# HIGH VOLTAGE TECHNIQUES

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| 1 | Course Title: | HIGH VOLTAGE TECHNIQUES | |
| 2 | Course Code: | EEM4506 | |
| 3 | Type of Course: | Optional | |
| 4 | Level of Course: | First Cycle | |
| 5 | Year of Study: | 4 | |
| 6 | Semester: | 8 | |
| 7 | ECTS Credits Allocated: | 4.00 | |
| 8 | Theoretical (hour/week): | 3.00 | |
| 9 | Practice (hour/week): | 0.00 | |
| 10 | Laboratory (hour/week): | 0 | |
| 11 | Prerequisites: | | |
| 12 | Language: | Turkish | |
| 13 | Mode of Delivery: | Face to face | |
| 14 | Course Coordinator: | Öğr. Gör. OKAN SÜLE | |
| 15 | Course Lecturers: | | |
| 16 | Contact information of the Course Coordinator: | Öğr. Gör. Dr. Okan SÜLE<br>E-posta:osule@uludag.edu.tr<br>Tel: (224) 294 21 53<br>Adres: Elektrik-Elektronik Mühendisliği bölümü, No: 519 | |
| 17 | Website: | | |
| 18 | Objective of the Course: | Introduction to events occurring at high voltages, realization of analysis and design of equipment which operating at high voltage. To teach overvoltage sources and its protections methods | |
| 19 | Contribution of the Course to Professional Development: | To have extensive knowledge about the strength and charging and discharging phenomena of electrical cables carrying high currents. | |
| 20 | Learning Outcomes: | | |
| | | 1 | Adequate knowledge about high voltage topics (issues) Skills for modeling and solving engineering problems using theoretical and practical information in these fields |
| | | 2 | Detection, description formulation and solving skills of problems in the field of high voltage; to this end, selection and application skills of appropriate analyzing and modeling methods |
| | | 3 | Designing skill, process, equipment or product in the field of high voltage by fulfilling specific requirements in realistic criterions. to this end, application skills of modern designing methods |
| | | 4 | Development, selection and using skills of modern techniques and equipments for high voltage applications. Ability to use information technologies effectively |
| | | 5 | Designing experiments, experimentation, data acquisitions, analysis and interpretation of results for examining problems in the field of high voltage |
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| 21 | Course Content: | | |

| | Course Content: | |
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| Week | Theoretical | Practice |
| **1** | Electrostatic fields | |
| **2** | Planar electrode system | |
| **3** | Spherical electrode system | |
| **4** | Cylindrical electrode system | |
| **5** | Layered electrode systems | |
| **6** | Multilayered electrode systems | |
| **7** | Conform transform | |
| **8** | Conform transform | |
| **9** | Ionization and discharge | |
| **10** | Discharge events | |
| **11** | High voltage measurement | |
| **12** | Overvoltage and protection | |
| **13** | High-voltage transmission system elements | |
| **14** | High voltage generation and transmission | |

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| **22** | Textbooks, References and/or Other Materials: | 1. Özkaya, M., Yüksek Gerilim Tekniği 1, Birsen Yayınevi, İstanbul, 2008.<br>2. Özkaya, M., Yüksek Gerilim Tekniği 2, Birsen Yayınevi, İstanbul, 2005.<br>3. Kalenderli, Ö., Kocatepe, C., Arıkan, O., Çözümlü |

| Activites | | | Number | Duration (hour) | Total Work Load (hour) |
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| **23** | Assesment | | | | |
| Theoretical | | | 14 | 3.00 | 42.00 |
| **TERM LEARNING ACTIVITIES** | **NUMBE** | **WEIGHT** | | | |
| Practicals/Labs | | | 0 | 0.00 | 0.00 |
| Midterm Exam | 1 | 40.00 | 1 | 3.00 | 42.00 |
| Homeworks | | | 0 | 0.00 | 0.00 |
| Home work-project | 0 | 0.00 | 0 | 0.00 | 0.00 |
| Field Studies | | | 0 | 0.00 | 0.00 |
| Midterm exams | 2 | 100.00 | 1 | 16.00 | 16.00 |
| Others | | | 0 | 0.00 | 0.00 |
| Final Exams | | | 1 | 20.00 | 20.00 |
| Total Work Load | | | | | 120.00 |
| Total work load/ 30 hr | | | 100.00 | | 4.00 |
| ECTS Credit of the Course | | | | | 4.00 |
| Course | | | University Associate and Undergraduate Education. | | |

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| **24** | **ECTS / WORK LOAD TABLE** |

| **25** | **CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS** | | | | | | | | | | | | | | | |
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| | **PQ1** | **PQ2** | **PQ3** | **PQ4** | **PQ5** | **PQ6** | **PQ7** | **PQ8** | **PQ9** | **PQ10** | **PQ11** | **PQ12** | **PQ13** | **PQ14** | **PQ15** | **PQ16** |
| **ÖK1** | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK2** | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK3** | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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| **ÖK4** | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK5** | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**LO: Learning Objectives PQ: Program Qualifications**

| **Contribution Level:** | **1 very low** | **2 low** | **3 Medium** | **4 High** | **5 Very High** |
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