**BIT 2317 COMPUTER SYSTEMS SECURITY (45 CONTACT HOURS)**

**Pre-requisites**

*ICS 2206 Introduction to Database Systems, BIT 2204 Network Systems Administration*

**Course Purpose**

This course provides students with a background, foundation, and insight into computer security.

**Learning Outcomes**

Upon completing this course the students should be able to:

i. Describe the security pitfalls in many important computing tasks today;

ii. Asses the controls that can check these weaknesses;

iii. Identify the existing controls that are inadequate in computing systems:

iv. Appraise the different kinds of computing applications their weakness and controls.

v. Identify vulnerabilities associated with computer security

**Course Description**

Information Security Fundamentals: Threats, Attacks, Vulnerabilities, and hazards. Computer Intrusion; Security Breaches; Threats and Vulnerability; Security Goals.

Security Controls: Intrusion, Detection, Identification, and Prevention. Program Security: Viruses and Other Malicious Code: Characteristics; types; Trojan Transmission; preventing Infection; Controls Against Threats, Principles of secure Design.

Administering security: personal computer security Risks and management,

Risk analysis; Security planning; Organizational security policies,

Trusted operating Systems: Protected Objects and Methods of Protection;

Protecting memory and Addressing; protecting Access to general objects; File protection mechanism; User Authentication Security Features; Assurance; Implementation examples, Database Security:

Security Requirements; Reliability and Integrity; Sensitive data; Inference problems; Multilevel

Databases Security; Firewalls and Gateways; Encrypting Gateways; Access control methods and models.

Encryption techniques; private, public cryptosystems. Key management (PKI).

Multilevel Security on Networks; trusted network Interface; Secure Communication ; Network security, email security.

**Teaching Methodologies**

Lectures, practical and tutorial sessions in Computer Laboratory, individual and group assignments, exercises and project work

**Instructional Materials/Equipment**

Overhead projector and computer, handouts, white boards, Textbooks, appropriate software.

**Course Assessment**

30% Continuous Assessment (Tests 10%, Assignment 10%, Practical 10%)

70% End of Semester Examination.

**Course Textbooks**

1. Kevin D. Mitnick, William L. Simon, The Art of Deception: Controlling the Human Element of Security ISBN371-563945

2. Dieter Gollmann, Computer Security, Wiley, ISBN-10: 0470741155 ISBN-13: 9780470741153

3. Jones and Ashenden, Risk Management for Computer Security, Butterworth-Heinemann, Print Book ISBN : 9780750677950, eBook ISBN : 9780080491554

**Reference Textbooks**

1. John E. Canavan, Fundamentals of Network Security, 2008 Adison Weisly

2. Edward Amoroso, (2004), Fundamentals of computer security technology, AT&T Bell Labs, Whippany, NJ,

3. Edward Amoroso, Fundamentals of computer security technology, 2011prentice hall, ISBN 371-563980

**Course Journals**

1. Acta Informatica ISSN 0001-5903

2. Advances in Computational Mathematics ISSN 1019-7168

3. Advances in data Analysis and Classification ISSN1 1862-5347

4. Annals Of software Engineering ISSN 1022-7091

**Reference Journals**

1. Journal of computer science and Technology ISSN 1000-9000

2. Journal of Science and Technology ISSN 1860-4749

3. Central European Journal Of Computer Science ISSN 1896-1533

4. Cluster computing ISSN 1386-7857