

Overview

Power Electronic Converters (PEC) establish the interconnection between the renewable energy sources and the electricity network. Their ability in handling the desired functionalities that are intended to handle, is largely dependent on their controller. In order to devise a smart and intelligent controller, three steps are required: 1) a mathematical model of the entire system, 2) selection of a control structure, and 3) design of the controller's gains. All three parts include interesting and sometimes challenging problems most of which go beyond the conventional knowledge and curricula material taught in the standard courses in the electrical engineering departments. It is essential that the next generation of workforce in the energy-related industries across India gain a solid and adequate level of knowledge in order to be prepared to understand and tackle the most important problems that this sector is grappling with. This course is a compact yet efficient presentation of some of the latest research results in modeling and control of PEC-based energy systems. The primary objectives of the course are as follows:

- i) Exposing participants to the fundamentals of power electronics and control systems.
- ii) Building in confidence and capability amongst the participants in the approaches for modeling and control of various PEC devices for energy applications.
- iii) Providing exposure to practical and advanced simulation models for a wide range of energy systems.
- iv) Enabling the participants to identify, model, analyze, and control emerging applications of PEC devices

Who can attend

- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories
- Faculty members from academic and technical institutions
- Students at different levels (B.Tech/M.Tech/Ph.D.)

Course Fee

- Foreign participants: US\$ 500
- Participants from industry: ₹ 5,000/-
- Faculties from academic institutions/ Govt. research organizations: ₹ 1,000/-
- Ph. D scholars: ₹ 750/-
- Students (B.Tech/M.Tech): ₹ 500/-

The above fee includes all instructional materials, laboratory equipment usage charges, and internet facility. The participants may be provided accommodation on payment basis.

Course Registration

Step-1: Fee Payment

1. Go to State Bank Collect (onlinesbi.sbi)
2. Select 'Educational Institutions'
3. Select 'Filter by State': Himachal Pradesh
4. Select 'Educational Institution': NIT Hamirpur
5. Select 'Payment category':

"Workshop STC FDP Conference" and fill the details to proceed further link for payment.

Step-2 E-Registration

After the payment, fill the form for e-registration through Google form: <https://forms.gle/RYze6B7HRVXv4ESn7>

MODELING AND CONTROL OF POWER ELECTRONIC CONVERTERS FOR ENERGY SYSTEM APPLICATIONS

December 16 - 20, 2024



Prof. Masoud Karimi Ghartemani
Mississippi State University, USA



**Department of Electrical Engineering
National Institute of Technology Hamirpur
Himachal Pradesh**

Course Instructor



**Prof. Masoud
Karimi Ghartemani**

Masoud Karimi Ghartemani is Professor of electrical and computer engineering at Mississippi State University, USA. His research interests are in modeling, design and control of distributed energy resources, nonlinear, robust, multivariable and optimal control theories; advanced signal processing. He has published more than 170 technical papers and has 7+ patents. He has authored:

- (i) Modeling and Control of Modern Electrical Energy Systems, Wiley-IEEE Press
- (ii) Enhanced Phase-Locked Loop (EPLL) Structures for Power and Energy Applications, Wiley-IEEE Press
- (iii) co-author of Unsolved Problems in Mathematical Systems and Control Theory, Princeton University Press

Prof. Karimi has supervised over ten PhD students and sixteen Masters students. He has delivered many invited talks in prestigious international conferences. His research has attracted notable funding from various agencies and industries. He is the recipient of the 2020 Faculty Research Award at MSU's Bagley College of Engineering. He is a Senior Member of IEEE and an Associate Editor for the IEEE Transactions on Industrial Electronics, IEEE Transactions on Sustainable Energy, and IEEE PES Letters.



Dr. Chandrasekaran

Dr. Chandrasekaran is an Assistant Professor in Department of Electrical Engineering at National Institute of Technology Hamirpur. He obtained his Ph.D. degree from Indian Institute of Technology Gandhinagar. His research interests include Grid Synchronization Techniques, Power Signal Processing and Cybersecurity of Power and Power Electronic Systems.



Dr. Supriya Jaiswal

Dr. Supriya Jaiswal received her PhD from Visvesvaraya National Institute of Technology, Nagpur in 2019. She is currently working as an Assistant Professor in the Department of Electrical Engineering, NIT Hamirpur (H.P.). Her field of research interests are Power Quality, Optimal Power Flow, Smart Energy Metering and Demand-side Management.

Course Coordinators

Dr. Chandrasekaran S,
Assistant Professor

Department of Electrical Engineering
National Institute of Technology Hamirpur
Himachal Pradesh - 177005

Phone: 9882299190

E-mail: chandru@nith.ac.in

Dr. Supriya Jaiswal
Assistant Professor

Department of Electrical Engineering
National Institute of Technology Hamirpur
Himachal Pradesh - 177005

Phone: 01972-254882,

E-mail: supriya@nith.ac.in

Course Registration



Last Date for Registration
10-12-2024