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Arizona State University Polytechnic Campus

ALT 515: Reliability and Standards (of Photovoltaics)
Course
ALT 515: Reliability and Standards of Photovoltaics
Friday 4:40 pm – 7:30 pm

Instructor Information
Instructors: Dr. Mani G. Tamizh-Mani
Email: manit@asu.edu

Office Hours
Location: Technology Center 154
Time: By appointment

Reference Materials
- Classroom presentations
- Handouts
- Numerous reference books and reports
- Internet, conference & journal publications

Prerequisites
Physical science or engineering background

Course Description
Solar Photovoltaics: Reliability issues, accelerated life testing, safety testing, standards organizations, applicable standards for performance, reliability and safety testing, testing and certification agencies, regulatory organizations, incentives and industry organizations / newsletters. Hands-on laboratory experience.

Purpose:
The goal in this course is to expose the students: (i) to the reliability issues of the solar photovoltaic modules and other system components, and (ii) to the relevant national and international standards’ requirements for performance, reliability/durability and safety of the solar photovoltaic modules and other system components. Students will become familiar with marketplace requirements for the photovoltaic systems and their components.

Methodology:
This will be a classroom based course with hands on laboratory experiments

Grading Policy (Tentative)
Attendance = 3%
Course Requirements

Attendance
Attendance is required for all classroom sessions.

Email and Internet
You must have an active ASU e-mail account and access to the Internet.

Studying and Preparation Time
In addition to the time spent in the face-to-face classroom sessions plan on devoting 2 – 3 hours each week to homework. Homework may include assignments, writing reports and reading related to a face-to-face session already completed or as preparation for the upcoming face-to-face session.

Late or Missed Assignments
All assignments must be finished and turned in to complete the course.

Submitting Assignments
Assignments will be submitted through blackboard.

Drop and Add dates
See the following link for the drop, add and withdrawal policy of ASU:
http://students.asu.edu/drop-add

Use of cell phones, pagers, and PDAs
Please turn off or silence ALL cell phones, pagers, and PDAs prior to coming to the face-to-face class sessions. If you have an emergency and need to keep in communication with someone, please inform your instructor ahead of time.
Use of laptops in class
Laptops are not required for this course. You may use your laptop to take notes. Do not use class time for emails, chats, web browsing, or other non-class related activities.

Subject to change notice
All materials, assignments, and deadlines are subject to change with prior notice. It is your responsibility to stay in touch with your instructor, review the blackboard regularly, or communicate with other students, to adjust as needed if assignments or due dates change.

Academic Integrity
Academic Integrity is very important to the department. To build a long-lasting base of integrity in the community and elsewhere, the department will not allow any type of academic dishonesty which includes: cheating, plagiarism, collusion, or falsifying of any academic records. If a student is determined to be academically dishonest, then he/she will receive an XE on his/her transcripts and will have an immediate review by the department chair.

Course Schedule (Tentative)
Week1: Grading policy; Syllabus; Introduction to Reliability and Standards; Class/term Projects
Week2: Reliability (general): HALT & HASS
Week3: Reliability (general): Acceleration Factor; Failure Rates, Modes & Mechanisms; Reliability Models
Week4: Reliability (general): Acceleration Factor; Failure Rates, Modes & Mechanisms; Reliability Models
Week4: ISO 9000 and ISO 17025; Testing and Certification Organizations; Regulatory Organizations;
Week5: PV site tours from reliability perspectives
Week6: Midterm Examination; Photovoltaic modules - Reliability & Standards
Week7: Photovoltaic modules – Safety & Standards
Week8: Photovoltaic modules – Key safety and reliability tests used in PV standards
Week9: Key reliability characterizations including electroluminescence; polymer degradation; recycling
Week10: Laboratory experiments
Week11: Laboratory experiments
Week12: Laboratory experiments
Week13: Group presentations
Week14: Group presentations
Week15: Final examination