Introduction of SEU EE International Summer School Program

Theme

Low Carbon Power System with High Penetration of Renewable Energy Resources

Overview

This program is organized by School of Electrical Engineering, Southeast University. It is designed for international students all over the world to provide plentiful summer online courses. Combined with the lectures given by the well-known experts in electrical engineering, the International Summer School aims to promote education reform and development for undergraduate or graduate students, which can create an innovative atmosphere for college students. In this way, the graduate students can better understand the field of international cutting-edge academic and research advances, broaden academic horizons, broaden scientific research ideas, improve academic literacy, strengthen the awareness of innovation and entrepreneurship, as well as improve the innovation ability and training quality of students.

The courses will be given by well-known foreign experts and teachers majoring in Electrical Engineering, Southeast University will provide professional guidance for the students; the implementation duration of this project is 4 weeks, with a total of 40 class hours. It is suggested that it can replace the practical courses in the professional training plan. Moreover, extra SRTP credits can be earned for participating in the above-mentioned lectures.

Schedule

A. Lecturers and Course Information：

1) Application and Practice of MATLAB for Low Carbon Power System Modeling (Seminar)

This course consists of interactive **MathWorks** Webinars
and course projects under the supervision from **Southeast University** faculty and Experts from **MathWorks**.

2) Curriculum Design of Power System with High Penetration of Renewable Energy Resources (Seminar)

Courses	Presenters	Agenda
New paradigms in HVDC transmission systems with Renewable Energy	Prof. Enrique Acha (Tampere University)	TBA
A brief discussion about Renewable Energy systems, Transportation Electrification and Energy Internet	Dr. Hongcai Zhang (University of Macau)	TBA
Efficient Integration of Uncertainties in the Low Carbon Power System: Motivations, Tools, and Applications	Dr. Yi Guo (ETH Zurich)	TBA

Prof. Enrique Acha

Abstract: Continuous increases in electrical energy consumption have encouraged a great deal of technological development in the electrical power industry. In particular, the development of new equipment for power transmission that enables a more flexible power grid aimed at achieving higher throughputs, enhancing system stability and reducing transmission power losses, has been high on the agenda. The VSC-HVDC link is the latest equipment developed in the arena of high-voltage, high-power electronics and its intended function is to transport electrical power in DC form, as well as to enable the asynchronous interconnection of otherwise independent AC systems, and to provide independent reactive power support. The technology employs Insulated Gate Bipolar Transistors (IGBTs), driven by pulse width modulation (PWM) control. This valve switching control permits to regulate dynamically, in an independent manner, the reactive power at either

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	terminal of the AC system and the power flow through the DC link. Based on the mentioned above, this conference is focused on the new paradigms of using HVDC transmission systems to face the challenges in the expansion of network infrastructure.
	Bio: Professor Enrique Acha is a Professor of Electrical Power Systems at the Tampere University (TAU) Finland since 2011. He is IEEE Fellow and world-class expert in power electronics modelling and applications in electrical power systems. He was a Professor of Electrical Power Systems at Glasgow University, UK from 2002 to 2011, where he was the Chair of the inter-university Glasgow-Strathclyde Centre for Economic Renewable Power Delivery and Head of the FACTS Research Laboratory. He was a postdoctoral fellow at the Universities of Toronto, Canada and Durham, England. He graduated from the University of Michoacan, Mexico in 1979 and obtained his PhD in Electronic Engineering from University of Canterbury, Christchurch, New Zealand in 1988 under the direction of Josu Arrillaga. He has been a Distinguished Lecturer under the IEEE Distinguished Lecturer Program since 2005, has given more than 20 invited plenary talks, more than 25 short courses, as well as being a Power Systems Consultant. He has more than 100 peer reviewed journal papers, and more than 80 international conference papers. He has published six scientific books and supervised 20 PhD students. In 2012 he was the recipient of the "Melchor Ocampo" Gold Medal awarded by the Congress of the State of Michoacán, México.
	澳 門 大 學 **UNIVERSIDADE DE MACAU** **UNIVERSITY OF MACAU**
Dr. Hongcai Zhang	Dr. Hongcai Zhang is currently an Assistant Professor with the State Key Laboratory of Internet of Things for Smart City and Department of Electrical and Computer Engineering, University of Macau, Macao, China. He received the B.S. and Ph.D. degree in electrical engineering from Tsinghua University, Beijing, China, in 2013 and 2018, respectively. In 2018-2019, he was a postdoctoral scholar with the Energy, Controls, and Applications Lab at University of California, Berkeley, where he also worked as a visiting student researcher in 2016. His current research interests include Internet of Things for smart energy, optimal operation and optimization of power and transportation systems, and grid integration of distributed energy resources. He is an associate editor of IET Electrical Systems in Transportation, and a guest editor of IET Smart Grid, Special issue on "Achieving an Integrated Smart Power Grid and Intelligent Transportation System".
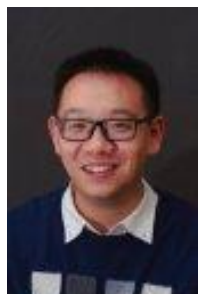
ETH *zürich*	

Dr. Yi Guo	Dr. Yi Guo is currently working with ETH Postdoctoral Fellowship in ETH Zurich. He received the B.S. degree in electrical engineering from Xi'an Jiaotong University, Xi'an, China, in 2013 and the M.S. degree in electrical engineering from the University of Michigan, Dearborn, MI, USA. He received the Ph.D. degree in mechanical engineering with The University of Texas at Dallas, Richardson, TX, USA. His research interests are in control and optimization in networks, with applications to electric power networks. He was awarded 2017-2019 Best Paper Award, IEEE Transactions on Power Systems, 2019 Betty and Gifford Johnson Endowment Travel Award, UT-Dallas, 2018 Best Reviewer, IEEE Transactions on Smart Grid, 2016 Best Author Award, Journal of Power System Technology.

3) Information Retrieval and Academic Writing Prepared for the Research in the Low Carbon Power System (Seminar)

This course consists of interactive Webinars as well as Writing Contest

Courses	Presenters	Agenda
How to Write Academic Paper in English	Dr. Wilsun Xu (University of Alberta)	TBA
How to Explore Academic Information	Dr. Kun Qian (University of Tokyo)	TBA
How to Write Academic Paper in Chinese	Dr. Hongxun Hui (University of Macau)	TBA

UNIVERSITY OF ALBERTA

Dr. Wilsun Xu	Dr. Wilsun Xu received a B.Eng in Electrical Engineering from the Xian Jiaotong University of China in 1982, a M.Sc in Power Engineering from the University of Saskatchewan in 1985, and a PhD in Power Engineering from the University of British Columbia in 1989. After spending 7 years in Canadian power industry with increasing responsibilities, Dr. Xu joined the University of Alberta in September 1996. Since then, he has been operating an active research program in the areas of power quality, voltage stability and distribution systems. Developing innovative solutions to real and challenging engineering problems is one of the main characteristics of Dr. Xu's research. His research contributions have been widely accepted by industry and academia. Dr. Xu serves frequently as a panelist, seminar speaker and session chair in IEEE conferences, and as an expert consultant for industry.

	東京大学 THE UNIVERSITY OF TOKYO
Dr. Kun Qian	Dr. Kun QIAN received his doctoral degree (Dr.-Ing.) for his study on automatic general audio signal classification in 2018 in electrical engineering and information technology from Technische Universität München (TUM), Germany. Currently, he is working as a JSPS Postdoctoral Research Fellow in the Educational Physiology Laboratory, Graduate School of Education, The University of Tokyo (UTokyo), Japan. He is a Senior Member of the IEEE. He was sponsored by fellowships to be the visiting researcher at the Nanyang Technological University (NTU), Singapore, the Tokyo Institute of Technology (Tokyo Tech), Japan, and the Carnegie Mellon University (CMU), USA. Dr. Qian serves as the Associate Editor for IEEE Transactions on Affective Computing, Frontiers in Digital Health, and BIO Integration, and is the leading organiser of the special session on computer audition for healthcare (CA4H) in the ICASSP2021, Toronto, Canada. He reviews regularly for many prestigious journals. Moreover, he was also the reviewer for the past ICASSP/INTERSPEECH/EMBC conferences. His main research interests include signal processing, machine learning, biomedical engineering, and deep learning. He (co-)authored more than 60 publications in peer reviewed journals, and conference proceedings (including the prestigious conferences ICASSP, INTERSPEECH, EMBC) having received more than 800 citations (h-index 17).
	澳門大學 UNIVERSIDADE DE MACAU UNIVERSITY OF MACAU
Prof. Hongxun Hui	Dr. Hongxun Hui is a Post-doctoral Fellow with the State Key Laboratory of Internet of Things for Smart City, University of Macau. He received the Ph.D. and B.Eng degree both from the College of Electrical Engineering, Zhejiang University in 2020 and 2015, respectively. From 2018 to 2019, he was a visiting student at the Advanced Research Institute in Virginia Tech. He was elected in the 1st batch of the Academic Rising Star Program for Ph.D. students in Zhejiang University in 2018. He has authored or coauthored 1 international book, 20 journal papers and 10 issued patents. One of his paper was selected as the ESI Highly Cited Papers (Top 1%). He was the recipient of the Outstanding Reviewer Award from Journal of Modern Power Systems and Clean Energy in 2019. His research interests are about the optimal control and market mechanism design of flexible loads considering high penetration of renewable energies in smart grid, the electricity market considering demand response, and the reliability analysis considering multiple uncertainties brought by flexible loads and renewable energies.

Host & Organizer

School of Electrical Engineering, Southeast University

Contact Information

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