

**Course Number: SE413- Syllabus
Satellite Geodesy & Geo-positioning
2024**

Course Description:

This course is designed to provide students with a solid foundation in satellite geodesy principles, along with the skills necessary for collecting, processing, and analyzing surveying observations from current global navigation satellite systems, such as GPS, GLONASS, Galileo, and BeiDou. Additionally, the course introduces the principles of GPS/GNSS system operations, types of GPS/GNSS observables, basic principles of position estimation with GPS/GNSS, GPS/GNSS error sources and analysis, various GPS/GNSS applications, as well as data collection and processing techniques.

Instructor:

Abdullah Alanazi, Ph.D.

Office Hours:

In person TBD. Also, appointments can be scheduled, send me an email at amalenazi@ksu.edu.sa

Textbook :

Bernhard Hofmann-Wellenhof, Herbert Lichtenegger, Elmar Wasle .
“GNSS – Global Navigation Satellite Systems GPS, GLONASS, Galileo, and more”.
Springer.2008.

Prerequisites:

SE 314 - Geodesy

Attendance:

Attendance is mandatory!!!!

Students are expected to attend each class and lab session.

The lecture notes **do not cover all** the course content. Important announcements will be made during the lecture sessions and review of laboratory procedures will also be outlined.

You are required to attend the laboratory session in which you are enrolled – **no exceptions.**

Laboratory and Assignments:

Homework Assignments that are turned in late incur a **-5% penalty per day** each class day that the assignment is late. Assignments over **five calendar days** late will not be accepted unless a written excuse and external verification. Homework is to be submitted in Lecture Hall. DO NOT place the homework under my office door.

Grading Policy: The final grades will be assigned using the following distribution:

Midterm-1 Exam	15 %
Midterm-2 Exam	15 %
Final Exam	40 %
Tutorial & Assignments	15 %
Laboratory	15 %
Total	100 %

Executive rule of King Saud University:

The grades earned by the student in each course are calculated as follows:

Score out of 100	Interpretation in English	Grade code	Grade weight (out of 5)
95-100	Superior Excellent	A+	5.00
90 to less than 95	Excellent	A	4.75
85 to less than 90	Superior very good	B+	4.50
80 to less than 85	Very good	B	4.00
75 to less than 80	Superior good	C+	3.50
70 to less than 75	Good		3.00
65 to less than 70	Superior Acceptable	D+	2.50
60 to less than 65	Acceptable	D	2.00
Less than 60	Fail	F	1.00

Course Content:

No	List of topics	Contact Hours
1	Overview of GPS	2
2	Satellite orbits	2
3	GPS observables	2
4	GPS errors	2
5	Surveying with GPS	2
6	GPS data processing	2
7	Coordinate systems	2
8	GPS Heighting	2
9	Augmentation systems	2
10	GPS modernization	2
11	GLONASS	2
12	Galileo	2
13	Compass	2
14	Precise Point Positioning	2
15	Indoor Navigation	2