



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus

| Course Code | Course Name | Credits | Contact Hours |
|-------------|-------------------|---------|---------------|
| 0401482 | Power Systems (2) | 3 | 3T |

INSTRUCTOR/COORDINATOR

| | |
|---------------------|--|
| Name | Dr. Talal Aljaafreh |
| Email | tmjaafreh@mutah.edu.jo |
| Office Hours | 11:00-12:30 (Mon,Wed) |

TEXTBOOK

| | |
|----------------------------|--|
| Title | Power System Analysis |
| Author/Year/Edition | Hadi Saadat, 2002, 3 rd Edition Tata McGraw Hill Publishing Co. Ltd., NewDelhi, |

Other Supplemental Materials

| | |
|----------------------------|--|
| Title (1) | Power System Analysis & Design |
| Author/Year/Edition | Glover, J. Duncan, Mulukutla S. Sarma, and Thomas Overbye. , <i>SI Version</i> . Cengage Learning, 2012. |
| Title (2) | Principles of power system |
| Author/Year/Edition | Mehta, V. K., and Rohit Mehta. S. Chand, 2005 |

SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

Underground cables; mechanical design of overhead transmission lines; insulators; economic operation; Power system Control; (Voltage and frequency control), power system stability and transients, power system earthing; DC transmission lines.

B. Pre-requisites (P) or Co-requisites (C)

Power Systems (1) (0401481) (P)

C. Course Type (Required or Elective)

Required

SPECIFIC GOALS

A. Course Learning Outcomes (CLOs)

By the end of this course, the student should be able to:

CLO1: To provide students with the basic understanding, fundamental and concepts of power system stability and transients [1].

CLO2: To explain different control types in power system [1].

CLO3: To make the student understand the economic dispatch and operation of power systems [1].

CLO4: To make the student able to analyze underground cables and power system earthing/grounding [1].

B. Student Learning Outcomes (SOs) Addressed by the Course

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| ✓ | | | | | | |

BRIEF LIST OF TOPICS TO BE COVERED

| List of Topics | No. of Weeks | Contact Hours |
|--|--------------|---------------|
| Unit 1: Power system stability | 1 | 3 |
| Unit 2: Power system Control; Generator control | 1 | 3 |
| Unit 3: Economic operation of power systems | 2 | 6 |
| Unit 4: Mechanical Design of overhead transmission | 1 | 3 |
| Unit 5: Electrical Design of overhead transmission lines | 2 | 6 |
| Unit 6; Underground cables; Types, Materials, Electric Characteristics | 3 | 9 |
| Unit 7: Power system earthing/grounding. | 2 | 6 |
| Unit 8: HVDC transmission System | 2 | 6 |
| <i>Total</i> | <i>14</i> | <i>42</i> |

EVALUATION

| Assessment Tool | Due Date | Weight (%) |
|---|--------------------------------------|------------|
| Mid Exam | According to the university calendar | 30 |
| Course Work (Homeworks, Quizzes, Projects, ...etc.) | One week after being assigned | 20 |
| Final Exam | According to the university calendar | 50 |

ABET's Students Learning Outcomes (Criterion # 3)

| Relationship to program outcomes | |
|----------------------------------|---|
| ABET 1-7 | Engineering Student Outcomes |
| 1 | √ an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics |
| 2 | an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. |
| 3 | an ability to communicate effectively with a range of audiences. |
| 4 | an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. |
| 5 | an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. |
| 6 | an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. |
| 7 | an ability to acquire and apply new knowledge as needed, using appropriate learning strategies. |