

ECE 3656 Mobile and Wireless Networks
Spring 2002

Homework 3: Due in class Mon April 29 2002

- This test contains 1 problem. It allows you to earn 100 points.
- The solution to this problem should be a hard copy of the required program and also a floppy disk containing the C/C++ code. Show your work, as partial credit can be given. You will be graded not only on the correctness of your answer, but also on the clarity with which you express it. **Be neat.**
- **No late submissions will be accepted.**
- Only homework returned in a letter size envelope will be accepted. Please, write your name and the class name (ECE 1320) on the envelope (write clearly, please). Also, write your name and the class name in the floppy disk.

Write your name here: _____

Problem # 1 [100 points]. You are requested to write a program that given as input the number n of nodes of a wireless network, as well as the nodes transmission radius r , and a real number p , $0 < p \leq 1$ returns as output a value L such that if the three coordinates of each of the nodes are randomly and uniformly selected from 0 to L then at least the $(100p)\%$ of the resulting network topologies are connected. As for homework 2, we want topologies that are connected but not “too much,” i.e., the value L should be the largest for which the network topology is connected (namely, a larger L would be likely to produce topologies that are not connected). The resulting value for L should be statistically accurate, namely, we seek results with a confidence interval of 95% and 5% precision.