Faculty

Professor

William Dunford

Power electronics, power supplies, motor controls, energy management.

William Dunford earned both his BSc in electrical engineering and his MSc in machines and power systems from Imperial College, University of London. Dr. Dunford completed his PhD at the University of Toronto in 1982.

Dr. Dunford's interests are in power conversion, ranging from utility to microelectronic applications. He have been involved with several photovoltaic application from water pumping to utility interfaces.This year Dr. Dunford is advising the UBC Solar Car Club. His present focus is in the energy efficiency and smart grid are Dr. Dunford is actively involved with various local companies, particularly in power quality and energy management applications.

Latest Publications

Research Areas

- Energy Systems

Research Groups

- Electric Power and Energy Systems Group

Courses

ELEC 352	**Electric Energy Systems** Balanced and unbalanced three phase energy systems. Modeling of generators, transmission lines, transformers and loads. High voltage transmission technology, low voltage industrial domestic distribution. [3-0-2] Prerequisites:
CPEN/ELEC 499	**Undergraduate Thesis** Guideline This course is intended as a vehicle to provide undergraduate students with research experience. Students can take on a research effort for 3 credits or for 6 credits. The undergraduate thesis typically can be used to satisfy technical elective requirements. This document summarize some of the procedures for this course and is intended as a guide for students and faculty members. Who is eligible to register for CPEN/ELEC 499?
ELEC 493	**Nanotechnology and Microsystems Capstone Design Project** Design, analysis, and implementation of solutions in response to a real world nanotechnology and microsystems engineering problem. Projects are provided by industry, research laboratories, or other suitable entities. Includes coverage of topics such as project management. Students mus have fourth year standing and be registered in the Nanotechnology and Microsystems Option to take this course. Find out more about Capstones Prerequisite
	Industrial Drives Typical mechanical loads; dynamic and static characteristics and analysis of DC and AC drives; microprocessor-based controllers; commercial choices of drives for various applications.
EECE 559	**Energy Storage Systems** Superconducting Magnetic Energy Storage. Pumped Storage. Other possible technologies. System modeling and control.
ELEC 342	**Electro-Mechanical Energy Conversion and Transmission** Three phase power; transformers and harmonics; magnetic materials and circuits, electromechanical energy conversion; DC machines; rotating magnetic field, AC induction and synchronous machines; variable frequency operation, brushless DC machines; stepper and single-phase motors Credit will only be given for one of EECE 373 or EECE 374. [3-3*-1]
ELEC 344	**Applied Electronics and Electromechanics** Characteristics of semiconductor devices; analog circuits; force and torque production; motor principles and torque-speed characteristics; principles of power electronics. Not open to students in Electrical and Computer Engineering. Course Outline We will study a variety of AC and DC electromechanical devices. The prerequisite skills for this course in include basic circuit analysis ability (i.e. Ohm's Law, Kirchoff's Voltage and Current laws.) Prerequisite

Latest Publications

2015	**Demand Side Storage to Increase Hydroelectric Generation Efficiency** Journal Article | *IEEE Transactions on Sustainable Energy*
2015	**Evaluation of NERC's BRD frequency control standard in hydroelectric generation** Conference Paper | *2015 IEEE Power & Energy Society General Meeting*
2015	**Transient Stability Assessment of power systems through Wide-Area Monitoring System** Conference Paper | *2015 IEEE Power & Energy Society General Meeting*
2013	**A Zero-Voltage Switching Full-Bridge DC–DC Converter With Capacitive Output Filter for Plug-In Hybrid Electric Vehicle Battery Charging** Journal Article | *Power Electronics, IEEE Transactions on*
2013	**An LLC resonant DC–DC converter for wide output voltage range battery charging applications** Journal Article | *Power Electronics, IEEE Transactions on*

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