Course Syllabus

SATELLITE COMMUNICATIONS

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Program: Telecommunications Engineering

1. Course number and name

TELG1020 - SATELLITE COMMUNICATIONS

2. Credits and contact hours

3 credits and 3 contact hours

3. Instructor's course or coordinator's name

ALFREDO JOSÉ NÚÑEZ UNDA

4. Text book, tittle, author, and year

- Dennis Roddy. Satellite Communications (4)

a.Other supplemental materials

- Maral. Satellite Communication Systems (5)
- Ippolito. Radiowave Propagation in Satellite Comunications (1)

5. Specific course information

a. Brief description of the content of the course (catalog description)

This course provides the mathematical elements that describe the geographical and geometrical aspects of the space, as well as the natural or artificial celestial bodies, supported by Kepler's laws. In addition, the effects of the space and atmospheric environment on the electromagnetic signal are studied qualitatively and quantitatively. The elements and blocks that make up the space and earth segment are detailed. Also, the processing of the digital signals is analyzed and the spectral efficiency parameters are established. Finally, spatial access mechanisms are emphasized, as well as applications focused on telephony, data and television services.

b. This course is: Selected elective

6. Specific goals for the course

a. Specific outcomes of instruction

1.- To analyze the concepts of orbit, its geographical and geometric positioning through mathematical models for performance evaluation.

2.- To design a satellite link according to the parameters of data flow and type of information to be transmitted in order to guarantee the quality of service to the user.

3.- To analyze satellite signal levels through access mechanisms for the optimization of system capacity in commercial applications.

b. Explicity indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

- An ability to communicate effectively in Spanish
- An ability to apply knowledge of mathematics, science and engineering

• A broad education necessary to understand the impact of engineering solutions in a social, environmental, economic and global context

7. Brief list of topics to be covered

1.- Bodies in space
2.- Antennas
3.- Satellite wave propagation
4.- Spatial segment and earth segment
5.- Digital signals
6.- Satellite link
7.- Satellite services