Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology
Approved by AICTE, New Delhi, DTE, Government of Maharashtra, Affiliated to University of Mumbai
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Department of Electronics and Telecommunication Engineering

Course Name:	Enabling Technologies for 6G Communications Networks
Name of the Faculty:	Mrs. Meena Perla
Designation:	Assistant Professor
Organization/Institution:	VIVA Institute of Technology
Duration:	5th Jan 2026 to 10th April 2026
Time:	30 hours
Number of Students:	19

Course Objectives:

1. Impart a fundamental level understanding of sixth-generation (6G) wireless technology
2. Encompassing its underlying concepts, use cases, and architectural frameworks
3. Overview of the evolution of wireless systems and standards,
4. Basics of multi-input multi output (MIMO) technology used in 6G wireless standards

Course Outcomes:

After successful completion of this course, students will be able to:

1. Learn about next generation multiple access technologies.
2. Define fundamental coding schemes.
3. Overview of next-generation Communication System
4. Advanced MIMO Techniques
5. Modulation, Channel Coding and Multiple Access for 6G
6. Advanced Network Topology for 6G

Programme Summary:

Duration: 30 Hours
Venue: VIVA Institute of Technology, Shirgaon.

Electronics & Telecommunication Engineering Department of VIVA Institute of Technology organized a 30 hours Bridge course on "**Enabling Technologies for 6G Communications Networks**" during 5th Jan 2026 to 11th April 2026 conducted by Mrs. Meena Perla

This course aims to impart a fundamental level understanding of sixth-generation (6G) wireless technology, encompassing its underlying concepts, use cases, and architectural frameworks. Starting with the overview of the evolution of wireless systems and standards, participants will delve into the essential principles behind 6G technology. The course will also cover the basics of multi-input multi output (MIMO) technology used in 6G wireless standards, along with advanced concepts like, massive MIMO, intelligent reflective surfaces (IRS), holographic beamforming, and orbital angular momentum (OAM).

The students will also learn about next generation multiple access technologies such as non-orthogonal multiple access (NOMA), rate-splitting multiple access (RSMA), and fundamental coding schemes such as Polar and low density parity check (LDPC) Codes. Further, this course will also introduce students to advanced network topology for 6G, such as non-terrestrial networks, underwater networks, optical wireless networks and AI/ML models for 6G networks and devices. Lastly, the course will also address forthcoming insights and potential technological advancements shaping the next generation of wireless communication systems.

The event was a success with very positive feedback from the participants. The speech by the Principal Dr. Arun Kumar was an inspiring one that covered the broad future scopes of the field. The Principal being an encouraging one who said that for such events where in student development is involved, he will always be supportive. In the speech given by Mrs. Archana Ingle, H.O.D of EXTC, students gained an idea of how this workshop can be utilized to take creative projects in the field of engineering.

Topics covered in the course:

Sr.no	Contents	Hrs.
1	Fundamentals of Wireless Communications	02
2	Current Wireless systems (WLAN, Cellular, Satellite, Optical etc.)	02
3	6G paradigm shifts, use cases, 6G KPIs	02
4	SIMO and MISO systems	02
5	Intelligent reflective surfaces (IRS)/ Metasurfaces	02
6	Orbital Angular Momentum (OAM)	01
7	6G Coding Schemes (LDPC and Turbo Codes)	02
8	Holographic Beamforming	02
9	Multiple Access Schemes for 6G	02
10	Candidate waveforms for 6G: OFDM, NOMA, OFDMA	02
11	Non-Terrestrial Networks	02
12	Underwater Network	02
13	Optical-Wireless Network	02
14	Green Communication Network	02
15	AI / ML Models for 6G Networks and Devices	02

CO-PO Mapping:

Course Outcome	Program Outcome												
	PO 1	PO 2	PO 3	PO 4	P0 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	CO Target level
CO1	3	3	2	-	2	2	-	-	-	-	-	-	2.4
CO2	3	3	2	-	2	2	-	-	-	-	-	-	2.4
CO3	3	3	2	-	2	2	-	-	-	-	-	-	2.4
CO4	3	3	2	-	2	2	-	-	-	-	-	-	2.4
CO5	3	3	2	-	2	2	-	-	-	-	-	-	2.4
CO6	3	3	2	-	2	2	-	-	-	-	-	-	2.4

Student Certificate format: