**University of Management and Technology**

**Course Outline**

Course code: **EE426L** Course title: **High Voltage Engineering Lab**

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| **Program** | BSEE |
| **Credit Hours** | 1 |
| **Duration** | One Semester |
| **Prerequisites** | -- |
| **Resource Person** | Muhammad Haris |
| **Counseling Timing**  **(Office # 7, Hall # 510, SEN Building )** | Monday (11:00-1:00) |
| **Contact** | Ext: 3663  muhammad.haris@umt.edu.pk |

**Chairman/Director signature………………………………….**

**Dean’s signature…………………………… Date………………………………………….**

**Introduction:**

The course is an advanced course on high-voltage technology and electrical insulating materials.

**Learning Objective:**

The course contains the basic theories and the most important experimental methods related to generation and measurement of high voltages. The aim of this lab is to develop understanding of high voltage generation and measurement procedures which are used extensively in the industries and research laboratories worldwide.

**Teaching Methodology:**

Lectures will be used to describe and develop the concepts.

Group tasks will be given to enhance interactive learning.

Experimental setup will be utilized to analyze the test object and different measurement techniques for high voltage measurement.

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in the semester.

**Marks Evaluation Marks in percentage**

Lab Sessional Evaluation 40%

Final Viva Voce 60%

Total 100%

**Recommended Text Book:**

* High Voltage Engineering, 2nd edition. By E. Kuffel, W.S. Zaengl, amd J. Kuffel

**Reference Book:**

* High voltage Engineering, 2nd edition, By M. S. Naidu, and V. Kamaraju

**Calendar of Course contents to be covered during semester**

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| **Week** | **Topics** | **Reference Material** |
|  | To Calibrate a Sphere-Gap using its Breakdown Strength against Gap Settings. | **Lab # 1** |
|  | To Calibrate a Rod-Gap using its Breakdown Strength against Gap Settings. | **Lab # 2** |
|  | To Calibrate a Cone-Gap using its Breakdown Strength against Gap Settings. | **Lab # 3** |
|  | To Calibrate a Flat-Surface Gap using its Breakdown Strength against Gap Settings. | **Lab # 4** |
|  | To Calibrate Cone Flat-Surface Gap using its Breakdown Strength against Gap Settings. | **Lab # 5** |
|  | To Compare the Flashover Voltages Wet and Dry for a typical Outdoor Insulator | **Lab # 6** |
|  | To Find out the 50% Critical Impulse Flash-Over Voltages on the 11KV Pin-type Insulator with Positive & Negative Impulse | **Lab # 7** |
|  | Study of relationship between string efficiency and the No. of insulators (units) used in a string insulator | **Lab # 8** |
|  | Study of relationship between string efficiency and the No. of insulators (units) used in a string insulator with guard ring | **Lab # 9** |
|  | To compare the flashover voltages wet and dry for a typical outdoor insulator | **Lab # 10** |
|  | To measure the ground resistance | **Lab # 11** |