

## Tamkang University Academic Year 103, 1st Semester Course Syllabus

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|--------------|---|------------|---|
| Course Title | ARCHITECTURAL STRUCTURE AND FORM          | Instructor | ULF MEYER   |
| Course Class | TEAXB4A<br>DEPARTMENT OF ARCHITECTURE, 4A | Details    | <ul style="list-style-type: none"> <li>◆ Required</li> <li>◆ One Semester</li> <li>◆ 2 Credits</li> </ul> |

### D e p a r t m e n t a l   A i m   o f   E d u c a t i o n

- I . Discern and understand current society and trends of development (Knowledge accumulation).
- II. Training of professionalism (Knowledge implementation).
  - 1. Learning of professional skills and practice.
  - 2. Cultivation of a character attending to social justice and public interest for architectural professionalism.
  - 3. Inspiring creative thinking in environment and architecture design discipline.
- III. Implementation of inter-disciplinary knowledge and team works (self-educating and growth).

### D e p a r t m e n t a l   c o r e   c o m p e t e n c e s

- A. Abilities in architectural design, creativities, aesthetics, and cumulating of knowledge for the development of architectural professionalism.
- B. Competence of logical reasoning and judgment for issue discovering, information gathering, analysis and problem solutions, and integration conceptual thinking into physical forms.
- C. Understanding and application of fundamental mathematics and science skills.
- D. Understanding of knowledge from socio-cultural, humanity and psychology disciplines for applications in architectural thinking and problem resolutions.
- E. Competence in implementation of architectonics, construction, and architectural practices.
- F. Understanding the functioning of ecological and urban environment and applying in architectural and urban design process.
- G. Application of information technology for creative works and enhancing communication ability.
- H. Prepared for planning management 、 effective communication and team-work, understanding of professional ethics and social responsibilities, highly pertinent to current affairs and global perspective.

|                        |  |
|------------------------|--|
| Course<br>Introduction | Development of structural forms, Structural actions, Structural materials,<br>Construction and form, Structural elements, complete structures: early forms,<br>Contemporary wide-span structures, Bridges, Multi-story buildings and structures,<br>Structural understanding and design. |
|------------------------|--|

**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   | 1. Properties of building material, 2. Elements of structural form, 3. Arch, 4.Complex system of building structures | P3               | ABCDEGH                       |

**Teaching Objectives, Teaching Methods and Assessment**

| No. | Teaching Objectives  | Teaching Methods  | Assessment        |
|-----|--|---|-------------------|
| 1   | 1. Properties of building material, 2. Elements of structural form, 3. Arch, 4.Complex system of building structures | Lecture, Discussion, Appreciation, Practicum, Problem solving | Practicum, 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    | 103/09/15~<br>103/09/21 | Introduction to Calatrava's works (1)                 |      |
| 2    | 103/09/22~<br>103/09/28 | Introduction to Calatrava's works (2)                 |      |
| 3    | 103/09/29~<br>103/10/05 | Building materials and Structural form (1)            |      |
| 4    | 103/10/06~<br>103/10/12 | Building materials and Structural form (2)            |      |
| 5    | 103/10/13~<br>103/10/19 | Modeling of framed structures (1 )                    |      |
| 6    | 103/10/20~<br>103/10/26 | Modeling of framed structures (2)                     |      |
| 7    | 103/10/27~<br>103/11/02 | Modeling of arch structures (1)                       |      |
| 8    | 103/11/03~<br>103/11/09 | Modeling of arch structures (2)                       |      |
| 9    | 103/11/10~<br>103/11/16 | Modeling of arch structures (3)                       |      |
| 10   | 103/11/17~<br>103/11/23 | Midterm Exam Week                                     |      |
| 11   | 103/11/24~<br>103/11/30 | Advanced design concept of suspended cable systems(1) |      |
| 12   | 103/12/01~<br>103/12/07 | Advanced design concept of suspended cable systems(2) |      |

|                         |  |   |  |
|-------------------------|--|---|--|
| 13                      | 103/12/08 ~<br>103/12/14   | Modeling of cable structures (1)              |  |
| 14                      | 103/12/15 ~<br>103/12/21   | Modeling of cable structures (2)              |  |
| 15                      | 103/12/22 ~<br>103/12/28   | Introduction to modern structural systems (1) |  |
| 16                      | 103/12/29 ~<br>104/01/04   | Introduction to modern structural systems (2) |  |
| 17                      | 104/01/05 ~<br>104/01/11   | Creative structural form                      |  |
| 18                      | 104/01/12 ~<br>104/01/18   | Final Exam Week                               |  |
| Requirement             |  |   |  |
| Teaching Facility       | Computer, Projector  |   |  |
| Textbook(s)             |  |   |  |
| Reference(s)            |  |   |  |
| Number of Assignment(s) | (Filled in by assignment instructor only)  |   |  |
| Grading Policy          | ◆ Attendance : 10.0 %   ◆ Mark of Usual : 20.0 %   ◆ Midterm Exam : 30.0 %<br>◆ Final Exam : 40.0 %<br>◆ Other < > :        %  |   |  |
| Note                    | This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> .<br><b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b> |   |  |