Best Practice -1 for 2021-22

1. **Title of the Practices**:

Inculcating the spirit of research among faculty for a progressive technological growth

2. **Objectives of the Practice**

- To improve quality in the teaching-learning process
- To enhance quality in UG and PG students projects
- To publish papers in referred Journals and Conferences
- To undertake collaborative projects and consultancy for long term interaction with the academia and industry
- To attain Intellectual Properties Rights (IPRs)
- To get research projects from several funding agencies

3. **The Context**

Research is a never ending quest for knowledge, which can be used for the development of the society. Today's world is rapidly developing, giving way and scope for new research initiatives to improve the living standards of the society. To keep up with the development, the growing needs and demands have become the most essential parameters in the academic institutions. To meet such demands, continuous research and development of new products and projects has become the need of the hour. To become a building block for the development of the society has motivated the institution to strengthen Research & Development activities that focus on various independent domains and encourages multi-disciplinary research.

4. **The Practice**

Teaching and research must go together. With this objective, research is promoted by the institution in the followings ways:

- Providing high end computing facilities with internet, Wi-Fi and other facilities
- The institute sponsoring for Conferences / Seminars / Workshops / Refreshers courses such as STTPS, FDPs etc., by providing financial assistance to a maximum of Rs. 3,000/- and considering the absence on all such cases as on duty.
- Institute encourages faculty members to publish their research papers in UGC Group-1 and Group-II journals by paying a minimum amount of Rs. 3,000/- and a maximum of Rs. 15, 000/- (Based on Impact factor of journals)
- Institute sponsoring financial assistance up to a maximum of Rs. 15,000/- to the faculty members who authors books for international publishers
- The institute offers Rs. 20,000/- grant to faculty as an incentive for obtaining a patent's
- The institute also offers 20% and 80 % share for their consultancy contribution among teacher and institution respectively.
- The institute also offers financial incentive of 15% of the research grant received by the faculty
- Exposure to international expertise by organizing invited lectures, workshops, seminars and conferences etc.,

5. Evidence of Success

The hard work done our faculty members, the following achievements have taken place in the institute for academic year 2021-22.

1. Number of teachers availed the facilities provided by the institute
    and obtained their PhD.   : 08
2. Number of teachers availing the facility and pursuing their Ph.D.   : 49
3. Number of international publications by the faculty   : 111
4. Number of funded projects / Research Grants , sanctioned   : 05

There is a tremendous improvement in teaching learning process as the faculty is exposed to latest areas of their topic of research. Further, they are able to help the faculty who are fresh to initiate research. Student's publications have increased and quality of student projects both UG and PG has been enhanced.

6. Problems encountered and Resources required

*   The major problem encountered is the limited interaction with industry. The institute has tie – up with some industries to improve quality in research
*   Necessary steps are taken up to get qualified and experienced teachers to fill the gaps
*   It is essential to minimize the teaching load on teachers for performing research activities.

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1. **Title of the Practices**

   Multi-dimensional Blooms Taxonomy based Lesson Plans for an effective teaching learning

2. **Objective of the Practice**

   The objective of practice is that teachers are classify the different outcomes and skills that are set for their students (Learning Outcomes)

3. **The Context**

   Maintaining equity, diversity, inclusion and quality in education system not only requires efforts but also required a systematic planning. An effective teacher is one who can instill into students stronger self-belief and greater interest for learning. This can be possible only through planning and appropriate teaching. Thus, students of various diversities can greatly be benefited and learn better through well-designed micro lesson plan. A little more of creativity and encouragement attitude from the teacher can create wonders in the lives of the students and help them to actualize fully their inner potentials.

4. **The Practice**

   The amalgamation of common digital tasks like moderating, blogging, info-graphic tools and audio visual can create a learner centric ambience on a blended learning platform. The well designed tasks namely, pre-class activities, in-class activities and post –class activities add enthusiasm and zeal to students.
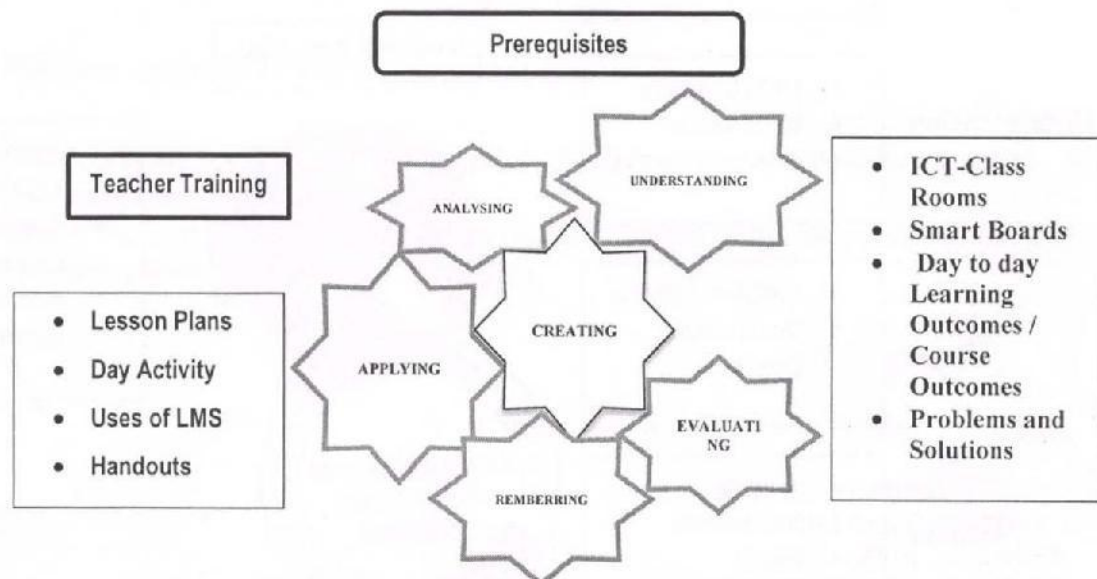
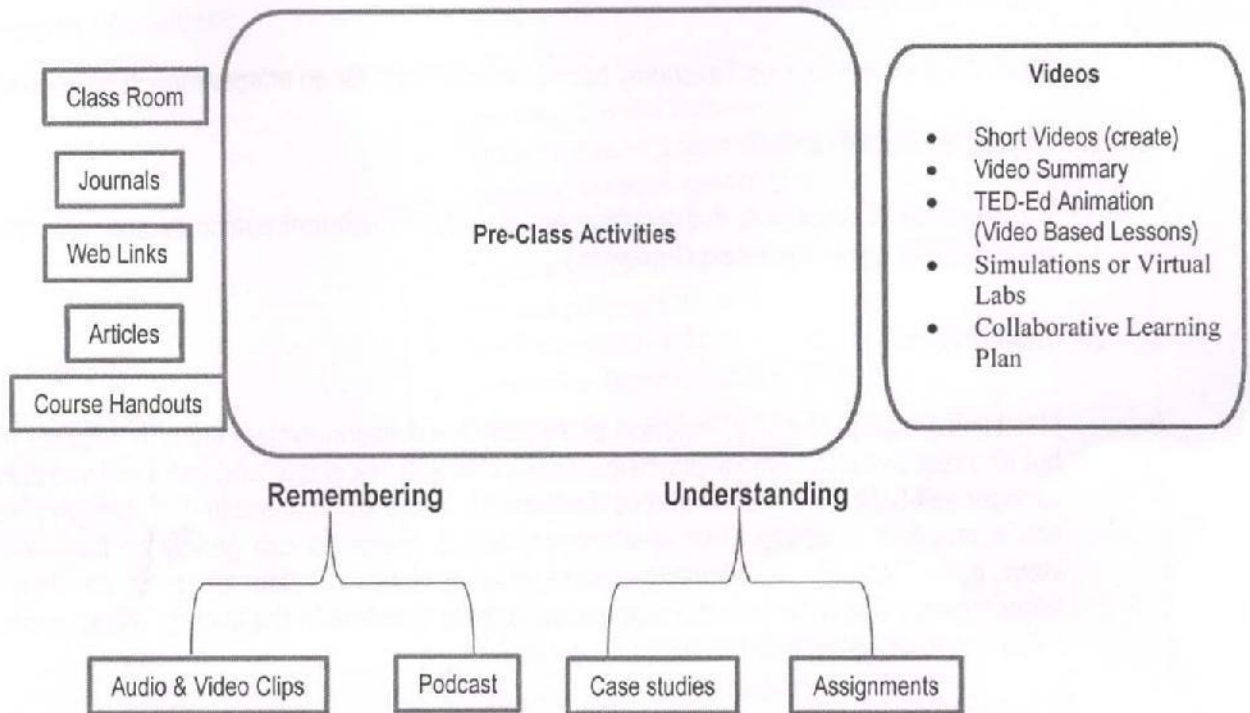Figure 1: Prerequisites for Class preparation by Teacher

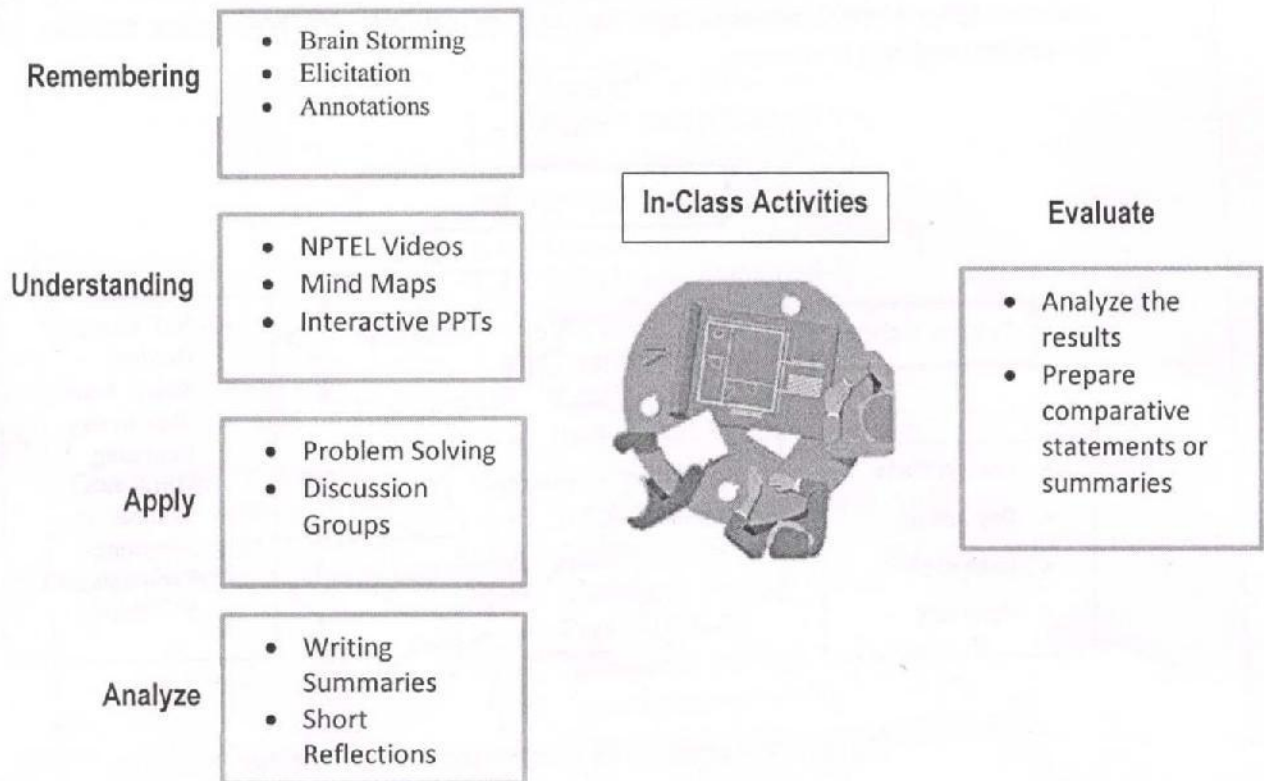|	Pre-Class Activities	Videos
Class Room		• Short Videos (create)
Journals		• Video Summary
Web Links		• TED-Ed Animation (Video Based Lessons)
Articles		• Simulations or Virtual Labs
Course Handouts		• Collaborative Learning Plan

Remembering

- Audio & Video Clips
- Podcast

Understanding

- Case studies
- Assignments

Figure 2: Pre-Class Activities

Remembering	• Brain Storming • Elicitation • Annotations
Understanding	• NPTEL Videos • Mind Maps • Interactive PPTs
Apply	• Problem Solving • Discussion Groups
Analyze	• Writing Summaries • Short Reflections

In-Class Activities

Evaluate

- Analyze the results
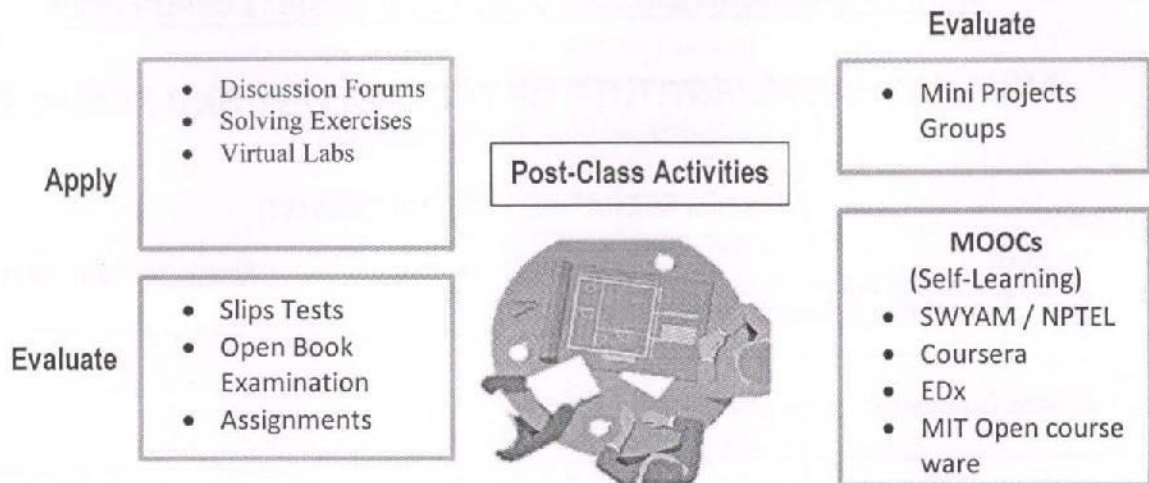- Prepare comparative statements or summaries

Figure 3: In Class activities

Figure 4: Post Class Activities

5. Evidence of Success

The micro lesson plan has brought out desired results in our institution and has become one of the best practice for our institution. This was indeed substituted by a well-defined micro lesson plan with multi-dimensional Blooms taxonomy which is essential for better understanding and acquiring skills and knowledge.

- More engagement of students in learning
- Adequate use of e-resources
- Desirable learning outcomes
- Satisfactory results in assessments and placements

6. Problems encountered and Resources required

- Few faculty are not able to prepare lesson plans due to lack of full-fledged knowledge on Knowledge domain of Blooms taxonomy
- Due to hectic academic schedules faculty unable to prepare multidimensional Blooms Taxonomy based lesson plans for all courses

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Multidimensional Blooms Taxonomy based Lesson Plan

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Course: OPERATING SYSTEMS (20A543T)

Teacher: Academic Year: 2021-2022

Year / Semester: II B.Tech II Semester

Course Outcomes:

Factual	• Introduction to Operating System Internals
Conceptual	• To understand paging and memory management schemes. • To gain knowledge in process and thread synchronization. • To learn about protection and security concepts • To understand files, I/O operations and mass storage
Procedural	• Design various Scheduling algorithms • Apply the principles of concurrency. • Design deadlock, prevention and avoidance algorithms • Design page replacement algorithms • Design and Implement a prototype file systems. • Design file access and allocation methods • Design disk scheduling algorithms
Applied	• Perform administrative tasks on Linux Servers / Unix Servers

Text book and References:

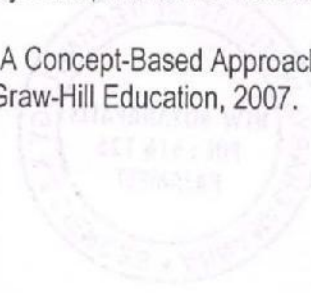Text book 1: Operating Systems Concepts, Abraham Silberchatz, Peter B. Galvin, 10th Edition, John Wiley

Text Book 2: Operating Systems: Internals and Design Principles, Stallings, Sixth Edition– 2009, Pearson Education

Text Book 3: Modern Operating Systems, Andrew S. Tanenbaum, Second Edition, Addison Wesley, 2001.

Text book 4: Operating Systems: A Concept-Based Approach, D M Dhamdhere, Second Edition, Tata Mac-Graw-Hill Education, 2007.

	• File system mounting(Unit-IV)) • File Sharing(Unit-IV)) • Disk attachment (Unit-IV) • File system structure(Unit-IV) • Free-space management(Unit-IV) • Program threats (Unit – V) • Domain of protection(Unit-V) • Firewalls to protect systems and networks (Unit V) • Access control and revocation of Access rights (Unit-V)
Procedural: Methods of inquiry, and criteria for using skills, algorithms, techniques, and methods	• Scheduling Algorithms(Unit-I) • The Critical- Section Problem(Unit-II) • Classic Problems of Synchronization(Unit-II) • Deadlock algorithms (Unit-III) • Page-Replacement Algorithms(Unit-III) • Access Methods(Unit-IV) • Allocation methods(Unit-IV) • Disk scheduling algorithm (Unit-IV) • RAID Structure (Unit-IV) • Access Matrix and its implementation (Unit-V)

Meta Cognitive / Applied: awareness of one's own learning, control and regulation of cognitive processes, self-knowledge, contextual knowledge, and conditional learning

Contents / Activities:

Factual: Factual knowledge consists of the basic elements students must know to be acquainted with a discipline	• Operating System Overview (Unit-1) • Operating systems Operations (Unit-1) • Operating systems services (Unit-1) • System calls (Unit-1) • Types of System call (Unit-1) • Process concepts (Unit-1) • The Process (Unit-1) • Scheduling-Basic Concepts (Unit-1) • Multithreading Concepts (Unit-II) • Process Synchronization(Unit-II) • Concurrency (Unit-II) • Principles of deadlock (Unit-III) • Memory Management (Unit-III) • Virtual Memory concepts (Unit-III) • File system Interface(Unit-IV) • The concept of a file(Unit-IV) • Overview of Mass-storage structure(Unit-IV) • Concepts of I/O Systems (Unit-V) • Basics of Security and classifications (Unit-V) • Goals of protection (Unit V) • Principles of Protection (Unit-V)
Conceptual: Conceptual knowledge consists of the interrelations among the basic elements within a larger structure	• Process State Diagram(Unit-1) • Process control block(Unit-1) • Process Scheduling(Unit-1) • Scheduling Queues(Unit-1) • Operations on Processes(Unit-1) • Scheduling Criteria(Unit-1) • Interposes Communication(Unit-1) • Threading Issues(Unit-II) • Synchronization Hardware(Unit-II) • Semaphores(Unit-II) • Monitors(Unit-II) • Synchronization examples(Unit-II) • Swapping(UNIT-III) • Contiguous Memory Allocation (UNIT-III) • Paging(UNIT-III) • Structure of the Page Table(UNIT-III) • Segmentation(UNIT-III) • Virtual Memory Management(UNIT-III) • Demand Paging(UNIT-III) • Thrashing(UNIT-III) • System Model(UNIT-III) • Deadlock Characterization(UNIT-III) • Directory structure(Unit-IV)

Title of the Practice: Eco-friendly and Green Campus

Objective:
- To develop a pollution free campus.
- To take necessary steps to reduce environmental pollution.
- Planting more trees and protecting the existing trees.
- To make Cool & clean campus environment by Conservation of energy.

Context:

Today there is a great need for conservation of energy because we are facing severe environmental problems. The main cause behind these problems are that the natural recourses at a much quicker pace than they can be replenished. Environmental pollution is becoming a very serious problem day by day due to deforestation and urbanization. The Institute is well situated surrounded by hills and the rainwater stream flow through the campus. There is effective use of available water and other natural resources. A clean and healthy environment aids effective learning and provides a conductive learning environment. To educate and make awareness in the students on the issues of eco-friendly and green campus.

The Practice:

Time bound strategies are developed to implement green campus initiatives. At the outset, a 'Green Audit committee' comprising faculty and students from various departments is constituted. This helps in strengthening eco campus systems. Following are the initiatives for making eco-friendly campus.

- Plantation: Different varieties of plants are planted in the campus. Our institute has planted hundreds of plants and trees. Present green campus is the outcome of the sincere efforts.
- Solar power generating system of 500 Kwp is provided on the roof top of the academic building (administrative Block and EEE/ ECE Block).
- Rain water harvesting system is in place to collect roof top water into the underground recharge in form of harvesting pits.
- Plants in the campus are watered without wasting the water

Evidence of Success:

- The green campus developed by institute helps not only to protect the environment, but also adds to the beauty of the campus.
- Good health without any health complication for all the students as there is no industry or residential colonies nearby up to about 10 Kms.
- The shade giving trees in the campus provide shade and the students take the shade under these trees during hot summer and feel the nature's gifts
- As the campus is about 50.69 acres the students & staff who are the residing in the campus enjoy morning walk, games and sports, gym and rejoice in pleasant atmosphere.

Best Practice -3 for 2021-22

Best Practice -3 for 2021-22
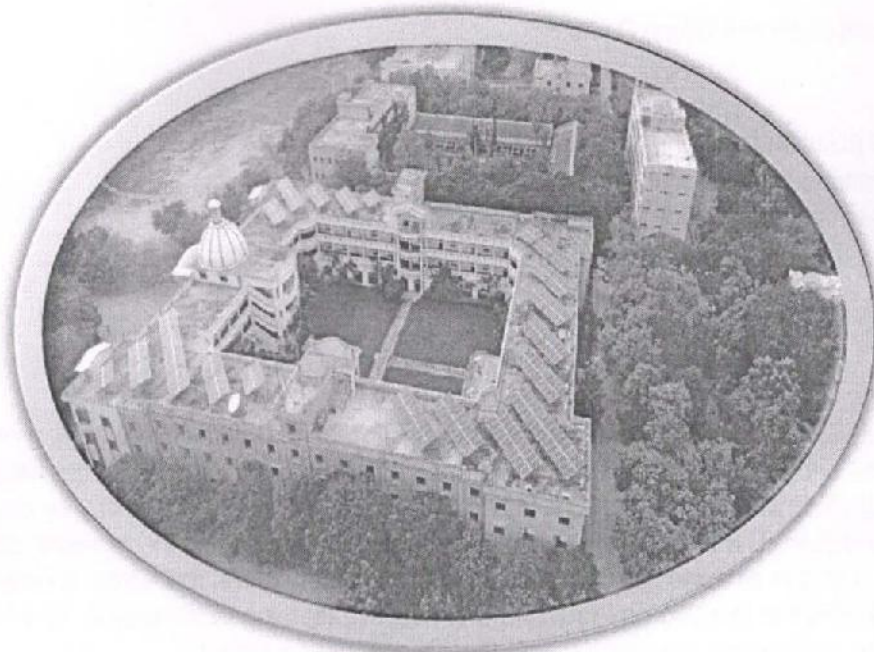
Problems Encountered and Resources Required:

To get rid of monkeys, solar fencing is provided and also gun man with dummy bullets to ensure that they may not restrict the growth of the plantation.

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