

ASSESSMENT GUIDE

MIT5003

**Wireless Networks and
Communication**

Semester 2 2020



Assessment overview

Assessments	Overview	Weight	Due date	Unit Learning Outcomes (ULO)
Assessment 1: Case Study and Presentation	In this case study you will explore some of the latest techniques in wireless communications and networks and apply these to a given case study for methodology selection, requirements and problem solving.	10%	Session 5 Sunday 11:55 PM	ULO1 and ULO2
Assessment 2: Research Report	In this assessment you will write a critique report on an academic paper in the field of wireless for applications to real world scenarios of communications and networks	10%	Session 9 Sunday 11:55 PM	ULO1 and ULO4
Assessment 3: Major Assignment	In this assessment you will work individually to apply your knowledge, to analyse and develop certain design models based on specific requirements in a simulation environment.	30%	Session 12 Sunday 11:55 PM	ULO1-ULO4

Referencing guides

You must reference all the sources of information you have used in your assessments. Please use the IEEE referencing style when referencing in your assessments in this unit. Refer to the Library's referencing guides for more information.

- https://elearning.vit.edu.au/pluginfile.php/473840/block_html/content/VIT%20Library%20Referencing%20-%20IEEE%20-%2007042020.pdf

Academic misconduct

VIT enforces that the integrity of its students academic studies follow an acceptable level of excellence. VIT will adhere to its [VIT Policies, Procedures and Forms](#) where it explains the importance of staff and student honesty in relation to academic work. It outlines the kinds of behaviours that are "academic misconduct", including plagiarism.

Late submissions

In cases where there are no accepted mitigating circumstances as determined through [VIT Policies, Procedures and Forms](#), late submission of assessments will lead automatically to the imposition of a penalty. Penalties will be applied as soon as the deadline is reached.

Short extensions and special consideration

Special Consideration is a request for:

- Extensions of the due date for an assessment, other than an examination (e.g. assignment extension).
- Special Consideration (Special Consideration in relation to a Completed assessment, including an end-of-unit Examination).

Students wishing to request Special Consideration in relation to an assessment the due date of which has not yet passed must engage in written emails to the teaching team to Request for Special Consideration as early as possible and prior to start time of the assessment due date, along with any accompanying documents, such as medical certificates.

For more information, visit [VIT Policies, Procedures and Forms](#).

Inclusive and equitable assessment

Reasonable adjustment in assessment methods will be made to accommodate students with a documented disability or impairment. Contact the unit teaching team for more information.

Contract Cheating

Contract cheating usually involves the purchase of an assignment or piece of research from another party. This may be facilitated by a fellow student, friend or purchased on a website. Other forms of contract cheating include paying another person to sit an exam in the student's place.

Contract cheating warning:

- By paying someone else to complete your academic work, you don't learn as much as you could have if you did the work yourself.
- You are not prepared for the demands of your future employment.
- You could be found guilty of academic misconduct.
- Many of for pay contract cheating companies recycle assignments despite guarantees of "original, plagiarism-free work" so similarity is easily detected by Turnitin.
- Penalties for academic misconduct include suspension and exclusion.
- Students in some disciplines are required to disclose any findings of guilt for academic misconduct before being accepted into certain professions (e.g. law).
- You might disclose your personal and financial information in an unsafe way, leaving yourself open to many risks including possible identity theft.
- You also leave yourself open to blackmail - if you pay someone else to do an assignment for you, they know you have engaged in fraudulent behaviour and can always blackmail you.

Grades

We determine your grades to the following Grading Scheme:

Grade	Percentage
A	80% – 100%
B	70% – 79%
C	60% – 69%
D	50% – 59%
F	0% – 49%

Assessment details

Assessment 1: Case Study and Presentation

Overview

Weight	Length	Due date	ULO
10%	1000-1500	Session 5 Sunday 11:55 PM	ULO1 and ULO2

Introduction

In this assessment you are required to explore the given case study and provide a solution, employing the latest wireless communication techniques. The solution needs to be presented in a report and a short video presentation discussing findings and the proposed solution. The assessment will help in developing an understanding of communication in wireless networks and the limitations and challenges.

Case Study: Home office

Under doctor's orders for more bed rest, Jan received authorization from her employer to work from home during and immediately after her pregnancy. However, to do her job effectively, she routinely needs to retrieve large files from the corporate local area network (LAN), modify them, and return them to another location on the LAN. She also occasionally likes to print something for convenience or record keeping, and she needs convenient access to a telephone. Jan has received instructions from her company's Information Technology (IT) staff regarding how to connect to the corporate LAN.

Jan currently has broadband access to her home. However, the only access is to a PC in a family room in the home's finished basement. Jan's family uses this PC for Internet access, online gaming, and as a resource for school projects. The PC is connected to a colour printer. Jan wants to create a home office in an unused upstairs bedroom. During the later stages of her pregnancy, she wants the convenience of working from more comfortable locations, such as her couch or bed. She already has a cordless phone and is planning to purchase a laptop PC and perhaps a second printer. However, a quick call to her broadband provider has caused her to question the financial feasibility of running new wiring for broadband access in other locations of her home. Perplexed with her problem, Jan talks to some of her co-workers, and one of them mentions wireless. Jan does a little investigation of the wireless LAN products available and decides many of the products are within her budget.

The scope of Jan's solution will be limited by the fact that she already has broadband access installed in her home. She also has instructions for connecting to the corporate LAN. However, she has not checked to see if the wireless home network will affect these instructions. Jan's challenge is that she needs reliable high-speed access to the corporate LAN from the new home office and other convenient locations in the house. She wants to interfere as little as possible with use of the PC in the family room, and she needs her laptop to be inaccessible from the family PC. She would like to have printing capability in the home office. However, her solution must fit within a limited budget. Finally, all equipment that she uses for her solution must be immediately available.

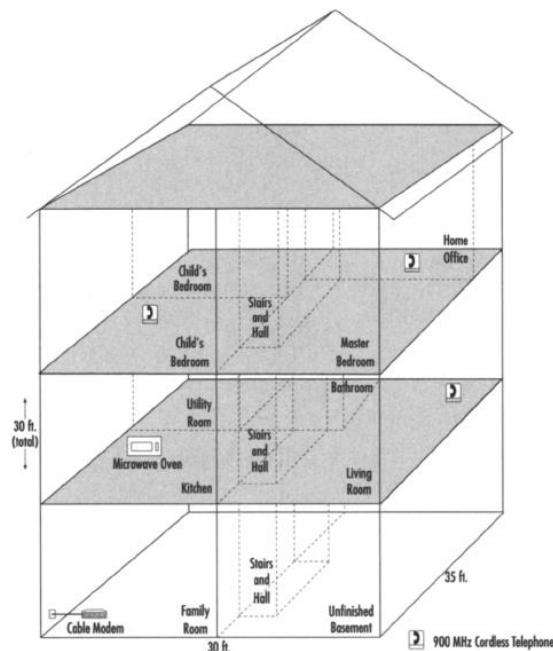


Figure 1. Jan's Site

The proposed solution must consider the following requirements:

- Any locations where she wants to use the laptop should not be more than 100 meters (over 300 feet) away from the access point
- Interference which may be caused by the cordless phone and microwave
- The home network should be cost efficient
- The network needs to be secure
- Other users on the home network

Submission Instructions

All submissions are to be submitted through Turnitin. Drop-boxes linked to Turnitin will be set up in Moodle. Assessments not submitted through these drop-boxes will not be considered. Submissions must be made by the end of session 5 Sunday 11:55PM.

The Turnitin similarity score will be used to determine any plagiarism of your submitted assessment. Turnitin will check conference web-sites, Journal articles, online resources and your peer's submissions for plagiarism. You can see your Turnitin similarity score when you submit your assessments to the appropriate drop-box. If your similarity score is of concern you will have a chance to change your assessment and resubmit. However, re-submission is only allowed prior to the submission due date and time. After the due date and time have elapsed you cannot make re-submissions.

Please Note: All work is due by the due date and time. Late submissions will be penalized at the rate of 10% of the assessment final grade per day including weekends.

Marking Guide: 50 Marks

Task	Description	Marks
Report Layout	The report style, language and structure should be appropriate.	5
Introduction	This section should include a few sentences which provide an outline of the assessment.	5
Elaborate	Elaborate the importance of the home office and discuss how the proposed solution meets requirements of the home office.	5
Design	Update the site design to include all the new hardware required for the secured home network. The site design can be modified, or you could create a new design based on the existing site, any tool could be used to provide the design.	10
Critical Analysis	The students are required to critically analyse, the communication channels and transmission techniques used by the wireless devices, and the limitations of the proposed wireless devices.	10
Presentation	The students are required to submit a 5-minute video presentation, discussing their proposed solution. The video presentation should not have more than 10 slides.	5
Conclusion	Summary of the report	5
References	Follow the IEEE style	5

Marking criteria/Rubric

You will be assessed on the following marking criteria/Rubric:

Assessment criteria	Exceptional $\geq 80\%$	Admirable 70% – 79%	Creditable 60% - 69%	Acceptable 50% - 59%	Unsatisfactory ≤ 49
C1. Report Layout 5 points	Extremely well structured and organized report; use of professional language	Well-structured and organized report; use of professional language;	Structured and organised report; use of language is appropriate	Structured and organised report; use of language could be improved	Choppy and confusing; format was difficult to follow; language needs to be proofread plenty of errors
C2. Introduction 5 points	The introduction is well rounded and provides a brief description of the assessment; the introduction sets an excellent flow for the report	The introduction provides a brief description of the assessment; the introduction sets a good flow for the report	The introduction provides a brief description of the assessment; the introduction sets the flow for the report	The introduction could relate more to the assessment	The introduction does not relate to the assessment and does not set the flow for the assessment
C3. Elaborate 5 points	The section demonstrates the importance of the home office extremely well; the section provides an excellent explanation of how the proposal meets the requirements	The importance of the home offices is demonstrated well; the section provides a good explanation of how the proposal meets the requirements	The section demonstrated the importance of the home office; the section provides an explanation of how the proposal meets the requirement	The section briefly describes the importance of a home office and provides some explanation of how the proposal meets the requirement	The importance of the home office is hardly explained; little discussion of how the proposal meets the requirements

C4. Design 10 points	An updated site design has been presented using an industry tool; the design does a great job in addressing the requirements; the home office design provides a good security solution	An updated site design has been presented using an industry tool; the design does a good job in addressing the requirements; the home office design provides a security design	An updated site design has been presented using an industry tool; the design addresses the requirements; the home office design provides a security design	An updated site design has been presented; the design addresses some of requirements	A brief site design has been presented; the design does not meet the requirements and does not address the security
C5. Critical Analysis 10 points	Provided an excellent critical analysis with focus on the communication channels and transmission techniques used by wireless devices; a well-rounded assessment of the limitation of the proposed wireless devices	Provided a good critical analysis with focus on the communication channels and transmission techniques used by wireless devices; an assessment of the limitation of the proposed wireless devices	The critical analysis focused on the communication channels and transmission techniques used by wireless devices; the limitations of proposed wireless devices was somewhat discussed	The critical analysis focused on the communication channels and transmission techniques used by wireless devices	The critical analysis lacks depth and detail; the critical analysis did not cover the limitations of the proposed wireless devices
C4. Presentation 5 points	Presentation is structured with clear beginning, middle and end; Main points were easy to follow and logical; speaker engaged audience, material presented was suited to length of presentation with clear summarization of main points.	Most information presented in logical sequence; generally, very well organized but better transitions might have been given; Material was well suited to length of presentation with summary of main points provided.	Most information presented in logical sequence; generally, organized but better transitions might have been given; Material was suited to length of presentation with summary of main points provided.	Structure of presentation was hard to follow with main ideas loosely connected; insufficient material presented to support main ideas. Conclusion unclear.	Presentation is choppy and disjointed; does not flow; Presentation ended without a conclusion or summary of key points.

C7. Conclusion 5 points	Provided an excellent summary of the assessment; covering all aspects of the assessment	Provided a good summary of the assessment; covering most aspects of the assessment	Provided a summary of the assessment; somewhat covered the aspects of the assessment	Provided a summary of the assessment.	The conclusions failed to summarise the assessment
C8. References 5 points	The references followed IEEE Style; the references were cited and complete	The references followed IEEE Style; most the references were cited and complete	Most references followed IEEE Style; some of the references were cited and complete	Most references followed IEEE Style; the references were not cited	The references did not follow IEEE Style and were not cited and incomplete

Assessment 2: Research Report

Overview

Weight	Length	Due date	ULO
10%	1000-1500	Session 9 Sunday 11:55 PM	ULO1 and ULO4

Introduction

In this assessment students are required to research on an article in the area of wireless communication. The research needs to be geared towards the transmission fundamentals with focus on the wireless channels, analysing the performance of wireless networks. The assessment is aimed to improve the student's investigation and analysis skills.

Task

In this assessment you are required to prepare a 2-page abstract in IEEE Style, use the template provided on the LMS. To prepare the abstract you need to select an article published in 2015 and later. The selected article needs to include wireless transmission fundamentals. The article needs to be on one of the areas given below.

- 4G and 5G cellular systems
- Ad hoc wireless networks
- Adaptive antennas for wireless systems
- AI Powered Wireless Communications
- Channel estimation
- Computation and Data Driven Wireless Communications
- Heterogeneous cellular networks
- Next generation WiFi
- Massive MIMO
- Propagation and channel characterization

The report must follow the template provided on the LMS. Please note that citation of sources is mandatory and must be in the IEEE style.

Submission Instructions

All submissions are to be submitted through Turnitin. Drop-boxes linked to Turnitin will be set up in Moodle. Assessments not submitted through these drop-boxes will not be considered. Submissions must be made by the end of session 9 Sunday 11:55PM.

The Turnitin similarity score will be used to determine any plagiarism of your submitted assessment. Turnitin will check conference websites, Journal articles, online resources and your peer's submissions for plagiarism. You can see your Turnitin similarity score when you submit your assessments to the appropriate drop-box. If your similarity score is of concern you will have a chance to change your assessment and resubmit. However, re-submission is only allowed prior to the submission due date and time. After the due date and time have elapsed you cannot make re-submissions.

Please Note: All work is due by the due date and time. Late submissions will be penalized at the rate of 10% of the assessment final grade per day including weekends.

Marking Guide: 50 Marks

Task	Description	Marks
Report Layout	The report layout, language and structure should be appropriate. The report should follow the template provided on the LMS and should be 2 pages.	5
Abstract	Include the step-by-step explanation of configuration and the related protocols and technologies	5
Introduction	This section should provide an outline of the assessment and the following sections.	5
Literature Review	You should perform a literature survey on the selected article. The literature survey should include at least 5 research papers, published no later than 2015.	15
Evaluate	Based on the available literature, identify and evaluate the performance of wireless communication networks.	10
Conclusion	Summary of the report.	5
References	Follow the IEEE Style	5

Marking criteria/Rubric

You will be assessed on the following marking criteria/Rubric:

Assessment criteria	Exceptional >=80%	Admirable 70% – 79%	Creditable 60% - 69%	Acceptable 50% - 59%	Unsatisfactory <=49%
C1. Report Layout 5 points	Extremely well structured and organized report; use of professional language; report template has been followed	Well-structured and organized report; use of professional language; report template has been followed	Structured and organised report; use of language is appropriate; template has been followed	Structured and organised report; use of language could be improved; template has been followed partially	Choppy and confusing; format was difficult to follow; language needs to be proofread plenty of errors; template has not been used
C2. Abstract 5 points	The abstract provides an insight of the article; the abstract is crisp; written extremely well	The abstract provides an insight of the article; the abstract is crisp; written very well	The abstract provides an insight of the article; written well	The abstract provides an insight of the article	The abstract is vague and difficult to follow; the abstract is not written well at all
C3. Introduction 5 points	The introduction is well rounded and provides a brief description of the assessment; the introduction sets an excellent flow for the report	The introduction provides a brief description of the assessment; the introduction sets a good flow for the report	The introduction provides a brief description of the assessment; the introduction sets the flow for the report	The introduction could relate more to the assessment	The introduction does not relate to the assessment and does not set the flow for the assessment
C4. Literature Review 15 points	The literature review provides an in depth analysis of 5 published articles/conference papers in the area; the literature review is extremely well written	The literature review provides an in depth analysis of 5 published articles/conference papers in the area; the literature review is well written and	The literature review provides an in depth analysis of the published literature in the area; the literature provides an insight of the area	The literature review provides an analysis of the published literature	The literature review lacks depth and detail; the literature review fails to provide a critique

	and provides a clear insight of the area	provides a clear insight of the area			
C4. Evaluate 10 points	The section provides an excellent evaluation of the performance; a well-rounded evaluation against the existing techniques	The section provides a good evaluation of the performance; a good evaluation against the existing techniques	The section provides a good evaluation of the performance; an evaluation against the existing techniques	An evaluation of the performance is somewhat provided	The evaluation of the performance has not been carried out; very little analysis is provided
C4. Conclusion 5 points	Provided an excellent summary of the assessment; covering all aspects of the assessment	Provided a good summary of the assessment; covering most aspects of the assessment	Provided a summary of the assessment; somewhat covered the aspects of the assessment	Provided a summary of the assessment.	The conclusions failed to summarise the assessment
C4. References 5 points	The references followed IEEE Style; the references were cited and complete	The references followed IEEE Style; most the references were cited and complete	Most references followed IEEE Style; some of the references were cited and complete	Most references followed IEEE Style; the references were not cited	The references did not follow IEEE Style and were not cited and incomplete

Assessment 3: Major Assignment

Overview

Weight	Length	Due date	ULO
30%	2500 Words	Session 12 Sunday 11:55 PM	ULO1-ULO4

Introduction

In this assessment the students are required to plan and design a wireless enterprise network for a hospital. To design the enterprise network, you are required to perform requirement analysis, understand the site, including the infrastructure and any line of sight issues. Since the buildings are medical in nature, you must take special care when deploying wireless communications. Medical equipment may be sensitive to wireless devices and channels. You must pay special attention to limiting radio frequencies in and around the emergency room area to avoid any interference

Task

The IS manager from Jones Hospital has hired you as a consultant to provide a wireless LAN solution for their hospital network. The hospital employs just over 800 employees, working in a complex composed of seven buildings in an urban area. All the buildings are close enough in proximity that employees frequently walk between buildings. The management staff wants to deploy wireless technology in their enterprise network. They have heard that this type of network will save them money as opposed to the current leased line network. They believe that the added mobility will also dramatically increase productivity. Since the staff moves from building to building, it seems to be the right idea to provide them with computer equipment and data that will roam with them. The area that the hospital buildings cover is shown in the Figure 2.

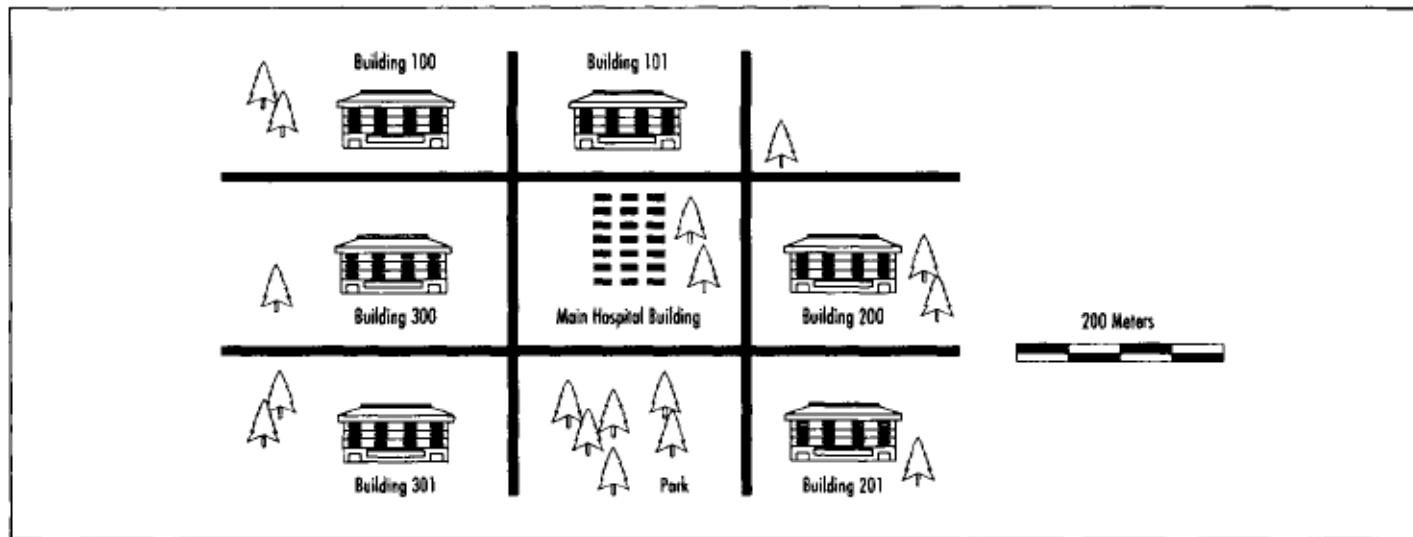


Figure 2. Hospital Buildings

The assessment requires you to plan and design a wireless network for the hospital using any industry tool of your choice.

Citation of sources is mandatory and must be in the IEEE style.

Submission Instructions

All submissions are to be submitted through Turnitin. Drop-boxes linked to Turnitin will be set up in Moodle. Assessments not submitted through these drop-boxes will not be considered. Submissions must be made by the end of session 12 Sunday 11:55PM.

The Turnitin similarity score will be used to determine any plagiarism of your submitted assessment. Turnitin will check conference web-sites, Journal articles, online resources and your peer's submissions for plagiarism. You can see your Turnitin similarity score when you submit your assessments to the appropriate drop-box. If your similarity score is of concern you will have a chance to change your assessment and resubmit. However, re-submission is only allowed prior to the submission due date and time. After the due date and time have elapsed you cannot make re-submissions.

Please Note: All work is due by the due date and time. Late submissions will be penalized at the rate of 10% of the assessment final grade per day including weekends.

Marking Guide: 100 Marks

Task	Description	Marks
Report Layout	The report style, language and structure should be appropriate.	5
Introduction	This section should include a few sentences which provide an outline of the assessment.	5
Requirement Analysis	Analyse and discuss requirements of the hospital, including the functional and non-functional requirements of the wireless enterprise network.	15
Network Design	A comprehensive network design needs to be provided, covering all the buildings and open areas of the hospital. The network design needs to include all the networking devices, equipment and connections. The network is required to be designed in any industry tool.	20
Critical Analysis	The students are required to provide a critical analysis of the design of the network, the analysis should be in depth and detailed. The critical analysis should provide reasoning for the selection of the network devices and the design.	10
Constraint and Limitations	The constraints and limitations of the enterprise network need to be discussed. A workaround needs to be discussed and the effect of the constraints and limitations need to be explored.	10
Conclusion	Conclude with your opinion about the results.	5
References	Follow the IEEE style	5

Marking criteria/Rubric

You will be assessed on the following marking criteria/Rubric:

Assessment criteria	Exceptional >=80%	Admirable 70% – 79%	Creditable 60% - 69%	Acceptable 50% - 59%	Unsatisfactory <=49%
C1. Report Layout 5 points	Extremely well structured and organized report; use of professional language; report template has been followed	Well-structured and organized report; use of professional language; report template has been followed	Structured and organised report; use of language is appropriate; template has been followed	Structured and organised report; use of language could be improved; template has been followed partially	Choppy and confusing; format was difficult to follow; language needs to be proofread plenty of errors; template has not been used
C2. Introduction 5 points	The introduction is well rounded and provides a brief description of the assessment; the introduction sets an excellent flow for the report	The introduction provides a brief description of the assessment; the introduction sets a good flow for the report	The introduction provides a brief description of the assessment; the introduction sets the flow for the report	The introduction could relate more to the assessment	The introduction does not relate to the assessment and does not set the flow for the assessment
C3. Requirement Analysis 15 points	The requirement analysis is in depth and detailed; all requirements of the hospital have been considered; the functional and non-functional requirements explained extremely well.	The requirement analysis is in depth and detailed; most requirements of the hospital have been considered; the functional and non-functional requirements explained well.	The requirement analysis is provided; most requirements of the hospital have been considered; the functional and non-functional requirements are explained.	A requirement analysis has been carried out; some functional and non-functional requirements discussed	A requirement analysis has not been carried out; briefly discussed the requirements

C3. Network Design 20 points	The network design covers all areas of the hospital; the network design is clear and easy to understand; the network is extremely well designed with an industry tool	The network design covers all areas of the hospital; the network design is clear; the network is well designed with an industry tool	The network design covers most areas of the hospital; the network is well designed with an industry tool	The network is designed with an industry tool and covers most areas of the network	The network is not designed with an industry tool; The network design seems incomplete and does not cover all areas
C4. Critical Analysis 10 points	Provided an excellent critical analysis with focus of the design of the network; the critical analysis provided great reasoning for the selection of the networking devices and the design	Provided a good critical analysis with focus of the design of the network; the critical analysis provided reasonable reasoning for the selection of the networking devices and the design	Provided a reasonable critical analysis with focus of the design of the network; the critical analysis provided reasonable reasoning for the selection of the networking devices and the design	The critical analysis focused on the design of the network; somewhat reasoning provided	The critical analysis lacks depth and detail; the critical analysis did not cover the limitations of the proposed wireless devices
C4. Constraints and Limitations 10 points	The constraints and limitations explained extremely well; a workaround the constraints and limitations are provided; the effect of the constraints and limitations discussed	The constraints and limitations explained very well; a workaround the constraints and limitations are provided; the effect of the constraints and limitations discussed	An explanation of the constraints and limitations is provided; a workaround the constraints and limitations are provided; the effect of the constraints and limitations discussed	An explanation of the constraints and limitations is provided; a brief workaround discussed	The constraints and limitations are hardly explained, a workaround not discussed; the effects have not been highlighted
C5. Conclusion 5 points	Provided an excellent summary of the assessment; covering all aspects of the assessment	Provided a good summary of the assessment; covering most aspects of the assessment	Provided a summary of the assessment; somewhat covered the aspects of the assessment	Provided a summary of the assessment.	The conclusions failed to summarise the assessment

C6. References 5 points	The references followed IEEE Style; the references were cited and complete	The references followed IEEE Style; most the references were cited and complete	Most references followed IEEE Style; some of the references were cited and complete	Most references followed IEEE Style; the references were not cited	The references did not follow IEEE Style and were not cited and incomplete
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