

## GLOBAL POSITIONING SYSTEMS

<b>Course Code</b>	19EC4702A	<b>Year</b>	IV	<b>Semester</b>	I
<b>Course Category</b>	Program Elective V	<b>Branch</b>	ECE	<b>Course Type</b>	Theory
<b>Credits</b>	3	<b>L-T-P</b>	3-0-0	<b>Prerequisites</b>	Satellite communication
<b>Continuous Internal Evaluation:</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

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## Course Outcomes

Upon successful completion of the course, the student will be able to

**CO1** Understand GPS signals and their characteristics (L2).**CO2** Classify and discuss about GPS receivers (L2)**CO3** Demonstrate different types of GPS errors (L3)**CO4** Analyse various standard formats of GPS(L3)**CO5** Differentiate GPS applications (L4)

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## Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)

Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation

\* - Average value indicates course correlation strength with mapped PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	1	1	1	1		1	1	1	1	1	2
CO2	3	2	1	1	1	1	1		1	1	1	1	1	2
CO3	3	3	2	1	2	1	1		1	1	1	1	1	2
CO4	3	3	3	2	2	1	1		1	1	1	1	1	2
CO5	3	3	3	2	2	1	1		1	1	1	1	1	2
Average* (Rounded to nearest integer)	3	3	2	2	2	1	1		1	1	1	1	1	2

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## Syllabus

Unit No.	Contents	Mapped CO
I	<b>Introduction to GPS:</b> Overview of GPS, GPS segments, GPS satellite generations, current GPS satellite <b>constellation, control sites.</b>	CO1, CO2 & CO3
II	<b>GPS Details:</b> GPS signal structure, GPS modernization, types of GPS receivers, time systems, pseudo range measurements, Carrier-phase measurements and cycle slips.	CO1, CO2 & CO3
III	<b>GPS errors and Biases:</b> GPS ephemeris errors, Selective availability, satellite receiver and clock error, multipath error, ionospheric error, tropospheric error	CO1, CO2 & CO3
IV	<b>GPS standard formats:</b> RINEX, NGS-SP3, RTCM SC-104 and NMEA 0183.	CO1, CO3 & CO4

V	<b>GPS Applications:</b> GPS for utilities industry, forestry and natural resources, precision farming, civil engineering applications, monitoring structural deformations, open pit-mining, land seismic surveying, marine seismic surveying, airborne mapping, sea floor mapping and vehicle navigation.	CO1,CO4& CO5
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**Learning Resources**

**Text Books**

1. Introduction to GPS the global positioning system: by Ahmed EI-Rabbany, Artech House Boston. London.

**Reference Books**

1. Fundamentals of Global Positioning System Receivers: A Software Approach, James Bao-Yen Tsui Copyright @ 2000 John Wiley & Sons, Inc.

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