

Mobile Communication Networks

Course Name	Course type (credit/hours)	Elective course(3/3)			Course code	F060
	Target students Division/major/grade	Software and Computer Engineering/Senior			Opening semester	2020 1ST SEMESTER
	Class time and classroom	Tue B(Pal407)Thu A(Pal407)			English Grade	A(100%English)
Reference to this course	Prerequisite courses					
	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		Choi Youngjune(Professor, Software and Computer Engineering)			
	Office Room Number		Office phone Number	2634	e-mail	
	Office hours		Homepage address			
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

This course deals with overall network architecture and protocols of mobile communications such as LTE-A and 5G in the top-down approach from the application layer to physical layer. The lecture covers all-layer solutions for QoS, radio protocols, mobility, spectrum and radio resource management of LTE-A/5G systems and then key ideas such as MIMO, mmWave, V2X, and cellular IoT of 5G networks. Finally, 6G technology that will be enabled by AI will be discussed. Students will participate in seminar and project activities.

2. Course Objectives

3. Class types and activities

Lecture
Student presentation (Seminar)

4. Teaching Method

- | | |
|---|---|
| <input checked="" type="checkbox"/> lecture | <input type="checkbox"/> discussion and debate |
| <input checked="" type="checkbox"/> team project(presentation and case studies) | <input type="checkbox"/> experiments(role-playing,etc) |
| <input type="checkbox"/> designing and production | <input type="checkbox"/> on-site learning(on-site training) |
| <input type="checkbox"/> others | |

5. Support Systems in Use

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> AjouBb | <input type="checkbox"/> automatic recording system | <input type="checkbox"/> web-based assignment |
| <input type="checkbox"/> cyber lecture | <input type="checkbox"/> online content | |
| <input type="checkbox"/> class behavior analyzing system | <input type="checkbox"/> others | |

6. Teaching Tools

- | | | |
|--|---|---|
| <input type="checkbox"/> PBL(Problem Based Learning) | <input type="checkbox"/> CBL(Case Based Learning) | <input type="checkbox"/> TBL(Team Based Learning) |
| <input type="checkbox"/> UR(Undergraduate Research) | <input type="checkbox"/> FL(Flipped Learning) | <input type="checkbox"/> DSAL(Data Science Active Learning) |
| <input type="checkbox"/> others | | |

7. Knowledge and ability required for taking this course

Computer Networks

8. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		10	
midterm exam	1	30	
final exam	1	30	
quiz	2	10	
presentation			
discussion			
homework	5	20	
etc			
study hours			

9. Textbook and supplementary material

Main/Sub	Title (Web-site)	Writer	Publisher	Publication year
Sub	5G NR The Next Generation Wireless Access Technology	ERIK DAHLMAN	Academic Press	2018

10. Class system and Class shedule

--

< Class Schedule >

* language : K-korean, E-English

Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
1	Introduction	E	Choi Youngjune			
2	Information theory	E	Choi Youngjune			
3	Information theory	E	Choi Youngjune			
4	Spectrum and channel model	E	Choi Youngjune			

< Class Schedule >

* language : K-korean, E-English

Week s	Topics	lang uag e	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
5	Mobile network architecture	E	Choi Youngjune			
6	Radio resource management	E	Choi Youngjune			
7	Radio resource management	E	Choi Youngjune			
8	Mid-term exam	E	Choi Youngjune			
9	4G/5G radio access: MAC	E	Choi Youngjune			
10	4G/5G radio access: PHY	E	Choi Youngjune			
11	Cellular IoT	E	Choi Youngjune			
12	V2X	E	Choi Youngjune			
13	6G	E	Choi Youngjune			
14	Seminar	E	Choi Youngjune			
15	Seminar	E	Choi Youngjune			
16	Final exam	E	Choi Youngjune			

11. Other items of notification