

## COURSES OFFERED

- ENGINEERING • PHARMACY
  - MANAGEMENT • HOTEL MGMT.
  - NURSING • PARAMEDICAL
  - AGRICULTURE SCIENCES
  - FASHION TECH. & DESIGN
  - AYURVEDA
  - JOURNALISM & MASS COMM.
  - BASIC SCIENCES • EDUCATION
  - COMMERCE
  - COMPUTER APPLICATIONS
  - ARTS • PHYSICAL EDUCATION
  - UG\* • PG\* • Ph.D.\*
- (All Major Disciplines)



**IES UNIVERSITY**  
B H O P A L

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**IES COLLEGE OF TECHNOLOGY**  
B H O P A L

Department of Electronics and  
Communication Engineering

Organize

Atal Sponsored

Two Weeks Faculty

Development Program on

**Technologies, Challenges**

**& Research Directions**

**of 6G Wireless**

**Communication**

**Systems**



5<sup>th</sup> - 16<sup>th</sup> December 2022





## ABOUT ORGANIZATION

The IES Group of Institutions promoted by Infotech Education Society is working towards excellence in education and fulfilling the needs of highly demanding professionals since 1999, in the pursuit of serving the society through imparting education. Renowned Educationists, Philanthropists, Engineers and Technical Professionals constitute Infotech Education



Society. The IES Group is AICTE / NBA / NAAC approved institutions in the field of Engineering and Technology, Management and Teachers Education Programs. The College campus is beautifully planned in 45 acres with pleasant landscaping presenting conducive environment for sincere and perfect learning.

## ABOUT DEPARTMENT

The department of Electronics & Communication Engineering is a part of IES College of Technology, Bhopal. The institute offers UG and PG courses under the Department of Electronics & Communication Engineering. The department has well furnished laboratories and digital class rooms, software etc. The department has well qualified and competent faculties who are abreast with the latest technologies. The department has state-of-art-infrastructure and also has laboratories equipped with latest research facilities and well equipment

## ABOUT THE FDP

The Sixth generation (6G) wireless connectivity is expected to offer high Speed, enriched capacity, lower latency, ultra-high reliability and the ability to connect massive number of connections, namely, Internet of Things (IoT), Machine to Machine (M2M) and Device to Device (D2D) devices. In addition to offering faster speeds and other consumer benefits, 6G is seen as crucial to advanced technologies like vehicle type applications, IoT and virtual reality and augmented reality that demand high speed and bandwidth. In addition, the industry has made plans for next generation of technology, sixth generation (6G) at frequencies from 100 GHz to 1 THz and offer speeds up to 100

Gbps with very low latency. According to the researchers, 5G/6G devices will be able to handle hundreds or even thousands of simultaneous connections that should offer more capacity with lower power requirements.

## TOPIC TO BE COVERED

- 6G technologies and its Application
- Emerging 6G technologies
- Expected service requirements for 6G communication
- The trends of increasing wireless connectivity
- Possible challenges and research directions to reach the 6G goal
- Expected 6G applications with the requirements
- Possible ways to reach the 6G communication system
- Research Methodology
- Beyond-5G and 6G Wireless communications system
- NEW Education Policy
- Implementation Challenges and Opportunities in Beyond-5G and 6G Communication /SUB-Millimeter wave/THZ Communication
- Hand's Training in MATLAB of 6G Wireless communication system
- Implementation Challenges and Opportunities in Beyond-5G and 6G Communication
- Indian values & ethos, Classroom conduct & behavior (teaching learning psychology)
- Art of Living, Life Skills such as time and stress management
- 6G Wireless Communication Systems: Applications, Requirements, Technologies, Challenges, and Research Directions
- Contribution and Research Direction
- Fundamental Enabling Technologies of 6G
- Prospects and Applications of 6G wireless communication system
- Solutions for various challenges in implementation of 6G Wireless communication.
- Beyond-5G distributed massive MIMO.
- Sub-millimeter wave

## WHO SHOULD ATTEND

All faculty affiliated to AICTE, Engineering, Diploma, Research scholar's and industrial person

## EMINENT INVITED SPEAKER

- Dr. Vivek Kapoor, Director, G H Raisoni Institute of Engineering & Technology, Nagpur

- Dr. Vibha Vyas, Professor COEP Pune
- Dr. Jyoti Singhi, Professor MANIT Bhopal
- Mrs. Suman Agrawal Scientist –F' DRDO Hyderabad
- Dr. Karmalkar, Professor, IIT-Chennai
- Dr. Ram Bilash Pachori, Professor, IIT, Indore.
- Dr. P K Singhai Professor MIT Gwalior.
- Dr. Shymal Das Mandal, Professor, IIT Khargpur
- Dr. Abhishek Rawat, Assistant Professor, IIIT RAM Ahmadabad.
- Dr. Dipankar Deb, Professor, IIIT RAM Ahmadabad
- Dr. Lalita Gupta, Associate Professor, MANIT Bhopal
- Dr. Amita Dev, VC, Indira Gandhi Delhi Technical University for Women, New Delhi
- Dr. Ved Prakash Singh Scientist & Head India Meteorological Dept. Govt. of India
- Mr. Ramnath Narhete, Director, On price InfoTech pvt Ltd
- Dr. Anjali Potnis, Professor, NITTTR, Bhopal
- Mr. Ashish Gupta, Scientist –F, DRDL DRDO Hyderabad
- Dr. Abhishek Bhatt, Professor, COEP PUNEe

## PATRON

Dr. Sunita Singh, Group Director, IES College of Technology, Bhopal.

## ORGANIZING CHAIRMAN

Dr. Anupriya Mishra, Principal, IES College of Technology, Bhopal.

## COORDINATOR

Dr. Rajesh Kumar Nema HOD, IES College of Technology, Bhopal.

## CO-COORDINATOR

Dr. Shweta Singh Associate Professor, IES College of Technology, Bhopal

## ORGANIZING TEAM

- Dr. Pramod Patel
- Dr. Amarjeet Ghosh, Mr. Ashish Raghwanishi
- Mr. Jamvant Omkar, Mrs. Neha Shrivastava

**BASIC AICTE ATAL FDP/CPDP Week 1 and Week 2 Schedule**  
**Department of Electronics and Communication Engineering**  
**Week 1 – Online (7:00 pm – 9:30 pm)**




<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5</b>	<b>Day 6</b>
<b>7:00 – 7:50 Session 1 (I)</b> <b>Dr. Dr. Vivk Kapoor,</b> <b>Director, G. H. Rasoni</b> <b>College of Engineering,</b> <b>Nagpur</b>	<b>7:00 – 7:50 Session 2</b> <b>(I) Dr. Jyoti Singhi,</b> <b>Professor, MANIT</b> <b>BHOPAL</b>	<b>7:00 – 7:50 Session 3</b> <b>(I) Dr. Ram Bilash</b> <b>Pachori,Professor IIT,</b> <b>Indore.</b>	<b>7:00 – 7:50 Session 4 (I)</b> <b>Dr. Shymal Das</b> <b>Mandal, Professor,IIT</b> <b>Khargpur</b>	<b>7:00 – 7:50 Session 5</b> <b>(I) Dr. Dipankar</b> <b>Deb,Professor, IIT</b> <b>RAM Ahmadabad</b>	<b>7:00 – 7:50 Session 6</b> <b>(I) NEP by Dr. Amita</b> <b>Dev, VC, Indira</b> <b>Gandhi Delhi</b> <b>Technical University</b> <b>for Women, New Delhi</b>
<b>8:00 – 8:50 Session 1 (II)</b> <b>Dr. Vibha Vyas, Professor,</b> <b>COEP PUNE</b>	<b>8:00 – 8:50 Session 2</b> <b>(II), Mrs. Suman</b> <b>Agrawal, Scientist –F,</b> <b>Scientist –F DRDO</b> <b>Hyderabad</b>	<b>8:00 – 8:50 Session 3</b> <b>(II) Dr. P K Singhai,</b> <b>Professor, MIT</b> <b>Gwalior</b>	<b>8:00 – 8:50 Session 4</b> <b>(II) Research</b> <b>Methodology, Dr.</b> <b>Karmalkar, IIT-</b> <b>Chennai</b>	<b>8:00 – 8:50 Session 5</b> <b>(II) Dr. Lalita Gupta,</b> <b>Assistant</b> <b>Professor,MANIT</b> <b>Bhopal</b>	<b>8:00 – 8:50 Session 6</b> <b>(II) NEP by Dr. Amita</b> <b>Dev, VC, Indira</b> <b>Gandhi Delhi</b> <b>Technical University</b> <b>for Women, New Delhi</b>
<b>9:00 – 9:30</b> <b>Session 1 Interactions</b>	<b>9:00 – 9:30</b> <b>Session 2 Interactions</b>	<b>9:00 – 9:30</b> <b>Session 3 Interactions</b>	<b>9:00 – 9:30</b> <b>Session 4 Interactions</b>	<b>9:00 – 9:30</b> <b>Session 5</b> <b>Interactions</b>	<b>9:00 – 9:30</b> <b>Session 6 Interactions</b>

**Week 2 – Offline (9:30 am – 4:30 pm)**

<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5</b>
<b>9:00 – 9:30 Inauguration</b>	<b>9:30 – 12:00 Session 8 Mr. Ramnath Narhete, Director, On price InfoTech pvt Ltd</b>	<b>9:30 – 12:00 Session 10, Ms. Anju, Singh , Art of Living, Life Skills such as time and stress management</b>	<b>9:30 – 12:00 Session 12 9: Dr. Abhishek Rawat, Assistant Professor, IIIT RAM Ahmadabad.</b>	<b>9:30 – 12:00 Session 14 Dr. Abhishek Rawat, Assistant Professor, IIIT RAM Ahmadabad.</b>
<b>9:30 – 12:00 Session 7, Dr. Ved Prakash SinghScientist &amp; HeadIndia Meteorological Dept. Govt. of India</b>	<b>12:00 – 1:00 Article 1 Discussion</b>	<b>12:00 – 1:00 Article 2 Discussion</b>	<b>12:00 – 1:00 MCQs</b>	<b>12:00 – 1:00 Visit Report (Team)</b>
<b>12:00 – 1:00 Lunch</b>	<b>1:00 – 2:00 Lunch</b>	<b>1:00 – 2:00 Lunch</b>	<b>1:00 – 2:00 Lunch</b>	<b>1:00 – 2:00 Lunch</b>
<b>1:00 – 2:00 Travel for Visit</b>	<b>2:00 – 4:00 Session 9, Dr. Anjali Potnis, NITTTR, Bhopal Indian values &amp; ethos, Classroom conduct &amp; behaviour (teaching learning psychology)</b>	<b>2:00 – 4:00 Session 11 16: Mr. Ashish Gupta, Scientist –F, DRDL DRDO Hyderabad</b>	<b>2:00 – 4:00 Session 13, Dr. Ram Bilash Pachori,Professor IIT, Indore.</b>	<b>2:00 – 3:00 Reflection Journal</b>
<b>2:00 – 4:00 Visit</b>	<b>4:00 – 5:15 Teaching Practice, Dr. Ved Prakash SinghScientist &amp; HeadIndia Meteorological Dept. Govt. of India</b>	<b>4:00 – 5:15 Teaching Practice, Dr. Abhishek Bhatt, Professor, COEP PUNE</b>	<b>4:00 – 5:15 Teaching Practice, Mrs. Suman Agrawal, Scientist –F, Scientist –F DRDO Hyderabad</b>	<b>3:00 – 4:00 Feedback</b>
<b>4:00 – 5:00 Travel back</b>				<b>4:00 – 5:00 Valedictory</b>





# ATAL FDP Schedule Poster



(05/12/2022 to 16/12/2022)

<b>BASIC AICTE ATAL FDP Week 1 and Week 2</b>				
<b>Week 1 – Online (7:00 pm – 9:30 pm)</b>				
<b>Day 1 (05/12/2022)</b>	<b>Resource Person</b>	<b>Topic to be Covered</b>	<b>Photo</b>	<b>Link</b>
7:00 – 7:50	Session 1 (I) Dr. Vivk Kapoor, Director, G. H. Raisoni College of Engineering, Nagpur	6G technologies and its Application		Join Zoom Meeting <a href="https://us02web.zoom.us/j/89611407426?pwd=SzIVSXI3b2NwZktWbXR1SkVBSU9sdz09">https://us02web.zoom.us/j/89611407426?pwd=SzIVSXI3b2NwZktWbXR1SkVBSU9sdz09</a>
8:00 – 8:50	Session 1 (II) Dr. Vibha Vyas, Professor, COEP PUNE	Emerging 6G technologies		Join Zoom Meeting <a href="https://us02web.zoom.us/j/89611407426?pwd=SzIVSXI3b2NwZktWbXR1SkVBSU9sdz09">https://us02web.zoom.us/j/89611407426?pwd=SzIVSXI3b2NwZktWbXR1SkVBSU9sdz09</a>
9:00 – 9:30	Session 1 Interactions			Join Zoom Meeting <a href="https://us02web.zoom.us/j/89611407426?pwd=SzIVSXI3b2NwZktWbXR1SkVBSU9sdz09">https://us02web.zoom.us/j/89611407426?pwd=SzIVSXI3b2NwZktWbXR1SkVBSU9sdz09</a>
<b>Day 2 (06/12/2022)</b>	<b>Expert Name</b>	<b>Topic to be Covered</b>		<b>Link</b>
7:00 – 7:50	Session 2 (I) Dr. Jyoti Singhi, Professor, MANIT BHOPAL	Expected service requirements for 6G communication		Join Zoom Meeting <a href="https://us02web.zoom.us/j/82106008970?pwd=aTdIOG5yczB2Qkg2NG5LNWd3NIJWdz09">https://us02web.zoom.us/j/82106008970?pwd=aTdIOG5yczB2Qkg2NG5LNWd3NIJWdz09</a>










8:00 – 8:50	Session 2 (II), Mrs. Suman Agrawal, Scientist –F, Scientist –F DRDO Hyderabad	The trends of increasing wireless connectivity		Join Zoom Meeting <a href="https://us02web.zoom.us/j/82106008970?pwd=aTdIOG5yczB2Qkg2NG5LNWd3NIJWdz09">https://us02web.zoom.us/j/82106008970?pwd=aTdIOG5yczB2Qkg2NG5LNWd3NIJWdz09</a>
9:00 – 9:30	Session 2 Interactions			Join Zoom Meeting <a href="https://us02web.zoom.us/j/82106008970?pwd=aTdIOG5yczB2Qkg2NG5LNWd3NIJWdz09">https://us02web.zoom.us/j/82106008970?pwd=aTdIOG5yczB2Qkg2NG5LNWd3NIJWdz09</a>
<b>Day3 (07/12/2022)</b>	<b>Expert Name</b>	<b>Topic to be Covered</b>		<b>Link</b>
7:00 – 7:50	Session 3 (I) Dr. Ram Bilash Pachori, Professor IIT, Indore.	Possible challenges and research directions to reach the 6G goal		Join Zoom Meeting <a href="https://us02web.zoom.us/j/84807563883?pwd=YzhieThpVURCV3JVczRBd1RhMlINdz09">https://us02web.zoom.us/j/84807563883?pwd=YzhieThpVURCV3JVczRBd1RhMlINdz09</a>
8:00 – 8:50	Session 3 (II) Dr. P K Singhai, Professor, MIT Gwalior	Expected 6G applications with the requirements		Join Zoom Meeting <a href="https://us02web.zoom.us/j/84807563883?pwd=YzhieThpVURCV3JVczRBd1RhMlINdz09">https://us02web.zoom.us/j/84807563883?pwd=YzhieThpVURCV3JVczRBd1RhMlINdz09</a>
9:00 – 9:30	Session 3 Interactions			Join Zoom Meeting <a href="https://us02web.zoom.us/j/84807563883?pwd=YzhieThpVURCV3JVczRBd1RhMlINdz09">https://us02web.zoom.us/j/84807563883?pwd=YzhieThpVURCV3JVczRBd1RhMlINdz09</a>
<b>Day 4 (08/12/2022)</b>	<b>Expert Name</b>	<b>Topic to be Covered</b>		<b>Link</b>





7:00 – 7:50	Session 4 (I) Dr. Shymal Das Mandal, Professor, IIT Khargpur	Possible ways to reach the 6G communication system		Join Zoom Meeting <a href="https://us02web.zoom.us/j/89989157679?pwd=b2NkYVd5WGliL0VtRmZiTzNoTC90QT09">https://us02web.zoom.us/j/89989157679?pwd=b2NkYVd5WGliL0VtRmZiTzNoTC90QT09</a>
8:00 – 8:50	Session 4 (II) Dr. Karmalkar, IIT- Chennai	Research Methodology		Join Zoom Meeting <a href="https://us02web.zoom.us/j/89989157679?pwd=b2NkYVd5WGliL0VtRmZiTzNoTC90QT09">https://us02web.zoom.us/j/89989157679?pwd=b2NkYVd5WGliL0VtRmZiTzNoTC90QT09</a>
9:00 – 9:30	Session 4 Interactions			Join Zoom Meeting <a href="https://us02web.zoom.us/j/89989157679?pwd=b2NkYVd5WGliL0VtRmZiTzNoTC90QT09">https://us02web.zoom.us/j/89989157679?pwd=b2NkYVd5WGliL0VtRmZiTzNoTC90QT09</a>
<b>Day 5 (09/12/2022)</b>	<b>Expert Name</b>	<b>Topic to be Covered</b>		<b>Link</b>
7:00 – 7:50	Session 5 (I) Dr. Dipankar Deb, Professor, IIT RAM Ahmadabad	Beyond-5G and 6G Wireless communications system		<a href="https://us02web.zoom.us/j/88424156103?pwd=NHJrcFRoRkxQR1lXazZrN2dFMWg0UT09">https://us02web.zoom.us/j/88424156103?pwd=NHJrcFRoRkxQR1lXazZrN2dFMWg0UT09</a>
8:00 – 8:50	Session 5 (II) Dr. Lalita Gupta, Assistant Professor, MANIT Bhopal	Expected 6G applications with the requirements		<a href="https://us02web.zoom.us/j/88424156103?pwd=NHJrcFRoRkxQR1lXazZrN2dFMWg0UT09">https://us02web.zoom.us/j/88424156103?pwd=NHJrcFRoRkxQR1lXazZrN2dFMWg0UT09</a>
9:00 – 9:30	Session 5 Interactions			<a href="https://us02web.zoom.us/j/88424156103?pwd=NHJrcFRoRkxQR1lXazZrN2dFMWg0UT09">https://us02web.zoom.us/j/88424156103?pwd=NHJrcFRoRkxQR1lXazZrN2dFMWg0UT09</a>
<b>Day 6 (10/12/2022)</b>	<b>Expert Name</b>	<b>Topic to be Covered</b>		<b>Link</b>

7:00 – 7:50	Session 6 (I) by Dr. Amita Dev, VC, Indira Gandhi Delhi Technical University for Women, New Delhi	NEW Education Policy		Join Zoom Meeting <a href="https://us02web.zoom.us/j/82188597893?pwd=dUppZ0s2NzdrN25Uc3BweVRYYVhmQT09">https://us02web.zoom.us/j/82188597893?pwd=dUppZ0s2NzdrN25Uc3BweVRYYVhmQT09</a>
8:00 – 8:50	Session 6 (II) NEP by Dr. Amita Dev, VC, Indira Gandhi Delhi Technical University for Women, New Delhi	NEW Education Policy		Join Zoom Meeting <a href="https://us02web.zoom.us/j/82188597893?pwd=dUppZ0s2NzdrN25Uc3BweVRYYVhmQT09">https://us02web.zoom.us/j/82188597893?pwd=dUppZ0s2NzdrN25Uc3BweVRYYVhmQT09</a>
9:00 – 9:30	Session 6 Interactions			Join Zoom Meeting <a href="https://us02web.zoom.us/j/82188597893?pwd=dUppZ0s2NzdrN25Uc3BweVRYYVhmQT09">https://us02web.zoom.us/j/82188597893?pwd=dUppZ0s2NzdrN25Uc3BweVRYYVhmQT09</a>



<b>Week 2 (9:30 to 5:00)</b>			
<b>Day 1 (12/12/2022)</b>			
<b>Time</b>	<b>Resource Person</b>	<b>Photo</b>	<b>Topic to be Covered</b>
<b>9:00-9:30</b>	<b>Inauguration</b>		
9:30-12:00	Session 7, Dr. Ved Prakash Singh Scientist & Head India Meteorological Dept. Govt. of India		Implementation Challenges and Opportunities in Beyond-5G and 6G Communication/ SUB-MILLIMETERWAVE/THZ Communication
12:00 – 1:00	Lunch		
1:00 – 2:00	Travel for Visit		Industrial Visit
2:00 – 4:00	Visit		
4:00 – 5:00	Travel back		
<b>Day 2 (13/12/2022)</b>			
9:30 – 12:00	Session 8 Mr. Ramnath Narhete, Director, On price InfoTech pvt Ltd		Hand's Training in MATLAB of 6G Wireless communication system
12:00 – 1:00	Article 1 Discussion		Implementation Challenges and Opportunities in Beyond-5G and 6G Communication
1:00 – 2:00 Lunch	Lunch		
2:00-4:00	Session 9, Dr. Anjali Potnis, NITTR, Bhopal		Indian values & ethos, Classroom conduct & behavior (teaching learning psychology)

4:00 – 5:15	Dr. Ved Prakash Singh Scientist & Head India Meteorological Dept. Govt. of India		Teaching Practice
<b>Day 3 (14/12/2022)</b>			
9:30 – 12:00	Session 10, Mrs. Anju Singh		Art of Living, Life Skills such as time and stress management
12:00 – 1:00	Article 2 Discussion		6G Wireless Communication Systems: Applications, Requirements, Technologies, Challenges, and Research Directions
1:00 – 2:00 Lunch	Lunch		
2:00-4:00	Session 11 Mr. Ashish Gupta, Scientist –F, DRDL DRDO Hyderabad		Contribution and Research Direction
4:00 – 5:15	Dr. Abhishek Bhatt, Professor, COEP PUNE		Teaching Practice
<b>Day 4 (15/12/2022)</b>			

9:30 – 12:00	Session 12 Dr. Abhishek Rawat, Assistant Professor, IIIT RAM Ahmadabad		Fundamental Enabling Technologies of 6G
12:00 – 1:00	MCQs		
1:00 – 2:00 Lunch	Lunch		
2:00-4:00	Session 13, Dr. Ram Bilash Pachori, Professor IIT, Indore.		Prospects and Applications of 6G wireless communication system
4:00 – 5:15	Teaching Practice, Mrs. Suman Agrawal, Scientist –F, Scientist –F DRDO Hyderabad		
<b>Day 5 (16/12/2012)</b>			
9:30 – 12:00	Session 12 Dr. Abhishek Rawat, Assistant Professor, IIIT RAM Ahmadabad		Solutions for various challenges in implementation of 6G Wireless communication. <ul style="list-style-type: none"> <li>• Beyond-5G distributed massive MIMO.</li> <li>• Sub-millimeter wave</li> </ul>
12:00 – 1:00	Visit Report (Team)		
1:00 – 2:00 Lunch	Lunch		
2:00-3:00	Reflection Journal		
3:00 – 4:00	Feedback		
4:00 – 5:00	Valedictory		



