

EMC115: Engineering materials and electronics:

Course description: The course deals with properties of electrical materials; conductors, semiconductors, insulators, photoconductors, ceramics, methods of fabrication of electrical materials for electronic devices, traditional and alternative methods of generation of electrical energy, photovoltaic devices, integrated circuits, laws of electrical engineering, experiments involving electronic measurements aimed at understand the properties of semiconductor devices; integrated circuits, experiments involving solar cells. MWF 11.10, Spring 2016.

Credit hours: 3

Textbook/required materials: a) Electrical Engineering, Theory and Examples, Revised Fourth Edition, K.H. Norian, HRC Publishers (2010).

Course activities: Each student will study a semiconductor material or electronic instrument or invention as his/her term project, paper and presentation. The written report should include an introduction, followed by the main body of the text that explains for instance how the semiconductor is fabricated, its materials and electrical properties, and its applications. The written report of about 10 pages, with no limits on the number of diagrams, is due on the last day of March. Students will learn how to search the literature to find material relevant to their project.

Assessment and grade determination: : Students are assessed on the depth of understanding of the subject of the term paper and presentation, on class assignments based on experiments conducted in class, and on tests. Written project=30%, oral presentation of project=20%, assignments and tests =50%. Project titles due middle of February. Written project reports due end of March. Students should notify the instructor of any absences ahead of time; otherwise they will not be given credit for missed tests/assignments. Students who stay away from class for long periods without a good excuse will fail the course. Students with special needs need to let the instructor know of these during the first week of classes. Test dates to be announced. Assignment dates depend on course progress and cannot be predicted. Project presentation dates to be announced.

Class/laboratory schedule: This class meets three times per week, 50 minutes per session.

Important dates:

Term paper titles due middle of February

Term paper due: last day of March

Test dates to be announced

Prepared by: K.H. Norian, January 2016