**King Saud University**

**College of Engineering*****1st*  Semester 1443H**

**Electrical Engineering Dept**

**EE 446: High Voltage Engineering**

**Course Objectives:**

1. Study types of high test voltages, their generation and measurement methods.
2. Apply physical modeling approach for high voltage components and systems.
3. Apply techniques, and systems for analysis and diagnostics of high voltage systems.
4. Understand the principles and applications of electrical insulation materials and their failures.
5. Design and implementation of high voltage generation and measurement systems.

**Weekly Teaching Plan**

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| **Week #** | **Deliverables** |
| 1 | Introduction to high voltages and their applications |
| 2 | HVDC generation methods and applications |
| 3 | HVAC generation methods and applications |
| 4 | Origins and characteristics of surge voltages in power systems |
| 5 | Generation of high voltage impulse voltages |
| 6 and 7 | Measurements of high DC, AC and Impulse voltages |
| 8 | Introduction to insulation material, their properties and applications |
| 9 and 10 | Ionization in gases; breakdown characteristics and applications of gas insulation in power system equipment |
| 11 | Types, characteristics, applications and breakdown of liquid insulation |
| 12 | Types, characteristics, applications and breakdown of solid insulation |
| 13 | Partial discharges origin, significance and testing techniques |
| 14 | High voltage test techniques, test standards and testing types |

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| **Textbook:** | A.A.Al-Arainy, M.I.Qureshi and N.H.Malik,” ***Fundamentals of High voltage Engineering***” King Saud University Press, 2013. |
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**Grading Policy:**

Mid-Term I: 23% 21.10.2021 (evening)

Mid-Term II: 23% 2.12.2021 (evening)

Tutorials, H.W. & Quizzes 10%

Class participation 4%

Final Exam 40%

Total 100%

**Instructor:**

**Dr. Y. Khan**

Office: 2C -123

Ph: 467-6759

**Attendance Policy:**

Any student who is absent for more than 25% of lectures and tutorials will not be allowed to appear in the final exam and this policy will be strictly enforced without any exceptions.