COURSEPLAN

Course Name: Satellite communication	**Course Code**: 20ECT731
CourseCredits:3	**Semester:**7th
Course Teacher/s: Mr.Yashodhara C L	**AcademicYear:**2023-24
Lab. Instructors(if applicable):NA	**Date of Commencement of Class:**19.10.2023

SUBJECT DESCRIPTION:

This Course introduces the use of satellites in communications systems is very much a fact of everyday life, as is evidenced by the many homes equipped with antennas, or "dishes," used for reception of satellite television. What may not be so well known is that satellites form an essential part of telecommunications systems worldwide, carrying large amounts of data and telephone traffic in addition to television signals. Satellites offer a number of features not readily available with other means of communications. Because very large areas of the earth are visible from a satellite, the satellite can form the star point of a communications net, simultaneously linking many users who may be widely separated geographically.

PREREQUISITES:

1. Basic concepts of Antenna theory
2. Basic knowledge of Microwaves.
3. Basic knowledge in Physics and Field Theory

LECTUREPLAN:

Topic	Topic Details	Number of Lectures	Prediction	Unit/Chapter Reference	Percentage of Module coverage
Module-I	Definition, Basic Principles	1	**Week1**	T1 2.1	
	Orbital parameters, Injection velocity	2		T1 2.3	

Satellite Orbits and Trajectories	satellite trajectory	3		T1 2.4	**20%**
	Types of Satellite	4	**Week2**	T1 2.5	
	orbits, Orbital perturbations	5		T1 3.3	
	Satellite stabilization,	6		T1 3.4	
	Orbital effects on satellite 's performance	7	**Week3**	T1 3.5	
	Eclipses	8		T1 3.6	
	CumulativeCoverage				**20%**
Module II Satellite subsystem	Power supply subsystem,	9	**Week4**	T1 4.1	**20%**
	Attitude and Orbit control	10		T1 4.6	
	Tracking, Telemetry and command subsystem	11		T1 4.7	
	Payload	12	**Week5**	T1 4.8	
	Earth Station:	13		T1 8.1	
	Types of earth station,	14		T1 8.2	
	Architecture	15	**Week6**	T1 8.3	
	Satellite tracking	16		T1 8.7	
	CumulativeCoverage				**40%**
AAT1		17			

Module III Multiple Access Techniques	Introduction	18	**Week7**	T16.1	**20%**
	FDMA(No derivation)	19		T1 6.1	
	FDMA(No derivation)	20	**Week8**	T1 6.2	
	SCPC Systems	21		T1 6.3	
	MCPC Systems	22		T1 6.4	
	TDMA, CDMA,	23	**Week9**	T1 6.5	
	SDMA	24		T1 6.14	
	Revision	25			
	CumulativeCoverage				**60%**
Module IV **Communication Satellites**	Introduction, Related Applications	26	**Week10**	T1 9.1	**20%**
	Frequency Bands, Payloads	27		T1 9.3	
	Satellite Vs. Terrestrial Networks,	28	**Week11**	T1 9.5	
	Satellite Telephony	29		T1 9.6	
	Satellite Television,	30		T1 9.7	
	Satellite radio,	31	**Week12**	T1 9.8	
	Regional satellite Systems	32		T1 9.10	
	National Satellite Systems.	33		T1 9.10	
	Cumulative Coverage				**80%**
AAT2		34			
Module V Remote Sensing Satellites	Classificationofremote sensing systems	35	**Week13**	T1 10.1	
	orbits, Payloads	36		T1 10.1	
	Types of images	37	**Week14**	T1 10.1	
	Image Classification	38		T1 10.1	
	Interpretation	39		T1 10.1	
	Interpretation	40		T1 10.1	
	Applications	41	**Week15**	T1 10.1	
	Revision	42			
	Cumulative Coverage				**100%**

TEXTBOOKSANDREFERENCEBOOKS:

Book Type	Code	Title& Author	Publication Information		
			Edition	Publisher	Year
TextBooks	**T1**	"Satellite Communications" by Anil K. Maini, Varsha Agrawal	2015	Wiley India Pvt. Ltd	**2015**
ReferenceBooks	**R1**	"Satellite Communications" Dennis Roddy	4th Edition	McGraw- Hill International edition,	**2006**
	R2	"Satellite Communications" by Timothy Pratt, Charles Bostian,	2nd Edition	Wiley India Pvt. Ltd ,	**2017**

COURSEOUTCOMES:
Attheendofthecoursethestudentwillbeableto:

CO1	Understand the concept of satellite orbits and its trajectories.
CO2	Explain the concept of satellite sub system and earth station design.
CO3	Analyze the various multiple access techniques used in satellite system.
CO4	Interpret the different types of communication satellites and its applications.
CO5	Design the working of remote sensing satellites and its applications.

CO-POMAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	-	-	-	-	-	-	-	3	2	-
CO2	3	3	3	2	1	1	-	-	-	1	1	-	3	1	1
CO3	3	2	2	1	-	-	-	-	-	2	1	-	3	2	1
CO4	3	3	3	1	2	-	1	-	-	2	-	1	3	2	1
CO5	3	2	1	1	1	-	-	-	-	1	-	1	3	2	-

EVALUATIONSCHEME:

Component		Weightage(%)		
CIE's	CIE1 5thweek	40	80	SumofBesttwooutofthreeCIE
	CIE2 10thweek	40		
	CIE3 15thweek	40		
AAT's	AAT1(Quiz)	10	20	SumoftwoAATs
	AAT2(Surprisetest)	10		
ContinuousInternalEvaluationTotalMarks:100.Reducedto50Marks **The minimumpassingmarkforthe CIEis40%ofthemaximummarks(20marksoutof50)**				
SemesterEnd Examination(SEE) TotalMarks:100.Reduced to50Marks **The minimumpassingmarkfortheSEEis40%ofthemaximummarks(20marksoutof50)**				

SignatureoftheCourseCo-Ordinator   **SignatureoftheHOD**

Date:18.10.2023

Note:

1. TheCourseplanisanattempttoensure**continuous improvement**intheTLPofthecourse.
2. TheproposedCoursePlanissubmittedto**DAC**beforethecommencementofthesemester.
3. Attheendofthe semester,thefacultyshallsubmitthe**actualimplementedplan**.
4. CalendarofEventsincluded.