Module code	TF-4304			
Module Title	Mobile and Wireless Network Systems			
Degree/Diploma	Bachelor of Engineering (Information Communication Systems)			
Type of Module	Major Option			
Modular Credits	4	**Total student workload**	8	hours/week
		Contact hours	4	hours/week
Prerequisite	None			
Anti-requisite	None			

Aims

The aim of this module is to introduce different wireless and mobile network systems, their protocol architecture and setup using different wireless data services. Network simulation tools will be used to setup and conduct experiments on wireless and mobile networks.

Learning Outcomes:

On successful completion of this module, a student will be expected to be able to:

Lower order :	20%	- comprehend wireless LANs and wireless data services - configure wireless LANs using different wireless technologies and analyse the network for different performance metrics
Middle order :	40%	- investigate and research advance wireless networks like Ad hoc and Cellular networks - design and setup Ad hoc networks and Cellular networks with different parameters and different wireless technologies
Higher order:	40%	- perform experiments to populate different networks and analyse protocols at different layers for establishing that type of network - present network analysis reports and arguments for performance of networks

Module Contents

- Wireless LANs: WLAN requirements and basics, IEEE 802.11 protocol architecture, MAC protocol CSMA/CA, frame addressing, Bluetooth and Home RF, Bluetooth protocol Architecture
- Cellular networks: Cellular Concepts, Cell splitting, Cellular network architecture, Control channel, Handoff, Difficulty in Handoff detection, Location area based protocols
- Ad hoc and Sensor networks: MACAW MAC Layer protocol , Transport layer protocols, Routing in Ad Hoc Networks, AODV, DRS, DSDV, Omni Antenna vs. Directional Antenna Pros and Cons, and interferences
- Wireless Data services: Cellular Digital Packet Data (CDPD), Generalized Packet Radio Service (GPRS), GSM, Standards like LTE
- Putting all together in NS2

Assessment	Formative assessment	Monthly online multiple choice and a report on experiments completed will be used to evaluate their learning
	Summative assessment	Examination: 40%
		Coursework: 60% - 2 class tests (15% each) - 2 individual laboratory assignments (15% each)