



**Lokmanya Tilak Jankalyan Shikshan Sanstha's**

**PRIYADARSHINI COLLEGE OF ENGINEERING**

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## **7.2 Best Practice**

### **Best Practice 1**

#### **1. Title of the Practice: PCE Green Initiative**

#### **2. Objectives of the Practice**

Environmental issues bring about thoughtful questions on the roles of Institutes in society. Irrespective of whether they are contributing to a better environment or worsening it, Institutions have to acknowledge environmental or green issues through impact research and measurement. Based on the approach PCE has significant Green Initiatives to ;

- Promote sustainability by creating awareness
- Share knowledge & Expertise. Expert talks about environmental problems and possible solutions
- Deploy eco-friendly technologies for greening and cleaning our campus.

#### **3. The Context**

The main contexts are (i) Water Management, (ii) Waste management, (iii) Energy (conservation and generation) and (iv) Landscaping and Trees.

#### **4. The Practice**

The Green initiative is driven by the 'Green Initiative Cell' which runs all the activities & the maintenance of the systems used in the operation.

### **(i) Rain Water harvesting**

The water shed management systems help in the betterment of flora & fauna around the area. They also increase the soil quality.

Rain water harvesting structures have been created. Drain pipes collect the roof top rain waters and discharge it to rain water harvesting pits.

An artificial lagoon admeasuring around 18,000 sq. meters & around average 3 meters deep had been dug inside the campus. Every year the lagoon gets filled to its brim during the rainy season. This water is not used in the institute. Hence apart from evaporation loss this entire volume of around 50,000 cubic meters adds to the water table of the surrounding areas. This is evidenced by the increase in the levels of many wells in surrounding areas.

### **(ii) Energy conservation & use of renewable energy**

The Internal stakeholders takes all measures to save the power. More than 80% lighting requirements are met through LED sources. Two Solar power generating systems of 376KW & 213 KW totalling 589 KW is provided on the roof top of the academic buildings. The girls hostel building is equipped with 50 KW solar power system. The systems are equipped with net metering. With the installation of this system, more than 80% of the total electricity requirement is met.

### **(iii) Plantation**

- The institute has decided to focus upon betterment of environmental conditions in & around its campus by having major plantations inside the campus. We believe that with the plantation of native trees of different varieties we shall be able to add oxygen & reduce the load of carbon di oxide & strengthen the ecosystem in the surrounding atmosphere.

- Every year students along with the staff, plant trees. Plantation Drives are organized various departments separately, in and out of campus as well.
- Due to this program over the years the campus has become lush and green. Also, a herbal garden consisting of plants with medicinal values is proposed to be cultivated in the college campus.

#### **(iv) Waste Management**

##### **Bio degradable waste**

- As a practice the institute does not allow any bio degradable waste to be discarded out of campus. We use it to prepare compost manure.
- There are two types of bio degradable waste in the campus one is the canteen waste & the other is garden waste.
- Composting pits have been dug at many places inside the campus & are taken care with best composting practices.

##### **E-waste management**

- Students & teachers are encouraged to collect e-waste from their homes & neighbourhoods. The institute runs e-waste collection drive from time to time. This reduces the e-waste in the society.
- The e-waste thus collected & the e-waste generated within the institute, is then disposed off by selling it to government authorized e-waste collection agencies. These agencies in turn dispose off the e-waste as per the procedures laid down by relevant department.

##### **Efforts for carbon neutrality**

By conserving and reusing energy the need for excessive use of fossil fuels can greatly reduce, thus reducing carbon emissions. Installing solar panels helps in reducing carbon emissions. The installation of in all 639 KW solar power systems has saved a lot of amount of carbon dioxide released into the air.

The movement of people inside the campus also requires great deal of fossil fuel consumption. The institute encourages the staff & students to use the bicycles & battery powered vehicles provided in the campus for this purpose.

The trees are natural carbon dioxide sinks. Thousands of trees inside the campus add a lot to carbon sequestration.

Thus the emission of carbon dioxide is greatly reduced with these efforts in the institute to achieve carbon neutrality.

## **5. Evidence of Success**

### **i) Water Management**

1. Approximate Quantity of water harvested through lagoon = 50,000 cubic meters.
2. Water levels in surrounding area wells have risen & is greatly appreciated by local public.
3. Many large trees in the campus are self -supported without any external watering, which clearly indicate the high water table even on a hilly terrain of our campus.

### **ii) Waste management**

1. Compost manure sold; 200 kg worth Rs. 5000/-
2. Compost manure used in campus approximately 500 kg worth Rs. 12500/-
3. E - waste sold

### **iii) Solar Power Systems**

- Reduction in cost of electricity;
- Expenses before Solar systems
- Expenses after installation of Solar systems

### **iv) Landscaping and Trees**

- Total No. of trees in the campus Approx. 5,500.
- Taking example of Neem, Teak & Peepal in the campus.

Approximate weight of CO<sub>2</sub> absorbed is shown in the table below;

<b>S. No.</b>	<b>Name of Tree</b>	<b>No. of Trees</b>	<b>Carbon sequestering Capacity/annum/plant</b>	<b>Total Carbon Sequestered/annum</b>
1	Teak	1672	30.42 Kg	50,862 Kg
2	Neem	400	21.77 kg	8800Kg
3	Peepal	100	21.77 kg	2200Kg
4	<b>Total</b>			<b>61,862 Kg</b>

(ii) As per our last green audit the carbon footprint of the vehicles burning fossil fuels in the campus is only 11938.28kg/annum, whereas only three varieties of trees are sequestering 61,862 kg of Carbon/annum. Apart from these three varieties there are thousands of other trees for which Carbon sequestering is not calculated. It shows that the net Carbon footprint of the institute campus is definitely negative.

(iii) The green initiative activities in & out of campus by the students are creating greater awareness in the society as well as upon the students themselves. The expert talk in the campus also strengthens the commitment to the environmental protection amongst students & staff.

## **6. Problems Encountered and Resources Required**

The Green Initiative requires to identify the areas which can have greener solutions. It takes a great deal of research in resolving these problems. This research requires time & resources as well as a great deal of capital allocation. As a regular teaching institute the staff is burdened with their day to day academic & administrative activities. Hence finding time & resources is a bit difficult. Cost for implementation some times puts barrier for immediate deployment.

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## **Best practice 2**

### **1. Title of the Practice: Centralized Examination and Evaluation System**

### **2. The Objectives of Practice:**

The examination reforms in the Institute, is not merely a technique to improve the evaluation system but to be viewed as an objective at improving the education process itself. The main objectives of evaluation procedures are:

(a) The system of evaluation should be adequate and comprehensive.

(b) The system should provide a feedback:

1. to the students regarding their strengths and weaknesses; and
2. to the teacher as to how far she/he has been able to benefit the students and to modify his/her approach and teaching methods.

### **3. The Context:**

The teaching, learning, and evaluation are integrated and indissoluble components of education. In general, the internal examinations are conducted at department level and valuation is done by the course teachers at department level, while we do this practice at institute level.

The institute ensures that the evaluation system serves as a resource in the process of learning. The evaluation system, along with teaching, act as an integral part of facilitating learning by the student. The evaluation process should include continuous internal evaluation, the conduct of examination, the evaluation of answer scripts and displaying the performance of the students. It is in this context that the evaluation practices are chosen and introduced.

### 3. The Practice

#### ***(A) Question Bank:***

Every Course teacher prepares Question Banks for various courses taught at UG level. These question banks are used for setting the question papers. Question Banks are updated by the teachers from time to time. Objective type questions are prepared by the teachers for some subjects.

#### **(B) Centralized Tests**

Two centralized Class Assessment Tests and one end semester examination (Sessional Examination) per semester are conducted.

- **Class Assessment Test-I** is based on Unit 1 and Unit 2 and **Class Assessment Test-II** is based on Unit 3 and Unit 4 of syllabus.
- **Sessional Examination** is conducted once at the end of the session based on University exam pattern which covers complete syllabus.
- Two **Assignments** are given in a semester. Assignment-1 is based on first 3 units and Assignment-2 covers remaining 3 units of syllabus.
- Unit wise question banks are provided for all subjects. The question bank is moderated by faculty members of respective subject groups at department level.

After the first test (Test one) each staff meets the students who score less marks and they are counseled and given remedial coaching. The course teacher of each subject distributes the valued end semester answer scripts to the students for their scrutiny. Students are given the chance to clarify with the staff if they have any doubt regarding the mark allotment.

## **(C)Transparency in Evaluation System**

### **Class Assessment Test:**

After Valuation, marks are displayed on dates mentioned in the academic calendar by faculty members. Assessment copies are shown to the students.

### **Sessional Examination:**

A general thrust is given on the external element in the end semester examinations, such as external paper setters, moderators of the question papers and valuers of the answer scripts. Three sets of question papers are prepared by different faculty members, which are moderated by faculty members of respective subject groups at central level.

After moderation of question papers, the Moderation committee hands over the papers to printing Committee. Printing committee hands over the required number of copies of question papers to the Exam In charge one hour before the scheduled time of the paper.

**Model Answers and marking scheme is prepared by every subject teacher before valuation.**

Valuation is done by the respective subject teacher within two days. Sample Answer sheets are moderated by external moderators.

Teachers of other institutes are also appointed for moderation of question papers and answer scripts.

Answer sheets are shown to all the students and answers are also discussed with the students. After seeing the papers students sign the answer sheets.



## ***Procedures of Evaluation and Guidelines for Faculty***

For evaluating students' performance, the teacher of a course will apportion marks to the Class Assessment test, semester-end examination, two assignments and teacher assessment based on a, periodical quizzes, laboratory work, seminars or any other assignment that the course teacher considers necessary for assessing the student's performance. The distribution of weightage, to the various components of assessment is as given in following tables.

### **Mark Distribution of Theory Subjects**

<b>Sr. No.</b>	<b>Evaluation Parameters</b>	<b>Weightage</b>
1	Class Assessment Test-I (CAT-I)	2
2	Assignment_I	2
3	Class Assessment Test-II (CAT-II) 2	2
4	Assignment -II	2
5	Sessional Examination	8
6	Teacher Assessment	4
	<b>Total</b>	<b>20</b>

### **Mark Distribution of Practical Subjects**

<b>Sr. No.</b>	<b>Evaluation Parameters</b>	<b>Weightage</b>
1	Practical Record	10
2	Practical Exam	5
3	Viva-Voce	5
4	Teacher Assessment	5
	<b>Total</b>	<b>25</b>

During Covid-19 which gave way to the pandemic situation, the examination system was switched to online mode from offline mode. This system also helped us to test the subject knowledge of the

students in the online system which eliminated logistical hassles and drawbacks in the traditional mode of the pen-and-paper examination. The online exam replaced the conventional system of assessment. The flexibility associated with computer-based tests reduced exam anxiety among test takers as they could take the exam at any time of the day. The outcome was:

- i. The institute encouraged the students for switching to online examination in pandemic situation.
- ii. Students successfully adapted the Online Examination System.
- iii. The MCQs were prepared by the faculty members based on the bloom's Taxonomy levels following Examination reforms which were useful to the students for competitive Examinations.
- iv. The attendance of the examination was around 98%.

## **5. Evidence of Success**

Continuous assessment being an important component of semester system, encourages the students to work systematically throughout the semester.

Students have the opportunity to discuss their answers through all accepted tools of internal evaluation. This has added to reliability and also transparency of the system.

There is increased rapport and relationship between the teachers and the students.

Holding of examinations is quite simplified and regularized and results are declared as per the predetermined date specified in the academic calendar.

This practice is effective for providing a feedback to the students and an opportunity to learn the subject more accurately and adequately. The system can also be credited for its efficiency; consequently, wastage of manpower is negligible.

Following table indicates the effectiveness of this practice for the end semester examination conducted between 27/09/2019 to 09/10/2019

<b>Report of Moderation of Question papers</b>	
Moderation Time Period	One day
Total number of programs	08
Total Courses moderated	128
Total number of paper sets moderated	384
Total number of External moderators	48
Total number of Internal moderators	108

<b>Report of Valuation of Answer script</b>	
Examination Time Period	27/09/2019 to 09/10/2019
Valuation Time Period	29/09/2019 to 11/10/2019
Total number of programs	08
Total Courses valued	122
Total Answer sheets valued	9420
Total valuers	162
Total moderators	128

### **Impact of the Practice**

The Centralized Examination and Evaluation System has opened and strengthened a transparent communication channel between students, teachers and administrators of various departments.

Students' involvement in the process has improved. The overall

sense of belonging to the institute among the students and the teachers has strengthened.

Students get acquainted with the University pattern of examination. This practice has helped in time management and optimization of resources. Uniformity in valuation is maintained because of the availability of marking scheme. Transparent and fair valuation is done. Every faculty evaluates answer scripts irrespective of seniority and cadre. The overall procedure being centralized is better controlled and convenient in implementation.

## **6. Problems Encountered and Resources Required (150 words)**

### **Problems Encountered**

- 1) Inability by external moderators, to report for moderation due to some unavoidable circumstances.
- 2) Some faculty members are busy with other assignments or on leave. Making alternate arrangement for valuation is quite difficult.
- 3) Formatting of question papers is a time-consuming task.

### **Resources Required**

No additional resources are required except deploying the available manpower at the college. Sufficient number of computers and printers are available for taking printouts of question papers.

## **7. Notes (Optional)**

*Contact person for further details*

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## **Best Practice 3**

### **1. Title of the Practice: Academic Planning & Monitoring (APM)**

### **2. Objectives of the Practice**

Academic planning and monitoring help in the smooth conduction of academic activities. Academic planning and monitoring also helps:

- To create and maintain programs of high quality and offer a distinctive experience for the students.
- To deliver courses effectively, in a planned and systematic manner.
- To create and maintain a sustainable learning environment in campus that supports the students and the staff to practice active learning.
- To allocate human resources strategically.

### **3. The Context**

This Academic Plan provides clarity to our strategic direction: eg, portfolio development, progression management, staff development. It also seeks to build on what we already have. We are distinctive in academic offer and promote best practices that are clearly found across the length and breadth of our campus.

Good quality academic planning is an essential ingredient in providing a coherent response which will ensure a sustainable future for the institute. Naturally it is important that planning from academic

departments help in monitoring overall performance. The planning process needs to be open and transparent in order to improve dialogue and understanding between the institutional center and academic departments.

Academic planning, therefore, facilitates institutional foresightedness over departmental activities, engages in constructive dialogue, provides an institutional steer on certain issues and facilitates the allocation of resources. This links the financial, planning and budget processes which ultimately aids in the creation of a more sustainable organization. This goes on to enhance the students' experience and research profile and overall reputation of the institute.

## **4. The Practice**

### **(A) Academic Planning:**

**Academic Calendar:** For smooth conduction of academics, the institute prepares academic calendar before the commencement of every session by considering the academic calendar of University and academic policy of the institute. This academic calendar is discussed in the departments for its implementation. Also, it is displayed on notice board for the students.

**Teaching Load Distribution:** The teaching load (theory and practical) is appropriately allotted among the faculty members as per the cadre, experience & specialization.

**Time Table:** Time table is prepared as per the teaching scheme of RTM Nagpur University and Departmental requirement. The Time table is circulated among the staff members and displayed well in advance for the students.

**Commencement of Classes:** The date of commencement of classes as per academic calendar is communicated to the students by displaying notice on the notice board prior to the commencement of classes. Messaging is also done through email, telephonic conversation, SMS etc.

**Course Planning:** All subject teachers prepare teaching plan, tutorial plan and lesson plan for their respective subjects. For the effective content delivery of practical subjects, faculty members conduct the experiments as per the teaching plan with the help of laboratory manual.

**Project work:** At the entry of seventh semester, students initiate project work with a defined group. Formation of project groups and allotment of guide is done as per guidelines given in academic policy. Project work is carried out by the group of students and evaluation is done by the project review committee and project guide. Progress seminars are conducted as per schedule in academic calendar. The review committee evaluates its work with respect to the rubrics defined by the departments.

Procedure for identification of bright (advanced learners) and weak (slow learners) students is described in the academic policy. Separate measures are defined for such students.

## **(B) Academic Monitoring**

To carry out Academic Monitoring, Principal constitutes the committee for academic monitoring of various programs. This committee visits department to take review of academic process and verifies the academics related documents. Such visits and reviews are carried out **twice** in a semester.

Academic monitoring committee is also formed at the department level which continuously monitors and verifies the academics related

documents. The adherence and compliance of academic calendar is also monitored. The continuous academic monitoring is done and fortnightly academic review is conducted. Class in-charges are assigned for every class and academic coordinator for each department is appointed by the head of department to monitor the conduction of classes as per time table.

Academic Coordinators keep academic record of all faculty members which includes the syllabus coverage, conduction of classes, strength and other academic related issues. The record is then submitted fortnightly to HoD for his/her observations, suggestions and improvements.

The HoD submits the Academic report to Dean Academics. This report shows lagging/ leading record of syllabus coverage. Accordingly, action plan is prepared for the extra classes for lagging syllabus. Updated academic documents like Lesson Plan and Tutorial Plan are checked by Academic Monitoring Team.

Cumulative attendance and the provisional detention list of the students are displayed on the notice board. Remedial classes are also conducted for academically slow learners and for the students having less attendance.

#### **4. Evidence of Success**

- Academic planning and monitoring ensures completion of targeted teaching plan.
- Program Assessment Committee (PAC) at the Department level & Internal Quality
- Assurance Cell (IQAC) at the Institute level ensures that the Objectives and Outcomes are attained, leading towards attainment of Vision & Mission of the Department & Institute.



- The practice helps in the timely completion of 100 % Syllabus coverage.
- Thus, the faculty members find enough time to conduct revision sessions.
- Our students are among the **1<sup>st</sup> ten rank holders of the University**. The table below gives an overview of the meritorious positions bagged by the students of various semesters in **R.T.M.N.U.(Summer-2019) Examination**. The contribution of all the departments is noteworthy in bringing laurels to the institute.

Summer 2019

<b>Semester</b>	<b>No of Rank holders Semester wise</b>
4 <sup>th</sup> Semester	18
6 <sup>th</sup> Semester	12
8 <sup>th</sup> Semester	11
<b>Total</b>	<b>41</b>

<b>Department</b>	<b>No of Rank holders Department wise</b>
Computer Technology	14
Civil Engineering	03
Electronics Engineering	03
Electronics & Telecommunication Engineering	02
Mechanical Engineering	04
Electrical Engineering	03
Information Technology	03
Aeronautical Engineering	09
<b>Total</b>	<b>41</b>

Continuous monitoring and use of pedagogical methods in teaching learning process has proved very useful in enhancing student's

learning interest. Special practice sessions and remedial classes where students solve University question papers, have helped in improving overall result. Measures taken for slow learners have proved helpful for increasing results.

Following table shows that results of all semesters has increased progressively from 2017 TO 2019

<b>College Results in R.T.M.N.U. Winter Examinations</b>			
<b>Semester</b>	<b>Winter-2019</b>	<b>Winter-2018</b>	<b>Winter-2017</b>
1st Semester	68	61	70
3 <sup>rd</sup> Semester	57	49	55
5 <sup>th</sup> Semester	62	68	73
7 <sup>th</sup> Semester	81	78	85
<b>Average College Results</b>	<b>67</b>	<b>64</b>	<b>70</b>

<b>College Results in R.T.M.N.U. Summer Examinations</b>			
<b>Semester</b>	<b>Summer-2020</b>	<b>Summer-2019</b>	<b>Summer-2018</b>
2st Semester	98	69	65
4 <sup>rd</sup> Semester	98	59	56
6 <sup>th</sup> Semester	98	70	74
8 <sup>th</sup> Semester	100	90	93
<b>Average College Results</b>	<b>98</b>	<b>72</b>	<b>71</b>

- The overall sense among the students for attending classes has strengthened, so average attendance has improved.
- More number of classes are engaged by the teachers.
- More number of pedagogical methods are used by the teachers in teaching learning process.

- This practice helped in Attainment of COs, POs and PSOs.
- Four programs got accreditation from NBA.

## **6. Problems Encountered and Resources Required**

- Availability of External Experts and mutual consent on the dates for adjunct/visiting faculty.
- Preparing action plan for extra classes because of unavailability of vacant slots in the time table.
- Faced difficulties in bringing students for remedial classes.
- Because of unexpected holidays it is difficult to adhere to the schedule of Academic Calendar.

## **7. Notes (Optional)**

***Contact person for further details***

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