DESIGN OF PHOTOVOLTAIC SYSTEMS

COURSE OUTLINE:
This course is a design oriented course aimed at photovoltaic system design. The course begins by discussing about the PV cell electrical characteristics and interconnections. Estimation of insolation and PV sizing is addressed in some detail. Maximum power point tracking and circuits related to it are discussed. Later, applications related to peltier refrigeration, water pumping, grid connection and micro grids are discussed in detail. Lastly a brief discussion on life cycle costing is also discussed in order to bring in a measure of completeness to the course.

ABOUT INSTRUCTOR:
Prof. L. Umanand is a faculty at the Department of Electronics System Engineering (DESE) of Indian Institute of Science, Bangalore. He has been teaching, guiding and consulting in power electronic converters for more than two decades. His area of research are in power conversion, renewable energy systems and modelling.

COURSE PLAN:
Week 01: The PV Cell
Week 02: Series and Parallel Interconnection
Week 03: Energy from Sun
Week 04: Incident Energy Estimation
Week 05: Sizing PV
Week 06: Maximum Power Point Tracking
Week 07: MPPT Algorithms
Week 08: PV - Battery Interfaces
Week 09: Peltier Cooling
Week 10: PV and Water Pumping
Week 11: PV - Grid Interface-i
Week 12: PV - Grid Interface-ii and life cycle costing