

Chapter 0

Course Administration

Handout by Joon Ho Cho

POSTECH NGCN301/EECE442, Spring 2024

based on J. Walrand and S. Parekh, *Communication Networks: A Concise Introduction*, 2nd ed.

0.1 What is a Syllabus?

0.2 Course Syllabus

0.1 What is a Syllabus?

- Def. A syllabus is **an outline** of the subjects in a course of study or teaching.
- **A Syllabus: More Than Just an Outline**
 - While a syllabus does present **an outline** of the course content, it serves as much more than that. Think of it as **a two-way agreement between you and me**, defining the expectations and responsibilities for both parties.
- Here's what that means:
 - **Early Transparency:** This syllabus provides upfront information about the course content, assessments, and grading policies.
 - **Feedback Opportunity:** **During the add/drop period (240220-240228)**, I welcome your feedback on the syllabus, and I may even adjust it based on your suggestions. This ensures you have a clear understanding of the course before fully committing.
 - **Mutual Agreement:** By enrolling in the course **after the add/drop period**, you agree to its content and requirements. Similarly, I commit to following the stated syllabus **unless we both agree to changes**.
Ultimately, the syllabus fosters clear **communication** and shared expectations, benefiting both you and me as we embark on this learning journey together.

0.2 Course Syllabus

- Where can you find it?
 - from Primary course webpage at PLMS:
<https://plms.postech.ac.kr/course/view.php?id=9895>
 - * Announcements
 - * links for HWs, Quizzes, Exams, etc.
 - from Secondary course webpage at Communication and Intelligent Systems Laboratory (CISL) home: <http://cisl.postech.ac.kr/class/eece442/>
 - * Handouts, annotated handouts, YouTube links, etc.
 - * If password protected, the passwords are one, two, ..., twentyfour, etc.
 - When pages disagree, please let me know.
- Syllabus on the primary course web page:
<https://plms.postech.ac.kr/local/ubion/course/syllabusV.php?id=9895>
- Syllabus on the secondary course web page:
<http://cisl.postech.ac.kr/class/eece442/>

Syllabus for Spring 2024 (Last update: 02/19/24)

📌 **Course Title:**

EECE442/NGCN301 Introduction to Communications and Network (3-0-3)

EECE442/NGCN301 통신 및 네트워크 개론 (3-0-3)

It is an elective course for the Electrical Engineering (EECE) major.

It is a mandatory course for the Next Generation Communications and Network (NGCN) minor.

- [Curriculum](#)
- [Industry-Academy Scholarship Program](#)

It is an open course for undergraduate students in military service.

● **Class Meetings:**

Regular Enrollment (재학생)

- In-class meetings: Every Tuesday and Thursday, 2:00 PM - 3:15 PM @ LG 102
- Attendance: Minimum attendance of 3/4 is required.
- Excuse absences: Please provide related documents for excused absences.
- Attendance check: It is your responsibility to regularly check your attendance status at the POSTECH [Electronic Attendance System](#).

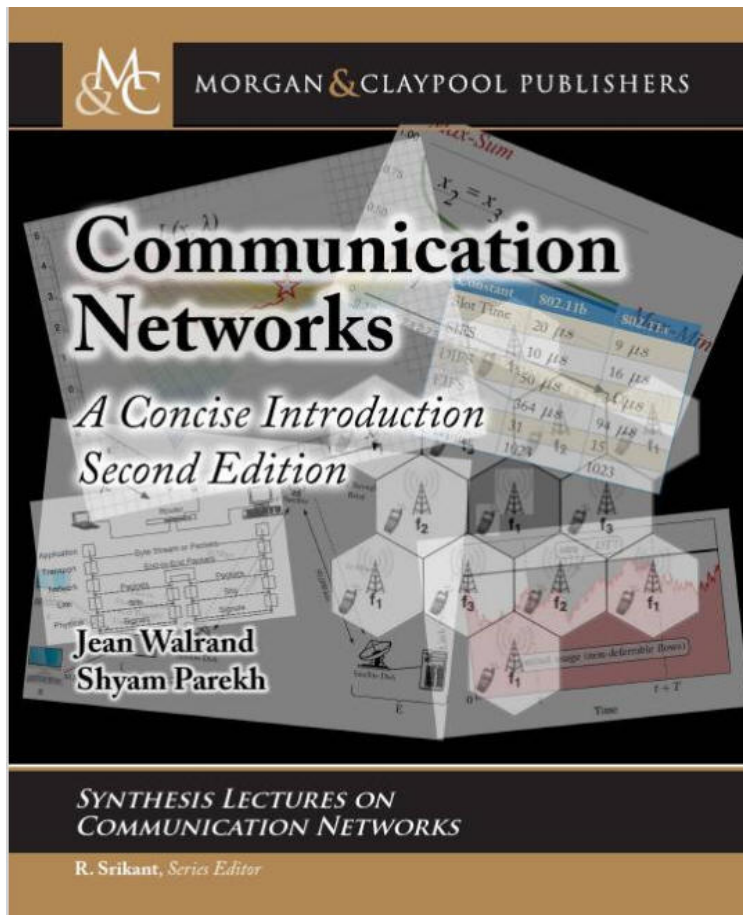
Open-Course Enrollment (군복무 개방과목 수강생)

- Recorded-online class meetings: Military students can learn through recorded videos uploaded on YouTube.
- Zoom meetings: You can attend in-class meetings and ask questions online using Zoom. (Zoom link will be provided by email, upon request.)
- Attendance: Attendance is replaced by HW submission.

● **Course Objectives:**

This course provides the foundations on the theory and practice of communications and network for undergraduate EECE/CSED/NGCN students.

● **Textbook:** ([available online via POSTECH library](#))



- [Jean Walrand](#) and [Shyam Parekh](#), *Communication Networks: A Concise Introduction, 2nd Ed.* Morgan & Claypool, 2018

🔴 Course Outline

1. The Internet
2. Principles
3. Ethernet
4. Wi-Fi
5. Routing
6. Internetworking
7. Transport
8. Models
9. LTE, NR

- 10. QoS
- 11. PHY
- 12. Additional Topics

● **Prerequisites:**

- While there are no official prerequisites, some basic knowledge of Electrical Engineering and Computer Science and Engineering would be very beneficial for success in this course.
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● **Companion Undergraduate Courses:**

EECE233 Signals and Systems
EECE302 Mathematics for EE Engineers A
EECE341 Introduction to Communication Systems
CSED352 Data Communication
CSED353 Computer Networks
EECE441 Introduction to Digital Communication
EECE443/NGCN302 Laboratory for Communications and Network
EECE451 Introduction to Digital Signal Processing

● **Course Requirements:**

1. Quarter-term Quiz 1 (14:00-14:30, Thu., Mar. 14th, LG 102) 10 %
2. Mid-term exam (19:00-21:00, Mon., Apr. 8th, LG 102) 20 %
3. Three Quarter-term Quiz 2 (14:00-14:30, Thu., May 2nd, LG 102) 10 %
4. Final Exam (19:00-21:00, Mon., June 3rd, LG 102) 30 %
5. Homework for each CM: 30 %
6. Attendance: on/off (According to the university rule, more than 1/4 of unEXCUSED ABSENCES lead to F without exception.)

* **Regular Students:**

- **Homework:** Assignments will be posted on PLMS with dedicated links for regular students. Each assignment will be due **approximately one week** after the corresponding class meeting.
- **Quizzes and Exams:** Take quizzes and exams on the **scheduled dates**, as the dates and times are posted above.

* **Open-Course Students:**

- **Homework:** Access assignments on PLMS using the open-course student links. Each assignment has a longer deadline of **2-3 weeks** after the corresponding class meeting, but **must be completed by June 13th**.
- **Quizzes and Exams:** Quizzes and exams will be available on PLMS. (Regular students must not access these links.) Complete each quiz and exam within **2-3 weeks** of the regular student date, but **finish them by June 13th**.
- Plan ahead and allocate sufficient time to complete each **quiz and exam** without interruption. Pausing or resuming is not possible once you begin.

* While you may use **any** resources during HW, Quiz, and Exam, **communication with other persons for assistance is not permitted and will be regarded as academic dishonesty**.

* **Extra-credit final report:**

- Submit
 1. a ppt/pdf file
 2. a 15-20 min. recorded presentation file
- Topics for your final report must be approved before the final exam.
- If the extra-credit final report is satisfactory, then the final grade will be one-step (+,0,-) increased without penalizing other students who have chosen not the submit reports.

* No S/U for undergraduate students. A final grade lower than B0 will be converted to U for S/U graduate students.

● **Homepages:**

- Announcements and homework can be found on the [PLMS](#). Quizzes and Exams for open-course students can also be found on the PLMS.
- Lecture handouts, videos, and notes will be provided on the lab website:
 - <http://cisl.postech.ac.kr/class/eece442/schedule.html>
- YouTube

playlist:

You can also find the lecture playlist on the following YouTube channels:

 - 24-1: <https://www.youtube.com/playlist?list=PL2fxOURY4wI4U438r2j1u0M6L5bxJ67Pi>

- [23-1](#)
- [22-1](#)
- Video lectures for other courses are also available, such as 233 Signals and Systems, 302 Math for EE A, Introduction to Optimization, Information Theory, Digital Communications, Estimation and Detection Theory, etc.

● **Instructor:** Professor Joon Ho Cho

Office) LG 409

Phone) +82-54-279-2377

E-mail) jcho (at) postech (dot) ac (dot) kr

Office Hours: 수업시간 전후 15분, 강의 줌 링크로 접속하여 진행.

● **Graduate TA:** 이현석

Office) LG 418

Phone) TBA

E-mail) ppp74103 (at) postech (dot) ac (dot) kr

Office Hours: TBA

● **Policy on Academic Dishonesty**

If the instructor suspects academic dishonesty, the instructor will notify the student(s) and follow the procedure to report to the school without any exception. Students have the responsibility to be knowledgeable about the consequences of dishonesty.

Schedule/Downloads (Last update: 02/16/24)

● The schedule is tentative and subject to change.

Chapter	Topic		24-1				23-1				22-1				Remarks
			Handout	Week	Date and Lecture Video	Annotated Handout	Handout	Week	Date and Lecture Video	Annotated Handout	Handout	Week	Date and Lecture Video	Annotated Handout	
0	Course Administration		CH00.pdf	1	2/20화			1	2/20월	01	00			01a	
1	The Internet	hosts, routers, links, IP packets,						1	2/22수	02			2/21월	01b	
		packet vs. circuit switchingaddressing, routing,						2	2/27월	03					
		dBm, error detection and ARQ, congestion and flow controls, DNS, WWW, http, hyperlink, URL					ch01.pdf		3/6월	04	Ch01.pdf	1			
2	Principles	Connectivity, cost, network topology, scalability, extensibility					ch02.pdf		3/8수	05	Ch02.pdf		2/23수	02	
		sharing links, PHY의 중요성, backbone network, IEEE802 Working groups, bandwidth vs. capacity, rate, delay of a packet						3	3/13월	06		2	2/28월	03	
													3/2수	04	

		bandwidth vs. channel width											
		Basic Operations, Medium Access Control, CSMA/CA, RTS, CTS, Frames,						4/10월	14			3/23수	10
							8	4/12수	28 Midterm Exam (covers upto CM#14)		6	3/28월	Quiz #1 (covers upto CM#10)
		PHY frame, PLCP header, preamble, Real passband signal, MAC performance analysis					9	4/17월	15			3/30수	11
		PHY of Wi-Fi 4--6						4/19수	16			4/4월	12
		Real passband signal and its Equivalent Complex baseband signal, Complex-valued modulation symbol, QAM, MCS, MIMO, SU-MIMO, DL-MU-MIMO, UL-MU-MIMO					10	4/26수	17		7	4/6수	13
5	Routing	Two-level routing, Inter-domain routing, Destination-based, peering vs. transit agreement, routing table, path vector, next hop IP address				ch05.pdf	11	5/1월	19	Ch05.pdf	8	4/11월	14

9	LTE and NR	wireless mobile communications and cellular concept																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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		algorithms, Byzantine agreement problem, Source compression, SDN and NFV, IoT, Remote computing and storage paradigms													
		Final Exam (Chs. 1-11.)							6/7수	29			6/8 수		