

# Security of e-Systems and Networks

## Overview

In the present digital world, networking and multimedia technologies are developing rapidly. People can communicate and exchange information with each other over the Internet effortlessly at anytime and anywhere. At the same time, unauthorized users may gain access to systems and information and consequently they may corrupt data, consume network bandwidth, degrade network performance and launch attacks that prevent authorized users from accessing the network efficiently. Therefore, information security has always been considered as a major concern issue in the present digital world. This course covers the fundamental techniques in security of E-based Systems and Computer Networks. E-based systems are ubiquitous in the modern world with applications spanning e-commerce, e-government, and e-services. This course deals with the fundamental concepts and tools of security of e-based systems and computer networks and its range of applications. Among the topics to be covered in this course include: Introduction to E-Security, fundamentals of public key cryptosystem, authentication of users, system integrity, confidentiality of communication, availability of business service, non-repudiation of transactions, public key cryptosystems, authentication and digital signature, e-security tools such as Public key infrastructure (PKI) systems, biometric-based security systems, trust management systems, Cellular and personal networks security in communication networks.

<b>Course Schedule</b>	<b>February 10 – 14, 2018</b> <b>Number of participants for the course will be limited to fifty.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"> <li>▪ Employees of Govt., Public and Private sector having at least a graduate degree holder.</li> <li>▪ Student at all levels (B.Tech./MCA/M.Sc. /M.Tech. /Ph.D.) or Faculty from reputed academic institutions and technical institutions.</li> </ul>
<b>Fees</b>	<p>One-Time GIAN Registration: Please visit <a href="http://www.gian.iitkgp.ac.in/GREGN">http://www.gian.iitkgp.ac.in/GREGN</a> and register by paying Rs. 500/- (those who have already been paid, need not pay again). The participation fees for taking the course is as follows:</p> <p><b>Participants from abroad : US \$400</b></p> <p><b>Industry/ Research Organizations: Rs.10,000</b></p> <p>Academic Institutions:</p> <p>a) Institute Faculty : Rs. 5,000</p> <p>b) Student : Rs. 3,000</p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.</p>

<b>Objectives of the Course</b>	<p>The primary objectives of the course are as follows:</p> <ul style="list-style-type: none"> <li>• To introduce the concept of security of e-based systems and computer networks and consequences of accessing an e-commerce, e-government system.</li> <li>• To become familiar with the some fundamental concept of secure techniques such as authentication, Digital Signature and PKI.</li> <li>• To comprehensive understanding with some application areas in the field of information and communication security.</li> </ul>
<b>Tentative Duration</b>	February 10 –14, 2018 (5 days) : 12 hrs lectures and 4 hrs Tutorials
<b>Tentative Lecture Schedule</b>	<p><b>Day1</b> Lecture 1 : 1 hrs: Introduction to E-Security Lecture 2: 1 hrs :Introduction to Public Key Cryptosystem Tutorial 1: 2 hrs: Mathematics behind public key cryptosystem</p> <p><b>Day 2</b> Lecture 3: 1 hrs:Attacks on Public Key Cryptosystem Lecture 4: 1 hrs: Introduction to Authentecatation and Digital Signature schemes Lecture 5 : 1 hrs: Different Attacks on Authentication Scheme</p> <p><b>Day 3</b> Lecture 6: 1 hrs: Public Key Infrastructure (PKI) systems Lecture 7: 1 hrs: Trust management system Lecture 8: 1 hrs: Fundamentals of E-Services security</p> <p><b>Day 4</b> Lecture 9: 1 hrs: Security issues in E-Government applications Lecture 10: 1 hrs: Security issues in E-Commerce applications Lecture 11: 1 hrs: Discussion on some Biometrics-based security systems</p> <p><b>Day 5</b> Lecture 12 : Cellular and personal networks security</p> <p><b>Date of Examination:</b> February 14, 2018</p>

## The Faculty



**Professor Mohammad S. Obaidat** (Fellow of IEEE and Fellow of SCS) is an internationally well-known academic/researcher/ scientist. He is currently working as a Professor in Computer and Information Science at Fordham University, USA. Among his previous positions are

Advisor to the President of Philadelphia University for Research, Development and Information Technology, President of the Society for Molding and Simulation International, SCS, Senior Vice President of SCS, Dean of the College of Engineering at Prince Sultan University, Chair of the Department of Computer and Information Science and Director of the MS Graduate Program in Data Analytics at Fordham university, Chair of the Department of Computer Science and Director of the Graduate Program at Monmouth University. His research interests are: wireless communications and networks, telecommunications and Networking systems, security of network, information and computer systems, security of e-based systems, performance evaluation of computer systems, algorithms and networks, green ICT, high performance and parallel computing/computers, applied neural networks and pattern recognition, adaptive learning and speech processing.



**Dr. Sachin Tripathi** is currently working as an Associate Professor in Department of Computer Science and Engineering, Indian Institute of Technology (ISM) Dhanbad. His research area includes Group Security, Ad-hoc and Sensor Network, Artificial Intelligence.



**Dr. Arup Kumar Pal** is an Assistant Professor in Department of Computer Science and Engineering, Indian Institute of Technology (ISM) Dhanbad. His research interests are Image Compression, Image Cryptosystem, Steganography and Watermarking, Content based Image Retrieval, Cryptography.

## Course Coordinator

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