

5 years Integrated M.Sc.(IT)(Semester 4)

Lesson Plan

060010412 : DSE6-Satellite and Telecommunication

UNIT	Sub Unit	No. of Lecture(s)	Topics	Reference Chapter/ Additional Reading	Evaluation Parameter
1.		[04]	Telecommunication Systems & Networks		
	1.1	1	The History & Evolution of Wireless Radio system	CG#1 Pg No. 12-16	
	1.2	2	Overview of 1G, 2G, 2.5G, 3G and 4G Cellular Systems	CG#1 Pg No.37-60 (Overview and comparison)	
	1.3	1	Wireless Standard Organizations	CG#1 Pg No.60-61	
2		[05]	GSM Technology		
	2.1	1	Introduction to GSM	CG#1 Pg No.117-120	Unit Test 2
	2.2	1	GSM Network & System Architecture	CG#1 Pg No.120-126	
	2.3	2	GSM System Operation	CG#1 Pg No.138-157	
	2.4	1	GSM Infrastructure Communications	CG#1 Pg No.157-165	
3		[05]	CDMA Technology		
	3.1	1	Introduction to CDMA	CG#1 Pg No.172-177	Internal
	3.2	2	CDMA Network & System Architecture	CG#1 Pg No.177-186	
	3.3	2	3G CDMA: IS-95B, CDMA2000, & W-CDMA	CG#1 Pg No.211-217	
4		[04]	Introduction to satellite Communication		
	4.1	1	Introduction: Satellite & Applications of satellites	MC#2 Pg No.47-59	Quiz 1
	4.2	1	Orbits & Kepler's Laws	MC#2 Pg No.153-156	
	4.3	0.5	Geosynchronous and Geostationary Orbits	MC#2 Pg No.156-160	
	4.4	0.5	Nongeostationary Orbits	MC#2 Pg No.160-164	
	4.5	1	Geosynchronous Transfer Orbit	MC#2 Pg No.164-167	
5		[05]	Satellite Systems, Construction and Satellite Operations		
	5.1	1	Major Satellite Subsystem	MC#2 Pg No.208-220	

	5.2	2	Satellite Operations	MC#2 Pg No.231-238	
	5.3	1	Satellite Lifetime	MC#2 Pg No.238-239	
	5.4	1	Communication Operations	MC#2 Pg No.240	
6		[05]	Atmospheric Effects on Signals		
	6.1	0.5	Elevation Angle and Path Length	MC#2 Pg No.296-297	
	6.2	1	Atmospheric Effects	MC#2 Pg No.297-300	
	6.3	0.5	Noise from the Atmosphere	MC#2 Pg No.306	
	6.4	1	Polarization Effects, Scintillation, Scattering and Improving the Quality of a Degraded Satellite Link	MC#2 Pg No.306-310	
	6.5	2	The Link Budget	MC#2 Pg No.312-316	
Text Book :					
1. Gary J. Mullet, Wireless Telecommunication Systems & Networks, CENGAGE Learning					[CG]
2. Mark R. Chartrand, Satellite Communication, CENGAGE Learning					[MC]

Objectives: To enable students to become familiar with basics of telecommunication system & satellite communication.

Course Outcomes:

Upon completion of the course, students shall be able to

- CO1: Explain basics of traditional telecommunication systems to modern telecommunication systems.
- CO2: Identify GSM wireless communication technologies and its mechanisms.
- CO3: Recognize CDMA wireless communication technologies and its mechanisms.
- CO4: Identify concepts related to satellite orbits and its launching.
- CO5: Summarize space station components & satellite operations.
- CO6: Recognize satellite communication problems.
- CO7: Establish link budget to moderate quality of signal sent between an earth-station and a satellite.

Course Objectives and Course Outcomes Mapping:

To study basics of telecommunication systems : CO1,CO2,CO3

Able to explain satellite communication systems: CO4,CO5,CO6,CO7

Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome							
		CO	CO	CO3	CO4	CO5	CO	CO	

		1	2				6	7
1	Telecommunication Systems & Networks	√						
2	GSM Technology	√	√					
3	CDMA Technology	√		√				
4	Introduction to Satellite Communications				√			
5	Satellite Systems, Construction and Satellite Operations				√	√		
6	Atmospheric Effects on Signals						√	√

Modes of Transaction (Delivery):

- ❖ Appropriate methods of teaching shall be decided depending on the objectives of the content taught.
 - ❖ Lecture method is generally used but along with it, as and when required, discussion method would be fruitful. It may be supplemented with various appropriate audio-visual aids.
 - ❖ Apart from lecture method, assignment activity can be designed on the basis of unit 3, unit 6.

Activities/Practicum:

The following activities shall be carried out by the students.

- ❖ - To search on internet about latest technologies used in telecommunication.
- To search on internet about latest technologies used in satellite communication.
- To explore latest information of satellites launched by India & its purposes.

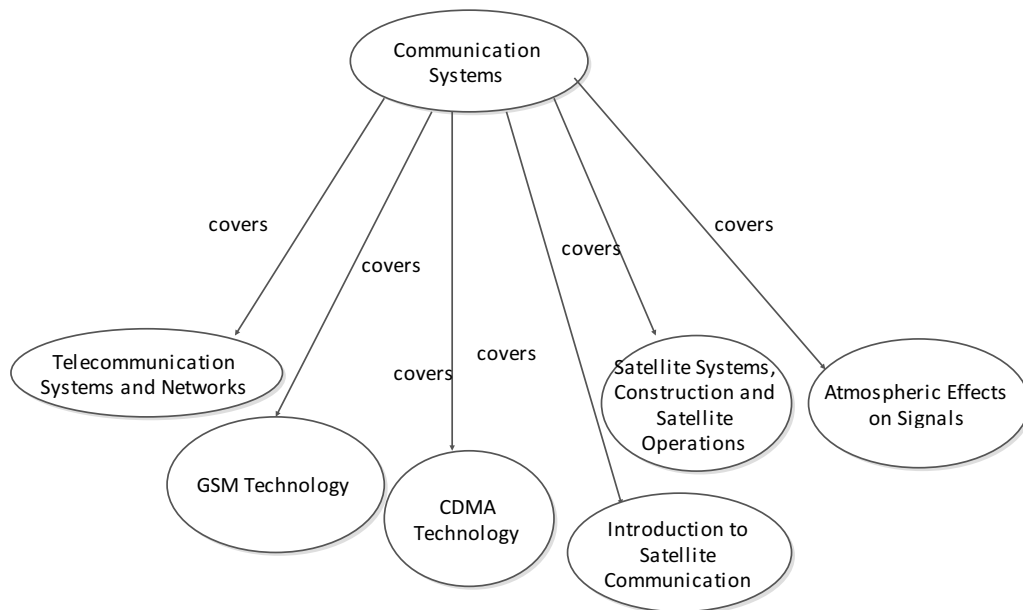
The following activities shall be carried out by the teacher.

- ❖ - To explain usage of Satellites around the world.
- Give insight related to various research work going on in field of telecommunication.
- To aware student about various future aspects of communication domain.

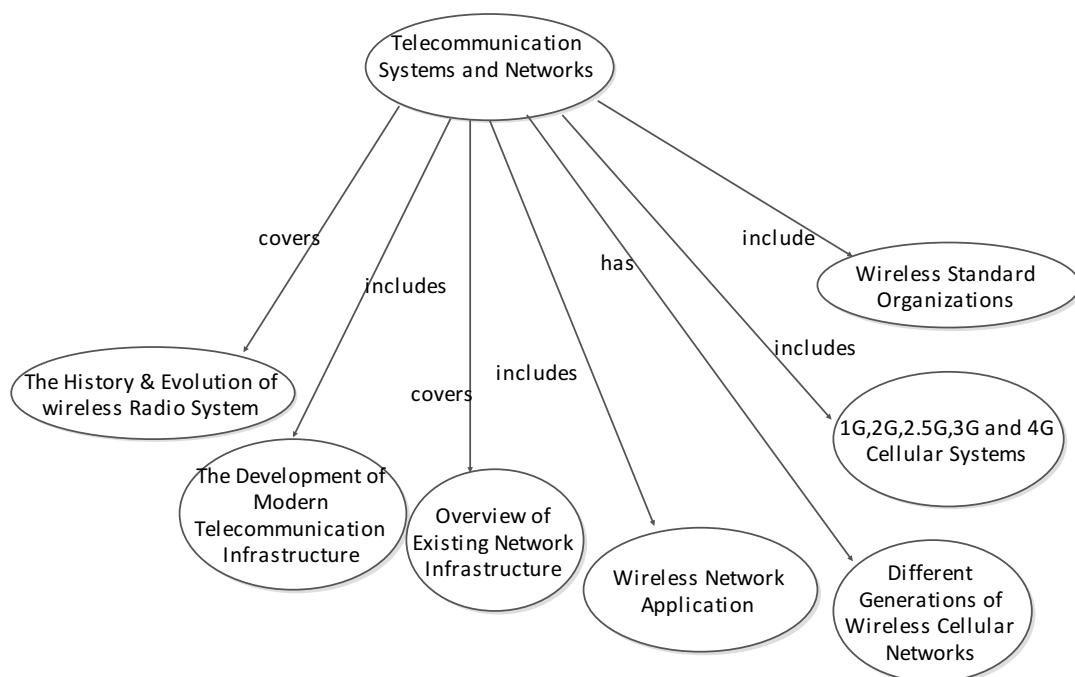
Concept Map:

It is a hierarchical / tree based representation of all topics covered under the course. This gives direct / indirect relationship /association among topics as well as subtopics.

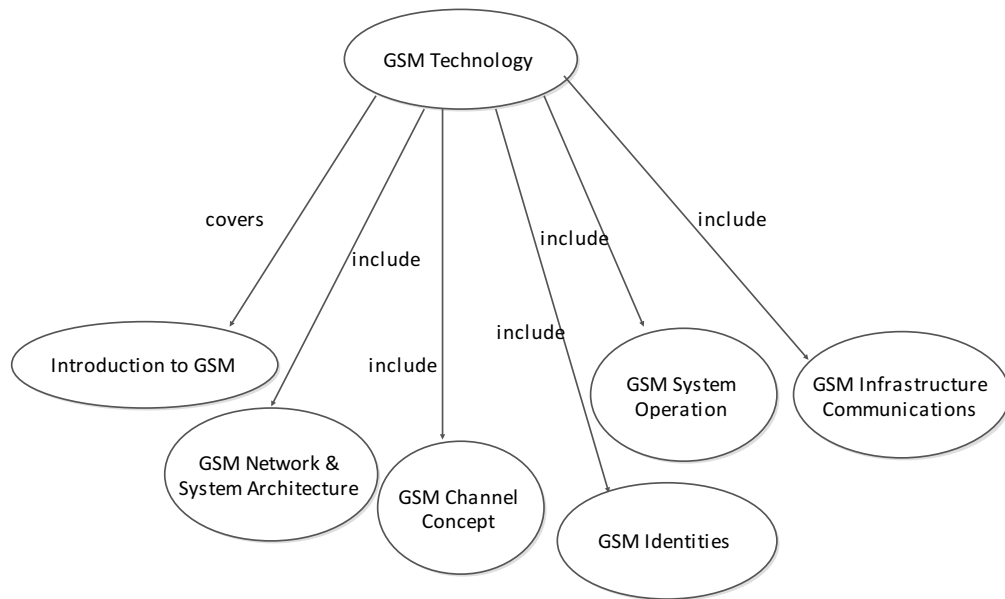
Communication System



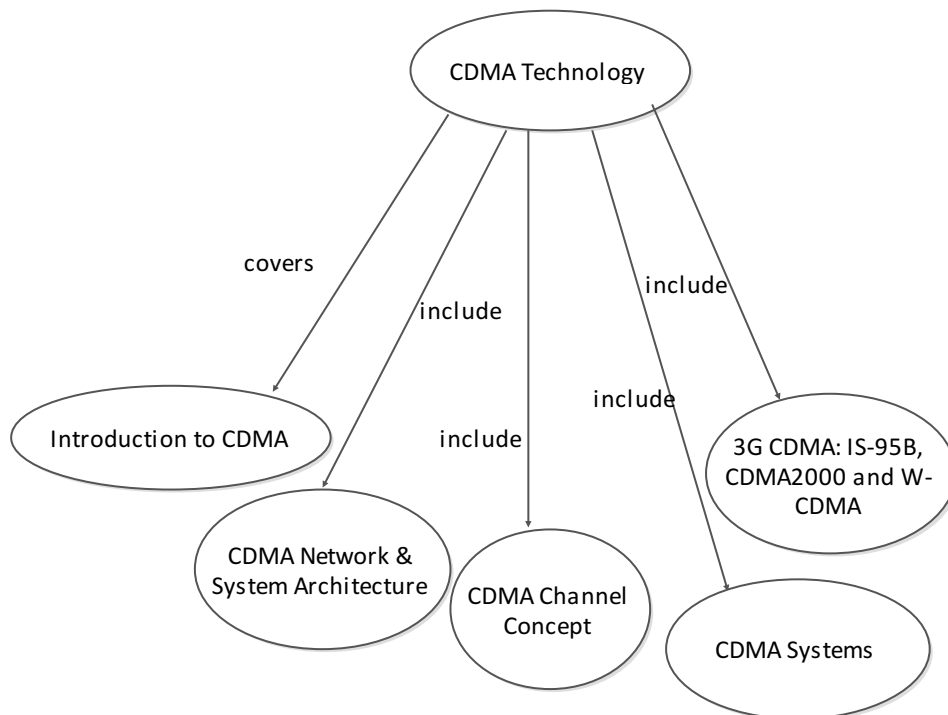
Unit-1: Telecommunication Systems and Networks



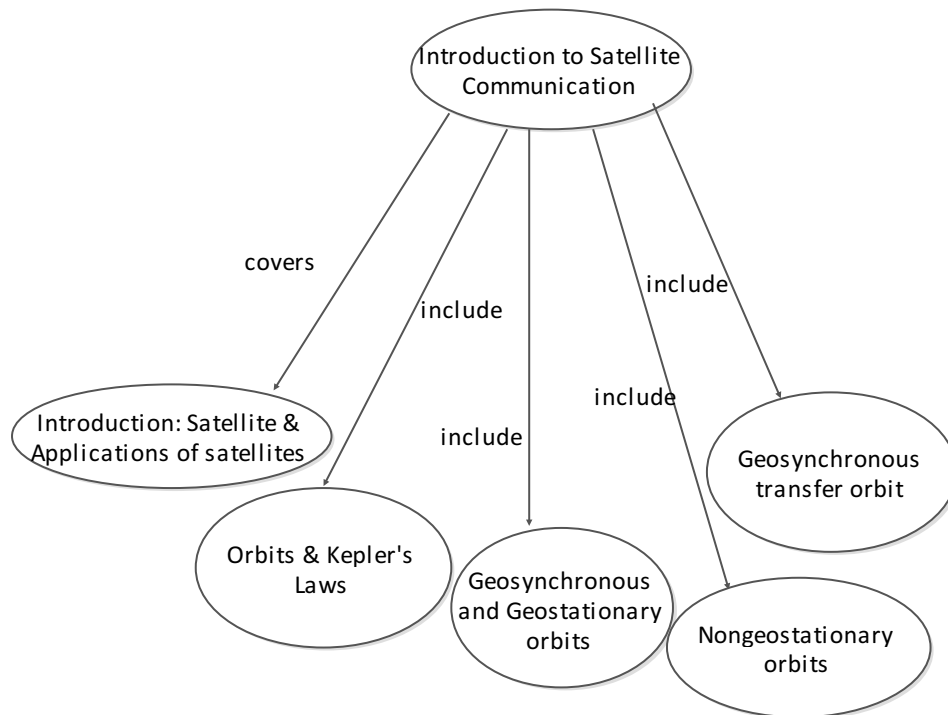
Unit-2: GSM Technology



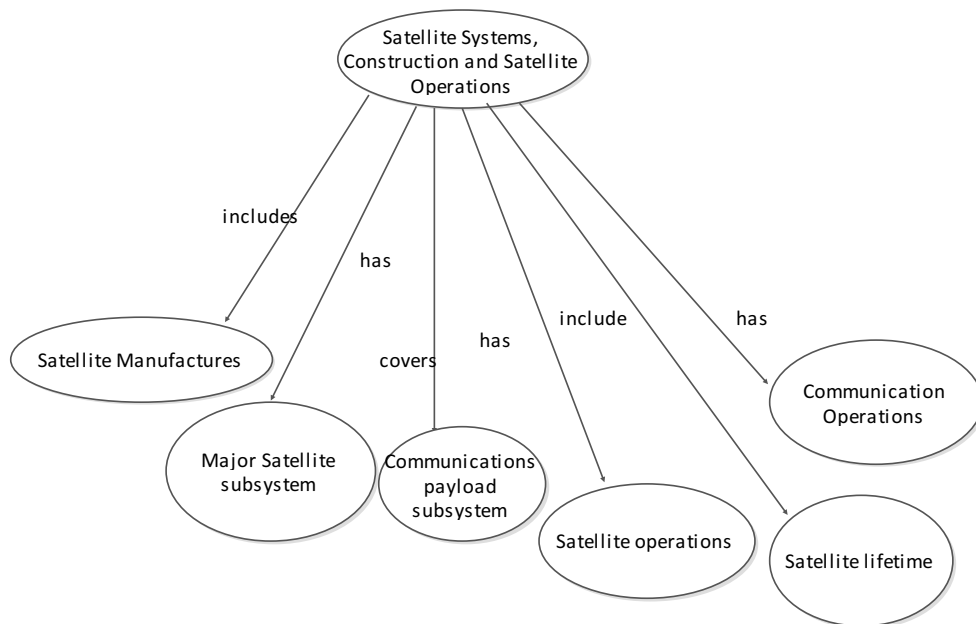
Unit-3: CDMA Technology



Unit-4: Introduction to Satellite Communication



Unit-5: Satellite Systems, Construction and Satellite Operations



Unit-6: Atmospheric Effects on Signals

