced-learning by students?
5. How the assessment and evaluation process can be made transparent to the students for giving them critical-feedback on their learning and helping them to improve in future?
6. How to prepare the mind-set of the students for smooth-transition to the corporates?

2.4 The Practice:

Use of IT Platform

Our teachers had developed in-house IT-platforms named 'Academic Performance Monitoring System (APMS)' and 'Learning Management System (LMS)' to convert existing practices into technology-driven practices.

- ❖ APMS: Entering CO, CO-PO-PSO mapping, goal-setting, CO-wise assigning "Assessment-tools", entering marks for assignment-test, internal assessment-test, prelims, end-semester examination, computation of CO, PO, and PSO-attainments, finding academic-defaulters, entering attendance and finding attendance-defaulters, conducting various feedbacks and analysing them, etc.
- ❖ LMS: Uploading notes/assignments/quizzes, on-line evaluation of assignments, etc.

Innovative Methodologies in Teaching-Learning and Evaluation for Transforming Thought-Process of the Students

Well in advance before beginning of a new-semester all the teachers prepare lecture-plan, carry-out mapping of Course-Outcomes with (a) Content-delivery-tool introducing innovation in teaching; and (b) Course-assessment and evaluation plan for in-semester and end-semester examinations. The examination can be theory paper, assignments, oral, quiz, etc.

Slow Learners

Slow-learners or students weak in academics are identified based on some of the following criteria's: (a) Their history of academic-performance; (b) Based on marks scored in internal-assessment tests. Those who score less than 12-marks out of 20 in tests are identified as slow-learners and revision/remedial classes are conducted for them. Post remedial classes impact analysis is carried out after the end-semester examination.

Fast Learners

Based on teacher's observations in class, laboratory, active participation/performance in co-curricular activities/competitions at various-levels, etc. fast-learners are identified and they are encouraged for additional learning as per pre-approved policy-framework.

Students' Feedback on Teaching-Learning

Online feedback on Teaching-Learning process is carried out twice in a semester and based on it teachers are asked to prepare action-to-be-taken for further improvement in Teaching-Learning process, if the feedback under 'satisfactory' category is above a particular-level. Appreciation certificates are given if the overall feedback under 'Excellent' category is above a particular-level.

Transparent Evaluation-Process

All the in-semester evaluations are carried out based on well-defined rubrics, solutions are discussed in the class, and answer-papers are shown to the students. For end-semester examination Mumbai-University norms are followed for revaluation, photo-copy of answer-book, etc. Students can approach grievance-committee if they feel so.

Preparing Students' for Right-Attitude

Conducting the activities mentioned below on regular-basis helps moulding the students' attitude to be punctual, sincere, hardworking, follow the given deadlines, etc. so that they will experience smooth transition to corporate-life. The activities include: Every-day reporting to the Institute at right time, monitoring attendance of the students every alternate-week, asking for leave-note for remaining absent, ensuring they complete assigned work in-time, mentoring students twice in a semester for sorting out issues which they may be facing, encouraging students to actively participate in co-curricular and extra-curricular activities, etc.

2.5 Evidence of Success

❖ Consistently excellent end-semester examination results in final year (around 100%).
❖ More than 85% of the students admitted in first year graduate in a stipulated 4-year duration.
❖ Every-year passing-percentage of our FE-students (around 80%) is almost double compared to the overall Mumbai-University results (around 40%).
❖ On an average 85% among the eligible-students are placed in-campus.
❖ The employers prefer our students and have been consistently coming back year-after-year.
❖ Our alumni are successful in their professional-career and many of them are now successful entrepreneurs.
❖ On an average every year 10-to-15% of the students enrol for higher-studies. Many of them have completed their Ph.D. from reputed foreign Universities.

2.6 Problems Encountered and Resources Required

1. Being affiliated institution, less flexibility in:

   (a) implementing additional evaluation-methodologies;

   (b) assigning time-slots for conducting revision/remedial classes and placement-related activities.

2. It takes lot of efforts in motivating and convincing a group of students about importance of performing well in academics.

3. Attitude of the students to maintain 75% attendance was a challenge.

4. Less flexibility in timing of the institute due to non-residential status.

5. Converting unique existing system into IT-platform was the challenge.

6. "Time" was the major resource required for effective implementation of this best-practice.

7. Sustaining motivation of sincere and dynamic teaching-staff was the challenge.

2.7 Notes for Adoption

1. Vision of the Management;
2. Administrative capabilities and vision at the Principal and Head-of-the-Department level;
3. Sincere, dynamic, dedicated, hardworking, and motivated faculty;
4. Acceptability of the processes followed by the Departments/Institute by the students.

Best Practice 3

3.1 Title of the Practice

IT Enabled Secured Examination Management System

3.2 Objective of the Practice

Institute is affiliated to University of Mumbai wherein, the examination conduction, Assessment, Result preparation and declaration of first and Final-Year is done by University while, the second and third-year are managed by Institute on behalf of university. The question paper for all examinations are send by the University. The answer papers of second and third year are assessed by internal-examiner and moderated by external-examiner. Result of the same, with all applicable ordinances and regulations of the University, is processed by institute and send to university for approval. So, a secured examination-system is essential and the following objectives have been set.

- ❖ Restrict malpractices and unfair means in the examinations.
- ❖ Maintain the reliability, transparency and confidentiality of the examination-system.
- ❖ Facilitate revaluation and print the grade sheets, transcripts.

3.3 The Context

University has implemented credit-and-grading system in the year-2012 wherein, estimation of Cumulative Grade point is essential which increased the difficulty level in the result-processing. This leads to the development of examination result processing software as per the university norms. The following are the different contexts where in the IT-enabled system work efficiently.

- ❖ Generation of the hall-ticket of the students applied for the examinations from the database of the students.
- ❖ The revaluation result, of the students who applied, should be processed separately and updated in the main-result.
- ❖ The printing of security enabled grade sheets automatically, after the revaluation of results.

- ❖ Promotion of student to next-year is to be done by applying the university ordinances and the list of eligible-students is to be generated.
- ❖ Generation of Transcripts for those students who go for higher-studies.

3.4 The Practice

IT enabled result processing module has been developed and deployed, for Credit and grading system from the year-2015.

Hall Ticket Generation Module:

Hall tickets of all students, applied for the examination, are generated with the help of student data base already existing in the IT enabled system. The hall ticket with photograph and the instructions to students are printed after allotting the seat-numbers.

Result Processing:

The entry of marks of all subjects (Oral/practical/Term Work/Internal Assessment/End semester) are done in the software manually. The first-semester and second-semester marks of all students are entered into the system once that result is declared by University which is essential for calculating the cumulative-grade-point of higher semester.

Once the marks are entered, no editing is permitted, at data-entry operator level. Any mistake at the data-entry will be corrected through the admin login in the presence of Controller of Examination/Principal. As per the provision in the Maharashtra University Act the result shall be processed within 45-days from the last-day of Examination.

Revaluation:

Students are permitted to apply for revaluation and Photo-copies of answer books within 10 days after the result is declared. The photocopies of answer books are send to their respective E-mail.

The revaluation result processing module takes out the list of students applied for the revaluation and complete the result processing separately and automatically updates the revaluation result in the main result sheet once the revaluation result is declared. The entire process of revaluation is completed within 30-days, from the last day of submission of application for revaluation.

Grade sheet printing:

The system dynamically generates examination wise grade sheets and print the same on security enabled paper with QR code. The grade sheets are distributed subsequently to the students.

Eligibility checking:

The system dynamically generates the list of eligible students for next academic year by applying the University ATKT ordinance, rules and regulations.

Transcript Generation:

The system automatically generates the transcripts for students who opt and applied for higher studies. This reduces the preparation and issuance time of transcripts. This enables the issue of transcripts within 2-days from the date of application.

3.5 Evidence of Success

The following outcomes are the end result of the practices followed:

1. Fast and authentic generation of Hall tickets.
2. Completion of the 2nd and 3rd year result processing and submission of result to University of Mumbai for approval within 10 days from the last day of examination.
3. Printing and distribution of security enabled Grade sheets to students within 10 days of the declaration of revaluation result.
4. Accurate generation and issuance of transcripts within 2 working days from the date of application.
5. No grievance has been reported regarding the result processing, issuance of grade sheets or transcripts.

3.6 Problem Encountered and Resources Required

No major problem is encountered in the system so far.

Examination cell is located in a secured place of the Institute where the access is restricted by order. The Examination cell consist of sections for Conduction, Evaluation and Result Processing (Confidential Room). All the above sections are well furnished and under CCTV surveillance. All stationary related to examination including blank/used answer sheets are securely kept in locked steel cupboards systematically.

The examination cell has 4 computers, 2 copying cum printing machines and 2 printers as part of IT infrastructure. The software is developed and maintained in-house. Two full time clerical staff and one attendant are exclusively appointed in Examination Cell. One faculty in-charge is appointed as Controller of Examination who is assisted by one faculty coordinator from each department for Examination related work.

3.7 Requirement for Adoption and Adaptation

Honest, ethical, integral and dedicated manpower is the backbone of any examination system.

Best Practice 4

4.1 Title of the Practice

IT Enabled process driven Training & Placement Activities

4.2 Objective of the Practice

The aim of this practices is to improve the efficiency of the Training and Placement activities conducted at the institute and focus on the following objectives:

❖ Assist Students in improving skillset required for successful interview process

- ❖ Fair, transparent and efficient process of registration of all students for the company
- ❖ Providing database for Placement Activities for generation of reports

Intended Outcome:

- ❖ Fair and Transparent Registration process
- ❖ Easy compilation of Database system
- ❖ Maintaining the Placement Database for report generation

4.3 Need Addressed and the Context

- ❖ Earlier registration process began with manual data collection of student records and verification then followed by compiling of database.
- ❖ Consent for the company had to be taken from individual student manually.
- ❖ As every company has different criteria for selection this database would be modified and then sent.
- ❖ This practice was prone to errors due to overwriting and data in different formats.
- ❖ The placement cell needs to make registration of students for the company in seamless manner and keeping track of student's conversion in different stages of company selection process.
- ❖ This also facilitates maintaining the database of student details in one central facility.
- ❖ There is requirement from gradation agencies for report generation of various placement related information.

4.4 The Practice

Training and placement cell of the institute is committed to enhance the quality of placement for all interested students pertaining to all the aspects associated with placement. mprovement in placement is possible through enrichment of student's aptitude and communication skills.

Placement Portal- Online Website (https://apms.fcrit.ac.in/placementcell/):

Placement portal is used for the report generation and interview process registration. The description of the practice is given below:

- ❖ The institute has launched a placement portal through which students can register for the placement activities.
- ❖ Student has to enter following details: Contact details like email ID, phone no., address, and academic details like SSC, HSC, diploma, semester vise CGPA including no. of live and dead KT.
- ❖ It also has a provision for linking their resume which they can update on their own regularly whenever required.
- ❖ Students going for higher studies get segregated separately by the portal will not get any mail regarding placement activities.
- ❖ Placement office creates the company profile based on the criteria, package and branches applicable to it.
- ❖ Once the company profile is built in the portal, eligible students receive a mail regarding the job position, asking for his/her consent.
- ❖ Only for those students who have given consent, their database is created separately which can be shared in excel format with the company.
- ❖ Placement cell is also able to track and quantify the student's placement ratio and student's conversion ratio at various stages of the placement process.

Placement Eligibility Test (http://app.campuscredentials.com/#/student-login):

❖ To enhance the student's skill set to ensure higher conversion rate during interview process, the placement eligibility test is conducted in our institute. The description of the practice is given below:

❖ The training and placement cell conducts a ten days intensive training program at the beginning of seventh semester.

❖ After this training a placement eligibility test is conducted through online testing portal for all registered students which comprises general aptitude and department specific technical aptitude test.

❖ Students with less score in eligibility test are identified through the portal and have to undergo further training to improve their aptitude skills and appear for a second eligibility test.

❖ Additional mock test for practice are also available on the same portal which can be given according to student's convenience.

4.5 Evidence of Success

❖ Portal facilitates IT enabled, seamless registration process for the students and also creates an excel sheet of placement related information which can be collated to give students progress, company interview process and academic year placement summary to placement staff, companies and gradation agencies.

❖ The testing portal has enabled training and improvement of the student skill set required for successful clearance of interview process.

❖ Since this IT driven practice was initiated in this academic year, some of the impacts achieved by this practice are given below:
  ➢ Fair and transparent registration process for interview process
  ➢ Error free database compilation
  ➢ Easy generation of summary report
  ➢ Has led to identification of weakness of student skillset at each level

4.6 Problem Encountered and Resources Required

❖ Manual entry of database created errors for registration process. This problem was addressed by implementation of placement portal. The resources for this practice includes the central server which is connected to the IT infrastructure present in the placement cell and laboratories. The placement portal (https://apms.fcrit.ac.in/placementcell/) is accessible from anywhere by the student through their login.

❖ Improvement of student's skillset for higher conversion ratio was not adequate during training program. To address this issue, placement eligibility test is conducted on an online portal (http://app.campuscredentials.com/#/student-login). Additional mock tests are accessible from anywhere for further improvement.

❖ Initially placement cell was having communication gap with the departments for coordination of interview process. The human resources were increased to address this issue to improve the communication. The structure of the placement cell is as follows:
  ➢ Training and Placement Officer,
  ➢ Staff coordinators from each individual department
  ➢ Training and placement assistant

4.7 Requirement for adoption and adaptation

❖ The placement portal software is integrated with our existing academic performance monitoring system (APMS) with the consideration of placement cell requirements.
❖ For the adaptation of this system by other institutes the following resources are required:
  ➢ Full-fledged IT infrastructure
  ➢ Expert human resources
  ➢ Software modules based on training and placement activities.