



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

LEVEL/ LEFEL : 4

MODULE CODE/ COD Y MODIWL: ACCC4002
INTERNET PROTOCOLS

ASSESSMENT TYPE/ MATH O ASESU: ASSIGNMENT

ASSESSMENT/COMPONENT/ ASESAD/CYDRAN: ASSESSMENT 1

COMPONENT WEIGHTING/ PWYSAU'R CYDRAN: 100 %

WORD COUNT/ NIFER Y GEIRIAU:

SUBMISSION DETAILS/ MANYLION CYFLWYNO:

- **All files of the website and the database should be zipped and submitted electronically to Moodle.**



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BACHELORS DEGREE ASSIGNMENT SPECIFICATION (SOAC)

Programme:	BSc Cloud Computing		
Assignment Title:	Internet Protocols		
Hand Out Date:	2 nd Week of Term	Submission deadline:	Please refer to the assessments schedule published on Students' Hall in Moodle and the Assessment Board on campus

Referencing:	In the main body of your submission you must give credit to authors on whose research your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have read or quoted in order to complete this assignment (e.g. for books: surname of author and initials, year of publication, <u>title of book</u> , edition, publisher: place of publication).
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Late submission will result in a late penalty mark, as follows:

Up to one week late, maximum mark of 40% for first attempts and 0% for resubmissions. No work will be accepted more than one week after the submission deadline

(Academic Quality Handbook 2016/17 7.5 (5))

AIM(S)

- To provide the student with a fundamental knowledge of Internet Protocol. Students will gain a detailed understanding of IP version 4 and 6. The various hardware devices used in modern network design and will understand the fundamental technical principles of protocols used in various layers of OSI model and IP Addressing.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

- Demonstrate a knowledge and understanding of Internet Protocol and to design an IP addressing scheme using IPv4/6, subnetting and VLSM.

INDICATIVE CONTENT

- IPv4 addressing
- Class A, B, C and D IP addressing
- Public and Private IP addressing
- Subnetting IP networks and variable length subnet mask.
- Unicast, multicast, and broadcast with IPv4
- IPv6 addressing
- Unicast, anycast and multicast with IPv6

LEARNING AND TEACHING STRATEGY

The majority of factual material will be presented in lectures using handouts, guided reading and use of internet and intranet material as required. Tutorial classes will concentrate on the technical design.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	35	35%
Independent learning	65	65%
Placement learning	0	
TOTAL	100	100%

ASSESSMENT**100% Coursework**

Learning Outcomes tested (from module syllabus)	Assessment Criteria To achieve each outcome a student must demonstrate the ability to:
Demonstrate a knowledge and understanding of Internet Protocol and to design an IP addressing scheme using IPv4/6, subnetting and VLSM.	The assignment will require students to design and implement IP addressing scheme to the given case study and document the full process of creating a solution to it.

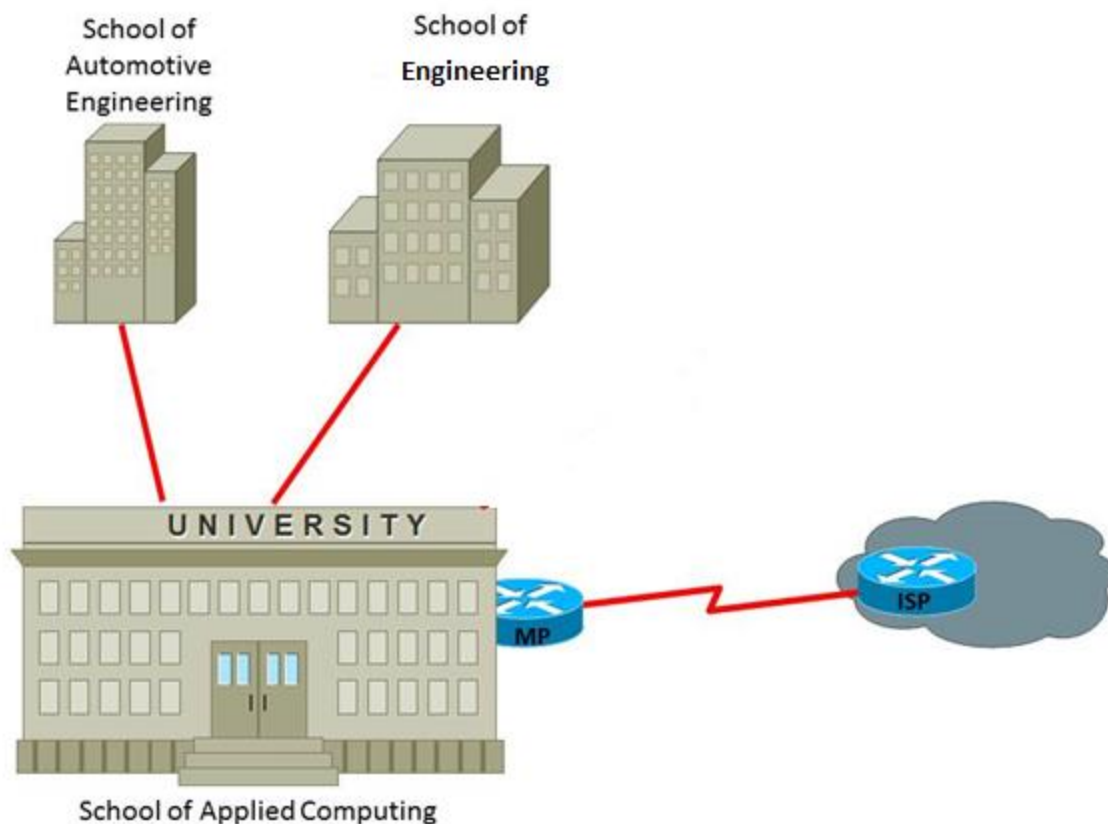
Assessment Summary

Activity type	Percentage
Written	0%
Coursework	100%
Practical	0%
TOTAL	100%

ASSESSMENT - TASK DESCRIPTION

Part 1 (1500 words): Write a research report of IPv6 addressing. The research should focus on different types of addressing available in IPv6. Illustrate your work with proper examples. The report should be of 1500 words.

Part 2: Design an IP addressing scheme for School of Management and Engineering.



As a network administrator, you are asked to design a hierarchical IP addressing scheme for Faculty's networks. Choose a suitable network address to support more than 2000 users and future growth.

The requirements are:

IP addressing scheme to support:

- a) School of Applied Computing: 20 staff, lab301 – 60 pcs, Lab302 – 30 pcs, Lab303 – 36 pcs, Lab 304 – 45 pcs, Lab306 – 40 pcs, Lab308 – 140 pcs, Lab309 – 50 pcs and Lab310 – 18 pcs.
- b) School of Automotive Engineering: 25 staff, lab101 – 40 pcs, Lab102 – 25 pcs, Lab103 – 35 pcs, Lab205 – 40 pcs, Lab206 – 48 pcs, CAD lab – 20 pcs and Lab301 – 50 pcs.
- c) School of Engineering: 18 staff, lab201 – 20 pcs, Lab202 – 80 pcs, Lab203 – 65 pcs, Lab205 – 25 pcs, Lab404 – 45 pcs, Lab408 – 28 pcs, Lab409 – 80 pcs, Lab410 – 45 pcs.

- A Test centre – 20 pcs, 1 IP phone, a printer
- An Open Access lab with 245 pcs and 5 printers
- Assign appropriate IPv6 address for 6 servers located at the University building
- The servers are DNS, Email, Finance, Registry, File server and a Print server. Assign appropriate IPv6 address for the link between MP and ISP.

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

1. Research-informed Literature

Your work must be informed and supported by scholarly material that is *relevant* to and *focused* on the task(s) set. You should provide evidence that you have accessed a wide *range* of sources, which may be academic, governmental and industrial; these sources may include academic journal articles, textbooks, current news articles, organisational documents, and websites. You should consider the *credibility* of your sources; academic journals are normally highly credible sources while websites require careful consideration/selection and should be used sparingly. Any sources you use should be current and up-to-date, mostly published within the last five years or so, though seminal/important works in the field may be older. You must provide *evidence* of your research/own reading throughout your work, using in-text citations in the main body of your work and a reference list that is alphabetical at the end of your work. Please use a recognised referencing system.

Specific to this assignment: Your work must focus on given research topic. Your work must include articles published by peer reviewed journals, conference proceedings, books, and related website (e.g. IEEE, ACM, Science direct). Information from website such as ehow, wiki, forums, etc. will not be accepted. Marks will be awarded for:

- The extent of research undertaken into the selected areas – 15%
- Selection of credible sources – 10%
- Application of appropriate referencing conventions (numerical referencing) – 5%

2. Knowledge and Understanding of Subject

Your work must demonstrate the growing extent of your knowledge and understanding of concepts and underlying principles associated with the subject area. *Knowledge* relates to the facts, information and skills you have acquired through your learning. You demonstrate your *understanding* by interpreting the meaning of the facts and information (knowledge). This means that you need to select and include in your work the concepts, techniques, models, theories, etc. appropriate to the task(s) set. You should be able to explain the theories, concepts, etc. meaningfully to show your understanding. Your mark/grade will also depend upon the *extent* to which you demonstrate your knowledge and understanding; ideally each should be complete and detailed, with comprehensive coverage.

Specific to this assignment: Your work must demonstrated the basic understanding of concepts and underlying principles. You should explain and analysis the chosen topic in a meaningful way. Marks will be awarded for understanding of research topic – 20%

3. Analysis

Your work must contain evidence of logical, analytical thinking, evaluation and synthesis. For example, to examine and break information down into parts, make inferences, compile, compare and contrast information. This means not just describing What! but also justifying: Why? How? When? Who? Where? At all times, you must provide justification for your arguments and judgements. Evidence that you have reflected upon the ideas of others within the subject area is crucial to you providing a reasoned and informed debate within your work. Furthermore, you should provide evidence that you are able to make sound judgements and convincing arguments using data and concepts. Sound, valid conclusions are necessary and must be derived from the content of your work. There should be no new information presented within your conclusion. Alternative solutions and recommendations may be proposed where relevant.

Specific to this assignment: Your work must demonstrate critical analysis and evaluation of chosen technologies. Your work must also justify your choice and provide evidence that your choice is better than other methods.

4. Practical Application and Deployment

You should be able to demonstrate how the subject-related concepts and ideas relate to real world situations or a particular context. How do they work in practice? You will deploy models, methods, techniques, and/or theories, in that context, to assess current situations, perhaps to formulate plans or solutions to solve problems, some of which may be innovative and creative. This is likely to involve, for instance, the use of real world examples and cases, the application of a model within an organisation and/or benchmarking one organisation against others based on stated criteria. You should show awareness of the limitations of concepts and theories when applied in particular contexts.

Specific to this assignment: You must use software such as Packet Tracer, GNS3, Visio, etc, to demonstrate the network design you have adopted.

5. Skills for Professional Practice

Your work must provide evidence of the attributes expected in professional practice. This includes demonstrating your individual initiative and/or collaborative working. You must communicate effectively in a suitable format, which may be written and/or oral, for example, essay, management report, presentation. Work should be coherent and well-structured in presentation and organisation.

Specific to this assignment: You must submit a report which should be approximately 1500 words in length. The report should be presented in an academic way (IEEE/ACM format) and therefore must include an abstract, an introduction, a conclusion and a list of references. The report must be submitted via Turnitin as well. Marks will be awarded for correct spelling, grammar and punctuation – 5% and Use of appropriate reference style and citation – 5%

MARKING CRITERIA

This section details the assessment criteria. The *extent* to which these are demonstrated by you determines your mark. The marks available for each criterion are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Common Assessment Criteria Applied	Marks available
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions.	30
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.	10
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence	10
4. Practical Application and Deployment Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems.	40
5. Skills for Professional Practice Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation.	10

COMMON ASSESSMENT AND MARKING CRITERIA

	OUTRIGHT FAIL	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
Assessment Criteria	0-29%	30-39%*	40-49%	50-59%	60-69%	70-79%	80-100%
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions	Little or no evidence of reading. Views and findings unsupported and non-authoritative. Referencing conventions largely ignored.	Poor evidence of reading and/or of reliance on inappropriate sources, and/or indiscriminate use of sources. Referencing conventions used inconsistently.	References to a limited range of mostly relevant sources. Some omissions and minor errors. Referencing conventions evident though not always applied consistently.	Inclusion of a range of research-informed literature, including sources retrieved independently. Referencing conventions mostly consistently applied.	Inclusion of a wide range of research-informed literature, including sources retrieved independently. Selection of relevant and credible sources. Very good use of referencing conventions, consistently applied.	A comprehensive range of research-informed literature embedded in the work. Excellent selection of relevant and credible sources. High-level referencing skills, consistently applied.	Outstanding knowledge of research-informed literature embedded in the work. Outstanding selection of relevant and credible sources. High-level referencing skills consistently and professionally applied.
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.	Major gaps in knowledge and understanding of material at this level. Substantial inaccuracies.	Gaps in knowledge, with only superficial understanding. Some significant inaccuracies.	Evidence of basic knowledge and understanding of the relevant concepts and underlying principles.	Knowledge is accurate with a good understanding of the field of study.	Knowledge is extensive. Exhibits understanding of the breadth and depth of established views.	Excellent knowledge and understanding of the main concepts and key theories. Clear awareness of challenges to established views and the limitations of the knowledge base.	Highly detailed knowledge and understanding of the main theories/concepts, and a critical awareness of the ambiguities and limitations of knowledge.
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence	Unsubstantiated generalisations, made without use of any credible evidence. Lack of logic, leading to unsupportable/missing conclusions.	Some evidence of analytical intellectual skills, but for the most part descriptive. Ideas/findings sometimes illogical and contradictory. Generalised statements made with scant evidence.	Evidence of some logical, analytical thinking and some attempts to synthesise, albeit with some weaknesses.	Evidence of some logical, analytical thinking and synthesis. Can analyse new and/or abstract data and situations without guidance.	Sound, logical, analytical thinking; synthesis and evaluation. Ability to devise and sustain persuasive arguments, and to review the	Thoroughly logical work, supported by evaluated evidence. High quality analysis, developed independently or through effective	Exceptional work; judiciously selected and evaluated evidence. Very high quality analysis, developed independently or through effective collaboration.

	Lack of any attempt to analyse, synthesise or evaluate.	Conclusions lack relevance.	Some evidence to support findings/ views, but evidence not consistently interpreted. Some relevant conclusions and recommendations, where relevant.	An emerging awareness of different stances and ability to use evidence to support the argument. Valid conclusions and recommendations, where relevant.	reliability, validity & significance of evidence. Ability to communicate ideas and evidence accurately and convincingly. Sound, convincing conclusions / recommendations.	collaboration. Ability to investigate contradictory information and identify reasons for contradictions. Strong, persuasive, conclusions, justifiable recommendations.	Ability to investigate contradictory information and identify reasons for contradictions. Highly persuasive conclusions
4. Practical Application and Deployment Effective deployment of appropriate methods, materials, tools and techniques; extent of skill demonstrated in the application of concepts to a variety of processes and/or contexts; formulation of innovative and creative solutions to solve problems.	Limited or no use of methods, materials, tools and/or techniques. Little or no appreciation of the context of the application.	Rudimentary application of methods, materials, tools and/or techniques but without consideration and competence. Flawed appreciation of the context of the application.	An adequate awareness and mostly appropriate application of well established methods, materials, tools and/or techniques. Basic appreciation of the context of the application.	A good and appropriate application of standard methods, materials, tools and/or techniques. Good appreciation of the context of the application, with some use of examples, where relevant.	A very good application of a range of methods, materials, tools and/or techniques. Very good consideration of the context of the application, with perceptive use of examples, where relevant. Evidence of some innovation and creativity.	An advanced application of a range of methods, materials, tools and/or techniques. The context of the application is well considered, with extensive use of relevant examples. Application and deployment extend beyond established conventions. Innovation and creativity evident throughout.	Outstanding levels of application and deployment skills. Assimilation and development of cutting edge processes and techniques.
5. Skills for Professional Practice Demonstrates attributes expected in professional practice including: individual initiative and collaborative working; deployment of appropriate media to communicate (including	Communication media is inappropriate or misapplied. Little or no evidence of autonomy in the completion of tasks. Work is poorly structured and/or largely incoherent.	Media is poorly designed and/or not suitable for the audience. Poor independent or collaborative initiative. Work lacks structure, organisation, and/or coherence	Can communicate in a suitable format but with some room for improvement. Can work as part of a team, but with limited involvement in group activities. Work lacks coherence in places and could be better structured.	Can communicate effectively in a suitable format, but may have minor errors. Can work effectively as part of a team, with clear contribution to group activities.	Can communicate well, confidently and consistently in a suitable format. Can work very well as part of a team, with very good contribution to group activities.	Can communicate professionally and, confidently in a suitable format. Can work professionally within a team, showing leadership skills as appropriate, managing conflict and	Can communicate with an exceptionally high level of professionalism. Can work exceptionally well and professionally within a team, showing advanced leadership skills.

written and oral); clarity and effectiveness in presentation and organisation.				Mostly coherent work and is in a suitable structure.	Work is coherent and fluent and is well structured and organised.	meeting obligations. Work is coherent, very fluent and is presented professionally.	Work is exceptionally coherent, very fluent and is presented professionally.
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BIBLIOGRAPHY

Essential

Introduction to Networks Companion Guide by Cisco Networking Academy (2013)

R. Graziani, (2013) IPv6 Fundamentals: A straightforward approach to understanding IPv6, Cisco Press

Background

N. Olifer and V. Olifer (2006) Computer Networks Principles, Technologies and Protocol for Network Design, John Wiley and Sons, Ltd.

M. A. Dye, R. McDonald and A. W. Rufi, (2011) Network Fundamentals: CCNA exploration companion guide, Cisco Press.

M. Sportack, (2003) IP Addressing fundamentals, Cisco Press.

Websites

<http://www.netacad.com> (username and password required)

<http://www.iana.org/numbers>