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**國立高雄科技大學**  
**NATIONAL KAOHSIUNG**  
**UNIVERSITY OF SCIENCE**  
**AND TECHNOLOGY**  
**授課大綱 Syllabus**

部別：日間部博士

112學年度第2學期

列印日期：2024/03/01

中文課程名稱：數據網路分析	英文課程名稱：Analysis of Data Networks	授課教師：蔡碩仁
開課班級：博子一甲	學分：3.0	授課時數：3.0
合班班級：電通碩士班一甲, 電通碩士班二甲		實習時數：0.0

<b>1. 中文教學目標(Chinese Teaching objectives)</b>
本課程旨在培養Open Networking 基本觀念，了解虛擬網路內含及其效能機制，進而將效能機制應用到網際網路之控管機制。

<b>2. 英文教學目標(English Teaching objectives)</b>
The course will provide students the basic concepts of Open Networking. Students will be able to understand virtual networking and its performance. And we will introduce how the flow control algorithms are applied to SDN to improve performance in the course.

<b>3. 中文教學綱要(Chinese CourseDescription)</b>
Open Networking 提供的多樣應用，平台由個人電腦到智慧型手機。相關的議題隨之而起。本課程以虛擬網路開始，從基礎起深入探討網路效率議題。可以應付未來電機資訊產業的變化。本課程，學生必須完成期末計畫，以增強實作能力。

<b>4. 英文教學綱要(English CourseDescription)</b>
Open Networking provides full of variety of applications. Platforms include desktops as well as smartphones. The booming internet comes with many issues. This course relies on the concept of virtual networking to understand and evaluate internet performance mechanisms. The course provides students with ability to fit into industry. In this course, students have to finish a project to enhance the ability of implementation.

<b>5. 中文核心能力</b>		
	核心能力名稱	核心能力百分比
1	具備基本的數學、物理、電子、數位及程式設計能力	20%
2	具備電子工程實作、分析與整合之能力	20%
3	具備有效溝通表達自我, 團隊合作之能力	10%
4	培養畢業生繼續深造的能力, 落實終身學習理念	20%
5	具備專業倫理及社會責任認知, 並遵守智慧財產權及職業道德	20%
6	對相關產業之國際發展趨勢有深入了解, 並具備接受全球化競爭挑戰的能力	10%

<b>6. 英文核心能力</b>		
	核心能力名稱	核心能力百分比
1	Competence in basic mathematics, physics, digital and programming design	20%

2	Competence in electronic engineering practices, analysis and integration	20%
3	Effective communication and team collaboration	10%
4	Competence of graduates in further study and lifelong learning	20%
5	Professional ethics and social responsibility awareness and compliance with intellectual property rights and ethics	20%
6	Profound knowledge in international development trend of related industries and ability of taking challenges in global competition	10%

### 7. 教科書

中文書名：RYU SDN Framework 英文書名：RYU SDN Framework

中文作者：RYU project team 英文作者：RYU project team

2 中文出版社：NTT, Japan 英文出版社：NTT, Japan

出版日期：2014年 月 備註：(1) [https://book.ryu-sdn.org/zh\\_tw/html/](https://book.ryu-sdn.org/zh_tw/html/) (2) <https://ryu-sdn.org/>

### 8. 參考書

中文書名：Computer Networking: A Top-Down Approach Computer Networking: A Top-Down Approach 英文書名：Computer Networking: A Top-Down Approach Computer Networking: A Top-Down Approach

中文作者：Jim Kurose, Keith Ross 英文作者：Jim Kurose, Keith Ross

2 中文出版社：Pearson 英文出版社：Pearson

出版日期：2020年 月 備註：

### 9. 教學進度表

週次或項目 Week or Items	中文授課內容 Chinese Course Content	英文授課內容 English Course Content	分配節次 Assigned Classes	備註 Note
1	Introduction to RYU	Introduction to RYU	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
2	Introduction to Mininet and Open vSwitch	Introduction to Mininet and Open vSwitch	3	<a href="https://www.openvswitch.org/">https://www.openvswitch.org/</a>
3	Revisit Network Layer (Data Plane & Control Plane)	Revisit Network Layer (Data Plane & Control Plane)	3	
4	Revisit Openflow 1.3 Specification	Revisit Openflow 1.3 Specification	3	<a href="https://opennetworking.org/wp-content/uploads/2014/10/openflow-spec-v1.3.0.pdf">https://opennetworking.org/wp-content/uploads/2014/10/openflow-spec-v1.3.0.pdf</a>
5	Switching Hub	Switching Hub	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>

6	Traffic Monitor	Traffic Monitor	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
7	REST Linkage	REST Linkage	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
8	Link Aggregation	Link Aggregation	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
9	Spanning Tree	Spanning Tree	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
10	Openflow Protocol	Openflow Protocol	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
11	Packet Library	Packet Library	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
12	OF-Config Library	OF-Config Library	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
13	Firewall	Firewall	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
14	Router	Router	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
15	QoS	QoS	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
16	Openflow Switch Test Tool	Openflow Switch Test Tool	3	<a href="https://ryu-sdn.org/">https://ryu-sdn.org/</a> <a href="https://book.ryu-sdn.org/zh_tw/html/">https://book.ryu-sdn.org/zh_tw/html/</a>
17	P4	P4	3	<a href="https://github.com/p4lang">https://github.com/p4lang</a>
18	P4Pi	P4Pi	3	<a href="https://github.com/p4lang/p4pi">https://github.com/p4lang/p4pi</a>

## 10. 中文成績評定(Chinese Evaluation method)

小考 作業

**11. 英文成績評定(English Evaluation method)**

Quizzes Projects

**12. 中文課堂要求(Chinese Classroom requirements)**

重要事項公布於教學平台，請每周檢視 僅限電機資訊學院選修

**13. 英文課堂要求(English Classroom requirements)**

Please check this website weekly for announcements. For students Enrolled in College of Electric and Information Eng. Only

**14. 本課程與SDGs相關項目(This course is relevant to these of SDGs as following)****「遵守智慧財產權」；「不得非法影印」！**