

Semester - 1
Paper 101: Fundamentals of Computer Security

Marks: 100

Lectures 60

Objective: This course will be responsible to lay the foundation for creating comprehensive understanding in the field of cyber security. With a view that incumbents in this diploma course are from varied disciplines, this paper will set the level field for all the students to be able to come at par and move together as they must go deeper into hard-core cyber security topics during the course duration.

Unit I: Computers and Cyber Security

Introduction to Computers, Computer History, Software, Hardware, Classification, Computer Input-Output Devices, Windows, DOS Prompt Commands, Linux/Mac Terminal and Commands, Basic Computer Terminology, Computer Security models, Computer Security Terms, Computer Ethics, Business and Professional Ethics, Need for cyber security; Cyber Frauds and crimes, Digital Payments, Various Search Engines, Introduction to Auditing, Deep Web, VAPT, Smartphone Operating systems, introduction to compliances ,Globalization and border less world.

Unit II: Python Scripting and PHP Basics

Python Basics, Variables and Types, Lists, Basic Operators, String Formatting, Basic String Operations, Conditions, Loops, Functions, Classes and Objects, Dictionaries, Modules and Packages.

Unit III: Cyber Laws

Need for Cyber Regulations; Scope and Significance of Cyber laws : Information Technology Act 2000; Network and Network Security, Access and Unauthorised Access, Data Security, E Contracts and E Forms. Penal Provisions for Phishing, Spam, Virus, Worms, Malware, Hacking, Trespass and Stalking; Human rights in cyberspace, International Co-operation in investigating cybercrimes.

Unit IV: Encoding

Encoding: Charset, ASCII, UNICODE, URL Encoding, Base64, Illustration: ISBN/ QR Code/ Barcode, Binary hamming codes and Binary Reedmuller codes.

Unit V: Web Application Architecture

HTML Basics, XAMPP Server Setup, Hosting Websites Linux, Apache, Virtualisation, Server Configurations, Web Application Firewalls..

Suggested Readings:

Langtangen, H.P. (2012). *Python Scripting for Computational Science* (4th Ed.). Springer

Behrouz A. Forouzan (2004). *Data communication and Networking*. Tata McGraw-Hill.

Kurose, James F. & Ross, Keith W. (2003). *Computer Networking: A Top-Down Approach Featuring the Internet* (3rd Ed.). Pearson Education.

Shklar, L. & Rosen, R. (2009). *Web Application Architecture: Principles, Protocols and Practices* (2nd Ed.). John Wiley & Sons.

Craig, B. (2012). *Cyber Law: The Law of the Internet and Information Technology*. Pearson.

Sharma J. P. & Kanojia S. (2016). *Cyber Laws*. New Delhi: Ane Books Pvt Ltd.

Paintal, D. *Law of Information Technology*. New Delhi: Taxmann Publications Pvt. Ltd.

Forbes, A. (2015). *The Joy of PHP: A Beginner's Guide to Programming Interactive Web Applications with PHP and MySQL* (4th Ed.). Plum Island Publishing LLC.

Shema, M. (2012). *Hacking Web Apps: Detecting and Preventing Web Application Security Problems*.

Peterson. W.W, (1972), *Error Correcting Codes*, MIT Press

Hill. R, (1980), *A First Course in Coding Theory*, Oxford University Press.

Macwilliams F J and Sloane N J A, (2013), *Theory of Error Correcting Codes*, North Holland Elsevier Science Ltd