Transmission & Switching Project

Spring 2017

Cellular Planning

You are required to Design the optimum Cellular Planning of a given area using **Mat lab :**

- You can used an already generated function for the Erlang B tables, found online

Inputs to Program

1-Area (length and width in meters)
2- Total bandwidth of the service provider and channel bandwidth
3- Minimum signal to interference ratio
4- Erlang per user (a subscriber)
5- Blocking probability
   Note: each user's full duplex communication requires 1 channel for uplink and one channel for down link.
6-The user Sensitivity
7-Gain of the Antenna/ Gain of the Receiver
8-Required number of subscribers

Output:

1. The minimum number of cells needed to cover the area
2. The radius of the cell calculated (the radius must satisfy the user sensitivity)
3. The Type of Sectoring used(60,120,180) *must meet Signal To interference Ratio
4. The total number of subscribers in the system if changed.
5. A layout of the city Area Divided into the calculated number of cells Cells

- Useful functions(you do not have to use them)
  https://www.mathworks.com/matlabcentral/fileexchange/192-erlangb?focused=5037563&tab=function
  https://www.mathworks.com/matlabcentral/fileexchange/192-erlangb?focused=5037567&tab=function
  http://stackoverflow.com/questions/27963305/hexagonal-grid-representing-a-cellular-network-as-used-in-mobile-communication-s

- You can use the Tutorial question to test your code (cellular and path loss tutorial)

Groups of: maximum 6
Weight of Project: 10%
Deadline: 29/4/2017, evaluation timing will be scheduled .

Good Luck☺