Tamkang University Academic Year 107, 2nd Semester Course Syllabus

Course Title	BROADBAND ACCESS NETWORKS	Instructor	LIN, CHI-YI
Course Class	TEIBM1A MASTER'S PROGRAM, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM), 1A	Details	◆ Selective ◆ One Semester ◆ 3 Credits

Departmental Aim of Education

Ⅰ. Cultivate the ability to conduct independent research and problem solving.

Ⅱ. Strengthen creativity and research capacity.

Ⅲ. Build profound professional knowledge in computer science and information engineering.

Ⅳ. Engage in self-directed lifelong learning.

Departmental core competences

A. Independent problem solving ability.

B. Independent innovative thinking ability.

C. Research paper writing and presentation ability.

D. Research & development (R&D) ability in information engineering.

E. Project execution and control ability.

F. Lifelong self-directed learning ability.

Course Introduction	In this course we will first describe the fundamental principles of network technologies such as signal encoding, circuit/packet switching, Ethernet/VLAN, and priorities. Then we will focus on various types of wireline broadband access networks, including DSL, FTTx, and EPON/GPON.

The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I.Objective Levels (select applicable ones) :
 (i) Cognitive Domain   : C1-Remembering,   C2-Understanding,   C3-Applying,
                          C4-Analyzing,   C5-Evaluating,   C6-Creating
 (ii) Psychomotor Domain : P1-Imitation,   P2-Mechanism,   P3-Independent Operation,
                          P4-Linked Operation, P5-Automation,   P6-Origination
 (iii) Affective Domain : A1-Receiving,   A2-Responding,   A3-Valuing,
                          A4-Organizing,   A5-Charaterizing,   A6-Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :
 (i) Determine the objective level(s) in any one of the three learning domains (cognitive,
     psychomotor, and affective) corresponding to the teaching objective. Each objective should
     correspond to the objective level(s) of ONLY ONE of the three domains.
 (ii) If more than one objective levels are applicable for each learning domain, select the
      highest one only. (For example, if the objective levels for Cognitive Domain include
      C3,C5,and C6, select C6 only and fill it in the boxes below. The same rule applies to
      Psychomotor Domain and Affective Domain.)
 (iii) Determine the Departmental core competences that correspond to each teaching objective.
       Each objective may correspond to one or more Departmental core competences at a time.
       (For example, if one objective corresponds to three Departmental core competences: A,AD,
       and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Departmental core competences
1	Students may understand the definition and characteristics of broadband access networks and its importance.	C2	F
2	Students may learn the development background and technological advances in broadband access networks.	C2	BC
3	Students may understand evolution and trends of telecommunication industry, and develop their ability on technical analysis.	C4	AD
4	Enhancing students' ability of technical English reading and comprehension.	C1	CF
5	Enhancing students' ability of information searching, aggregation, and presentation.	C5	CF

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	Students may understand the definition and characteristics of broadband access networks and its importance.	Lecture, Discussion	Written test, Participation
2	Students may learn the development background and technological advances in broadband access networks.	Lecture, Discussion	Written test, Participation

3	Students may understand evolution and trends of telecommunication industry, and develop their ability on technical analysis.	Lecture, Discussion	Written test, Participation
4	Enhancing students' ability of technical English reading and comprehension.	Lecture, Discussion	Report
5	Enhancing students' ability of information searching, aggregation, and presentation.	Discussion	Report

This course has been designed to cultivate the following essential qualities in TKU students

Essential Qualities of TKU Students	Description
◇ A global perspective	Helping students develop a broader perspective from which to understand international affairs and global development.
◆ Information literacy	Becoming adept at using information technology and learning the proper way to process information.
◇ A vision for the future	Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision.
◇ Moral integrity	Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems.
◇ Independent thinking	Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically.
◇ A cheerful attitude and healthy lifestyle	Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life.
◇ A spirit of teamwork and dedication	Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems.
◇ A sense of aesthetic appreciation	Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process.

Course Schedule

Week	Date	Subject/Topics	Note
1	108/02/18 ~ 108/02/24	Course Introduction	
2	108/02/25 ~ 108/03/03	Introduction to Telecom Networks (1/2)	
3	108/03/04 ~ 108/03/10	Introduction to Telecom Networks (2/2)	
4	108/03/11 ~ 108/03/17	Signal Fundamentals and Encoding (1/2)	
5	108/03/18 ~ 108/03/24	Signal Fundamentals and Encoding (2/2)	
6	108/03/25 ~ 108/03/31	Circuit Switching and Packet Switching & Network Quality of Service	

7	108/04/01 ~ 108/04/07	Teaching Observation Period	No classes
8	108/04/08 ~ 108/04/14	Network Quality of Service (1/2)	
9	108/04/15 ~ 108/04/21	Network Quality of Service (2/2)	
10	108/04/22 ~ 108/04/28	Midterm Examination	
11	108/04/29 ~ 108/05/05	QoS in Packet Networks (1/2)	
12	108/05/06 ~ 108/05/12	QoS in Packet Networks (2/2)	
13	108/05/13 ~ 108/05/19	Ethernet and VLAN	
14	108/05/20 ~ 108/05/26	DSL and FTTx	
15	108/05/27 ~ 108/06/02	Passive Optical Networks (1/2)	
16	108/06/03 ~ 108/06/09	Passive Optical Networks (2/2)	
17	108/06/10 ~ 108/06/16	Final Oral Presentation	
18	108/06/17 ~ 108/06/23	Final Examination	

Requirement	About the final oral presentation, students may select any topics in the field of broadband access networks, and do the presentation in English.
Teaching Facility	Computer, Projector
Textbook(s)	Principles of Computer Networks and Communications, Dumas and Schwartz, Pearson, 2009. Broadband Network Architectures, Hellberg et al., Prentice Hall, 2007.
Reference(s)	Triple Play, Hens and Caballero, Wiley, 2008.
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 20.0 ％ ◆ Mark of Usual： ％ ◆ Midterm Exam： 30.0 ％ ◆ Final Exam： 30.0 ％ ◆ Other〈Oral Presentation〉：20.0 ％
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**