



University of Tehran
School of Electrical and Computer Engineering

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| Course: | 8101142 – Electrical Installations | | | | | | | | | |
| Course type: | EE* | | | | | | CE* | | | Credit: 3 |
| | Com | E | P | B | Con | D | SW | HW | IT | |
| | Required | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Elective | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Level: | Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/> | | | | | | | | | |
| Co-requisite(s): | None. | | | | | | | | | |
| Prerequisite(s): | None. | | | | | | | | | |
| Prerequisite by topic: | None. | | | | | | | | | |
| Textbook(s): | [1] H. Kalhor, <i>Lighting engineering</i> , Sahami Enteshar Press, 2016 (in Persian) [2] H. Kalhor, <i>Electrical installations engineering</i> , Sahami Enteshar Press, 2016 (in Persian) [3] Seip, Guenther G. <i>Electrical installations handbook</i> , Berlin: Siemens, and New York: Wiley, 1987, edited by Seip, Guenther G. [4] Ministry of Roads & Urban Development Iran, <i>National building codes</i> . | | | | | | | | | |
| Coordinator: | M. H. Samimi, School of ECE | | | | | | | | | |
| Goals: | The goal of the course is that students know the concepts of lighting and electrical installations engineering, learn the calculation methods, and design the installation systems of a residential building or industrial plant from A to Z by considering all the requirements. | | | | | | | | | |
| Outcome: | Upon successful completion of the course, students will be able <ol style="list-style-type: none"> 1. To explain lighting concepts. 2. To describe the mechanisms of different lighting sources. 3. To carry out the point by point and lumen method lighting calculations. 4. To design the indoor, outdoor, and street lighting systems. 5. To apply safety instructions regarding the electricity. 6. To perform the power factor correction calculations. 7. To recognize and utilize different apparatuses in the electrical installation systems. 8. To design and select the cable and switching systems for the electrical installation. 9. To design the protection system of the electrical installations. | | | | | | | | | |
| Topics: | 1) Lighting engineering 1-1) Introduction and definitions | | | | | | | | | |

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| | 1-2) Lighting sources and different lamps 1-3) Point by point calculation method for lighting design 1-4) Lumen calculation method for lighting design 1-5) Street lighting 1-6) Lighting projects 1-7) Energy saving and lighting scheduling 2) Electrical installations 2-1) Electricity hazards and safety 2-2) Distribution grids and circuits 2-3) Power factor correction 2-4) Wires and cables 2-5) Cable current ratings, thermal calculations 2-6) Determining cable cross sections based on current ratings and voltage drops 2-7) Protection in distribution grids 2-8) Indoor wiring systems 2-9) Electrical installation design of residential buildings 2-10) Electrical installation design of industrial plants 2-11) Protective ground and earthing systems |
| Computer usage: | DIALUX, ETAP |
| Assignments: | Include 7 Homework |
| Projects: | Lighting system design, electrical installations design |
| Grading: | Assignments: 20% Quiz: 10% Midterm exams: 35% Final exam: 35% |
| Further readings: | [1] IET, Electrical installation design guide: calculations for electricians and designers, 3 rd edition, 2016. |
| Prepared by: | Mohammad Hamed Smimi |
| Date: | October 06, 2017 |

| *EE: Electrical Engineering | | CE: Computer Engineering | |
|-----------------------------|----------------|--------------------------|------------------------|
| Com | Communications | SW | Software |
| E | Electronics | HW | Hardware |
| P | Power | IT | Information Technology |
| B | Bioelectronics | | |
| Con | Control | | |
| D | Digital System | | |