SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by
NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OFELECTRONICS AND COMMUNICATION ENGINEERING
TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Period/Week	Academic Year	Course Commencement Date
20EC7E08	Global Positioning and Navigation satellite systems	VII	ECE	5	2024-25	05-06-2024

COURSE OUTCOMES:

After completion of the Course, students are able to

1.	Describe the basic concepts of GPS signal receiver.[K2]
2.	Illustrate the architecture of GPS and their services[K3]
3	Distinguish between the GPS & Galileo.[K4]
4.	Analyze and evaluate the Navigation data parameters and GPS Position determination.[K4]

UnitNo.	Out Comes/ Bloom's Level	Topics No	Topics/Activity	Number of periods	Text Book/ Reference	Delivery Method
1	CO1: Describe the basic concepts of GPS signal receiver.[K2]		**UNIT-1: OVERVIEW OF GPS**		T1,T2	Chalk and Talk, PPT and E-Learning
		1.1	Basic concept of GPS and Evaluation of GPS	2		
		1.2	GPS configuration and Working principle	2		
		1.3	System Architecture of GPS- Space Segment, Control Segment and User Segment	1		
		1.4	Services of GPS	2		
		1.5	GALILEO system	1		
		1.6	GLONASS system	1		
		1.7	Comparison of GPS, GALILEO and GLONASS	1		
		1.6	Gagan	1		
		1.7	Applications of GPS	1		
			Class Test-1	1		
				13		
2	CO2: Illustrate the architecture of GPS and their services[K3]		**UNIT-2: GPS SIGNALS AND RECEIVERS**		T1, T2	Chalk and Talk, PPT and E-Learning
		2.1	GPS signal generation and signal characteristics	2		
		2.2	GPS Signal Structure	2		
		2.3	GPS Receiver	2		
		2.4	GPS signal condition	1		
		2.5	GPS signal Aquisition	2		
		2.6	Anti-Spoofing	2		
		2.7	Selective availability	1		
			Class Test-2	1		
				13		

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3	CO2: Illustrate the architecture of GPS and their services[K3]	**UNIT-3: GPS CO-ORDINATE FRAMES,TIME REFERENCES**			T1, T2	Chalk and Talk, PPT and E-Learning
		3.1	ECI Co-ordinate system	2		
		3.2	ECEF Co-ordinate system	2		
		3.3	GeoDetic co-ordinate system	2		
		3.4	Geocentric co-ordinate system	2		
		3.5	World Geodetic System 84	2		
		3.6	GPS Time and UTC generation	2		
				12		
4	CO3: Distinguish between the GPS & Galileo.[K4]	**UNIT-4: GPS ORBITS AND SATELLITE POSITION DETERMINATION**			T1, T2,T3	Chalk and Talk, PPT and E-Learning
		4.1	GPS Orbital Parameters	2		
		4.2	Description of receiver independent exchange format	2		
		4.3	RINEX Observation Data	2		
		4.4	Navigation Message data parameters for RINEX	2		
		4.5	GPS Position determination	2		
			Class Test-3	1		
				11		
5	CO4: Analyze and evaluate the Navigation data parameters and GPS Position determination. .[K4]	**UNIT-5: GPS ERRORS**			T2, T4	Chalk and Talk, PPT and E-Learning
		5.1	GPS error Models and sources	2		
		5.2	Clock errors	2		
		5.3	Ionospheric errors	2		
		5.4	Tropospheric error	2		
		5.5	Multipath ionospheric error estimation	2		
		5.6	Dual frequency GPS Receiver	2		
			Class Test-4	1		
				13		
			TOTAL	62		

Text Books:

S.No	
1	G. S. RAO, Global Navigation Satellite Systems, 2nd Edition, McGraw-Hill publications, New Delhi, 2010. (UNIT-I-V)

Reference Books:

1	B. Hoffman – Wellenhof, H. Liehtenegger and J. Collins, 'GPS – Theory and Practice', 4th Edition, Springer – Wien, New York , 2001. (UNIT-I-III)
2	Sateesh Gopi, "Global Positioning System: Principles and Applications", 3rd Edition, TMH, 2005. (UNIT-I-II)
3	James Ba – Yen Tsui, 'Fundamentals of GPS receivers – A software Approach', 3rd Edition, John Wiley & Sons, 2001. (UNIT-IV-V)
4	Elliot D. Kaplan, "Understanding GPS Principles and Applications", 2nd edition, Artech House, 2005. (UNIT-I-III).

Web Details:

1	http://www.unoosa.org/oosa/sk/ourwork/psa/gnss/gnss.html		
2	https://www.princeton.edu/~alaink/Orf467F07/GNSS.pdf		
3	https://www.euspa.europa.eu/european-space/eu-space-programme/what-gnss		
	https://www.gps.gov/systems/gnss/	Name	Signature with Date
i.	Faculty	Dr. B.S.Rao.	
ii.	Course Coordinator	Dr. B.S.Rao..	
iii.	Module Coordinator	Dr,Y.S.V.Raman	
iv.	Programme Coordinator	Dr. B. S. Rao.	

Principal

(Dr.S.Suresh Kumar)