



Workshop on Curriculum Finalization and Training on Development of SLM as OER



at

Uttarakhand Open University, Haldwani

From

18-19 Sep., 2015

Author

Dr. Jeetendra Pande

Assistant Professor, School of Computer Science & IT, UOU, Haldwani

Conducted by School of Computer Science & IT in collaboration with Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi

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1. Introduction

Uttarakhand Open University (UOU) was established by an Act of Uttarakhand Legislative Assembly in 2005 (Act No. 23 of 2005) with the aim of disseminating knowledge and skills through distance learning, using the flexible and innovative methods of education to ensure 'independent learning'. The University uses novel educational programmes, various modes of communication technology and contact sessions to make distance learning more effective. The major objective of the University is to cater to the educational needs of the target groups to create skilled and knowledge based human resource for speedy upliftment and development of the State. The University aims to impart quality education by maintaining high academic standards.

The role of distance education is shifting. Traditionally distance education was limited in the number of people served because of production, reproduction, and distribution costs. Today, while it still costs the university time and money to produce a course, technology has made it such that reproduction costs are almost non-existent. This shift has significant implications, and allows distance educators to play an important role in the fulfillment of the promise of the right to universal education. At little or no cost, universities can make their content available to millions. This content has the potential to substantially improve the quality of life of learners around the world. New distance education technologies, such as OpenCourseWares, act as enablers to achieving the universal right to education. These technologies and the associated changes in the cost of providing access to education, change distance education's role from one of classroom alternative to one of social transformer (Caswell, Henson, Jensen, & Wiley, 2008)

2. Background and Aim of the Programme

The need to secure our networks and our computing and communication devices has never been greater. Awareness and Training are two of the most important weapons against emerging cyber security threats. In an ever escalating spiral, cyber security experts work hard to develop new ways to prevent continually emerging threats while the hackers and criminals develop more sophisticated technology to circumvent their information systems and network security.

Uttarakhand Open University realised the importance of creating mass awareness about cyber security through education and decided to launch PG Diploma programme on Cyber Security. The proposal was submitted to Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi for seeking the grant for the development of Self-Learning Material (SLM) as Open Educational Resources (OER). The project was granted to School of Computer Science & IT with Dr. Jeetendra Pande as a point of contact for developing the programme.

The programme is aimed at individuals who want to know more about how Cyberspace works and what makes it so vulnerable to attacks? The students will gain a solid foundation for pursuing more specialized courses towards building a promising career in the field of Cyber & Information Security.

School of Computer Science & IT proposed to launch 'PG Diploma in Cyber Security' from the forthcoming session.

3. Workshop Aim

Uttarakhand Open University intends to launch a PG Diploma programme in Cyber Security in the forthcoming session. A two-day workshop was held at UOU Headquarter, Haldwani on 18-19 Sep.,2015 to gear-up the finalization and development of the programme.

The main objectives of the workshop are:

1. To identify relevant course content writers/experts from the research organizations, industry and concerned subject area for development of the curriculum and the self-learning materials;
2. To provide training on development of self-learning materials as OER to the course writers of the programme for Cyber Security;
3. To finalise the curriculum for Cyber Security course;
4. To allocate Units to the experts to course writing;
5. To develop a strategy for continuous engagement of Editors and Course writers to finalize the draft course materials of programme Cyber Security;

4. Sessions

The workshop was planned for two days and the agenda was framed in consultations with CEMCA. The detailed schedule of the workshop is as follows:

TIME	ACTIVITY	FACILITATOR	Expected Output/Outcome
DAY 1 : 18th September 2015			
9.30 – 10.00 a.m.	Registration		List of participants
10.00 – 11.00 a.m.	Inauguration: Introductions & Welcome Remarks		Getting to know each other
11.00 – 11.15a.m.	BREAK		BREAK
11.15 – 11.30a.m.	Programme & workshop objectives	Dr. Jeetendra Pande	Agreed upon workshop objectives
11.30 - 12.30 p.m.	Understanding OER and Open License (creative commons)	Dr. Manas Ranjan Panigrahi, CEMCA, New Delhi	Presentation & Discussion
12.30 – 1.30 p.m.	Instructional Design and writing SLMs	Dr. Jeetendra Pande	Presentation & Discussion
1.30 – 2.30 p.m.	LUNCH		LUNCH
2.30 – 2.45 p.m.	Presentation of Draft	Dr. Jeetendra Pande	Presentation

	curriculum and content outline		
2.45 – 3.30 p.m.	GROUP WORK on Draft content outline	Experts	Finalisation of draft content outline
3.30-3.45p.m.	BREAK		BREAK
3.45-5.00 p.m.	GROUP WORK on Draft content outline continued and Presentation by Groups	Dr. Jeetendra Pande Dr. Manas Ranjan Panigrahi	Finalisation of draft content outline and presentation and comments
DAY 2 : 19th September 2015			
9.30 – 10.00 a.m.	Recap of Day 1	Dr. Jeetendra Pande	Summary of Day 1
10.00 – 11.00 a.m.	GROUP WORK on Draft content outline	Experts	Finalisation of draft content outline
11.00 – 11.15 a.m.	BREAK		BREAK
11.15 – 1.30 p.m.	GROUP WORK on Draft content outline	Experts	Finalisation of draft content outline
1.30 – 2.30 p.m.	LUNCH		LUNCH
2.30 – 3.30 p.m.	GROUP WORK on Draft content outline continued and Presentation by Groups	Dr. Jeetendra Pande Dr. Manas Ranjan Panigrahi	Agreed upon Course content outline
3.30-3.45p.m.	BREAK		BREAK
3.45 – 4.15p.m.	Instruction to course writers and Prepare time line	Dr. Jeetendra Pande, Dr. Manas Ranjan Panigrahi	Agreed upon the time line and instructions on writings of courses
4.15 – 5.00 p.m.	Valediction		

DAY I: 18/09/2015

5. Registration

The event started with the registration of the Participants. 11 participants from UOU, and other organizations like Cyber Emergency Response Team(CERT-In), Ministry of Defence, Graphic Era Hill University, Bhimtal, etc. registered for the workshop.

6. Inauguration Session

The inaugural session started at 09:30 am at Conferene Hall, Uttarakhand Open University. The chief guest of the event was Professor Govind Singh, Registrar & Director- School of Jounalism of Mass Communication, Uttarakhand Open University. Dr. Jeetendra Pande, Assistant Professor- School of Computer Science& IT, UOU welcomed all the particepents and gave an opening remarks about the workshop.



Figure 1: Inaugural session of the workshop

The chief guest and the particepents were given a floral welcomed by presenting flower bouquet. It was followed by welcome speech by the Prof. Durgesh Pant, Director- School of CS & IT, who participated in the inaugural session over skype.



Figure 2: Prof. Durgesh Pant addressing participants over SKYPE



Figure 3: Floral welcome of the particpepts

Prof. Govind Singh, chief guest of the inagural session shared his earlier experiences when computer was introduced in India and how fast it have penitratd in our day to day lives. He expressed his concerns on educating people on cyber security techniques to protect our information from being misused. This was followed by a brief introduction of all the particpepts. The session ended with the vote of thanks by Dr. Jeetendra Pande and announcement of a tea break.

Tea Break: 11:00 am to 11:15 am

7. Technical Session on SLM preparation Guidelines and OERs

Dr. Jeetendra Pande presented a brief agenda of the workshop to the participants. He also introduced the objective of the programme and the workshop.

The expert for the first technical session, Dr. Manas Ranjan- Programme Officer, CEMCA gave a detailed presentation on OERs in which he introduced the concept and history of OERs and how OERs have emerged as one of the effective tools for teaching and learning. He also explained how OERs are helpful to add to the quality of the educational offerings by enhancing the quality of the teaching and learning resource by optimizing the reuse of the existing material. He also explained various common creative licences and how the author can identify the appropriate licence for developing and publishing OERs. He also demonstrated how to searching the appropriate OERs for a specific subject/topic from the various OER repositories.



Figure 4: Technical Session on Effective use of OERs

The second technical session was on Instructional Design and writing Self Learning Materials(SLM) by Dr. Jeetendra Pande. He discussed Distance Education Bureau(DEB)/Distance Educational Council(DEC) guidelines for planning and developing and academic programmes. He also discussed

the norms for delivery of courses through distance mode based on credit system and important UGC regulations to be kept in mind while deciding the nomenclature of the programme.



Figure 5: Lecture on Instructional Design and writing SLMs

The discussion was followed by a presentation on structure of SLM in which he discussed guidelines for developing e-content, terminologies used by UOU for SLM. He briefed about the definition of the various terms like programme, course, block, units and their interrelation. He introduced the three important section of a Unit viz. opening section, main body and ending section.

OPENING SECTION

- _____ Title
- _____ Unit Structure
- _____ Objectives
- _____ Introduction & Study Guidance

MAIN BODY

- _____ Thematic Content
- _____ Illustrations/ Photos
- _____ Diagrams/Tables
- _____ Graphics/Charts
- _____ Activities
- _____ References

ENDING SECTION

- _____ Summary
- _____ Possible Answers
- _____ List of References
- _____ Bibliography
- _____ Glossary
- _____ Further Readings
- _____ Model Questions

Figure 6: Three important section of a Unit

He also discussed the example of the unit structure adopted by UOU. He also explained many examples for writing objective, introduction, learning objective, writing styles, designing of activities for the unit, writing summary, references etc.

- Unit 1.....
- 1.0 Objectives
- 1.1 Introduction
- 1.2.....
 - 1.2.1.....
 - Check your progress
 - 1.2.2.....
 - Check your progress
- 1.3.....
 - 1.3.1
 - Check your progress
 - 1.3.2.....
 - 1.3.3.....
 - Check your progress
- 1.4.....
 - 1.4.1
 - Check your progress
 - 1.4.2.....
 - Check your progress
- 1.5 Let Us Sum Up
- 1.6 Glossary
- 1.7 Suggested Readings
- Possible answers
- References/ Bibliography

Figure 7: Unit structure adopted by UOU

Lunch Break: 01:30 to 02:30 pm

8. Presentation of Draft curriculum and Content Outline



Figure 8: Presentation of draft curriculum and content outline by Dr. Jeetendra Pande

The post lunch session started with the presentation of draft curriculum by Dr. Jeetendra Pande. Comments and suggestion were invited on the draft curriculum and workgroups was formed to finalized the curriculum contents.

Tea Break: 03:30 to 03:45 pm

9. Group Activity on Finalizing the Draft Curriculum Contents

The workgroups were formed and the courses were allocation to the groups on the basis of their specilization. Detailed deliberations and discussions were made amongs the workgroups to discuss the objective & scope of the course and the detailed contents that should fit-in to match the objectives.



Figure 9: Group Activity on Content Finalization

DAY II: 19/09/2015

10. Group Activity on Finalization of Draft Curriculum Contents cont..

The second day of the event started with the recap of the previous day by Dr. Jeetendra Pande. It was followed by the group activity on the brainstorming session on content finalization.



Figure 10: Group activity on content finalization Day II

Tea Break: 11:00 to 11:30

11. Presentation by Group I

Group I presented the final outline of the curriculum of the courses allocated to them. The presentation followed by the suggestions from the other group. After detailed discussion, the agreed upon contents were incorporated in the final version of the curriculum of the courses allocated to Group I.



Figure 11: Presentation by Group I

Lunch Break: 01:30 to 02:30 pm

12. Presentation by Group II

In the post lunch session, the presentation was made by Group II. The course developed by Group II were audited by Group I and with mutual agreements, the curriculum contents were finalized.



Figure 12: Presentation by Group II

13. Allocation of Units to Course Writers and Preparing timelines

In the post lunch session, the final syllabus was once again reviewed and syllabus as a whole was deliberated. After finalization, based on the expertise on the course, the volunteers for the unit writing were invited. The unit were allocated to the course writers and content writers are given the flexibility to reframe/ tweak/change titles/content of units little to adjust the flow or to cover topics. However spirit of block should remain same the syllabus while writing the contents.

Tea Break: 04:15 to 05:00 pm

14. Valedictory Session

The valedictory session started with the welcome of the chairperson Prof. Subhash Dhuliya, Hon'ble Vice Chancellor, UOU. After the floral welcome, Dr. Jeetendra Pande presented the proceeding of the two day workshop. It was followed by the speech of Prof. Subhash Dhuliya, who congratulated School of Computer Science & IT for the timely action of developing the course material on cyber security for spreading mass awareness through education. He also advocated the use of ICT for reaching the unreached. He also thanked CEMCA for their continuous support to UOU for capacity building and providing financial recourse. The workshop ended with vote of thanks delivered by Dr. Jeetendra Pande. The valedictory session concluded with the group photograph of all the participants with Hon'ble Vice Chancellor.



Figure 13: Group Photograph of all the participants

Appendix I

Misc. Photographs



Appendix II

List of Participants



Workshop
on
Curriculum Finalization and Training on Development of SLM as OER
for
Post-Graduate Diploma in Cyber Security
18-19 September, 2015
Organized by
Uttarakhand Open University (UOU), Haldwani, Uttarakhand
In Association with
Commonwealth Educational Media Center for Asia (CEMCA), New Delhi



Attendance Sheet: Day 1: 18 September, 2015

SN	Name	Affiliation	Mobile No	e-mail	Signature
1	Mr. Ashutosh Bahuguna	Scientist-C, Cyber Emergency Response Team-India	9971019290	bahuguna.a@deity.gov.in	
2	Group Captain Ashok Kataria	Ministry of Defence, New Delhi	9868473630	dirit-dgaqa@gov.in	
3	Mr. Mukesh Kumar Verma	Cyber Security Consultant and Researcher, Chandigarh	8130479555	mkv1989@gmail.com	
4	Prof. Ashok Panjwani	Professor, M.D.I. Gurgaon	9868367945	apanjwani@mdi.ac.in	
5	Wing Com. C S Chawla	Ministry of Defence, New Delhi	9868445191	chawlacs@gmail.com	
6	Dr. Manas Ranjan	CEMCA, New Delhi	9650154010	mpanigrahi@col.org	
7	Mr. Sandeep Budhani	Assistant Professor, Graphic Era University	9456189520	sandeepbudhani13@gmail.com	
8	Dr. Jectendra Pande	Assistant Professor, Uttarakhand Open University, Haldwani	9927050094	jpande@uou.ac.in	
9	Mr. Balam Singh Dafouti	Academic Associate, Uttarakhand Open University, Haldwani	9720669090	bdafaouti@uou.ac.in	
10	Mr. Rajesh Arya	Uttarakhand Open University, Haldwani	9927055921	rarya@uou.ac.in	
11	Mr. Rajendra Goswami	Uttarakhand Open University, Haldwani	9568212882	rgoswami@uou.ac.in	



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Attendance Sheet: Day 2: 19 September, 2015

SN	Name	Affiliation	Mobile No	e-mail	Signature
1	Mr. Ashutosh Bahuguna	Scientist-C, Cyber Emergency Response Team-India	9971019290	bahuguna.a@deity.gov.in	
2	Group Captain Ashok Kataria	Ministry of Defence, New Delhi	9868473630	dirit-dgaqa@gov.in	
3	Mr. Mukesh Kumar Verma	Cyber Security Consultant and Researcher, Chandigarh	8130479555	mkv1989@gmail.com	
4	Prof. Ashok Panjwani	Professor, M.D.I. Gurgaon	9868367945	apanjwani@mdi.ac.in	
5	Wing Com. C S Chawla	Ministry of Defence, New Delhi	9868445191	chawlacs@gmail.com	
6	Dr. Manas Ranjan	CEMCA, New Delhi	9650154010	mpanigrahi@col.org	
7	Mr. Sandeep Budhani	Assistant Professor, Graphic Era University	9456189530	sandeepbudhani13@gmail.com	
8	Dr. Jeetendra Pande	Assistant Professor, Uttarakhand Open University, Haldwani	9927050094	jpande@uou.ac.in	
9	Mr. Balam Singh Dafouti	Academic Associate, Uttarakhand Open University, Haldwani	9720669090	bdafaouti@uou.ac.in	
10	Mr. Rajesh Arya	Uttarakhand Open University, Haldwani	9927055921	rarya@uou.ac.in	
11	Mr. Rajendra Goswami	Uttarakhand Open University, Haldwani	9568212882	rgoswami@uou.ac.in	

Appendix III

Syllabus

Title of Programme: PG Diploma in Cyber Security

Total Credit: 28

Programme Code:

Programme Mode: Yearly

Admission Cycle: July

Eligibility: Graduate

Mode:Offline

Duration: Min: 1 Year Max: 3 Years

SLM Availability Medium: English

Objective of the Programme:

The need to secure our networks and our computing and communication devices has never been greater. Awareness and Training are two of the most important weapons against emerging cyber security threats. In an ever escalating spiral, cyber security experts work hard to develop new ways to prevent continually emerging threats while the hackers and criminals develop more sophisticated technology to circumvent their information systems and network security.

First and foremost, it will show the students the big picture: What types of cyber-threats have been unleashed on the information systems and what impact they have on our economy and lives? Who are the cyber criminals behind these attacks and what is being done to stop them? What are the looming threats to our personal identity, credit cards, smart phones, tablets and other mobile devices and what we can do to protect ourselves in cyber space from spam, spyware and "social engineering"? Is there any expectation of Privacy in the cyber age of Big Data, Cloud computing and Social Media? And, finally, what actions we should take if by some misfortune, we fall victim to a serious Internet crime or fraud?

In this first course, is aimed at individuals who want to know more about how Cyberspace works and what makes it so vulnerable to attacks? The students will gain a solid foundation for pursuing more specialized courses towards building a promising career in the field of Cyber & Information Security.

Programme Structure:

First Semester

S. No.	Paper Name	Paper Code	Marks			Credits	Minimum Counselling hours
			Th.	Ass.	Total		
1	Fundamentals of Information Security		60	40	100	4	12
2	Cyber Security Techniques		60	40	100	4	12
3	Cyber attacks and counter measures: user perspective		60	40	100	4	12
4	Lab		60	40	100	4	12

Second Semester

S. No.	Paper Name	Paper Code	Marks			Credits	Minimum Counselling hours
			Th.	Ass.	Total		
1	Information Security Assurance : Framework, standards and Industry best practices		60	40	100	4	12
2	Information System		60	40	100	4	12
3	Digital Forensic		60	40	100	4	12
4	Advanced cyber security techniques		60	40	100	4	12
5	Project/Lab					4	

Detailed Syllabus

Course I: Fundamentals of Information Security

BLOCK I: INTERNET, E-COMMERCE & E-GOVERNANCE BASICS

Unit I: Introduction and History, Internet address, Domain Naming System, Internet infrastructure, ISP, Role of ISP, International & National ISP's, ccTLD (Country Code Top Level Domain), TLD (Top Level Domain) Types of accounts. Worldwideweb (WWW), Application areas of Internet. E-Governance: Need of E-Governance, Issues in E-Governance applications and the Digital Divide; Evolution of E-Governance, Its scope and content; growth in E-Governance global trends, Other issues.

Unit II: Model of Digital Governance: Broadcasting/ Wilder Dissemination Model, Critical Flow Model, Comparative Analysis Model, Mobilization and Lobbying Model, Interactive-service Model/Government-to-Citizen-to-Government Model (G2C2G); Evolution in E-Governance and Maturity Models: Five Maturity Levels, Characteristics of Maturity Levels, Key areas, Government framework, Digital India Program, Towards Good Governance through E-Governance Models.

Unit III: E-readiness: Digital System Infrastructure, Legal Infrastructural Preparedness, Institutional Infrastructural Preparedness, Human Infrastructural Preparedness, Technological Infrastructural Preparedness; Evolutionary Stages in E-Governance.

Unit IV: E-Commerce: Definition of E-commerce, Business Models of E-commerce and Infrastructure; B2B, B2C, B2G and other models of e-commerce; Types of payment systems - e-cash and currency servers, e-cheques, credit cards, smart cards, electronic purses and debit cards; e-wallet, Google Wallet, Digital locker and other initiatives of Central government and state Governments.

BLOCK II: CYBER CRIME

Unit I: Introduction to computer crime and cyber crimes, Distinction between cyber crime and conventional crimes, Reasons for commission of cyber crime, Some basic terminologies- Virus, Malware, worm, trojan, spyware, scareware, botnets, ransomware and zombies.

Unit II: Kinds of cyber crimes – Hacking, cyber stalking, cyber pornography; online forgery and fraud, Cyber terrorism, Cracking software, Downloading illegal music files, Creating and distributing viruses on other computers, Posting confidential business information on the internet, copyright infringement, identity theft, phishing/spoofing, credit card fraud, on-line auction fraud, spamming, denial of service attack, debt elimination, internet extortion, cyber defamation, Smart Phone Auditing.

Unit III: Cyber criminals, Organized cyber crimes, Classification of cyber crimes, Cyber crime and Cyber terrorism, Information Warfare and Surveillance, Introduction to IT act.

Unit IV: Case Studies: Cyber Threats and Attacks, Impacts and response actions.

BLOCK III: INFORMATION SECURITY

Unit I: Introduction to Cyber Security, Security principles, Security triad: Confidential, Integrity, Availability;

UNIT II: Introduction to ISMS

Unit III: Cyber security techniques for secure e-commerce: authentication, encryption, digital signatures, antivirus, firewall; Computer forensics, steganography

Unit IV: Ethical aspect of Cyber Security ,Tips for computer security: Think before you click, Update everything, Backup your files, Secure your wireless network, Use strong passwords, etc.

COURSE II: CYBER SECURITY TECHNIQUES

BLOCK I

Unit I : Information Technology Security Policy , Aspects of Organizational security- IT security, Physical security, financial security, Legal security, online security.

Unit II: Modes of Attack- Insider attack, outsider attack. Why to report a cyber crime?, Reporting a cyber crime- How and when to report an incident?

Unit III: Intrusion Detection System/Prevention Systems and Incident Handling.

Unit IV: securing IT assets, Implementing Hardware Based Security, Software Based Firewalls, Securing IS assets, Prevent your network from anonymous attack, Wireless Security, WEP or WPA, Protect USB port

BLOCK II

Unit I: Security Standards & assurance frame work.

Unit II: desktop security and malware

Unit III: e-commerce & application security.

Unit IV: social engineering.

BLOCK III

Unit I: Risk management.

Unit II: Computer forensics & Collection of Digital Evidence

Unit III: Cyber Security initiatives in India: National Information Security Assurance Programme (NISAP), Indian Computer Emergency Response Team (Cert-In), Indo US Cyber Security Forum (IUSCSF), National counter terrorism centre (NCTC) of India, National Critical Information Infrastructure Protection Centre (NCIPC) of India, Institute for Defence Studies and Analyses(IDSA), National Intelligence Grid (Natgrid) project of India, Crime and Criminal Tracking Networks and systems (CCTNS) project of India, national cyber coordination center, botnet cleaning center, malware analysis center.

Unit IV: Cyber Laws, National Cyber security policy, national cyber crisis plan.

COURSE III: CYBER ATTACKS AND COUNTER MEASURES: USER PERSPECTIVE

BLOCK I

Unit I: cyber attacks, types of attacks motivation.

Unit II: Assesses Threats and Vulnerabilities, Risk Management.

Unit III: Information Security Framework: Organisation and Responsibilities, The Organisation's Management of Security, Organisational Policy, Standards and Procedures

Unit IV: Information Security Governance, Information Security Implementation, Security Information Management, Legal Framework, Security Standards and Procedures

BLOCK II

Unit I: Procedural / People Security Controls: People, User Access Controls, Communication, Training and Awareness

Unit II: Technical Security Controls, Protection from Malicious attacks, Networks and Communications, External Services, Cloud Computing, IT Infrastructure

Unit III: Software Development and Lifecycle: Testing, Audit and Review, Systems Development and Support

BLOCK III

Unit I: Authentication and password security

Unit II: Wireless security

Unit III: Investigation and forensic technique, investigate fraud email, fake social media profile investigation, investigate origin of spoof mail and genuine mail

Unit IV: introduction and application of cryptography

Course IV: LAB

- a. How to generate a secure password.
- b. How to check whether a site is secure for online payment.
- c. how to configure a basic firewall available with OS.
- d. How to select a browser(help them decide which browser is best by providing some of the details of the browsers).
- e. How to configure in browser setting for safe browsing(clearing cookies after browsing session, never store passwords etc.)
- f. How to secure wireless using password. etc
- g. Social Media Security: guidelines for safe browsing of facebook, twitter, linkedin,etc
- h. email security
- i. Browser Security

- j. Smart Phone Protection
- k. Secure e-transaction
- l. Installing and configuring antimalware/antivirus software
- m. Use of Encryption technologies for securing data
- n. Patching and updating user/client systems
- o. Secure Communication
- p. Other latest topics

COURSE V: INFORMATION SECURITY ASSURANCE : FRAMEWORK, STANDARDS AND INDUSTRY BEST PRACTICES

BLOCK I

Unit 1: Interrelationship between Regulation, policies, standard procedures and guidelines, Standards for Information Security: ISO standards- ISO/IEC 27002:2005 (Code of Practice for Information Security Management), ISO/IEC 27001:2005 (Information Security Management System - Requirements),

Unit II: Regulations related to Information Security- SOX, GLBA, COSO, HIPPA, FISMA, FIPS, FFIEC, common elements of compliance, Security controls, common pitfalls of a effective Information Security program.

Unit III: ISO/IEC 15408 (Evaluation Criteria for IT Security), ISO/IEC 13335 (IT Security Management); Payment Card Industry data security standards, COBIT, ITIL (OR ISO/IEC 20000 SERIES)

Unit IV: Introduction to industry best practices including NIST, SANS ,OWASP

BLOCK II

Unit I: Overviews of ISO-27K.

Unit II: ISO 27001

Unit III: ISO-27002

Unit IV: Other standards, guidelines, ISO- 27005

BLOCK III

Unit I: Security auditing

Unit II: Information security

Unit III: Disaster recovery

Unit IV: Business continuity planning and management

COURSE VI: INFORMATION SYSTEM

BLOCK I

Unit I: Networking and Communications

Unit II: Cryptography

Unit III: VA/PT- Basics

Unit IV: Network Security, Email Security, Infrastructure & Web Application Security

BLOCK II

Unit I: History of Cryptography, Basic concepts of Cipher, simple cipher, digital cipher, Key management.

Unit II: Cryptographic Algorithms, symmetric cipher, asymmetric ciphers, data integrity algorithms

Unit III: Key management and distribution, user authentication Protocols

Unit IV: Network and internet security, Transport level security, wireless network security, e-mail Security, IP Security.

BLOCK III

Unit I: footprinting and reconnaissance

Unit II: scanning and enumeration

Unit III: gaining access and exploitation

Unit IV: post exploitation activities

COURSE VII: COMPUTER FORENSIC

BLOCK I

Unit I: Introduction to Computer Forensic, evolution and objective, goals of forensic readiness, role of forensic investigators,

Unit II: Computer forensic investigation process

Unit III : Digital Evidence and first responder procedure

Unit IV : Understanding storage media and file system

BLOCK II

Unit I: Windows forensic- data acquisition and duplication, recovering deleted files and deleted partitions.

Unit II: Application password crackers, Image forensic, log capturing and events correlation

Unit III: Network Forensic

Unit IV: Investigating wireless attacks

BLOCK III

Unit I: Investigating web attacks

Unit II: Investigating email attacks

Unit III: Mobile forensic

Unit IV: Investigative reports and becoming expert witness, cyber regulations and IT act

COURSE VIII: ADVANCED CYBER SECURITY TECHNIQUE

BLOCK I

Unit I: Perimeter Devices Security

Unit II: Data Center Security

Unit III: Secure Network design/Implementation

Unit IV: Physical and environment security

BLOCK II

Unit I: server security- patch management, server hardening.

Unit II: services hardening

Unit III: advanced web application security.

Unit IV: E-mail Security

BLOCK III

Unit I: desktop hardening

Unit II: mobile devices

Unit III: wireless

Unit IV: advanced persistent threats

Course IX: PROJECT

Appendix IV

List of Course Writers

S.No.	Course	Block	Unit	Expert Name
1	FUNDAMENTALS OF INFORMATION SECURITY	Block I	1	Prof. Ashok Panjwani, MDI Gurgaon
			2	
			3	
			4	
		Block II	1	Dr. Sandeep Budhani, Graphic Era Hill University, Bhimtal
			2	
			3	
			4	
		Block III	1	Mr. Ashok Kataria, Ministry of Defence
			2	
			3	
			4	
2	CYBER SECURITY TECHNIQUES	Block I	1	Mr. Mukesh Kumar Verma, Cyber Security Researcher & Consultant, Chandigarh
			2	
			3	
			4	
		Block II	1	Mr. Ashutosh Bahuguna, Scientist-C, CERT-In and Mr. Abhilash Saini, Scientist-C, CERT-In
			2	
			3	
			4	
		BLOCK III	1	Mr. Ashutosh Bahuguna, Scientist-C, CERT-In and Mr. Abhilash Saini, Scientist-C, CERT-In
			2	
			3	
			4	
3	CYBER ATTACKS AND COUNTER MEASURES: USER PERSPECTIVE	BLOCK I	1	Mr. Rajendra Goswami, Programmer- Uttarakhand Open University, Haldwani
			2	
			3	
			4	
		Block II	1	Mr. Charanjeet Singh Chawla, Ministry of Defence
			2	
			3	
			4	
		BLOCK III	1	Dr. Jeetendra Pande, UOU
			2	
			3	
			4	
4	Lab	Block I	1	To be developed by the University at latter stage
			2	
			3	
			4	
		Block II	1	
			2	
			3	
			4	
		Block III	1	
			2	
			3	
			4	

5	INFORMATION SECURITY ASSURANCE : FRAMEWORK, STANDARDS AND INDUSTRY BEST PRACTICES	Block I:	1	Mr. Mukesh Kumar Verma, Cyber Security Researcher & Consultant, Chandigarh
			2	
			3	
			4	
		Block II:	1	Mr. Ashutosh Bahuguna, Scientist-C, CERT-In
			2	
			3	
			4	
		Block III:	1	Mr. Rajesh Arya, UOU
			2	
			3	
			4	
6	INFORMATION SYSTEM	Block I	1	Mr. Ashok Kataria, Ministry of Defence & Mr. Charjeet Singh Chawla jointly
			2	
			3	
			4	
		Block II	1	
			2	
			3	
			4	
		BLOCK III	1	
			2	
			3	
			4	
7	DIGITAL FORENSIC	Block I	1	Dr. Jeetendra Pande, UOU & Team. The details shall be shared after discussion with the teammates.
			2	
			3	
			4	
		Block II	1	Dr. Ajay Prashad, Head Cyber Security, University of Petroleum & Energy Studies, Dehradun
			2	
			3	
			4	
		Block III	1	Dr. Monit Kapoor, University of Petroleum & Energy Studies, Dehradun
			2	
			3	
			4	
8	ADVANCED CYBER SECURITY TECHNIQUE	Block I	1	Mr. Ashutosh Bahuguna, Scientist-C, CERT-In and Mr. Abhilash Saini, Scientist-C, CERT-In
			2	
			3	
			4	
		Block II	1	
			2	
			3	
			4	
		Block III	1	
			2	
			3	
			4	
9	Project			To be developed by the University at latter stage