# Tamkang University Academic Year 105, 1st Semester Course Syllabus

| Course Title | WIRELESS LOCAL AREA NETWORKS | Instructor | KUEI-PING SHIH |
|---|---|---|---|
| Course Class | TEIBM1A<br>MASTER'S PROGRAM, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM), 1A | Details | ◆ Selective<br>◆ One Semester<br>◆ 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 | This course is mainly targeted at graduate-level students, at academic and industrial researchers working in the field, and also at engineering developing actual solutions for wireless LANs. This course contains basic concepts of wireless LANs, protocol stack of wireless LANs, and challenges of wireless LANs, and so on. Moreover, the students can realize the state-of-the-art technology via literature survey, paper presentation and discussions. |
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# 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 | Realize the operations of WLANs. | C2 | D |
| 2 | Realize the challenges and possible solutions in operations of wireless LANs | C5 | ABD |
| 3 | Cultivate the capabilities of independent thinking and investigation | C5 | ABDF |
| 4 | Increase English reading and writing capabilities. | P3 | BC |
| 5 | Increase the capabilities of oral presentation and defense. | P3 | ABCD |

## Teaching Objectives, Teaching Methods and Assessment

| No. | Teaching Objectives | Teaching Methods | Assessment |
| --- | --- | --- | --- |
| 1 | Realize the operations of WLANs. | Lecture, Discussion | Practicum, Report, Participation |
| 2 | Realize the challenges and possible solutions in operations of wireless LANs | Lecture, Discussion, Problem solving | Practicum, Report, Participation |
| 3 | Cultivate the capabilities of independent thinking and investigation | Lecture, Discussion | Practicum, Report, Participation |
| 4 | Increase English reading and writing capabilities. | Lecture, Discussion | Practicum, Report, Participation |
| 5 | Increase the capabilities of oral presentation and defense. | Lecture, Discussion | Practicum, Report, Participation |

| This course has been designed to cultivate the following essential qualities in TKU students | |
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| 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 | 105/09/12 ~ 105/09/18 | Introduction to WLANs | |
| 2 | 105/09/19 ~ 105/09/25 | Collision Resolution of IEEE 802.11 DCF | |
| 3 | 105/09/26 ~ 105/10/02 | Priority Scheme of IEEE 802.11 DCF | |
| 4 | 105/10/03 ~ 105/10/09 | Random Backoff Scheme of IEEE 802.11 DCF | |
| 5 | 105/10/10 ~ 105/10/16 | The Operation of IEEE 802.11 PCF | |
| 6 | 105/10/17 ~ 105/10/23 | The Coexistence of PCF and DCF | |
| 7 | 105/10/24 ~ 105/10/30 | IEEE 802.11 Other Issues: Fragmentation and Multirate Support | |
| 8 | 105/10/31 ~ 105/11/06 | Power Saving Schemes in IEEE 802.11 Infrastructure Mode | |
| 9 | 105/11/07 ~ 105/11/13 | Power Saving Scheme in IEEE 802.11 Infrastructure-less Mode | |
| 10 | 105/11/14 ~ 105/11/20 | Midterm Evaluation | |
| 11 | 105/11/21 ~ 105/11/27 | Papers Discussion | |

| 12 | 105/11/28 ～ 105/12/04 | Papers Discussion | |
| --- | --- | --- | --- |
| 13 | 105/12/05 ～ 105/12/11 | Papers Discussion | |
| 14 | 105/12/12 ～ 105/12/18 | Papers Discussion | |
| 15 | 105/12/19 ～ 105/12/25 | Papers Discussion | |
| 16 | 105/12/26 ～ 106/01/01 | Papers Discussion | |
| 17 | 106/01/02 ～ 106/01/08 | Papers Discussion | |
| 18 | 106/01/09 ～ 106/01/15 | Concluding Remarks | |

| Requirement | |
| --- | --- |
| Teaching Facility | Computer, Projector |
| Textbook(s) | |
| Reference(s) | Std 802.11-2012: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications. Institute of Electrical and Electronics Engineers, Inc., 2012.<br>All related IEEE Standards, drafts, forums, and contributions.<br>All related Journal and Conference papers. |
| Number of Assignment(s) | (Filled in by assignment instructor only) |
| Grading Policy | ◆ Attendance： 10.0 ％ ◆ Mark of Usual：30.0 ％ ◆ Midterm Exam： ％<br>◆ Final Exam： ％<br>◆ Other〈Presentation, Repor〉：60.0 ％ |
| 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 .<br>※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.** |