UNSW Course Outline

ZEIT8119 Internetworking - 2024

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General Course Information

Course Code : ZEIT8119
Year : 2024
Term : Semester 2
Teaching Period : Z2
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : School of Systems and Computing
Delivery Mode : Online
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course is intended for students with an IT or electrical engineering background to advance their understanding of network operations. At the end of the course, students will be capable of building a network with routers and select a routing protocol for the network. Routing is an essential element of all networks that can have significant impact on the performance of a

network. Students will be able to implement basic network security mechanisms such as firewalls.

This course links routing theory to practical experience. Apart from introducing the two routing algorithms widely used in the Internet, i.e., link state and distance vector, this course discusses their applications in various routing protocols, such EIGRP, OSPF, and provides the first-hand experience to teach students how to set up a small-to-medium size network with handful routers and uses various routing protocols including basic network security mechanisms such as firewall technology.

Course Aims

The aim of this course is for students in IT and Electrical Engineering programs to advance their understanding of network operations. On completion of the course, studetns are capable of building a network with routers and select a routing protocol for the network.

Relationship to Other Courses

N/A

Course Learning Outcomes

Course Learning Outcomes	Australian Computing Society (ACS)
CLO1 : Discuss the historical evolution of internetworking and its trends. Organize network address space resources efficiently.	• ACS : Computer Networking
CLO2 : Appraise various routing protocols and apply them appropriately for solving real-world problems.	• ACS : Modelling, abstraction, design • ACS : Computer Networking
CLO3 : Explain CCNA basic network security concepts, and implement them, in particular encryption and firewall technologies, in solving real-world problems.	• ACS : Cyber Security • ACS : Modelling, abstraction, design • ACS : Computer Networking

Course Learning Outcomes	Assessment Item
CLO1 : Discuss the historical evolution of internetworking and its trends. Organize network address space resources efficiently.	• Assignment 1 • Overall Test
CLO2 : Appraise various routing protocols and apply them appropriately for solving real-world problems.	• Assignment 2 • Assignment 3 • Assignment 1 • Overall Test
CLO3 : Explain CCNA basic network security concepts, and implement them, in particular encryption and firewall technologies, in solving real-world problems.	• Assignment 3 • Overall Test

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Teaching Strategies

I believe that teaching and learning is a two-way communication process. As a lecturer, my aim is to get the message/information across and achieve the aim and goals setup above. To make this happen, I need your participation in this process to give me feedback and suggestion from time to time.

Note that the overall assessment/test questions are closely related to the material covered in

lectures and assignments. In order to avoid shortcut style learning by guessing final test questions by looking at the solutions of recent exams/final tests, recent exams/final tests are not released. However, the final test structure and sample questions will be provided to help prepare for the final test.

No scheduled lecture is provided like on Campus face-to-face teaching. However, a list of video clips is provided similar to recorded lectures. To better help students' learning, instead of a traditional recorded lecture, individual key or difficult concepts are identified and illustrated through concept-level video clips. Students are encouraged to follow the weekly scheduled content at their own pace. I strongly suggest that you read through the corresponding lecture materials before watching the relevant concept illustration video clips provided in Moodle.

Use of Generative AI in Assessments
For all assessment tasks, you may use standard editing and referencing software (e.g., Microsoft Office suite, Grammarly, etc.), but not Generative AI. If the use of generative AI such as ChatGPT is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion. In principle, online tools can only be used for learning purpose or simple calculations such as binary-decimal conversion etc. in the intermediate process. They cannot be used to search for the answers. No online tools could be used in the final overall test.

Other Professional Outcomes

N/A

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates	Australian Computing Society (ACS)
Assignment 1 Assessment Format: Individual Short Extension: Yes (3 days)	10%	Start Date: 15/07/2024 12:00 AM Due Date: 30/07/2024 12:00 AM	• ACS : Computer Networking
Assignment 2 Assessment Format: Individual Short Extension: Yes (3 days)	15%	Start Date: 31/07/2024 08:46 PM Due Date: 20/08/2024 08:47 PM	• ACS : Computer Networking
Assignment 3 Assessment Format: Group Short Extension: Yes (3 days)	25%	Start Date: 21/08/2024 08:48 PM Due Date: 05/10/2024 08:50 PM	• ACS : Teamwork concepts and issues • ACS : Modelling, abstraction, design • ACS : Cyber Security
Overall Test Assessment Format: Individual	50%	Start Date: 03/11/2024 09:36 PM Due Date: 04/11/2024 09:36 PM	

Assessment Details

Assignment 1

Assessment Overview

Ability to use DHCP & RIP in a network. Lab-based exercise

Course Learning Outcomes

- CLO1 : Discuss the historical evolution of internetworking and its trends. Organize network address space resources efficiently.
- CLO2 : Appraise various routing protocols and apply them appropriately for solving real-world problems.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Assignment 2

Assessment Overview

Routing Algorithm Calculation and EIGRP Protocol Configuration

Course Learning Outcomes

- CLO2 : Appraise various routing protocols and apply them appropriately for solving real-world problems.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Assignment 3

Assessment Overview

Ability to use BGP and Security in a network

Course Learning Outcomes

- CLO2 : Appraise various routing protocols and apply them appropriately for solving real-world problems.
- CLO3 : Explain CCNA basic network security concepts, and implement them, in particular encryption and firewall technologies, in solving real-world problems.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Overall Test

Assessment Overview

24-Hour taken-home online overall course assessment/test

Course Learning Outcomes

- CLO1 : Discuss the historical evolution of internetworking and its trends. Organize network address space resources efficiently.
- CLO2 : Appraise various routing protocols and apply them appropriately for solving real-world problems.
- CLO3 : Explain CCNA basic network security concepts, and implement them, in particular encryption and firewall technologies, in solving real-world problems.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity

reports.

General Assessment Information

For these assessment tasks, unless otherwise noted, you are permitted to use standard editing and referencing functions in word processing software. You must not use any functions that generate or paraphrase [or translate] passages of text, whether based on your own work or not. Please note that your submission will be passed through an AI-generated text detection tool. If your marker has concerns that your answer contains passages of AI-generated text you may be asked to explain your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Grading Basis

Standard

Requirements to pass course

50% or above the overall course marks or 50 or above out of 100 marks. No individual hurdle.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 15 July - 19 July	Activity	(1) Read through lecture slides on "Introduction and course overview" (2) Watch recorded concept-level video clips: DHCP, and NAT. (3) Do scheduled lab exercise
Week 2 : 22 July - 26 July	Activity	(1) Read through lecture slides on "Network background " (2) Watch recorded routing algorithm concept-level illustrative video clips: Dijkstra routing algorithm, and Bellman-Ford Routing Algorithm. (3) Do scheduled lab exercise
Week 3 : 29 July - 2 August	Activity	(1) Read through lecture slides on "Overview of Scalable Network" (2) Watch the recorded routing algorithm concept-level illustrative video clip: Classless routing overview. (3) Do scheduled lab exercise
Week 4 : 5 August - 9 August	Activity	(1) Read through lecture slides on "Advanced IP addressing" (2) Watch the recorded concept-level illustrative video clips: Route-summarization, and VLSM. (3) Do scheduled lab exercise
Week 5 : 12 August - 16 August	Activity	(1) Read through lecture slides on "Routing Overview" (2) Watch the recorded concept-level illustrative video clips: Static routing, and RIP-v2. (3) Do scheduled lab exercise
Week 6 : 19 August - 23 August	Activity	(1) Read through lecture slides on "RIP2 and EIGRP" (2) Watch the recorded concept-level illustrative video clips: EIGRP, and DUAL algorithm. (3) Do scheduled lab exercise
Week 7 : 9 September - 13 September	Activity	(1) Read through lecture slides on "OSPF-1" (2) Watch the recorded concept-level illustrative video clip: OSPF . (3) Do scheduled lab exercise
Week 8 : 16 September - 20 September	Activity	(1) Read through lecture slides on "OSPF-2" (2) Watch the recorded concept-level illustrative video clip: OSPF -multiarea. (3) Do scheduled lab exercise
Week 9 : 23 September - 27 September	Activity	(1) Read through lecture slides on "Route Optimization" (2) Watch the recorded concept-level illustrative video clips: Policy-based routing, and Redistribution. (3) Do scheduled lab exercise
Week 10 : 30 September - 4 October	Activity	(1) Read through lecture slides on "BGP" (2) Watch the recorded concept-level illustrative video clip: BGP. (3) Do scheduled lab exercise
Week 11 : 7 October - 11 October	Activity	(1) Read through lecture slides on "CCNA Security Basics" (2) Do scheduled lab exercise
Week 12 : 14 October - 18 October	Activity	Read through "Introduction of New Networking Technologies"
Week 13 : 21 October - 25 October	Activity	Interactive Overall Test Preparation

Attendance Requirements

Not Applicable - as no class attendance is required

General Schedule Information

No scheduled lecture is provided like on Campus face-to-face teaching. However, a list of video clips is provided similar to recorded lectures. To better help students' learning, instead of a traditional recorded lecture, individual key or difficult concepts are identified and illustrated through concept-level video clips. Students are encouraged to follow the weekly scheduled content at their own pace. I strongly suggest that you read through the corresponding lecture

materials before watching the relevant concept illustration video clips provided in Moodle.

Course Resources

Prescribed Resources

1. CCNP ROUTING AND SWITCHING ROUTE 300-101 OFFICIAL CERT GUIDE

2. CCNP ROUTE 642-902 OFFICIAL CERTIFICATION GUIDE, CISCO PRESS.

3. << CCNA SECURITY 210-260 OFFICIAL CERT GUIDE>> BY OMAR SANTOS. ISBN: 9781587205668. PEARSON HIGHER ED USA.

Textbook link: https://www.pearson.com/store/p/ccna-security-210-260-official-cert-guide/P200000009639/9781587205668

Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of this course.

Students can also provide feedback during the semester via direct contact with the lecturer, the "On-going Student Feedback" link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups. Student opinions really do make a difference. Refer to the Moodle site for this course to see how the feedback from previous students has contributed to the course development.

***Important note:** Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct Policy*

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Jiankun H u		Building 15, Room 106	61 2 51145159	I am available for video conference consultation during normal working hours. A face-to-face meeting is also possible if needed. Please email me to make an appointment.	No	Yes

Other Useful Information

School-specific Information

The Leaning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

UNSW Moodle supports the following web browsers:
• Google Chrome 50+
• Safari 10+
Internet Explorer is not recommended. Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:
• Windows 10,
• Mac OSX Sierra,
• iPad IOS10

Further details:
Moodle System Requirements
Moodle Log In

If you need further assistance with Moodle:

For enrolment and login issues please contact:
IT Service Centre
Email: itservicecentre@unsw.edu.au
Phone: (02) 9385-1333
International: +61 2 9385 1333

For all other Moodle issues please contact:
External TELT Support
Email: externalteltsupport@unsw.edu.au

Phone: (02) 9385-3331

International: +61 2 938 53331

Opening hours:

Monday – Friday 7:30am – 9:30 pm

Saturday & Sunday 8:30 am – 4:30pm

Study at UNSW Canberra

Study at UNSW Canberra has lots of useful information regarding:

• Where to get help

• Administrative matters

• Getting your passwords set up

• How to log on to Moodle

• Accessing the Library and other areas.

UNSW Canberra Student Hub

For News and Notices, Student Services and Support, Campus Comminity, Quick Links, Important Dates and Upcoming Events

School Contact Information

Deputy Head of School (Education): Dr Erandi Hene Kankanamge

E: e.henekankanamge@adfa.edu.au

T: 02 5114 5157

Syscom Admin Support: syscom@unsw.edu.au

T: 02 5114 5284

Syscom Admin Office: Building 15, Level 1, Room 101 (open 10am to 4pm, Mon to Fri)