

## 99-1 Preliminary Syllabus, Da-Yeh Univ

| Information       |                          |                       |                |
|-------------------|--------------------------|-----------------------|----------------|
| Title             | 燃料電池與氫能                  | Serial No. / ID       | 1544 / MAI3069 |
| Dept.             | 機械與自動化工程學系               | School System / Class | 大學日間部3年5班      |
| Lecturer          | 鄭錕燦                      | Full or Part-time     | 專任             |
| Required / Credit | Optinal / 3              | Graduate Class        | No             |
| Time / Place      | (四)34 / H440 (五)5 / H440 | Language              | Chinese        |

| Introduction  |
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| <p>Fuel cell, an important and highly appraised energy conversion apparatus, is a promising technology for tomorrow's green energy and it is expected to replace the internal combustion engines in vehicles and the traditional batteries in 3C products in the near future. The purpose of this course is to expose students to this new kind of energy-related technology. The contents of this course consist of the following aspects: 1. The operational principles and the merit/defect evaluations for various kinds of fuel cells; 2. The characteristics and functions of fuel cell components; 3. The analysis of fuel cell systems.</p> <p>The objectives of this course are:</p> <ol style="list-style-type: none"> <li>1. To make students understand the basic theories of fuel cells, fuel-cell-related electrochemistry, the calculation of fuel cell efficiencies.</li> <li>2. To make students understand the merits and defects of various kinds of fuel cells.</li> <li>3. To make students understand the characteristics and functions of fuel cell components.</li> <li>4. To make students understand the structure of fuel cell system and grasp the fundamental technique for fuel cell design.</li> </ol> |

| Outline   |
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| <p>Unit 1: Introduction</p> <p>Unit 2: Thermodynamics of fuel cells</p> <p>Unit 3: Reaction kinetics of fuel cells</p> <p>Unit 4: Charge transfer in fuel cells</p> <p>Unit 5: Mass transfer in fuel cells</p> <p>Unit 6: Mathematical models of fuel cells</p> <p>Unit 7: Types of fuel cells</p> <p>Unit 8: Introduction to subsystem of fuel cells</p> |

| Prerequisite                               |
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| Thermodynamics, and fundamental chemistry. |