

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING**

**GLOBAL POSITIONING SYSTEM
OPEN ELECTIVE – VI (TO OTHER BRANCHES)
SYLLABUS FOR B.E. VI–SEMESTER**

Instruction	:	1period per Week	Semester End Exam	:	35	Subject Reference Code	:	OE610CE
Credits	:	1	Sessional Marks	:	15	Duration of Sem. End Exam	:	2Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>Objectives of this course are to</i>	<i>Upon the completion of the course, students are expected to</i>
1. To provide fundamental knowledge on geo spatial technology such as GPS	1. Describe the fundamental theory and concepts of the Global Positioning System to provide 3D positioning with great accuracy. 2. Compute errors and biases in GPS measurements and apply necessary corrections to obtain accuracyas per the user specifications.

UNIT-I

Overview of GNSS and Introduction to GPS, GLONASS, GALILEO, COMPASS, IRNSS systems

GPS: Basic concepts, Functional system of GPS – Space segment, control segment and user segment, Working principle of GPS, Signal structure and code modulation, Pseudo-range measurements and navigation position

UNIT-II

Errors and biases in GPS measurements, Accuracy of navigation position: UERE and DOP, Intentional degradation of GPS signals: Selective availability (SA) and Anti-spoofing (AS)

Differential GPS: Space based augmentation systems (e.g., SBAS, GAGAN) and Ground based augmentation systems (e.g., WASS, EGNOS)

GNSS applications: GIS and GPS integration

Learning Resources:

1. Leick, A., GPS Satellite Survey, John Wiley: NJ, 2015
2. Hofmann, B., Lichtenegger H. and Collins J., Global Positioning System: Theory and Practice, Springer: Berlin, 2011.
3. Hofmann-Wellenhof, Bernhard, Lichtenegger, Herbert, Wasle, Elmar, GNSS – GPS, GLONASS, Galileo and more, 2013.