EE6509 RENEWABLE ELECTRICAL ENERGY SYSTEMS

Academic Unit: 3.0
Prerequisite: Nil
Effective: Acad Year 2006/07
Last update: January 2006

OBJECTIVE

The objectives of this course are to learn about the issues in renewable energy systems and distributed generation. It covers the understanding and design of single-phase and three-phase renewable energy systems based on fuel cells, micro-hydro power, photovoltaics, wind turbine power and other distributed generation sources. These systems can be connected to the utility grid or to a microgrid.

DESIRED OUTCOME

The student can easily appreciate that engineering for sustainability is an emerging theme and that the need for more environmentally friendly electrical energy systems is an important part of the global trend. Renewable energy systems that are based on energy sources such as solar and wind do not diminish over time and are independent of fluctuations in price and availability. Distributed generation systems offer increased reliability and reduced threat of massive and widespread power blackouts.

OTHER RELEVANT INFORMATION

This course is aimed for graduate students or engineers already working in related fields. Prior knowledge of power, motors, power electronics and control theory at the undergraduate level is required.

CONTENT

Introduction to Electric Power Industry. Distributed Generation. Micro-Hydro Power Systems. Wind Power Systems. Solar and Photovoltaic Power Systems.

ASSESSMENT SCHEME

Continuous Assessment	20%
Final Examination	80%

TEXTBOOK

1. Masters, G M, Renewable and Efficient Electric Power Systems, Wiley-Interscience Press, 2004.

REFERENCES

1. Quaschning V, Understanding Renewable Energy Systems, Earthscan Publication, 2005.
2. Tiwari G N, Renewable Energy Resources: Basic Principles and Applications, Alpha Science International Ltd, 2005.