Dublin City University
School of Electronic Engineering

Coursework Submission Cover Sheet

Student No		**Degree Scheme**	
Student Name		**Year**	
Module	EE452	**Lecturer**	
Title		**Hours spent on this exercise**	

I hereby declare that the attached submission is all my own work, that it has not previously been submitted for assessment, and that I have not knowingly allowed it to be used by another student. I understand that deceiving or attempting to deceive examiners by passing off the work of another as one's own is not permitted. I also understand that using another's student's work or knowingly allowing another student to use my work is against the University regulations and that doing so will result in loss of marks and possible disciplinary proceedings.

Signed: **Date:**

Note: Coursework examiners are entitled to reject any coursework which does not have a signed copy of this form attached.

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Comments:

SIMULATION EXERCISE 1: Introduction to NS-3

This exercise is designed to familiarise you with the basic functionality of the simulator NS-3. The exercise is marked out of 100 marks, with marks for each part of the assignment as indicated below. The assignment contributes 7.5% of the overall EE452 module mark. Your report will be turned in via the link provide in Loop. This is an individual assignment. The university plagiarism policy applies in full.

Getting Started with NS-3

A number of good tutorials exist including:

Ns Tutorial: https://www.nsnam.org/docs/release/3.25/tutorial/singlehtml/index.html
This contains step-by-step tutorials that will lead you from the very basic of NS-3 like how to run a script on NS-3 and the NS-3 log system to a more in-depth look of NS-3 models and trace system.

Where to use NS

You have two options for using NS.

1. **You may use the machines in S210**. You will need to boot into Linux Mint and use your normal credentials to log in. If you encounter any issues with this, please contact the demonstrator. **IMPORTANT:** If you use the lab to run NS3, before you logout, remove the trace files (.tr) and .pcap files from the "/ns-allinone-3.25/ns3.25" folder and remove the tcpWireless.cc and/or udpWireless.cc files from "/ns-allinone-3.25/ns3.25/scratch" folder. A failure to do this will result in the software hanging when the next person goes to use it.

2. **You may install NS on your own machine**. Instructions for doing this with Windows laptops can be found in the "Install_NS-3" document.

Running NS

First, you have to copy your NS-3 scripts to the folder "**~/repos/ns-3-allinone/ns-3-dev/scratch**". Then, open a terminal window; change the folder to "**~/repos/ns-3-allinone/ns-3-dev/**" and run your NS-3 script as follows:

./waf --run myscript

In the above command line, "***myscript.cc***" is the **cc** file containing the simulation scenario. (*Note:* you have to omit the extension "***.cc***" part in the command.)

Assignment

1) Create and run a model for a single node and access point over a wireless link. **[10 marks]**

2) Analyse loss, delay, throughput, and jitter for your model. There are a number of ways in which you can do this analysis, Please see the assignment forum. **[20 marks]**

3) Add a third node to the model. **[20 marks]**

4) Repeat your analysis of loss, delay, throughput, and jitter for the new system. Compare the results to those in Step 2. **[10 marks]**

5) Describe the NS-3 WiFi model used in this assignment. Compare it to the actual protocol. What features are captured, and what features are not represented? **[30 marks]**

Turn in:
Lab report detailing your work. Please use proper reporting including introduction, conclusion, and explanations of what you have done at each step. **[10 marks]**