



---

**Electronics and Communication  
Engineering Department  
Government Polytechnic Jamnagar**

---

# Resonance

Vol-II Issue-1 Jan-2022

**Editor:**

**Mr. C K Parmar**

Lecturer ECE Department  
G P Jamnagar

**Mr. Tejash R Rangani**

Student Coordinator  
ECE Department  
G P Jamnagar

## ABOUT THE DEPARTMENT

In June 2007, Diploma Programme namely Electronics & Communication Engineering has been started at Government Polytechnic, Jamnagar. The Department of Electronics and Communication Engineering envisions upliftment of students especially living in rural areas, through an effective teaching learning process and quality teaching, to make them competent globally with sound technical, interpersonal, analytical, managerial skills and professional ethics. The department possess a well-equipped Labs which provides practical learning of actual environment of industry. The department has highly qualified faculties to ensure qualitative education. At present, the department has student intake

## VISION

To produce creative, innovative and ethical EC engineers that will serve to societal and industrial needs

## MISSION

- M1. To impart excellent technical education from fundamentals to application level, with ethics, to EC engineering students so that they can provide solution to industrial or social problems.
- M.2 Provide creative teaching-learning environment to students for achieving excellence in technical education.
- M3. To develop state of art laboratories with latest instruments and equipment's to develop psychomotor skills in students.
- M4. To establish department library with latest books, magazines, eBooks, video tutorials-lectures and other learning resources to promote reading attitude in students.
- M5. To make students entrepreneur or employable in industries.

**MESSAGE FROM HOD**

**Mr Ashutosh M Bhatt**  
**HOD ECE Department**  
**Government Polytechnic Jamnagar**

It is a matter of pride to share that the **Electronics and Communication Engineering Department** at **Government Polytechnic, Jamnagar**, established in June 2007, has continuously worked towards empowering students especially from rural backgrounds through quality technical education and skill development.

Our department is committed to nurturing technically competent and ethically responsible professionals. With a strong foundation in subjects such as **Basic Electronics, Communication Systems, Microprocessors, Embedded Systems, VLSI, and Optical Communication**, we provide a curriculum aligned with industry standards and future technologies.

We are equipped with well-established laboratories, experienced faculty, and a vision to offer an education that blends academic knowledge with hands-on practice. As we enter a new academic cycle, we remain focused on delivering excellence and fostering innovation among our students.

*“The purpose of education is to make good human beings with skill and expertise. Enlightened human beings can be created by teachers.”*

— **Dr. A.P.J. Abdul Kalam**

## Workshop on Marine Communications and Equipment

The **Electronics and Communication Engineering Department**, Government Polytechnic, Jamnagar, organized a hands-on **workshop on Marine Communications and its Equipment for 5th semester students**. The session aimed to provide industry-level exposure to communication systems used in maritime operations.



The workshop was conducted by **Mr. Suresh Vinzuda, Radio Surveyor and Engineer**, along with his expert team members **Mr. Rajan** and **Mr. Pawan** from **AskMarine and Life Raft Services Pvt. Ltd., Jamnagar**.



What made the event even more special was that **all three experts are proud alumni of the EC Department**. Their return as mentors was a moment of pride for the department and served as an inspiration for current students.

This industry-connected session not only enriched students' technical knowledge but also highlighted the success stories that began in the very same classrooms.

## Workshop on Computer Networking and Hardware

The **Electronics and Communication Engineering Department**, Government Polytechnic, Jamnagar, conducted a **workshop on Computer Networking and Hardware** for **5th semester students**, aligning with the subject *Computer Networks* offered in the curriculum.

**Students** participated in this practical, skill-based session. The workshop was led by **Mr. Bharat Parmar, Network Engineer** from **GTPL Pvt. Ltd., Jamnagar**, who brought valuable industry experience into the classroom.



Mr. Parmar provided an in-depth demonstration of various networking devices such as **switches, routers, Wi-Fi routers, MODEMs, and HUBs**. He explained their roles, configuration methods, and installation techniques.



This workshop significantly enhanced the students' understanding of computer networking and provided practical exposure to tools and hardware used in the industry. It bridged the gap between theory and application, equipping students with essential technical skills.

Glimpses of Election voters' campaign (SVEEP,) & swachhra abhiyan programme by JMC at GP Jamnagar as on 23/11/2021.



National Mathematics Day 22nd December 2021

Celebration at G P Jamnagar

**Government Polytechnic, Jamnagar**

Celebrates

**NATIONAL MATHEMATICS DAY**

22 December-Srinivasa Ramanujan's birthday



A tribute to the "Ins- $\pi$ -ring" The Great Indian Mathematician

1) Shrinivas Ramanujan and his contribution.	2) Applications of coordinate geometry in engineering.
3) Real life applications of vectors.	4) Real life applications of Trigonometry.
5) Applications of logarithm.	6) Applications of Matrices. (શ્રેણીક્રમ ઉપયોગો)
7) History of mathematics.	8) Pythagoras Theorem.
9) Beauty behind Fibonacci numbers.	10) Platonic Solids.
11) Prime numbers.	12) Applications of differentiation in engineering.
13) Applications of integration in Engineering.	14) Importance of Mathematics in Engineering.
15) Applications of differential equations in engineering.	16) Use of Mensuration in real life.
17) Indian mathematician and their contribution.	18) Any topic of Mathematics of your choice
19) Various Graphs of Functions and Their properties. ( $y=x^2$ , $y=\sin x$ , $y=\log x$ , $y=e^x$ , $y=x$ , $y=3x+2$ etc.)	
20) Trigonometry ratios for angle other than standard angle (0 to 90 degree)	



## Exploring the Future: Virtual Reality, Augmented Reality & Mixed Reality

### Student Contribution

By: RANGANI TEJASH RATILAL

\*Enrolment No.: 206250311004

In today's fast-evolving digital age, immersive technologies like **Virtual Reality (VR)**, **Augmented Reality (AR)**, and **Mixed Reality (MR)** are changing the way we interact with the world. These technologies merge the physical and digital environments, enabling real-time, multi-sensory experiences that go beyond traditional user interfaces.

These innovations are playing a crucial role in fields like **engineering, medical science, manufacturing, education, design, defence, and entertainment**, and are expected to become integral to daily life and work. Let's understand how they differ and where they are used.



### Virtual Reality (VR)

**Virtual Reality** completely immerses the user in a simulated environment.



It replaces the real world with a digital one that can be similar or entirely different from the real environment. Users typically wear **VR headsets** (like Oculus Rift, HTC Vive, or Meta Quest) that block out external views and respond to head movements for a 360-degree experience.

### How It Works:

- Requires **VR goggles/headsets**, motion sensors, and controllers
- Visuals and audio are generated by a computer or console
- Can be combined with gloves and treadmills for full-body tracking

### Applications:

- **Engineering:** 3D design walkthroughs, product simulation



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)



[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

- **Education:** Virtual labs, anatomy exploration in medical training
- **Training:** Flight simulators, defence and emergency drills
- **Entertainment:** Gaming, virtual concerts, 360° storytelling



[This Photo](#) by Unknown Author is licensed under [CC BY-NC](#)

### Augmented Reality (AR)

**Augmented Reality** enhances the real world by overlaying digital objects and information in real time. Unlike VR, AR doesn't replace your environment it adds to it. Devices like smartphones, AR glasses (e.g., Google Glass), or tablets

#### How It Works:

- Uses a camera to capture the real world
- Digital elements (text, images, 3D models) are added using AR software
- Works with mobile AR apps or web-based platforms

#### Applications:

- **Industrial design:** Real-time collaboration on 3D models
- **Medical training:** Holographic simulation of human anatomy
- **Smart manufacturing:** Visual dashboards linked to IoT systems
- **Education:** Interactive classroom content and live demonstrations

### Mixed Reality (MR)

Mixed Reality combines VR and AR elements, allowing real and digital objects to interact in real time. MR requires advanced devices like Microsoft HoloLens or Magic Leap, where users can not only see digital content but also manipulate it as if it were part of the real environment.

#### How It Works:

- Uses spatial mapping, sensors, and AI
- Virtual objects are anchored in the real world and respond to real-time changes
- Supports gesture recognition and eye-tracking for interaction

#### Applications:

- **Education:** AR apps for interactive learning and visual explanation
- **Retail:** Virtual try-ons for clothes or home furniture previews
- **Maintenance:** AR manuals for machine repair and technical training
- **Healthcare:** Visual overlays during surgeries for accuracy

### Why It Matters for EC Students

As Electronics and Communication Engineering students, understanding the technologies behind VR, AR, and MR is critical. These systems rely on core EC concepts such as:

- **Signal processing**
- **Sensor interfacing**
- **Microcontrollers**
- **Wireless communication**
- **Display technologies**

The demand for engineers skilled in **embedded systems, digital design, hardware-software integration, and sensor technologies** will grow as VR/AR/MR devices evolve.

### Conclusion

Immersive technologies like Virtual Reality, Augmented Reality, and Mixed Reality are no longer just futuristic concepts—they are today's reality. They are revolutionizing how we **learn, interact, train, and create**. For students and professionals in the electronics and communication domain, these fields open vast opportunities for **innovation, entrepreneurship, and high-impact careers**.

*“Let us embrace the immersive future—**not just as users, but as innovators.**”*