MODULE DESCRIPTOR VERSION: VE2		
No.	Course Learning Outcomes	Assessments
1	Interpret network topologies and protocols of modern communication systems. (C3, PLO2)	Class Test
2	Analyse networking control techniques and applications. (C4, PLO2)	Final Exam
3	Build modern communication systems with appropriate network protocols and algorithms. (P5, PLO5)	Individual Assignment

No.	AGMT Task No.	Question Vs Taxonomy																	
		Cognitive Level						Psychomotor Level							Affective Level				
		1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5
CLO3	1,2,3											100M							
	POM											100%							

Overview

Internet of Things (IoT) is a network of physical devices, vehicles, buildings and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. An IoT network allows objects to be sensed and/or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. Sensors are used to detect physical phenomena such as light, heat, pressure, temperature, humidity etc. Sensors are regarded as a revolutionary information gathering method to build the information and communication system which will greatly improve the reliability and efficiency of infrastructure systems. It follows IPv6 addressing system. LowPAN Gateway are the Gateways to Internet for all the things/devices that we want to interact with. Gateway help to bridge the internal network of sensor nodes with the external Internet i.e., it will collect the data from sensors and transmitting it to the internet infrastructure.

Task

1. **Build** an IoT network using sensors, LowPAN Gateway, routers and wired nodes.
2. **Organise** the configuration setting clearly in your report.
3. **Perform** the simulation to examine the changing of IP addresses from source to destination by adjusting various performance metrics such as Network Metrics, Link Metrics, Application Metrics, and Protocol Metrics etc. Explain the graphs and comment on the results.

Assessment Criteria (100%):

Report format (10%)

(i)   Report format using word processing appropriate tools   10%

Report documentation (70%)

(i)   Building of high-quality application using suitable tools and techniques   30%

(ii)   Innovativeness using suitable algorithms & techniques   5%

(iii)   Simulation results using suitable tools   25%

(iv)   Discussion and Conclusion on results obtained using suitable tools   10%

Tutor Assessment (20%)

(i)   Demonstration and Q& A done using suitable tools and techniques   20%

- Please refer to appendices A, B and C for general requirements on report, Instructions on discussion, conclusion and references and grading criteria.

APPENDIX A

General requirements on Report

- The report must be formatted with a font size of 12pt if Times New Roman or a font size of 11pt if Arial and 1.5 line spacing and maximum 30 pages. Please ensure the paragraphs are properly aligned/ justified.

- There should be List of Tables and List of Figures after the Table of Content.

- The report should be in chapters and the structure should not go beyond the second level. Instead of adding subsections at the third level you may use bullets if required.

- All information provided must be straight to the point, precise and all information must be accordingly cited and well presented. Avoid plagiarism.

- All figures and tables must have a title and referenced i.e. indicate the source.

- There might be slight variations in the order and content required, please do approach your relevant lecturer for future assistance.

- The report must be in binding.

- Please also include the following in you report
    - Page numbering at each page (Page X of Y)
    - Figure and table caption font size : Times New Roman,10pt
    - Position of figure and table: center-aligned.

- The total number of pages should not exceed 30 pages.

Appendix B

Instructions to Students on Discussion, Conclusion and References

Discussion

In the Discussion section you should give an overall appraisal of the results of your work. It is here that you will have the best opportunity to demonstrate your understanding of the work and to give a critical account of what challenges you were facing and your solution to these challenges for the assignment completion.

Conclusion

The Conclusion is a short summary of the results of your work (about 200 words). The Conclusion should follow naturally from the Discussion. It should give a concise statement of what has been achieved. Anticipated application of techniques developed should be summarized very briefly. The Conclusion should be self-contained, i.e., it should not make reference to any sections, figures, or references in the report.

References

All references to books, papers, and other publications must be <u>fully</u> and <u>correctly</u> quoted to be useful to the reader. Please refer to the APA Referencing Guide document in APU Library Homepage for guidance on referencing and citation.

Citation Example

<u>In the text</u>

A few researchers in the linguistics field have developed training programs designed to improve native speakers' ability to understand accented speech (Derwing et al., 2002; Thomas, 2004). Their training techniques are based on the research described above indicating that comprehension improves with exposure to non-native speech. Derwing et al. (2002) conducted their training with students preparing to be social workers, but note that other professionals who work with non-native speakers could benefit from a similar program.

<u>In the References section</u>

Derwing, T. M., Rossiter, M. J., & Munro, M. J. (2002). Teaching native speakers to listen to foreign-accented speech. *Journal of Multilingual and Multicultural Development,* 23(4), 245-259.

Thomas, H. K. (2004). *Training strategies for improving listeners' comprehension of foreign-accented speech* (Doctoral dissertation). University of Colorado, Boulder.
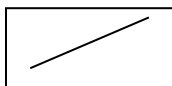
Appendix C - Grading Criteria

Name: _____   **TP:** _____

Criteria	Fail	Marginal Fail	Pass	Credit	Distinction
	0 – 3	**4**	**5 – 6**	**7**	**8 – 10**
Report format using appropriate word processing tools (10%) [CLO3-P5-PLO5]	▪ **Organised** Very poor documentation standards due to inappropriate usage of word processing tools. No citation and references.	▪ **Organised** poor documentation standards due to incorrect usage of word processing tools & techniques. Some attempts made to do citation and referencing but either irrelevant / outdated or not according to APA Name Referencing	▪ **Organised** average documentation standards with correct usage of word processing tools & techniques.Some citation and references noted but either irrelevant / outdated or not according to APA Name Referencing.	▪ **Organised** good documentation standards with correct usage of word processing tools & techniques. Most citation and references noted and are relevant / up-to-date using APA Name Referencing.	▪ **Organised** excellent documentation standards with correct usage of word processing tools & technique. All citation and references are relevant / up-to-date and using APA Name Referencing.
	0 – 11	**12 – 14**	**15 – 19**	**20 – 22**	**23 – 30**
Assemble of high quality application using suitable tools and techniques (30%) [CLO3-P5-PLO5]	▪ **Built** or very poor design and/or implementation.	▪ **Built** the design and briefly described the design of the system using suitable tools and techniques. ▪ **Assembled** and executed partial operations but did not manage to justify any specifications used.	▪ **Built** the design and briefly discussed the design of the system using suitable tools and techniques. ▪ **Assembled** and executed partial operations based on specifications used with simple reasons but with no calculations or references.	▪ **Built** the design and given a moderate detailed discussion of the design of the system using suitable tools and techniques. ▪ **Assembled** and executed all operations based on specifications used with valid reasons and with calculations or references.	▪ **Built** the design and given a detailed discussion of the design of the system using suitable tools and techniques. ▪ **Assembled** and executed all operations based on the specifications used with valid reasons and with extensive calculations or references.
	0 – 1	**2**	**3**	**4**	**5**
Innovativeness using suitable algorithms & techniques (5%) [CLO3-P5-PLO5]	▪ **Performed** very poor application of existing algorithms & techniques.	▪ **Performed** poor application of existing algorithms & techniques.	▪ **Performed** basic application of existing algorithms & techniques but with improvement added	▪ **Performed** good application of existing algorithms & techniques but with significant improvement added.	▪ **Performed** eexcellent application of new algorithms & techniques and with results improved.

		0 – 4	5 – 10	11 – 15	16 – 20	21 – 25
Simulation results using suitable tools (25%) [CLO3-P5-PLO5]		• **Performed** the simulation of the program which is not fully relevant using suitable tools and not able to display the results.	• **Performed** the simulation of the program with errors using suitable tools and displayed the results with errors.	• **Performed** the simulation of the correct program with minor errors using suitable tools and displayed the results with errors.	• **Performed** the simulation of the correct program with minor errors using suitable tools and displayed the results correctly.	• **Performed** the simulation of the correct program without errors using suitable tools and displayed the results correctly.
		0 – 3	**4**	**5 – 6**	**7**	**8 – 10**
Discussion and Conclusion on results obtained using suitable tools (10%) [CLO3-P5-PLO5]		• **Organised** poor discussion and conclusion on the work done with future work and the simulation results obtained using suitable tools.	• **Organised** weak discussion and conclusion on the work done with future work and the simulation results obtained using suitable tools.	• **Organised** average discussion and conclusion on the work done with future work and the simulation results obtained using suitable tools.	• **Organised** good discussion and conclusion on the work done with future work and the simulation results obtained using suitable tools.	• **Organised** excellent discussion and conclusion on the work done with future work and the simulation results obtained using suitable tools.
		0 – 7	**8-9**	**10-12**	**13-15**	**16 – 20**
Tutor Assessment (20%) [CLO3-P5-PLO5]	**Demonstration and Q&A done using suitable tools and techniques**	• **Performance** was was very poor without suitable tools and techniques. Unable to answer.	• **Performance** was at bare minimum as per the assignment with suitable tools and techniques. Answered 40% of the questions.	• **Performance** was sufficient to what was done as per assignment with suitable tools and techniques. Answered 50% of the questions.	• **Performance** was clear and in detail what was done as per the assignment with suitable tools and techniques. Answered 60% of the questions.	• **Performance** was highly appropriate and coverage of the complete work done as per the assignment with suitable tools and techniques. Answered 75% of the questions.

Total Marks:

Lecturer: Dr. Raed Mohammed Taher Abdulla