

## Tamkang University Academic Year 104, 2nd Semester Course Syllabus

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|---|---|------------|---|
| Course Title  | EVOLUTION OF MACHINES   | Instructor | YANG LUNG-JIEH  |
| Course Class  | TNUZB1F<br>, 1F   | Details    | <ul style="list-style-type: none"> <li>◆ Required</li> <li>◆ One Semester</li> <li>◆ 2 Credits</li> </ul> |
| Academic Aim of Education   |   |            |   |
| <p>Students will understand recent development of modern science and technology and its impact on human society and global environment. Through the design of course students will also be familiar with broadly-based fundamental technical knowledge and improve.</p>   |   |            |   |
| Schoolwide essential virtues  |   |            |   |
| <ul style="list-style-type: none"> <li>A. A global perspective.</li> <li>B. Information literacy.</li> <li>C. A vision for the future.</li> <li>D. Moral integrity.</li> <li>E. Independent thinking.</li> <li>F. A cheerful attitude and healthy lifestyle.</li> <li>G. A spirit of teamwork and dedication.</li> <li>H. A sense of aesthetic appreciation.</li> </ul> |   |            |   |
| Course Introduction   | <p>The course presents an introduction to the historical background and progressing aspects of the machines and manufacture technology.</p> |            |   |
|   |   |            |   |

## The Relevance among Teaching Objectives, Objective Levels and Schoolwide essential virtues

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-Characterizing, A6-Implementing

II. The Relevance among Teaching Objectives, Objective Levels and Schoolwide essential virtues :

- (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 Schoolwide essential virtues that correspond to each teaching objective. Each objective may correspond to one or more Schoolwide essential virtues at a time. (For example, if one objective corresponds to three Schoolwide essential virtues: A, AD, and BEF, list all of the three in the box.)

| No. | Teaching Objectives  | Relevance        |                              |
|-----|--|------------------|------------------------------|
|     |  | Objective Levels | Schoolwide essential virtues |
| 1   | The students will be able to understand the historical background, basic concepts, principles of application and future perspectives of machine and manufacture technology.  | C2               | ABC                          |
| 2   | The students shall be aware of the development, status and future trends of the major areas of technology.   | C2               | ABC                          |
| 3   | The students shall be able to recognize that many of the social and environmental changes are due to the evolution of technology; then, they may reasonably address kinds of issues, either occurring or potential, in social, ethical, environmental or energy, etc. aspects. | C2               | ABC                          |

### Teaching Objectives, Teaching Methods and Assessment

| No. | Teaching Objectives   | Teaching Methods    | Assessment                          |
|-----|---|---------------------|-------------------------------------|
| 1   | The students will be able to understand the historical background, basic concepts, principles of application and future perspectives of machine and manufacture technology. | Lecture, Discussion | Written test, Report, Participation |
| 2   | The students shall be aware of the development, status and future trends of the major areas of technology.  | Lecture, Discussion | Written test, Report, Participation |
|     |   |                     |                                     |

|   |  |                     |                                     |
|---|--|---------------------|-------------------------------------|
| 3 | The students shall be able to recognize that many of the social and environmental changes are due to the evolution of technology; then, they may reasonably address kinds of issues, either occurring or potential, in social, ethical, environmental or energy, etc. aspects. | Lecture, Discussion | Written test, Report, Participation |
|---|--|---------------------|-------------------------------------|

Course Schedule

| Week | Date                     | Subject/Topics                                    | Note                                  |
|------|--------------------------|---|---------------------------------------|
| 1    | 105/02/15 ~<br>105/02/21 | Introduction                                      |                                       |
| 2    | 105/02/22 ~<br>105/02/28 | Anonymous Developments                            |                                       |
| 3    | 105/02/29 ~<br>105/03/06 | Anonymous Developments                            |                                       |
| 4    | 105/03/07 ~<br>105/03/13 | Chinese Inventions and Machines                   |                                       |
| 5    | 105/03/14 ~<br>105/03/20 | Chinese Inventions and Machines                   | 3/15 3-h class; makeup for 3/29       |
| 6    | 105/03/21 ~<br>105/03/27 | Machinery during the Industrial Revolution        | 3/22 3-h class; makeup for 3/29       |
| 7    | 105/03/28 ~<br>105/04/03 | Machinery during the Industrial Revolution        | 3/29 Prof. Yang goes abroad; no class |
| 8    | 105/04/04 ~<br>105/04/10 | Observation days (no class)                       |                                       |
| 9    | 105/04/11 ~<br>105/04/17 | Machinery during the Industrial Revolution        |                                       |
| 10   | 105/04/18 ~<br>105/04/24 | Midterm Exam Week                                 |                                       |
| 11   | 105/04/25 ~<br>105/05/01 | Cosmology & presentation of group 1               |                                       |
| 12   | 105/05/02 ~<br>105/05/08 | Exploring Outer Space & presentation of group 2   |                                       |
| 13   | 105/05/09 ~<br>105/05/15 | Semiconductor Industry & presentation of group 3  |                                       |
| 14   | 105/05/16 ~<br>105/05/22 | Small Technology & presentation of group 4        |                                       |
| 15   | 105/05/23 ~<br>105/05/29 | Artificial Intelligence & presentation of group 5 |                                       |
| 16   | 105/05/30 ~<br>105/06/05 | Robotics & presentation of group 6                |                                       |
| 17   | 105/06/06 ~<br>105/06/12 | Future machines & presentation of group 7         |                                       |
| 18   | 105/06/13 ~<br>105/06/19 | Final Exam Week                                   |                                       |

|                         |  |
|-------------------------|--|
| Requirement             | <p>1.(Attendance) According to the rule of Tamkang University, one who is absent beyond 1/3 of the whole class time is not allowed for attending the final exam. One time of absence at any roll call will lose him/her 2 scores.</p> <p>2.(Mark of usual) All students in this class are divided into several groups. Each group is scheduled to give an oral presentation of 30 min (3 min for each person) at least and they should hand in one integrated paper report. The title and the content of the presentation should be relevant to this course. The presentation score of each group is determined by the audience and Prof. Yang by 50%-50% weighting ratio. Additionally, each student should clearly mention his/her contribution to his/her group in the final term report.</p> |
| Teaching Facility       | Computer   |
| Textbook(s)             | Evolution of Machines, edited by Lung-Jieh Yang  |
| Reference(s)            | You can download the textbook file from<br><a href="http://tsp.ec.tku.edu.tw/QuickPlace/ljyang/Main.nsf/h_BFD832272469E2A1482570770042B201/32c5151db16852ef482576ea000d469c/?OpenDocument">http://tsp.ec.tku.edu.tw/QuickPlace/ljyang/Main.nsf/h_BFD832272469E2A1482570770042B201/32c5151db16852ef482576ea000d469c/?OpenDocument</a>   |
| Number of Assignment(s) | 1 (Filled in by assignment instructor only)  |
| Grading Policy          | <p>◆ Attendance : 10.0 %    ◆ Mark of Usual :        %    ◆ Midterm Exam : 30.0 %</p> <p>◆ Final Exam : 30.0 %</p> <p>◆ Other &lt; final report &gt; : 30.0 %</p>  |
| Note                    | <p>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> .</p> <p><b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b></p>  |