EEE567 - SATELLITE COMMUNICATION
LABORATORY SESSION: SATELLITE TRACKING
Monday, September 14, 2026

1.0 Objective

To make the learners understand:

i) the trajectories of satellites in space
ii) Space parameters of GEO, LEO Satellites
iii) Space parameters of Military, Weather and Communication Satellites
iv) Understand the importance of satellite international codes and their composition.
v) various computations of the satellite tracking software and link them to theory.

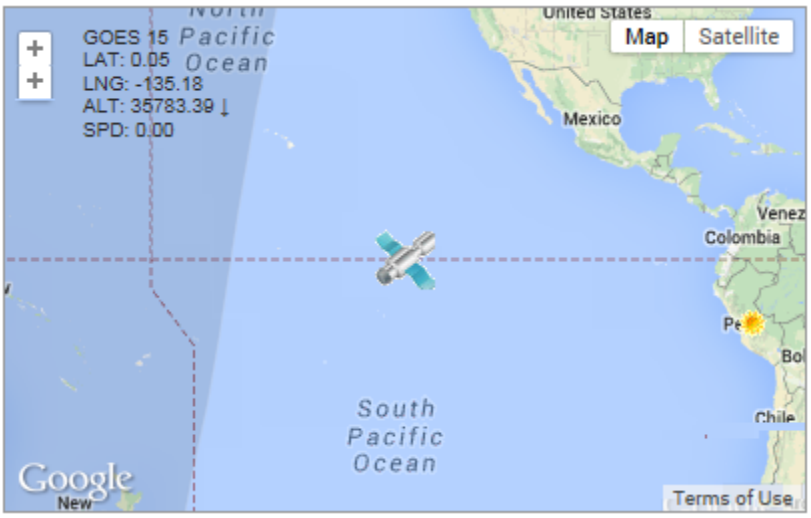


Figure 1 Satellite Tracking (image)

2.0 Laboratory Equipment Required

Computer workstation running Windows 7 or later version with connection to the Internet.

3.0 Methodology

1. Open website: http://www.n2yo.com
2. Track the satellites shown below.
3. Repeat for each satellite by using the https://orbtrack.org

SATELLITE PARAMETERS

Enter the parameters and fill the table below.

Satellite	Parameters
ESIAFI 1 (COMSTAR 4)	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… 10. Projected End of Life ……
USA 248	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… **10.** Projected End of Life ……
GSAT-14	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… 10. Projected End of Life ……

Satellite	**Parameters**
NAVSTAR 65 (USA 213)	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… 10. Projected End of Life ……
STARLINK-4765	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… 10. Projected End of Life ……
IRIDIUM 96	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… 10. Projected End of Life ……

Satellite	Parameters
INTELSAT 35E	1. Type …… 2. International Code…… 3. Launch Date …… 4. Perigee …… 5. Apogee …… 6. Period …… 7. Speed …… 8. Azimuth…… 9. Elevation …… 10. Projected End of Life ……

QUESTIONS

1. What do the following terms mean and who assigns them (Use google)?

(a) NORAD ID

(b) International Satellite Code

2. **(a)** Derive value of the velocity of a satellite (V_s) and use the equation to compute the speed of the following satellites:

(i) GOES 15

(ii) Iridium 96

Assume G = 6.67 x 10^{-11} Nm^2/kg^2 and M = 5.98 x 10^{34} Kg.

(b) How does your computation compare with the value displayed by the satellite racking program?

3. Computation of various azimuth and elevation is dependant on the geographic location (latitude and longitude). Explain how the software takes this into account.

4. By taking your location to be a city in the centre of the country, estimate the number of satellites over-flying the country.

5. How many Iridium satellites are parked. Why is satellite parking necessary?

6. Locate and list parked geostationary satellites. Why is it necessary to park geostationary satellites?