EIE3333
Data and Computer Communications

Lecturer: **Dr K.T. Lo**

Room DE641

Tel: 2766 6256

Email: enktlo@polyu.edu.hk

General Information

Lecture + Tutorial

- Time: Friday 12:30 – 15:20
- Venue: QR403

Laboratory (Lab Sessions will begin in Week 8)

- Time: Tuesday 15:30 – 18:20 Friday 8:30 to 11:20
- Venue: CD514 CD514

Consultation Hours

- Time: Wednesday 14:00 – 16:00
- Venue: DE641

Course Webpage: Learn@PolyU

- Please visit it frequently for course materials and announcements

General Information

Lecture + Tutorial

Feb	22	27	28	29	30	31	1	2	Lunar New Year Break
	23	3	4	**5**	6	7	8	9	3
	24	10	11	12	**13**	14	15	16	4
	25	17	18	19	20	21	22	23	5
Mar	26	24	25	26	27	28	29	1	6
	27	2	3	4	5	6	7	8	7
	28	9	10	11	12	13	14	15	8
	29	16	17	18	19	20	21	22	9
	30	23	24	25	26	27	28	29	10
Apr	31	30	31	1	2	3	4	5	11
	32	6	7	8	9	10	11	12	12
	33	13	14	15	16	17	18	19	13
	34	20	21	22	23	24	25	26	14
May	35	27	28	29	30	1	2	3	15
	36	4	5	6	7	8	★	10	Exam.

★ Test

Lab Session

Objectives

- To provide solid foundation to students about the architectures and operations of communication networks.
- To enable students to master the knowledge about computer networking in the context of real-life applications.
- To prepare students to learn and to critically evaluate new knowledge and emerging technology in communication networks.

Learning Outcomes

Upon completion of the subject, students will be able to:

- Understand the services, functions, and inter-relationship of different layers in communication network models
- Describe how components in different layers inter-operate and analyze their performance
- Understand and apply the principles and practices of communication networks
- Learn new techniques and to align new technologies to existing network infrastructure
- Present ideas and findings effectively
- Learn independently

Keyword Syllabus

- **Introduction to Data Communications and Computer Networking**
  - Models for Data Networks
  - Protocols and services
  - Layering architecture
  - Internet architecture
- **Physical Layers**
  - Data Transmission and Transmission Media
  - Line Coding Techniques

Keyword Syllabus

- **Data Link Layers**
  - Error Detection and Correction
  - Data link control (DLC) – Flow control and error control
  - Data Link Protocols: High-level Data Link Control (HDLC) and Point-to-Point Protocol (PPP)
  - Media Access Control (MAC)
  - Local Area Network (LAN)
  - Wireless LAN

Keyword Syllabus

- **Network Layers**
  - Packing Switching Techniques
  - Internetworking
  - IP addressing
  - DHCP and NAT
  - IP routing
- **Transport Layers**
  - Transmission control protocol (TCP) / User Datagram Protocol (UDP)
  - TCP Connection Management

Schedule - Lecture

Venue: **QR403**
Time: **12:30pm - 3:20pm (Friday)**

Week 04 14/02/2020	Data Networks and Protocol Layering
Week 05 21/02/2020	Transmission Medium and Line Coding
Week 06 28/02/2020	Error Detection and Correction
Week 07 06/02/2020	Flow Control and Error Control
Week 08 13/03/2020	HDLC and PPP
Week 09 20/03/2020	**Test 1** Medium Access Control
Week 10 27/03/2020	LAN and Virtual LAN

Schedule - Lecture

Venue: **QR403**
Time: **12:30pm - 3:20pm (Friday)**

Week 10 03/04/2020	Wireless LAN and Switching Techniques
Week 11 10/04/2020	Public Holiday, No Lecture
Week 12 17/04/2020	IP Addressing, DHCP and NAT
Week 13 24/04/2020	IP Routing
Week 14 01/05/2020	Public Holiday, No Lecture
Week 15 08/05/2020	TCP and UDP
09/05/2020	Test 2

Laboratory - Schedule

Venue: **CD514**

Time: **3:30pm – 6:20pm (Tuesday)**

8:30am - 11:20am (Friday)

- There will be 3 lab sessions for each student
- Cisco related lab exercises
- To be started at Week 8 (March 10, 2020)
- There will be 4 groups of students (including the degree students)
- Detailed grouping information will be finalized after the add/drop period

Laboratory - Schedule

• Week 5	20-2-2019, Wed	Group A Lab 1
	21-2-2019, Thu	Group B Lab 1
• Week 6	27-2-2019, Wed	Group C Lab 1
	28-2-2019, Thu	Group D Lab 1
• Week 7	6-3-2019, Wed	Group A Lab 2
	7-3-2019, Thu	Group B Lab 2
• Week 8	13-3-2019, Wed	Group C Lab 2
	14-3-2019, Thu	Group D Lab 2
• Week 9	20-3-2019, Wed	Group A Lab 3
	21-3-2019, Thu	Group B Lab 3
• Week 10	27-3-2019, Wed	Group C Lab 3
	28-3-2019, Thu	Group D Lab 3

- Lab 1 – Configuring Basic Switch Settings
- Lab 2 – Configuring VLANs and Trunking
- Lab 3 – Configuring IPv4 Static and Default Routes

Course Assessment

- Continuous Assessment 40 %
  - Graded Assignments 6%
  - Lab Exercises 9%
  - 2 Tests (open-book) 25%

- Final Examination (3 hours) 60 %

  (Close-book Examination – one single-sided A4 clue sheet is allowed)

Course Assessment

Specific Assessment Methods/ Task	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)					
		1	2	3	4	5	6
1. Continuous Assessment	40%						
• Mid-Term Test	12.5%	✓	✓	✓	✓	✓	
• End-of-Term Test	12.5%	✓	✓	✓	✓	✓	
• Assignments	6%	✓	✓	✓	✓	✓	
• Laboratories	9%			✓		✓	✓
2. Examination	60%	✓	✓	✓	✓	✓	
Total	100%						

Assessment Rubrics

Outcome 1: Understand the services, functions, and inter-relationship of different layers in communication network models

F	D	D+	C	C+	B	B+	A	A+
0	1	1.5	2	2.5	3	3.5	4	4.5
[0,34]	[35,41]	[42,48]	[49,55]	[56,62]	[63,69]	[70,76]	[77,84]	[85,100]
Not able to understand the services, functions, and inter-relationship of different layers in communication network models	Occasionally able to understand the services, functions, and inter-relationship of different layers in communication network models		Sometimes able to understand the services, functions, and inter-relationship of different layers in communication network models		Most of time able to understand the services, functions, and inter-relationship of different layers in communication network models		Always able to understand the services, functions, and inter-relationship of different layers in communication network models	

Outcome 2: Describe how components in different layers inter-operate and analyze their performance

F	D	D+	C	C+	B	B+	A	A+
0	1	1.5	2	2.5	3	3.5	4	4.5
[0,34]	[35,41]	[42,48]	[49,55]	[56,62]	[63,69]	[70,76]	[77,84]	[85,100]
Not able to describe how components in different layers inter-operate and analyze their performance	Occasionally able to describe how components in different layers inter-operate and analyze their performance		Sometimes able to describe how components in different layers inter-operate and analyze their performance		Most of time able to describe how components in different layers inter-operate and analyze their performance		Always able to describe how components in different layers inter-operate and analyze their performance	

Assessment Rubrics

Outcome 3: Understand and apply the principles and practices of communication networks								
F	D	D+	C	C+	B	B+	A	A+
0	1	1.5	2	2.5	3	3.5	4	4.5
[0,34]	[35,41]	[42,48]	[49,55]	[56,62]	[63,69]	[70,76]	[77,84]	[85,100]
Not able to understand and apply the principles and practices of communication networks	Occasionally able to understand and apply the principles and practices of communication networks		Sometimes able to understand and apply the principles and practices of communication networks		Most of time able to understand and apply the principles and practices of communication networks		Always able to understand and apply the principles and practices of communication networks	

Outcome 4: Learn new techniques and to align new technologies to existing network infrastructure								
F	D	D+	C	C+	B	B+	A	A+
0	1	1.5	2	2.5	3	3.5	4	4.5
[0,34]	[35,41]	[42,48]	[49,55]	[56,62]	[63,69]	[70,76]	[77,84]	[85,100]
Not able to learn new techniques and to align new technologies to existing network infrastructure	Occasionally able to learn new techniques and to align new technologies to existing network infrastructure		Sometimes able to learn new techniques and to align new technologies to existing network infrastructure		Most of time able to learn new techniques and to align new technologies to existing network infrastructure		Always able to learn new techniques and to align new technologies to existing network infrastructure	

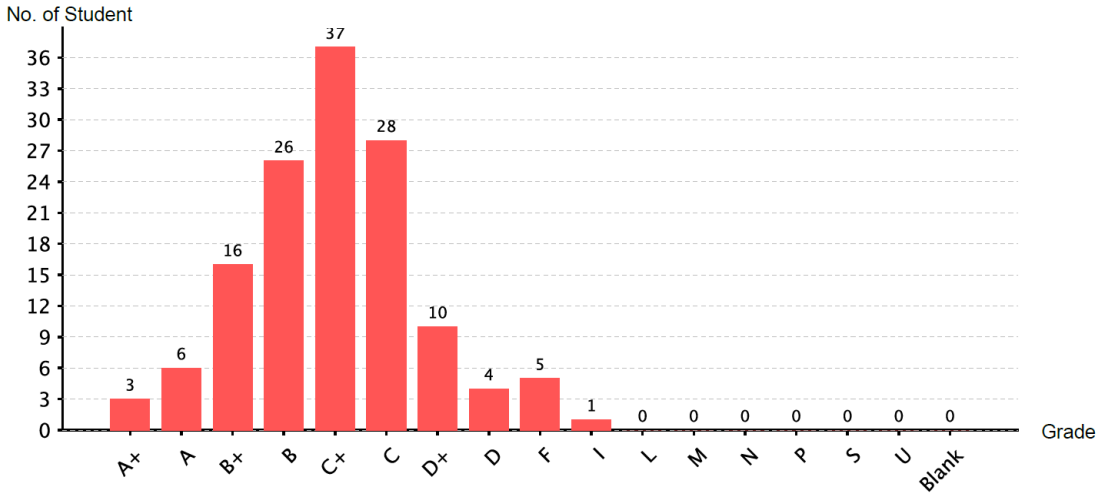
Assessment Rubrics

Outcome 5 : Present ideas and findings effectively								
F	D	D+	C	C+	B	B+	A	A+
0	1	1.5	2	2.5	3	3.5	4	4.5
[0,34]	[35,41]	[42,48]	[49,55]	[56,62]	[63,69]	[70,76]	[77,84]	[85,100]
Not able to present ideas and findings effectively	Occasionally able to present ideas and findings effectively		Sometimes able to present ideas and findings effectively		Most of time able to present ideas and findings effectively		Always able to present ideas and findings effectively	

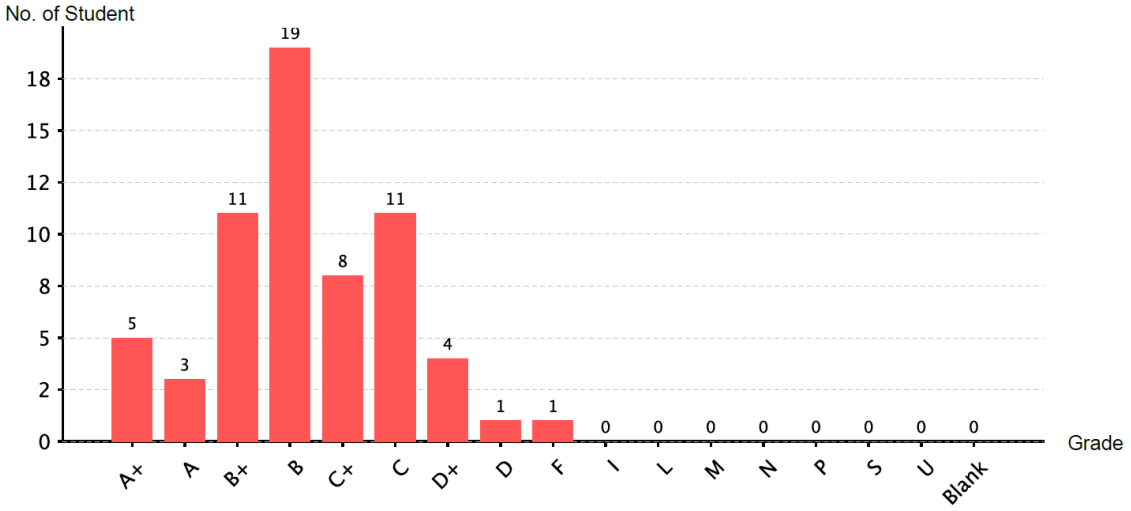
Outcome 6: Learn independently								
F	D	D+	C	C+	B	B+	A	A+
0	1	1.5	2	2.5	3	3.5	4	4.5
[0,34]	[35,41]	[42,48]	[49,55]	[56,62]	[63,69]	[70,76]	[77,84]	[85,100]
Not able to learn independently	Occasionally able to learn independently		Sometimes able to learn independently		Most of time able to learn independently		Always able to learn independently	

Past Exam Statistics

2018/19 Semester 2

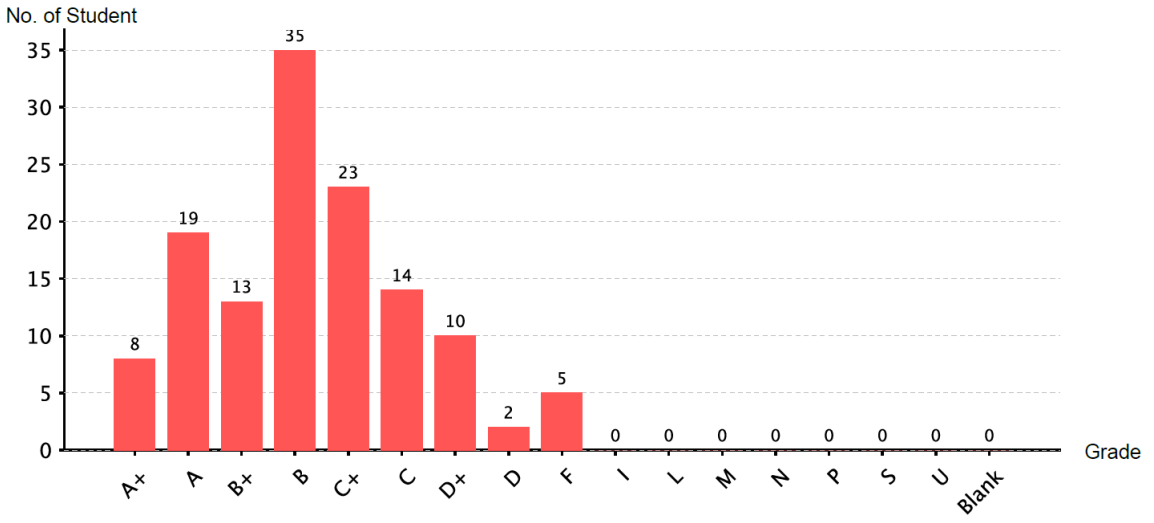


2018/19 Semester 1

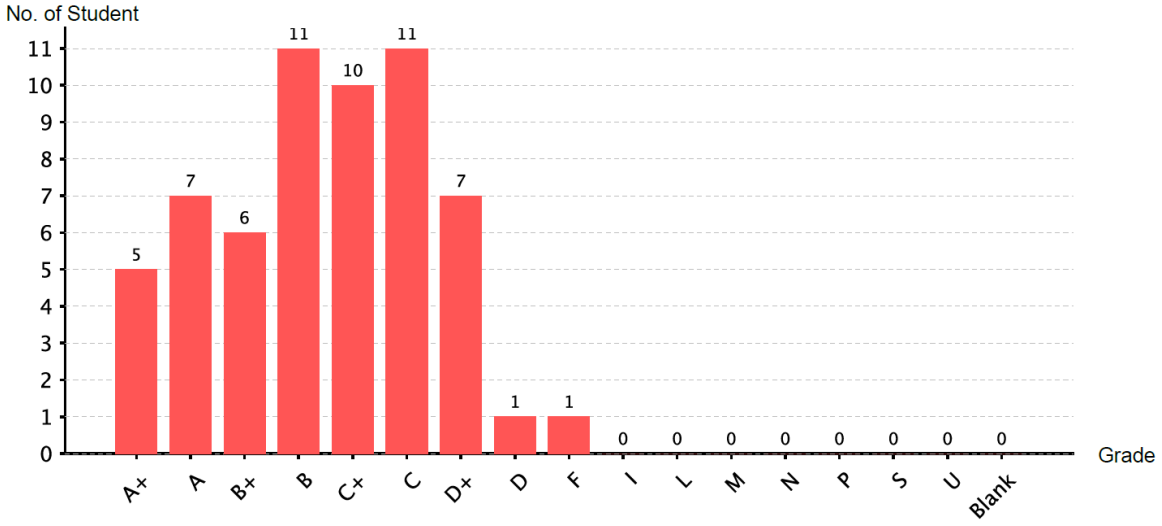


Past Exam Statistics

2017/18 Semester 2



2017/18 Semester 1



Student Plagiarism

- The University regards plagiarism very seriously.
- Possible punishments include
  - Reduce overall marks of the continuous assessment
  - Reduce the overall grade
  - Fail the subject
  - Be suspended or expelled from the University
- Information on how to avoid plagiarism:
  http://edc.polyu.edu.hk/PSP/student.htm

References

Text Book

- B. A. Forouzan, **Data Communications and Networking**, 5th Edition, McGraw-Hill 2013

Reference Book

- William Stallings, **Data and Computer Communications**, 10th Edition, Pearson 2015