

# GIAN Short-term Course on Cyber Physical System (CPS) Security for the Smart-Grid

March 05 – 16, 2018  
IIT Bombay

## Overview

Electric power grid is a complex cyber-physical critical infrastructure system that forms the lifeline of our society. The reliable, secure, and economic operation of the grid is of paramount importance to national security and prosperity. The modern power grid, often known as smart grid, is a highly automated Cyber Physical System (CPS), wherein a multitude of sensors, communication networks, and controllers are tightly interconnected to the physical grid for the purpose of efficient monitoring, protection, and control of the grid infrastructure to ensure its reliable and economic operation.

In recent years, there have been growing concerns over the cyber security of critical infrastructure systems, esp. the power grid, due to both from increasing trend of cyber-attacks and the sophistication of these attacks. Moreover, the increased reliance on cyber technologies (sensors, information and communication technologies) in the smart grid will significantly increase the attack surface, which further underscores the urgency and importance of cyber security. In this context, the CPS security for the power grid — encompassing attack deterrence, prevention, detection, mitigation, resilience, and attribution/forensics — is among the most important R&D priorities today. A holistic cyber security framework includes enhancement in technology, process, and the knowledge of engineers who develop technologies and/or operate the system.

The goal of this course is to provide a comprehensive understanding of the challenges, issues, solutions, and state-of-the-art research and best practices pertaining to the cyber security of the power grid. This easily follows for other infrastructures like Smart Cities, Transport etc. The course is organized into 10 half-day modules.

Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants.

<b>You Should Attend If...</b>	<ul style="list-style-type: none"><li>• Academic researchers, industry professionals, scientists from public sectors on infrastructure cyber-security for the power grid/cyber physical systems (CPS) security/ cyber security for critical infrastructure systems.</li><li>• Students (B.Tech./B.E./Masters/PhDs) in the above related areas</li><li>• Application providers for infrastructures in particular for smart grids, smart cities and public utilities using Internet</li></ul> <p><b>Number of participants for the course will be limited to fifty.</b></p>
General	The course is intended to a broad audience that includes (post)-graduate students, faculty, and industry professionals who wish to gain knowledge in CPS security for critical infrastructure systems and CPS security for power grid in particular.
Fees	The participation fees for taking the course is as follows: <b>Participants from abroad: US \$800/-</b> <b>Industry/ Research Organizations: Rs. 30000/-</b> <b>Academic Institutions: Rs. 15000/-</b> <b>Students: Rs5000/-</b> The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24-hour internet facility. The participants will be provided with accommodation on payment basis.

## The Faculty



**Professor Manimaran Govindarasu** is currently the Mehl Professor of Computer Engineering in the Department of Electrical and Computer Engineering at Iowa State University. He received his Ph.D degree in Computer Science and Engineering from the Indian Institute of Technology (IIT), Chennai, India, in 1998 and has been on the faculty of Iowa State since 1999. His research expertise is in the areas of CPS security for the smart grid, cyber security, and real-time systems/networks. At Iowa State, he has built a CPS security testbed for the smart grid that is being utilized for R&D, education, and training. He is a co-author of the text "Resource management in real-time systems and networks," MIT Press, 2001. He has co-authored over 150 peer-reviewed research publications, and has given several invited talks and tutorials at reputed IEEE conferences and delivered more than dozen industry short courses on the subject of cyber security for the power grid. He has made several panel presentations and also (co)-organized several panel sessions that include the Super Session on Communications Innovations for Power Systems at the IEEE Power and Energy Society (PES) General Meeting, 2012. He has served as a guest Co-Editor for several journals including flagship IEEE magazines (IEEE Network, Jan. 2004; IEEE Power & Energy, Jan. 2012; IEEE Network, 2013) and currently serving as an Associate Editor for IEEE Transactions on Smart Grid and IEEE Transactions on Mobile Computing. He currently serves as the Founding Chair of the Cyber Security Task Force at IEEE Power and Energy Society (PES) CAMS subcommittee and also serves as the Chair of CAMS. His research is funded by the U.S. NSF, DHS, DOE, and industry-university research consortiums (PSERC and EPRC). He is a Fellow of the IEEE.



**Professor RK Shyamasundar** is a JC Bose National Fellow and Distinguished Visiting Professor at the Department of Computer Science and Engineering, IIT Bombay. He was the Founding Dean of School of Technology and Computer Science at Tata Institute of Fundamental Research. He is the founding President of IARCS and also the Founding Chair of the well-known series of FSTTCS conferences. He is a Fellow IEEE, Fellow ACM and Fellow of all National Science and Engineering academies and a Fellow of the World Academy of Sciences (TWAS), Trieste. He has authored over 300 peer reviewed publications, 8 patents, and 8 books. More than 35 Ph.D. students have graduated under his guidance in India and USA. He has been a consultant to ESPRIT projects, Industries, Govt. of India etc. He is on the editorial board of Journal of parallel and distributed computing, Sadhana etc. He has served as Faculty/Visiting Scientists at various places Like IBM TJ Watson Research Center, UCSD, UIUC, SUNY at Albany, INRIA, IRISA, University of Cambridge, JAIST at Japan, Max Planck Institute at Saarbrucken, Visiting Distinguished Fellow of Royal Academy of Engineering, UK twice etc. One of his principal areas of research has been cyber security and is leading the Information Security Research and Development Center (ISRDC) funded by MEITY at IIT Bombay. He has/had been on the boards of IIIT Allahabad, IIIT Jabalpur, IDRBT, Bombay Stock Exchange etc.

## Course Coordinator

Prof. RK Shyamasundar  
Department of Computer Science and Engineering  
IIT Bombay  
Powai, Mumbai 400076

**GIAN Short-term Course on**

**Cyber Physical System (CPS) Security for  
the Smart-Grid**

**March 05 – 16, 2018**

**Registration Form**

Name(in block letters): \_\_\_\_\_  
\_\_\_\_\_

Qualification: \_\_\_\_\_

Designation: \_\_\_\_\_

Organization: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Mobile: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Payment: Rs: \_\_\_\_\_

DD No.: \_\_\_\_\_ Dt: \_\_\_\_\_

(DD in favour of "Registrar, IIT  
Bombay – CEP a/c")

**Or NEFT/ RTGS**

(Please furnish the foll. details if NEFT/RTGS)

Name of A/c Holder:

UTR NO./Transaction ID:

Name of Bank & Branch:

Date of Payment:

Amount:

IIT Guest House/ Hostel accommodation  
required (will be provided as per availability and  
on a payment basis): YES / NO

Signature of Applicant: \_\_\_\_\_

Date:

**Venue for Classes**

Seminar Room, CSE, IIT Bombay

**Lecture Notes**

To fully realize the objectives of the course, the  
lecture notes will be made available at the time of  
registration at IIT Bombay.

**Date & Time of Registration:**

5 March 2018, 8.30 AM at CSE Dept., IIT Bombay.

**COURSE FEE**

**Participants from abroad: US \$800/-**

**Industry/ Research Organizations: INR: 30000/-**

**Academic Institutions/ Faculty/ NGO: INR: 15000/-**

**Students & Research Scholars: INR: 5000/-**

The above fees include all instructional materials,  
computer use for tutorials and assignments,  
laboratory usage charges, free internet facility.  
Subject to availability, the participants will be  
provided with accommodation on payment basis.

The fees may be paid as follows ( tick the  
appropriate box) :

Logging in at <https://portal.iitb.ac.in/ceqipapp>.

You will have to create a login ID, look up this  
course and fill up a registration form. **Only after  
approval** of the faculty coordinator, you can pay  
the fees.

Or

Demand draft drawn in favour of "**The Registrar,  
IIT Bombay - CEP Account**". **If payment is by DD,  
please furnish the following details:**

DD No.: \_\_\_\_\_ Dt: \_\_\_\_\_

All completed registration forms with bank  
transaction details must be mailed to: Prof. R.K.  
Shyamasundar, Attn: GIAN Course; Department  
of CSE, IIT Bombay, Powai, Mumbai 400076

**Enquiries:**

[gian.isrdc.iitb@gmail.com](mailto:gian.isrdc.iitb@gmail.com)