Department of Electronics & Telecommunication Engineering

Innovations by the Faculty in Teaching and Learning

GOALS:

To enhance students learning experiences beyond traditional classroom teaching, the department implements innovative concepts and measurable programs. The department is continuously striving to:

- Enrich student learning by innovative practices.
- Develop students' comprehension and expertise of creative methods and strategies.
- Broaden students' perspective of emerging technologies and tools in academics, contemporary and social issues by innovative strategies.
- Motivate students to innovatively think, formulate and perform through different department club activities

The innovative practices are made available on the Institute web site for reference and review, the link for which is as below:

https://mgmcen.ac.in/electronincs-telecommunication-engineering/consultancy.aspx

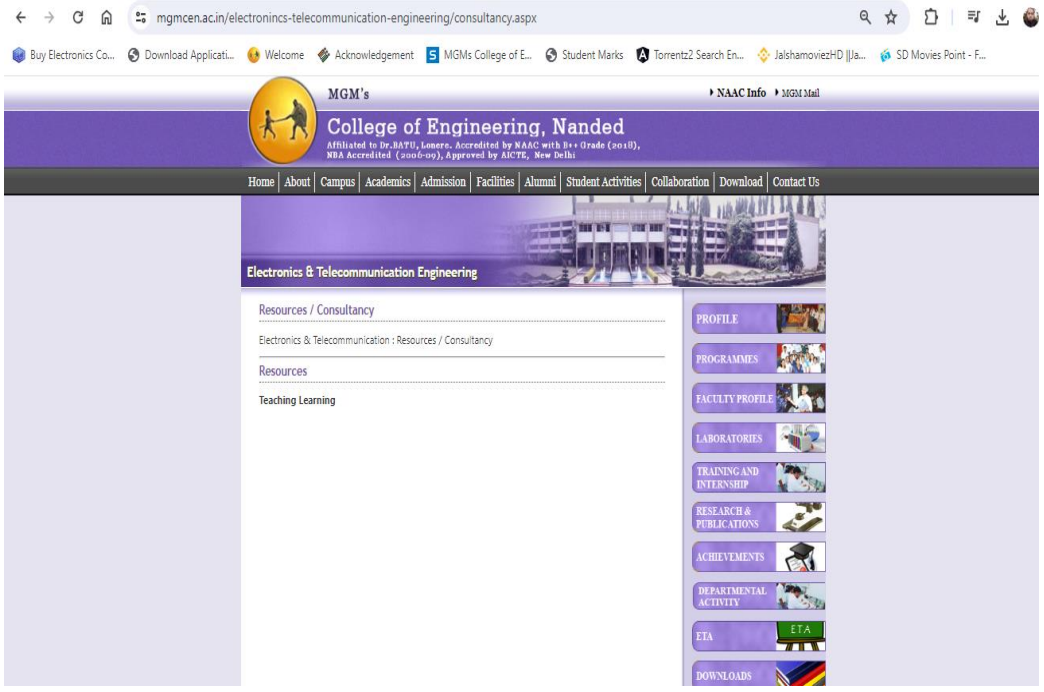

Figure 5.5.1:Innovative Practices floated on website

Table 5.5.1 Reflects various teaching learning methods implemented in the department.

Table 5.5.1 Teaching Learning Methods

Sr.No	Teaching Learning Methods	Activities Carried out
1	ICT based teaching learning	Google Classroom YouTube and NPTEL links
2	Digital social learning platform, Blended Learning	Google class rooms, WhatsApp
3	Physical social learning platform	Students' chapters - Workshop, Expert Lecture
4	Technical and Social programs	Technical and Social Program conducted by the department
5	Exposure of faculty to industry	Interaction of faculty with company guide, Faculty Industry Visit
6	Proactive teaching learning	Role Plays/ Educational Game/ Quiz
7	Projects	Sponsored projects and Mini projects
8	Industry Institute interaction	Industry Institute meets, MOUs, Industrial visits
9	Competitions	Participation in different technical events (Visiotech, Department technical. Clubs)
11	Talks	Expert lectures
12	Membership of professional bodies	ISTE, IETE, IAENG
13	Visit / participation	Seminars, Workshops, Conferences

1. **ICT Based Teaching Learning:**

The ICT tools we use in the department:

- Google Classroom
- NPTELvideos/Swayam
- Moodle/Spring board
- You tube
- ERP(http://mgmerp.ac.in/adminlogin_.aspx)

- ICT enabled Classroom
- MicrosoftTeams
- Virtual Lab

The work is available for peer review and critique on the Institute web site for reference and review, the link for which is as below:
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The various innovative practices used in teaching and learning by faculty are listed below.

1. E-contents on YouTube (Active Learning)
2. Virtual labs (Experimental Learning)
3. IndustryVisits (CollaborativeLearning)
4. Student Chapter/Club Activities (Collaborative Learning)
5. Students Symposium (Active Learning, Experimental Learning, Collaborative Learning, Cooperative Learning through various Events)
6. Project-Based Learning (Collaborative Learning)
7. Cutting-edge initiative (Collaborative Learning)
8. 50:10 teaching Module (Collaborative Learning)
9. Prerequisite Diagnosis Assessment (Active Learning)

1. E-Contents on YouTube:

Faculty has also created their own YouTube Channels and Google drives wherein they upload study material relevant to their own subjects and also student activity related programs are uploaded on the channel. The links are shared with the students and the contents are openly accessed by all students.

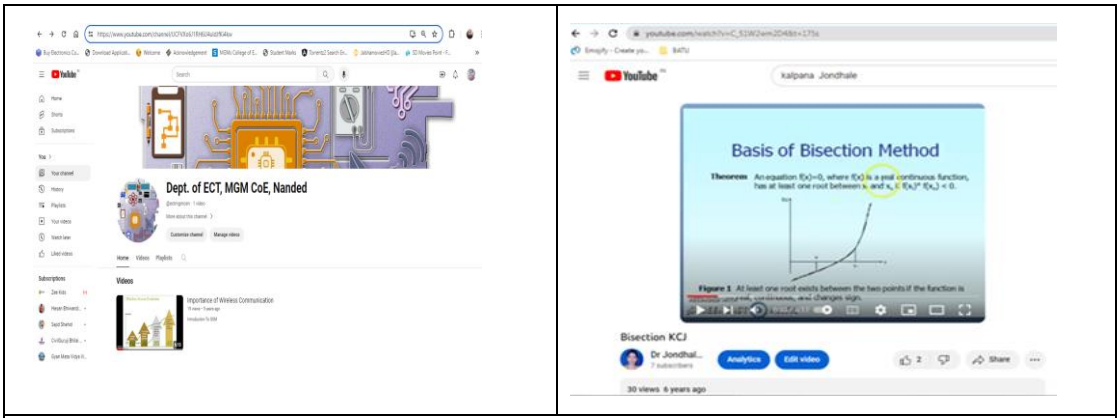


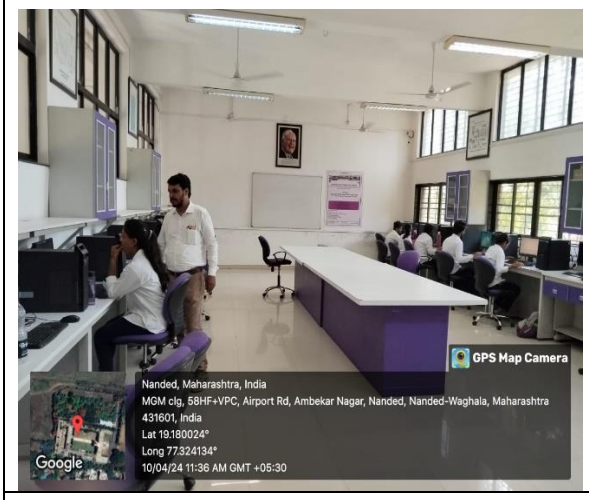
Figure 5.5.2:Youtube Channel of faculty /department

Outcome:

- This has helped students to learn and understand the course in a better and effective way.
- The students can learn at their own pace and at own convenience apart from classroom learning. This provides students, the opportunity for self-study.

2. NPTEL videos/ Swayam

Virtual labs for various courses are conducted online on web browsers with the help of simulators. Such online facilities are called as virtual labs (http://www.vlab.co.in/), and are a part of an excellent innovative initiative taken by the MHRD of India.



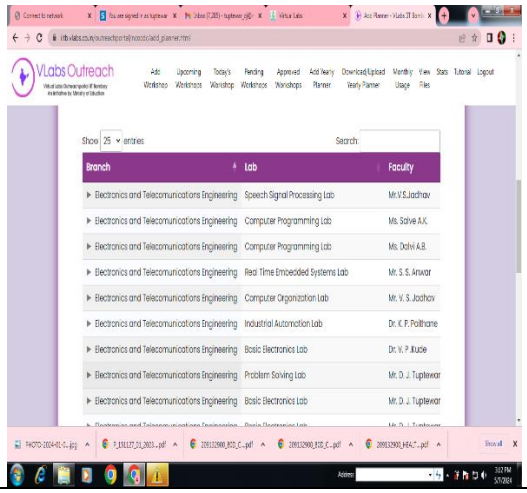


Figure 5.5.3: Usage of Virtual lab by Dept. & MGM's COE Nodal Centre

Outcome:

- Remote-access to simulation-based Labs in various disciplines of Science and Engineering.
- Use of virtual labs inspires students to conduct experiments with theircuriosity. This helps them in learning basic and advanced concepts through remote experimentation.
- It provides a complete Learning Management System around the Virtual Labs where the students/ teachers can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self-evaluation.

3. Industry Visits:

Students are exposed to latest developments through regular visits to industry. Faculties organize industrial visits under One Faculty One Industry Programme.

Figure 5.5.4: Industrial Visit

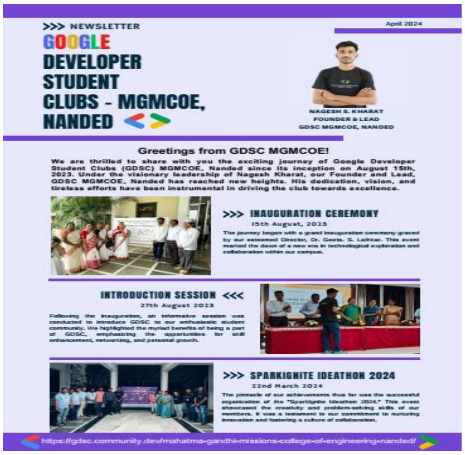
Outcome: It contributes to student's knowledge and opportunity for self-study

4. StudentChapter/ClubActivities:

The department has four professional chapters, as listed below, which provide a good platform for the students to take active part in the various competitions, seminars and lectures arranged by the society. The activities help the students to showcase their talents in terms for team building, communications skills, team work, target work and overall development in professional activities. One faculty advisor is associated with each student chapter for mentoring, guidance and overall governance

Table 5.5.2: List of Students Chapter and Club

Sr.No	Name of Students Chapter	Number of Student Members
1	Electronics Technocrats Association (ETA)	All Students of department
2	ISTE Student Chapter	47^{+}
3	Google Developer Student Club (GDSC)	80^{+}
4	Future Ready Engineers (FRE)	30^{+}



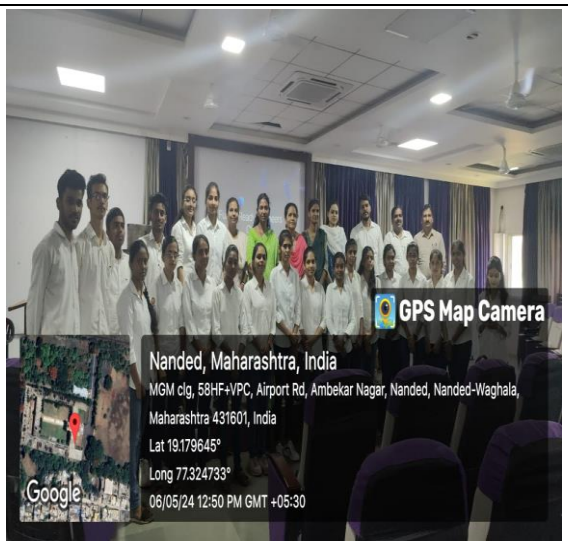


Figure 5.5.5: Activities for students, under student chapter and student club

Outcome:

- Enrich students learning skills like communication, presentation, leadership and Social etc**.**

5. Students Symposium (VisioTech):

VISIOTECH is an Event which is conducted every year to provide platform for budding engineers to exhibit their talent and skills in various events and competitions organized. The name VISIOTECH was coined as it represents Vision of Technocrats.VISIOTECH will be packed with multiple events testing knowledge and capabilities of would-be engineers.

The College conducts **VisioTech (Technical Events),** an annual national level student symposium, and every year to encourage the students organizing and participating in various events to enhance their skills. In that department of ECT conduct different technical events as

Sr.No.	Event	Details
1	Minute To Win It	Student has given some technical tasks. They have to complete it within a minute.
2	Circuitrix	Start implementing digital logic in digital world using your skills and enjoy the event.
3	Circuit Debugging	Do you believe you are an expertise in debugging any circuit quickly? Join the event and show your talent in debugging.
4	Technical Rangoli	Here is an opportunity to show your art skills which explains the concept of technology.

Figure 5.5.6: Visio Tech Event glimpses

Outcome: Improving skills so that they can participate in more events

The work can be reproducible and developed further by other scholars using following innovative techniques

6. Project-Based Learning

PBL has been introduced for students with the goal of motivating students to learn by working cooperatively in groups to solve a problem. PBL is a student-centered pedagogy that employs a dynamic class room approach in which students are believed to gain a deeper understanding through active exploration of real-world challenges and problems. Students gain knowledge about a subject by investigating and responding to a complex question, challenge, or problem over time. It is an inquiry-based and active learning style. Problem- based learning will also alter the role of the teacher as a mentor in the learning process.

Figure 5.5.7: PBL as Project Competition

Outcome:

- PBL encourage students to develop a balanced, diverse approach to solving real-world problems, both on their own and in a team.
- Institute level PBL competition help students to provide interdisciplinary approach and solution to real world problems.

7. Cutting-edge initiative: Today's education system is rapidly evolving in order to introduce new teaching techniques and strategies that promote a culture of diversity and inclusion. Similarly, each teacher has a distinct teaching style. However, all teachers have the same goal: to install a love of learning in their students. Department have a few Cutting- edge initiatives as given below that use modern technology.

- Avishkar
- Hackathon
- E Yantra
- UnnatBharat Abhiyan

Figure 5.5.8: Cutting-edge initiatives Avishkar, Unnat Bharat

8. 50:10 Teaching Module:

PO Mapped: PO1, 2,3,4,9,10

Objective: Objective of this activity is to build confidence, improving communication skills and instilling leadership qualities when they undergo this module.

Activity Details: In engineering courses, we have 60-minutes lecture. Of which every teacher dedicates 50 minutes for delivering the contents of the course syllabus which he/she is supposed to teach, and 10 minutes is reserved for self-learning of the student.

During this time, few students come in front of the class and make a presentation or explain

their thoughts on a topic. This class presentation habit builds confidence and ability to speak in front of an audience, develops his/her communication skills and many other things which will be beneficial in making him confident in the long run.

Conception of the 50:10 Module:

The 50:10 module is a highly analysis and research-based module. It is formulated with the experience of the faculty teachers and the principal taking the initiative to add value to the education that MGM's COEN imparts. MGM is a premier college based in the heart of the city. Naturally it receives many students from the rural areas of Maharashtra. Over period of time, it is observed that even though these students are very good technically, they failed in communicating to the recruiters that they are good enough. Addressing the issue, it is thought of making the 50:10 method as routine practice.

Figure5.5.9: Student Buildup Confidence, Improving Communication Skills Through 50:10 Module

Outcome:

The above method has surely helped a lot as the student is undergoing self-learning. We had students who were hesitant to stand in front of the class. We managed to encourage them to present and they themselves understood the importance of public speaking and overcame the fear. Students admitted to us that this exercise has helped them overcome stage fear. Moreover, a great response at the campus interview can be visibly experienced.

9. Prerequisite Revision/ Test / Diagnosis Assessment:

Faculty conducts the prerequisite test of their courses during first week of the start of the semester. This helps the faculty to do diagnosis assessment of the students in their courses.

Outcome:

Faculty can easily identify week and bright students in their courses with this revision or test conduction.

Outcomesof InnovativePracticesusedbyFacultyinTeachingandLearning:

There are several potential outcomes of innovative practices used by teachers in teaching and learning:

1. **Increased Student Engagement**: Innovative practices often involve interactive and hands-on activities that capture students' interest and make learning more enjoyable. This result in increased engagement and participation in the classroom.
2. **Improved Critical Thinking Skills:** Innovative teaching methods encourage students to think critically, solve problems, and analyze information. This led to the development of higher- order thinking skills and a deeper understanding of the subject matter.
3. **Enhanced Creativity:** Innovative practices often provide opportunities for students toexpress their creativity and explore different perspectives. This helps foster a sense of curiosity, imagination, and originality among students.
4. **Personalized Learning Experiences:** Innovative practices tailored to meet the individual needs and learning styles of students. This result in personalized learning experiences that cater to each students' strengths, interests, and motivations.
5. **Increased Collaboration and Communication Skills:** Many innovative teaching practices emphasize collaboration and teamwork. These help students to develop effective communication skills, as well as the ability to work well with others and

contribute to group discussions.

6. **Long-Lasting Knowledge Retention:** Innovative practices that involve active learning and real-world applications help students to retain knowledge for a longer period of time. By connecting new information to practical experiences, students are more likely to remember and understand the concepts being taught.
7. **Preparation For the Future:** Innovative practices often incorporate the use of technology, which is becoming increasingly important in today's society. By integrating technology into the classroom, teachers can help prepare students for the future workforce and equip them with the necessary skills for success in the digital age.
8. **Learning Outcomes:** Innovative teaching practices have the potential to enhance learning outcomes for students. By incorporating new and diverse instructional strategies, such as problem-based learning, flipped classrooms, or project-based assessments, educators can facilitate deeper understanding, critical thinking, and the development of practical skills in students.
9. **Motivation and Interest:** Innovative practices often help to stimulate students' motivation and interest in the subject matter. By embracing new technologies, or real-life applications, faculty create a more vibrant and captivating learning environment. This increased interest led to improved academic performance and a passion for lifelong learning.
10. **Faculty Development:** Implementing innovative teaching practices requires faculty to continuously update their knowledge and skills. It promotes professional growth and development, encouraging faculty members to explore new teaching methods, experiment with different instructional tools, and collaborate with colleagues. This ongoing professional development contributes to a positive academic culture in institution.
11. **Institutional Reputation:**By adopting innovative practices in teaching and learning, educational institutions enhance their reputation and attract students, faculty, and funding. Institute is seen as leaders in the education field and benefited from increased enrollment, improved rankings, and positive perception among stakeholders.
12. **Student Success and Well-being:** Innovative practices also have a positive impact onstudent success and well-being. By incorporating strategies that address different learning styles, assist diverse student populations, and promote inclusivity, faculty creates asupportive and inclusive learning environment. This contributes to improved studentretention rates, satisfaction, and mental health.

13. **Research and Innovation:** Innovative teaching practices often go hand in hand withresearch and innovation in education. Faculty who embraces innovative practices are more likely to engage in educational research, explores new methodologies, and contributes to the advancement of knowledge in their field.