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RAMRAO ADIK
INSTITUTE OF
TECHNOLOGY
NAVI MUMBAI

Department of Information Technology

Innovative Initiatives in Teaching and Learning Process

The Department of Information Technology has highly qualified faculty with mixed rich experience in academics & industry. To improve the quality of teaching & learning process, the subject teacher and the department use innovative techniques and take proper care to complete the course within the stipulated time according to academic calendar designed at the beginning of the semester.

Various Content Delivery Methods (CDM) adopted by department to deliver the course contents are depicted in the following table:

Table 1: Content Delivery Methods

Instructional Methods	Description
Interactive Lectures	Lecture delivery is a quick and efficient way of introducing large number of students to the course contents and is used to convey critical information, history, Background, theories and evolutions. The contents of lectures are chosen to meet the course outcomes set for the course by the curriculum designers and the faculty by defining the proper lesson plan for the subject.
Presentations	Most of the lectures are conducted through presentations that help to illustrate ideas and concepts in easy way. Working models are effectively communicated to students with audio and video. Presentations are followed by the discussions based on the topic taught, thus improving communication skills of students. Presentations are delivered using modern tools like ICT and Smart Boards.
Demonstrations	Laboratory experiments are demonstrated through program execution, charts, monograms and videos. Interpretation of results is done through demonstration. Students are engaged completely for assigned lab hours. Demonstrations strengthen the lifelong learning capability of students.

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Webinars	Webinars are engaged by students regularly for the contents beyond the syllabus.
Group Discussions	Group Discussions are made among students to emphasis on learning and sharing. Differences in opinions are explicitly marked during discussions. Students are groomed to participate in group discussions in healthy manner by accepting the criticism in positive way.
Mini Projects/Competitions	Students are involved in mini projects bringing out innovative ideas and implementation. Team work development is made through this kind of instructional method. Students are also exposed to participate in competitions at different levels.
Live Case Studies	Live Case Studies are discussed with students for better understanding of the subjects.
Quiz	Quizzes are conducted as and when required in the classroom. It helps students to understand the topic in depth.

Table 2: Learning Methods

Learning Methods	Description
LMS	Learning Management System (**LMS**) is a virtual classroom showcasing all the learning material provided by the faculties for the students. LMS consist of the details of each course including session plan, lecture presentations, assignments, question bank, discussion forum, quiz, university question papers etc.
NPTEL Videos	NPTEL Video lectures are given to students to improve the learning capability.
Expert talks	Expert talks are arranged for students on variety of topics and recent technologies.
Project based learning	More emphasis is given on Mini Projects and Project based learning to increase self-learning capability.

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Brainstorming sessions	Brainstorming sessions and Group Discussions are conducted in the class.

1. NPTEL Video Lectures

NPTEL is jointly initiated by all seven Indian premier IIT's and IISC Bangalore. These prestigious institutes have been hugely successful in nurturing the young Indian talent. NPTEL provides course-ware in the form of video lectures and web courses. These lectures, delivered by highly qualified and experienced professors, are very helpful for IIT as well as non-IIT students to gain in-depth knowledge of the topic.

Figure 1: NPTEL Videos

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2. Content Beyond Syllabus

To bridge the gap between syllabus & recent trends in Engineering & Technology, the concept of content beyond syllabus is introduced. Guest/Expert lectures on advanced technologies are conducted for students and faculty. Students are encouraged to take part in Technical Quizzes and group discussions.
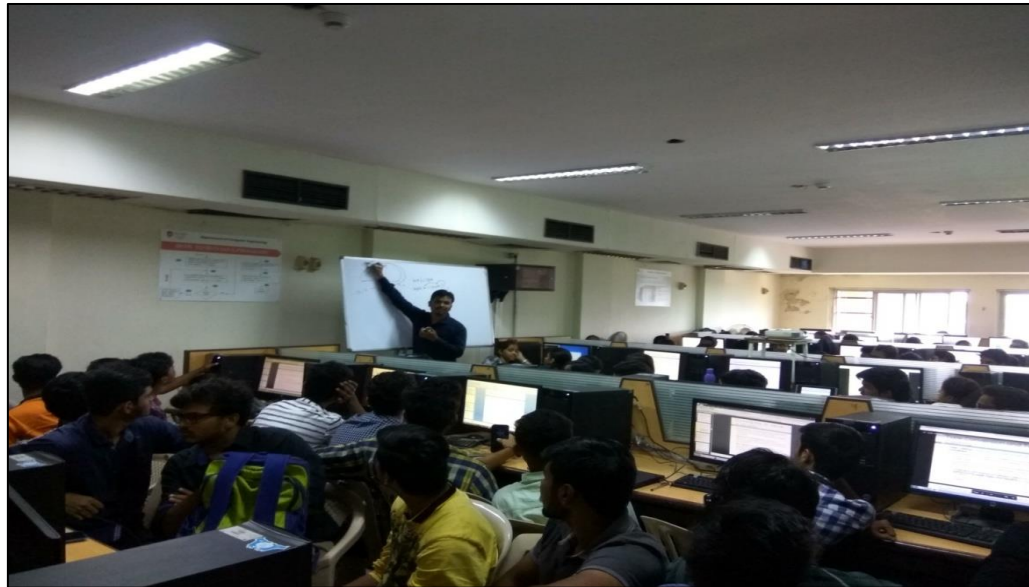

Figure 2: Content Beyond Syllabus

3. Webinar

Webinars are new technological trends for getting connected to the industrial experts and to explore deeply into the dynamics of the industry trends. IT department regularly organizes webinars for students to keep them updated with latest trends in industry.

Webinar Details

Topic: Protecting Your Organisation from Advanced Threats
Hosted by: Hrvoje Dogan,resident expert and leader of the Technical Advisory Group
Under the subject: Software and Web Security
Class/Div: TE/ A & B
Subject Incharge: Mr.Swapnil Shinde
  Ms.Anita Patil

Content Covered:
- How today's threats have changed the email and web security landscape
- What key features you need to require of your email and web security provider to protect you from today's threats
- How Cisco Security solutions can help
- Email and web are two critical pillars in today's business operations. The amount of business-sensitive data exchanged via email and web traffic is continuously increasing, making it a prime target for hackers.
- Today's threats are personalised, targeted, sophisticated and designed to evade traditional security solutions and trick users into becoming unwitting participants by encouraging them to click disguised compromised links and open personalised malicious attachments.

Figure 3:Webinar

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LMS

LMS is an innovative platform for students and faculty for curriculum information exchange. It is a common virtual place where students and faculty interact online, outside the classroom. Students can view lecture presentations, videos on LMS. Students can have technical discussions with their friends online from anywhere through discussion forums. They can also participate in quizzes on course contents topics.
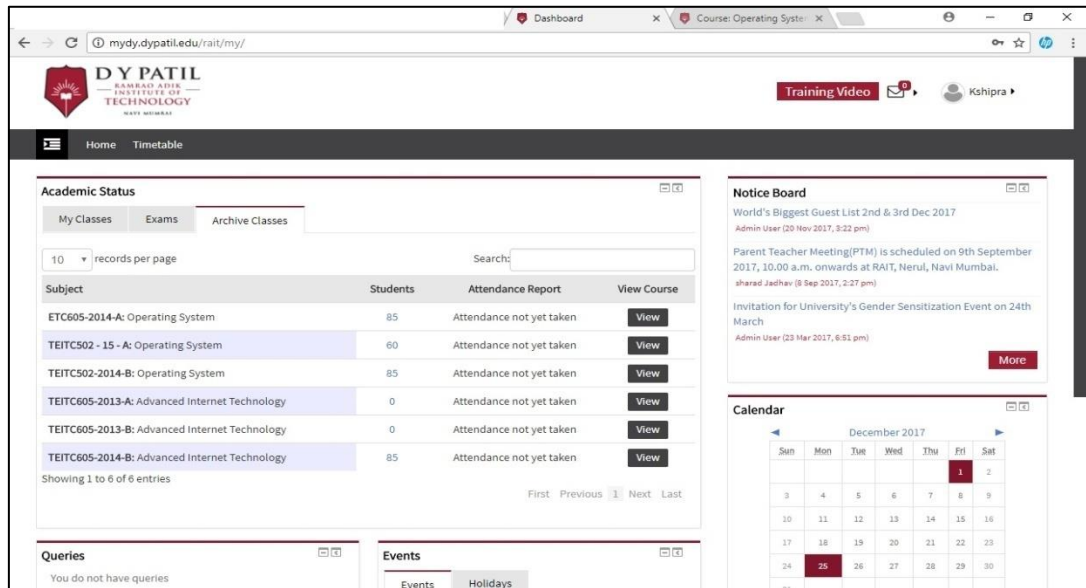
Figure 4: LMS Dashboard
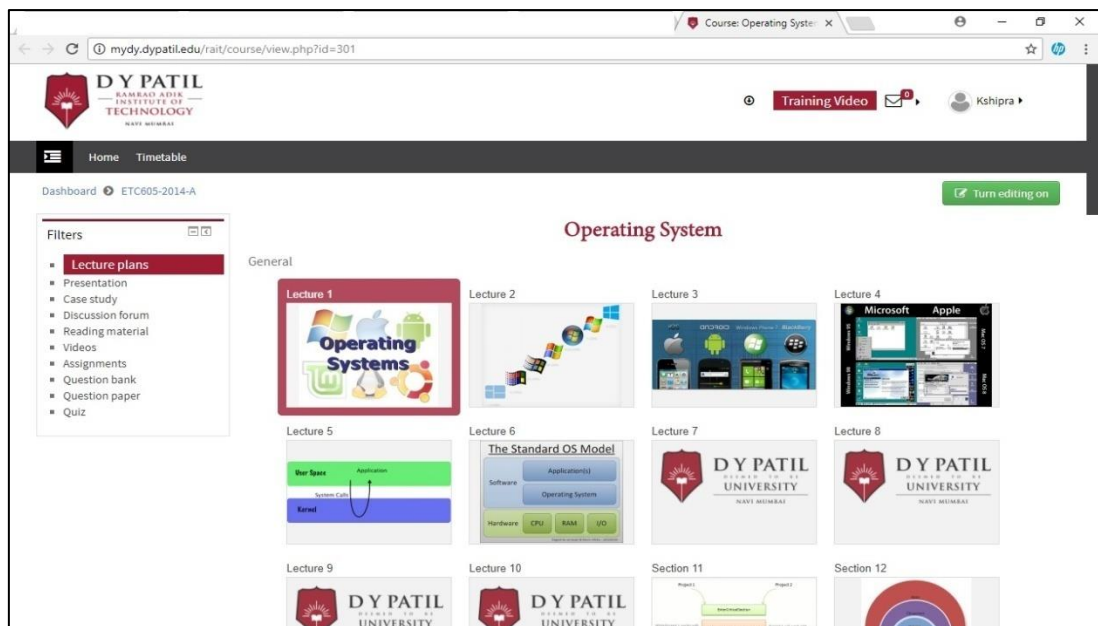
Figure 5: LMS Course Material

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Figure 6: LMS Quiz

Figure 7: LMS Discussion Forum

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Inclusive Classroom

- IT department has spacious and well ventilated classrooms.

- Each classroom is equipped with LCD projectors, internet and other digital learning resources where e-learning resources like NPTEL and webinars are conducted. This methodology enhanced the learning beyond what is routinely possible by conventional methods.

- Apart from traditional classroom teaching practices, the teachers are encouraged to use ICT-enabled teaching pedagogy.

- The teacher uses the interactive Smart board in a way to make teaching learning process interesting.

- Recent addition to these facilities is an ultra-modern Virtual Classroom.

- Teacher delivers content beyond the syllabus in the classrooms so that student would come to know recent advances in technology.

Figure 8: Classroom with ICT

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State of the art Laboratories:

- The department has well equipped laboratories with equipments catering to all UG and PG courses as per curriculum requirements.

- Each laboratory has adequate number of motivational charts, provided for insights into laboratory working procedure.

- Specialized lab, equipped with hardware and software is exclusively used to carry out mini and major projects.

- Laboratory instructional materials are prepared by experienced faculty for respective subjects.

- As per the university guidelines, 10-12 experiments are to be conducted. One or two experiments are conducted beyond the specified list for relevant courses. All the experiments are designed in such a way that they cover all Course Outcomes.

- Computation/simulation based experiments are also included.

- Live case studies and mini projects are also included for some subjects to understand the need of subject in real time applications.

Figure 9: Laboratory ambience

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Project Based Learning

Project is a medium through which students can apply their engineering knowledge to solve a specific problem. Through project implementation students learn to concentrate on every detail of the problem. A properly selected project topic leads to a well implemented and fully functional project which in turn helps students to be confident and industry ready. Hence special attention is paid to the selection of project topics, allocation of guide and implementation of projects.

Initiatives

- A project coordinator is appointed by head of the department who is responsible for planning, scheduling and execution of all the activities related to student projects.

- Orientation program for students is organized for brief introduction of the process to carry out the project.

- Faculty members with teaching experience of more than 5 years are eligible as project guides. The faculty members are competent and qualified with the latest tools and technologies as required for experimentations during the project period.

- Student projects are selected in line with department's Vision, Mission and Program Educational Objectives.

- Students are provided with brief idea of various fields for selecting the projects.

- The project undertaken by the students are "in-house" and "out-house". The students are also allowed for developing sponsored projects in leading industries and research institutes.

- Project Guides encourages the students to present their work at national/international level Conferences and project competitions.

- The paper based on project topic is thoroughly checked for plagiarism before submission.
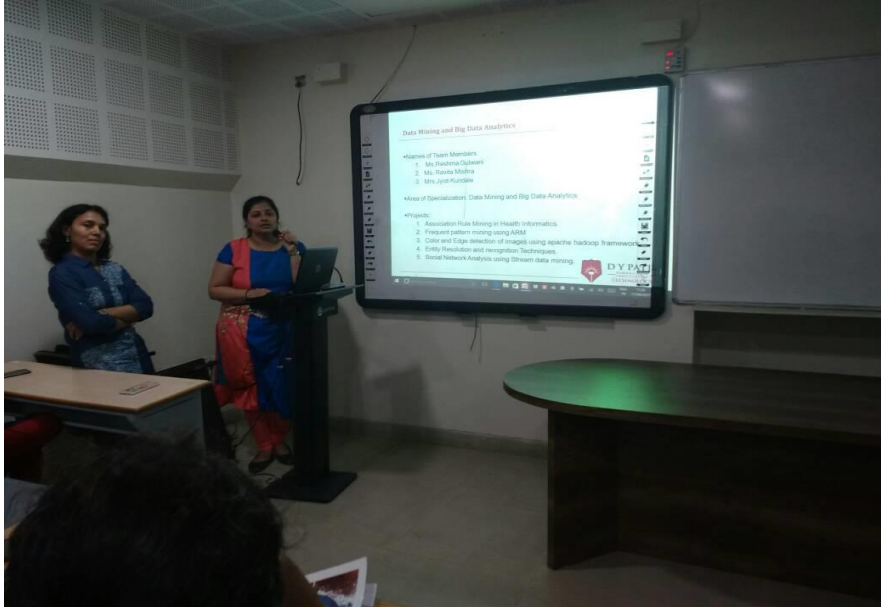
Figure 10: Project research area discussion with students

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Industry internship/summer training

1. To bridge the gap between curriculum and industry requirements, students are motivated to undergo summer trainings and industry internship.

2. Students are encouraged to undertake summer internships in leading research organizations like BARC, IIT where they work on the latest research problems.

3. Students participates in "Remote TCS internship" and internships provided by IIT.

4. Students are involved in the outreach research programs like e-yantra, JAC, Nodal centre by IITs.

5. Summer training programs are conducted in the department for students to enrich them with hands on experience and practical knowledge on latest industry development.

Figure 11: Summer Training Program