Syllabus for Introduction to Computer Networks (SWE3022-41), Fall 2025

Instructor: Prof. Jaehoon (Paul) Jeong
Department of Computer Science and Engineering,
Sungkyunkwan University
Suwon, Republic of Korea
Office: 85468, Corporate Collaboration Center, Natural Sciences Campus
Phone: 031-299-4957
Email: pauljeong@skku.edu
Webpage: http://iotlab.skku.edu/people-jaehoon-jeong.php
Office hour: Wednesday 13:30-14:30

Welcome to SWE3022-41!
In this course, you will be exposed to the introduction to Computer Networks. The goal of this course is to provide undergraduate students with the knowledge about computer networks that are used by computers and mobile computing devices (e.g., Smartphones, Tablets, and Laptops) for various services through cloud. This course decomposes the Internet technology (as the core of computer networks) into multiple layers and explains protocols required for those layers. That is, based on the OSI (Open Systems Interconnection) model, this course divides the Internet architecture into Physical layer, Data link layer, Network layer, Transport layer, and Application layer and then articulates the protocols necessary for running services in each layer. Our classes will be delivered in the form of flipped class, consisting of pre-class video lecture and class discussion. I hope you will enjoy this computer networking course!

Detailed Class Information

When: Monday 16:30-17:45 (Online) and Wednesday 15:00-16:15 (Offline)

Where: Offline Class (85602 in Corporate Collaboration Center) and Online Class (Watching Video Clip Lecture in icampus)

Teaching assistant 1: Mose Gu

- Graduate Student: Department of Computer Science and Engineering
- Research Lab: IoT Lab
- Office: 85461 in Corporate Collaboration Center
- Office Hour: Wednesday 13:00-14:00
- Phone: 031-299-4106
- Email: rna0415@naver.com, rna0415@skku.edu

Teaching assistant 2: Jiwon Suh

- Graduate Student: Department of Computer Science and Engineering

- Research Lab: IoT Lab
- Office: 85461 in Corporate Collaboration Center
- Office Hour: Wednesday 14:00-15:00
- Phone: 031-299-4106
- Email: sjw6136@gmail.com, sjw6136@skku.edu

Textbooks:

- **Main Textbook:** "Computer Networking: A Top-Down Approach", 8th edition, by James F. Kurose and Keith W. Ross, Pearson, published in 2022.
- **Supplemental Textbook:** "Computer Networks", 6th edition, by Andrew S. Tanenbaum, Nick Feamster, and David Wetherall, Pearson, published in 2019.

Coursework: The coursework consists of quizzes, group activities, homework assignments, term project, midterm exam, and final exam. (See schedule on the following pages.)

1. Quizzes

Every week (Monday) an online open-book quiz will be given to the students in the icampus during the class (10 minutes at the beginning). The quiz will let the students review the course contents and follow them up. The number of problems per quiz will be 5. The scores of the quizzes will be used for bonus points.

2. Group Activities

Each group consists of four students. Group activity aims at bringing up the thinking power of the students with four discussion problems from the day's class once a week. Problems are (i) narrative questions and (ii) calculation questions. Each group will need to submit the solutions of the group activity problem before the due of each group activity. The report of such solutions needs to be written in Powerpoint slides (i.e., pptx file). The TA will grade the submitted report. During the class, groups will work for their answers according to a presentation schedule.

3. Homework Assignments

Four homework assignments are based on textbook and relevant articles. Homework assignments will have three or four problems and one article reading (e.g., journal or conference papers related to computer networks). Some problems are related to network simulation with OMNeT++ and SUMO. These are designed to help the students work on the term project progressively.

4. Term Project

One term project is a 10,000-line project that is based on open source (e.g., OMNeT++) for network simulation. For the term project, the program should be implemented in C++ and Python.

The topic is about an intelligent handover scheme in 5G networks. The results of the term project include a midterm report and a final report with source code and demonstration video clip and slides.

Each student needs to submit its midterm report with a term project proposal, Powerpoint slides (i.e., pptx file) for presentation, and video clip for presentation according to the term project schedule in page 5. The midterm report should have at least 5 pages in A4. It needs to present its idea with Powerpoint slides according to the course schedule.

Each student needs to submit its final report with a term project report, Powerpoint slides for presentation, and video clip for presentation according to the term project schedule in page 5. The final report should have at least 15 pages in A4 along with the source code, design document, and user manual for installation and testing. Also, each team needs to present its work with Powerpoint slides according to the course schedule.

5. Exams

The exams will be closed-book tests in class by course schedule. It is noted that the final exam is a non-cumulative test, including the topics that are covered after the midterm exam. Make-up will be considered only in the event of a documented last-minute medical or other emergency.

Grading: Grades will be based on attendance (5%), quizzes (10%), group activities (15%), homework assignments (15%), term project (15), midterm exam (20%), and final exam (20%). The guideline for grade is based on the following absolute scale for the total score 100: $A+\geq 95, A \geq 90, B+\geq 85, B \geq 80, C+\geq 75, C \geq 70, D+\geq 65, D \geq 60, F < 60$. The final grade boundary will be determined according to the guideline above along with the university grading policy.

Notes for Attendance:

1. When you are absent from class more than five times (e.g., 5 absences and 1 late attendance), you will be given F grade.
2. Absence with a reasonable reason without pre-notice will be considered one late attendance.
3. Two late attendances are equivalent to one absence.

Important class policies (Please read carefully!): For the qualification of full credit, each homework assignment, each group activity, and the term project must be submitted in its entirety before class on the due date. Work submitted after class will not be accepted. Also, all work must be done independently. I encourage you to discuss problems of the homework assignments and group activities in general terms with your classmates, but the final answer must be your own. Copying from the reports of other students, from the instructor's manual, or from the material in

the Internet will be regarded as cheating, leading to F grade. The cheating from other people's work or the Internet will let you fail in this course with "F" grade.

Web page: The information about the course will be posted on the course page in icampus (https://icampus.skku.edu/). The group activities and homework assignments are posted here. You need to submit your homework reports, group activity reports/slides, and term project reports to the icampus course page. The page will also have an online forum through a web board, where students can discuss material related to the course. Please check the class web page regularly for the notices.

Course Schedule

The schedule may be changed at instructor's discretion. Readings refer to chapters that are relevant to two textbooks.

Week	Topic
1 (9/1, 9/3)	Course Introduction Computer Networking Research in IoTLab at SKKU Introduction to Computer Networks
2 (9/8, 9/10)	Application Layer (1/2)
3 (9/15, 9/17)	Application Layer (2/2)
4 (9/22, 9/24)	Wireless and Mobile Networks (1/2)
5 (9/29, 10/1)	Wireless and Mobile Networks (2/2)
6 (10/6, 10/8)	Transport Layer (1/2)
7 (10/13, 10/15)	Transport Layer (2/2) Review for Midterm Exam
8 (10/20, 10/22)	Midterm Exam
9 (10/27, 10/29)	Simulation and Modeling: SMPL Introduction to Network Simulation: OMNeT++ File Transfer in the Internet
10 (11/3, 11/5)	Network Layer: Data Plane (1/2)
11 (11/10, 11/12)	Network Layer: Control Plane (2/2)
12 (11/17, 11/19)	Link Layer and LANs (1/2)
13 (11/24, 11/26)	Link Layer and LANs (2/2)
14	Security (1/2)

(12/1, 12/3)	
15 (12/8, 12/10)	Security (2/2) Review for Final Exam
16 (12/15, 12/17)	Final Exam

Note:
There will be online, stored classes on both 11/03/2025 and 11/05/2025. There will be no classes on these dates. The lecturer will participate in the Internet Standardization Conference in Internet Engineering Task Force (IETF) from 11/01/2025 to 11/07/2025.

Homework Schedule

HW Number	Out	Due
HW1	9/15	9/29, 16:30
HW2	9/29	10/13, 16:30
HW3	11/10	11/24, 16:30
HW4	11/24	12/8, 16:30

Term Project Schedule

Term Project	Out	Due
Midterm Report	9/15	10/13, 16:30
Final Report	10/13	12/8, 16:30

Exam Schedule

Exam	When	Where
Midterm Exam	10/22 (Wednesday), 15:00-16:15	85613
Final Exam	12/17 (Wednesday), 15:00-16:15	85613