ShriVaishnavVidhyapeethVishwavidhyalaya, Indore

Institute of Computer Applications

Name of Program: BCA + MCA

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme								
			Theory			Practical		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teacher Assessment	End Sem University Exam	Teacher Assessment				
BCBT515	Elective	Information and Computer Security	60	20	20			4	1	0	5

Course Education Objectives (CEOs):

This introductory course is aimed at giving basic understanding about Information and computer security. This entry-level course covers a broad spectrum of security topics and is based on real-life examples to create Information and computer security interest in the students. A balanced mix of technical and managerial issues makes this course appealing to attendees who need to understand the salient facets of information and computer security basics and the basics of risk management.

Course Outcomes (COs):

At the end of the course, the students have firm understanding on basic terminology and concepts related to Information and system level security, basics of computers and networking including Internet Protocol, routing, Domain Name Service, and network devices. They are also exposed to basic cryptography, security management, and network security techniques. They also look at policies as a tool to effectively change an organization's culture towards a better secure environment.

UNIT - I:

History of Information and Computer Security, Attacks and Attackers, Security Management, Risk and Threat Analysis, Foundations of Information and Computer Security, Fundamental Dilemma of Information and Computer Security, Data vs. Information, Principles of Information and Computer Security.

UNIT - II:

Identification and Authentication: Username and Password, Bootstrapping Password Protection, Guessing Passwords, Phishing, Spoofing and Social Engineering, Protecting the Password file, Single Sign-On.
Access Control: Authentication and Authorization, Access Operations, Access Control Structures, Ownership, Intermediate Controls, Policy Instantiation, Comparison of Security Attributes.

UNIT - III:

Database Security: Introduction, Relational Databases, Access Control, Statistical Database Security, Integration with the Operating System, Privacy.
Software Security: Introduction, Characters and Numbers, Canonical Representations, Memory Management, Data and Code, Race Conditions, Defences.
Bell-LaPadula Model: State Machine Models, The Multics Interpretation of BLP.
Security Models: The Biba Model, Chinese Wall Model, The Clark-Wilson Model

UNIT - IV:

Cryptography: Introduction, Integrity Check Functions, Digital Signatures, Encryption: Data Encryption Standard, RSA Encryption; Strength of Mechanisms.
Key Establishment: Introduction, Key Establishment and Authentication, Key Establishment Protocols, Kerberos, Public Key Infrastructures.

UNIT - V:

Communications Security: Introduction, Protocol Design Principles, IP Security, IPsec and Network Address Translation.
Network Security: Introduction, Firewalls, Intrusion Detection.
Web Security: Introduction, Authenticated Sessions, Code Origin Policies, Cross Site Scripting, Cross-Site Request Forgery, JavaScript Hijacking, Web Services Security.

TEXT BOOKS:

1. Dieter Gollmann. Computer Security, 3rd Edition, Wiley, 2014. ISBN: 978-81-265-5082-1.

REFERENCES:

1. John Vacca, **Computer and Information Security Handbook**, 3rd Edition, Morgan Kaufmann, ISBN: 9780128038437.
2. Michael E. Whitman, Herbert J. Mattord, **Principles of Information Security**, 4th Edition, Thomson, ISBN: 9781111138219.
3. Umesha Nayak, Umesh R Hodeghatta, **The InfoSec Handbook: An Introduction to**

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Information Security, 1st Edition, Apress, ISBN: 978-1430263821
Mark Stump, **Information Security: Principles and Practice**, 2nd Edition, Wiley-Blackwell,
ISBN: 978-0470626399

Name of Program: BCA + MCA (BT)

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			End SEM University Exam	Two Term Exam	Teachers Assessment*	End SEM University Exam	Teachers Assessment*				
BCBT535	Elective	Information Storage and Management	60	20	20	0	0	3	1	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit;
Q/A – Quiz/Assignment/Attendance, MST - Mid SEM Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in
class (Given that no component shall be exceed 10 Marks)

CourseEducationalObjectives (CEOs):

- Goals of an ISM are to implement the organizational structure and dynamics of the enterprise
  for the purpose of managing the organization in a better way and capturing the potential of
  the information system for competitive advantage.

Course Outcome (COs) s (Cos): After the successful completion of this course students will be
able to

- Understand the value of data to a business.
- List the components of the Storage Systems Architecture.
- To understand about Storage Technology.

UNIT – I

Introduction to Storage Technology: - Data proliferation, evolution of various storage technologies, Overview of storage infrastructure components, Information Lifecycle Management, Data categorization.

UNIT – II
Storage Systems Architecture:- Intelligent disk subsystems overview, Contrast of integrated vs. modular arrays, Component architecture of intelligent disk subsystems, Disk physical structure components, properties, performance, and specifications, RAID levels & parity algorithms, hot sparing, Front end to host storage provisioning, mapping and operation.

UNIT – III

Introduction to Networked Storage:- JBOD, DAS, NAS, SAN & CAS evolution and Comparison Applications, Elements, connectivity, standards, management, security and limitations of DAS, NAS, CAS & SAN.

UNIT – IV
Hybrid Storage solutions: - Virtualization: Memory, network, server, storage & appliances Data center concepts & requirements, Backup & Disaster Recovery: Principles Managing & Monitoring: Industry management standards (SNMP, SMIS, CIM), standard frame workapplications, Key management metrics (Thresholds, availability, capacity, security, performance).

UNIT – V
Information storage on cloud :-Concept of Cloud, Cloud Computing, storage on Cloud, Cloud Vocabulary, Architectural Framework, Cloud benefits, Cloud computing Evolution, Applications & services on cloud, Cloud service providers and Models, Essential characteristics of cloud computing, Cloud Security and integration.

Text and Reference Books:
1. John W. Rittinghouse and James F. Ransome; Cloud Computing: Implementation, Management and Security, CRC Press, Taylor Frances Pub.
2. Nick Antonopoulos, Lee Gillam; Cloud Computing: Principles, System &Application, and Springer.
3. Anthony T. Velete, Toby J.Velk, and Robert Eltenpeter, Cloud Computing: A practical Approach, TMH Pub.
4. Saurabh, Cloud Computing: Insight into New Era Infrastructure, Wiley India.
5. Sosinsky, Cloud Computing Bible, Wiley India

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