


<p>Education</p>	<p align="center"> NATIONAL INSTITUTE OF TECHNOLOGY, ARUNACHAL PRADESH (ESTABLISHED BY MINISTRY OF HUMAN RESOURCE DEVELOPMENT, GOVT. OF INDIA) </p>	<p>Ethics</p>
<p>In GOD's own land, a fusion of scholar students, innovative & motivated researchers & teachers and fast moving visionary leaders.</p>	<p align="center">  PROPOSED COURSE STRUCTURE AND SYLLABUS FOR MS BY RESEARCH (ON LINE) IN INFORMATION SECURITY </p>	<p>Steeping Stone and Sky reaching ladder to success</p>
<p>Research</p>	<p>PO- Yupia, Dist.- Papum Pare, Arunachal Pradesh, Pin-791112 PhNo: 0360-2284801/2001582 FaxNo: 0360-2284972 Email- nitarunachal@gmail.com</p>	<p>Service to Society</p>

NATIONAL INSTITUTE OF TECHNOLOGY

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Course Structure for MS by Research (on line) in Information Security

First Semester:

Subject Code	Subject	Credit
MIS - 101	Information Theory & Coding	5
MIS - 102	Modern Algebra	5
MIS - 103	Probability & Statistics	5
MIS - 104	Information Security I	5
MIS - 105	Computer & Society	5
	Total credit	25

Second Semester:

Subject Code	Subject	Credit
MIS - 201	Information Security II	5
MIS - 202	Physical Security Control	5
MIS - 203	Entrepreneurship & Innovation	5
MIS - 204	Research Methodology	5
MIS - 205	Knowledge Management	5
	Total credit	25

Third Semester:

Subject Code	Subject	Credit
MIS - 301	Research & Project	40

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Information Theory & Coding

Module Code: MIS-101

Semester: 1st

Credit Value: 5

AIM

To introduce the fundamental concepts of information theory: data compaction, data compression, datatransmission, error detection and correction.

OBJECTIVES

- To have a complete understanding of error–control coding.
- To understand encoding and decoding of digital data streams.
- To introduce methods for the generation of these codes and their decoding techniques.
- To have a detailed knowledge of compression and decompression techniques.
- To introduce the concepts of multimedia communication.

UNIT I INFORMATION ENTROPY FUNDAMENTALS

Uncertainty, Information and Entropy – Source coding Theorem – Huffman coding –Shannon Fano coding –Discrete Memory less channels – channel capacity – channel coding Theorem – Channel capacity Theorem.

UNIT II DATA AND VOICE CODING

Differential Pulse code Modulation – Adaptive Differential Pulse Code Modulation – Adaptive subband coding –Delta Modulation – Adaptive Delta Modulation – Coding of speech signal at low bit rates (Vocoders, LPC).

UNIT III ERROR CONTROL CODING

Linear Block codes – Syndrome Decoding – Minimum distance consideration – cyclic codes – GeneratorPolynomial – Parity check polynomial – Encoder for cyclic codes – calculation of syndrome – Convolutionalcodes.

UNIT IV COMPRESSION TECHNIQUES

Principles – Text compression – Static Huffman Coding – Dynamic Huffman coding – Arithmetic coding – ImageCompression – Graphics Interchange format – Tagged Image File Format – Digitized documents – Introduction toJPEG standards.

UNIT V AUDIO AND VIDEO CODING

Linear Predictive coding – code excited LPC – Perceptual coding, MPEG audio coders – Dolby audio coders –Video compression – Principles – Introduction to H.261 & MPEG Video standards.

Reading List

1. Simon Haykin, "Communication Systems", John Wiley and Sons, 4th Edition, 2001.
2. Fred Halsall, "Multimedia Communications, Applications Networks Protocols and Standards", Pearson Education, Asia 2002; Chapters: 3,4,5.
3. Mark Nelson, "Data Compression Book", BPB Publication 1992.
4. Watkinson J, "Compression in Video and Audio", Focal Press, London, 1995.
5. J. S. Chitode, "Information Theory and Coding", Technical Publications Pune.
6. Raymond W. Yeung, "Information Theory & Network Coding", Springer.
7. Richard W. Hamming, "Coding & Information Theory", Prentice Hall.
8. Ranjan Bose, "Information Theory, Coding & Cryptography", the McGraw Hill-Companies.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Modern Algebra

Module Code: MIS-102

Semester: 1st

Credit Value: 5

Aim:

Aim of the course is to provide the concept of modern algebra, structures such as groups, rings, fields etc.

Objectives:

The course is design to meet the following objectives:

1. This course aims to provide a first approach to the subject of algebra, which is one of the basic pillars of modern mathematics.
2. The focus of the course will be the study of certain structures called groups, rings, fields and some related structures.
3. Abstract algebra gives to student a good mathematical maturity and enables to build mathematical thinking and skill.

Learning outcomes:

Upon completion of the subject:

1. The student will be able to define the concepts of group, ring, field, and will be able to readily give examples of each of these kinds of algebraic structures.
2. The student will be able to define the concepts of coset and normal subgroup and to prove elementary propositions involving these concepts.
3. The student will be able to define the concept of subgroup and will be able to determine (prove or disprove), in specific examples, whether a given subset of a group is a subgroup of the group.
4. The student will be able to define and work with the concepts of homomorphism and isomorphism.

Subject Matter:

Unit I

Review of groups, Subgroups, Normal subgroups, Quotient group, Group Homomorphism.

Unit II

Permutation groups, Cayley theorem, Cyclic group, Direct product of groups, Finite abelian groups, Cauchy theorem and Sylow theorem.

Unit III

Ring, Zero divisor, Integral domain, Ideals, Quotient ring, Isomorphism theorems, Polynomial ring, Euclidean ring, Prime & Irreducible elements & their properties, UFD, PID and Euclidean Domain.

Unit IV

Field, Finite Fields, Field Extensions, Galois Theory.

Reading List:

A. Books:

1. I. N. Herstein, Topics in Algebra, Wiley Eastern Ltd, 2008.
2. S. Lang, Algebra, Addison Wesley.
3. J. B. Fraleigh, A First Course in Abstract Algebra.
4. C. Musili, Introduction of Rings and Modules, Narosa Publishing House.
5. M. Artin, Algebra, PHI.
6. P. B. Bhattacharya, S. K. Jain and S. R. Nagpaul, Basic Abstract Algebra, Cambridge University Press, 1995.
7. J. Fraleigh, A First Course in Abstract Algebra, Pearson, 2003.
8. D. Dummit and R. Foote, Abstract Algebra, Wiley, 2004.

B. Magazine:

1. Current Science (Indian Academy of Science).
2. The Mathematics Student (Math Student) (Indian Mathematical Society).
3. Mathematical Spectrum (The University of Sheffield).
4. Mathematics Magazine (Mathematical Association of America).
5. +Plus magazine (University of Cambridge).
6. Ganithavahini (Ramanujan Mathematical Society).

C. Journals:

1. Ganita Sandesh.
2. Journal of Rajasthan Academy of Physical Sciences.
3. Bulletin of Calcutta Mathematical Society.
4. Algebra Colloquium.
5. Applicable Algebra in Engineering, Communication and Computing.
6. Contributions to Algebra and Geometry.
7. Communications in Algebra.
8. Journal of Algebra.
9. Journal of Pure and Applied Algebra.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Probability & Statistics

Module Code: MIS-103

Semester: 1st

Credit Value: 5

Objectives:

The course is design to meet the following objectives:

1. Imparting theoretical knowledge and practical application to the students in the area of Stochastic Process.
2. Introducing the basic notions of probability theory and develops them to the stage where one can begin to use probabilistic ideas in statistical inference and modeling, and the study of stochastic processes.
3. Providing confidence to students in manipulating and drawing conclusions from data and provide them with a critical framework for evaluating study designs and results.
4. Injecting future scope and the research directions in the field of stochastic process.

Learning outcomes:

Upon completion of the subject

1. Students will add new interactive activities to fill gaps that we have identified by analyzing student log data and by gathering input from other college professors on where students typically have difficulties.
2. Students will add new simulation-style activities to the course in Inference and Probability.
3. Students will be substantially prepared to take up prospective research assignments.

Subject Matter:

Probability:

Unit I

Probability Theory: Random Experiment, Sample space, Event (exclusive & exhaustive), Classical, Frequency and Axiomatic definition of probability Related theorem, Independent events. Bayes theorem, Compound experiment, Bernoulli trial, Binomial Law, Multinomial law. **Random variables:** Definition of random variables, distribution function (discrete and continuous) and its properties. Probability mass function; Probability density function. Transformation of random variables (One and two variable); Chebychev inequality and problems.

Unit II:

Distributions: Binomial, Poisson, Uniform, Exponential, Normal, t and χ^2 . Expectation and Variance (t and χ^2 excluded); Moment generating function; Reproductive Property of Binomial; Poisson and Normal Distribution. Binomial approximation to Poisson distribution and Binomial

approximation to Normal distribution; Central Limit Theorem; Law of large numbers (Weak law); Simple applications.

Statistics:

Unit III:

Sampling Theory: Population; Sample; Statistic; Estimation of parameters (consistent and unbiased); Sampling distribution of sample mean and sample variance.

Estimation Theory: Point estimate, Maximum likelihood estimate of statistical parameters and interval estimation (Binomial, Poisson and Normal distribution).

Correlation and Regression: Simple idea of Bivariate distribution; Correlation and Regression; and simple problems

Unit IV:

Testing of Hypothesis: Simple and Composite hypothesis; Critical Region; Level of Significance; Type I and Type II Errors; Best Critical Region; Neyman-Pearson Theorem (proof not required); Application to Normal Population; Likelihood Ratio Test (proof not required); Comparison of Binomial Populations; Normal Populations; Testing of Equality of Means; χ^2 -Test of Goodness of Fit (application only).

Stochastic Process: Random Process, Poisson Process, Discrete and Continuous Parameters Markov Chains, Birth and Death Process, Concept of Queues, M/G/I queuing system.

Reading List:

A. Books:

1. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2000.
2. Khazanie, Ramakant. Basic Probability Theory and Applications Santa Monica, CA: Goodyear, 1976.
3. Ross, Sheldon M. Introduction to Probability Models, New York, NY: Academic Press, 1972, 1985. Third Edition.
4. S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.
5. Cramer, Harald. Random Variables and Probability Distributions, New York, NY: Cambridge University Press, 1970. Third Edition.
6. Parzen, Emanuel. Modern Probability Theory and Its Applications New York, NY: John Wiley, 1960.
7. Rothschild, V. and Logothetis, N. Probability Distributions New York, NY: John Wiley, 1986.
8. Bailey, Norman T.J. The Elements of Stochastic Processes with Applications to the Natural Sciences New York, NY: John Wiley, 1990.
9. Bhat, U. Narayan. Elements of Applied Stochastic Processes, New York, NY: John Wiley, 1984. Second Edition.
10. Karlin, Samuel and Taylor, Howard M. A First Course in Stochastic Processes, New York, NY: Academic Press, 1975. Second Edition.
11. Karlin, Samuel and Taylor, Howard M. A Second Course in Stochastic Processes New York, NY: Academic Press, 1981.

12. J. Medhi, Stochastic Processes, 3rd Ed., New Age International, 2009.
13. Ross, Sheldon M. Stochastic Processes New York, NY: John Wiley, 1983.
14. N.G. Das, Statistical Methods, Vol-I & Vol-II, McGraw Hill.
15. Murray R. Spiegel, Probability and Statistics, McGrawHill, Schaums Outline Series.

B. Magazine:

1. Current Science (Indian Academy of Science).
2. The Mathematics Student (Math Student) (Indian Mathematical Society).
3. Mathematical Spectrum (The University of Sheffield).
4. Mathematics Magazine (Mathematical Association of America).
5. +Plus magazine (University of Cambridge).
6. Ganithavahini (Ramanujam Mathematical Society).

C. Journals:

1. Advances in Probability and Related Topics (Marcel Dekker).
2. Annals of Applied Probability (Institute of Mathematical Statistics).
3. Annals of Probability (Institute of Mathematical Statistics).
4. Communications on Stochastic Analysis.
5. Electronic Journal of Probability.
6. Sminaire de Probabilits (Lecture Notes in Mathematics, Springer-Verlag).
7. Stochastic Modelling and Applied Probability (Springer-Verlag).
8. Stochastic Processes and their Applications.
9. Stochastics: An International Journal of Probability and Stochastic Processes (Taylor & Francis).
10. Theory of Probability and its Applications (SIAM).
11. Stochastic Processes and their Applications, Elsevier.
12. Stochastics: An International Journal of Probability and Stochastic Processes, Taylor Francis Online.
13. International Journal of Stochastic Analysis, Hindwai Publishing Corporation.
14. Journal of the American Statistical Association.
15. Journal of the Royal Statistical Society, Series A, Statistics in Society.
16. Journal of the Royal Statistical Society, Series B, Statistical Methodology.
17. Journal of the Royal Statistical Society, Series C, Applied Statistics.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Information Security I

Module Code: MIS-104

Semester: 1st

Credit Value: 5

Objectives:

The course is design to meet with the objectives of:

1. Security breaches can be very expensive in terms of business disruption and the financial losses that may result.
2. Increasing volumes of sensitive information are transferred across the internet or intranets connected to it.
3. Networks that make use of internet links are becoming more popular because they are cheaper than dedicated leased lines. This, however, involves different users sharing internet links to transport their data.
4. Directors of business organizations are increasingly required to provide effective information security.

Learning outcomes:

By the end of the subject, students should be able to:

1. Identify some of the factors driving the need for network security.
2. Identify and classify particular examples of attacks.
3. Define the terms vulnerability, threat and attack.
4. Identify physical points of vulnerability in simple networks.
5. Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.
6. Explain the implications of implementing encryption at different levels of the OSI reference mode.
7. Explain what is meant by data integrity and give reasons for its importance.
8. Describe methods of providing assurances about data integrity.
9. Describe the use of hash functions and explain the characteristics of one-way and collision-free functions.
10. 10. Describe and distinguish between different mechanisms to assure the freshness of a message.
11. Explain the role of third-party agents in the provision of authentication services.
12. Discuss the effectiveness of passwords in access control and the influence of human behaviour.
13. Identify types of firewall implementation suitable for differing security requirements.

14. Apply and explain simple filtering rules based on IP and TCP header information.
15. Distinguish between firewalls based on packet-filtering routers, application level gateways and circuit level gateways.

Subject Matter:

Unit I

Introduction of Information Security, Cryptography, Conventional Encryption, Symmetric key cipher: Traditional technique: Substitution cipher, Transmission cipher, Stream Cipher, Block Cipher, Roaster Machine, Asymmetric Key Cipher, Rabin, Elgamal, ECC.

Unit II:

Modern Symmetric Techniques, Substitution Codes, Transposition codes, Cryptanalysis of classical ciphers, General Attacks, Secret and Private Key Cryptography, DES, Modes of operation of DES, Automatic Variable Key, Proof of DES, Merits and Demerits of DES, Quantification of Performance, TDES, IDEA.

Unit III:

Advanced Encryption Standard/AES, Comparison of Secret Key Systems, Modes of operation of AES Limitations of AES, Limitation of Secret or Private Key Crypto systems, Key Transport Protocols, Needham-Schroeder Protocol, Key Agreement Protocol, Diffie-Hellman Protocol, Station to Station Protocol, Merkle's Puzzle Technique of key agreement, Public Key Cryptography RSA Algorithm, Limitations of RSA Algorithm, Comparison of RSA and TRAP DOOR Public Key Crypto systems.

Unit IV:

Public key cryptographic mechanisms, Message Authentication: Hash Function, MAC, Digital Signature, Digital Signature under RSA algorithm ; check functions for authenticity, integrity and non repudiation of the message content, Non repudiation by digital signature of RSA, Strength of Mechanism ;

Reading List:

A. Books:

1. C.T. Bhunia - Information Technology Network & Internet - New Age Publication.
2. Atul Kahate - Cryptography and Network Security - Tata McGraw-Hill Education, 072008.
3. Information Warfare: How to Survive Cyber Attacks by Michael Erschloe.
4. Hacking Linux Exposed by Brian Hatch, James Lee and George Kurtz, Osborne/McGrawHil.
5. Incident Response by Kenneth R. van Wyk and Richard Forno, O'Reilly Media.
6. Incident Response: Investigating Computer Crime by Kevin Mandia, Chris Prosise, mcgraw-Hill Professional.
7. Hacker's Challenge by Mike Schiffman, McGraw-Hill/Osborne.
8. CERT Guide to System and Network Security by Julia Allen, Addison-Wesley Educational.
9. Authentication: From Passwords to Public Keys by Richard E. Smith, Addison-Wesley.
10. Web Hacking: Attacks and Defense by Stuart McClure, Saumil Shah, Shreeraj Shah, Addison-Wesley Professiona.
11. Anti-Hacker Tool Kit by Mike Shema, Bradley C. Johnson, Keith J. Jones, mitp-Verlag.

B. Magazine:

1. Information Security - SC Magazine, Haymarket Media Inc., United State.
2. InfoSec Magazines, United Kingdom.

C. Journals:

1. Journal of Computer Security, IOS press, Netherland.
2. International Journal of Information Security - Springer, United State.
3. Journal of Information Security and Applications - Elsevier, Netherland.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Computer & Society

Module Code: MIS-105

Semester: 1st

Credit Value: 5

Objectives:

Examines the impact of the computer revolution on the conditions of work and life in contemporary society including legal and theoretical issues. Discusses ethical and professional issues in computer use.

Subject Matter:

Part 1. Introduction: Computer Ethics

Ethics and Professional Ethics

Professional codes of ethics are more specific than moral philosophies. They contain statements of responsibilities to clients and the public. Besides being an expression of the moral views of their members, professional codes of ethics serve as a statement about a profession's responsibility to avoid doing harm in the wider society. This contributes to building the trust that leads society to allow professional groups to regulate themselves. Codes of ethics are based on the moral values shared by a group.

Morality and Design

Professional ethics can be put into practice by individuals in their work and through the policies designed by governments, business organizations, and NGOs (non-governmental organizations).

Part 2. Computer Mediated Social Structure

Computer-Mediated Social Structure

The basic unit of social structure is the social interaction. Repeated patterns of social interaction build larger elements of social structure: roles, groups, organizations, communities, and social institutions.

Computer-mediated social interactions occur between people using computers and communications networks.

Social Control, Privacy, Negotiating Identity in Computer, Mediated Communications, Privacy and Surveillance in Computer-Mediated Communication, The Social Construction of Information, Formal and Informal Topic: Information in Bureaucratic Organizations , Information in Informal Organizations,

Part 3. The Digital Dilemma: Intellectual Property in the Information Age

The Social Construction of Property, Balancing Intellectual Property Rights and the Public Interest, Contracts (subscribe and Licenses), Trademarks (trademark, trade secret, censorship), Problems with Patents - Business Methods, Innovation, Trolls, and Vendor,

Copyrights (copyright, derivative work, circumvention), **Digital Rights Management by Law, Treaty, and Design.**

Part 4. Ethical Issues in Computer and Communications Design

Computerized stock markets, automobiles, airplanes, and medical equipment malfunction and are vulnerable to hacking. The development of adaptive technologies to permit disabled individuals (and people with slow internet connections) to use the web has not kept pace with the development of high bandwidth multimedia applications. A "Digital Divide" has developed in the access to online information and services.

Designing for Accessibility, Designing for Democracy, Designing for Safety, Designing for Sustainability, Computer Applications for the Social Good.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Information Security II

Module Code: MIS-201

Semester: 2nd

Credit Value: 5

Objectives:

The course is design to meet with the objectives of:

1. Security breaches can be very expensive in terms of business disruption and the financial losses that may result.
2. Increasing volumes of sensitive information are transferred across the internet or intranets connected to it.
3. Networks that make use of internet links are becoming more popular because they are cheaper than dedicated leased lines. This, however, involves different users sharing internet links to transport their data.
4. Directors of business organizations are increasingly required to provide effective information security.

Learning outcomes:

By the end of the subject, students should be able to:

1. Identify some of the factors driving the need for network security.
2. Identify and classify particular examples of attacks.
3. Define the terms vulnerability, threat and attack.
4. Identify physical points of vulnerability in simple networks.
5. Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.
6. Explain the implications of implementing encryption at different levels of the OSI reference mode.
7. Explain what is meant by data integrity and give reasons for its importance.
8. Describe methods of providing assurances about data integrity.
9. Describe the use of hash functions and explain the characteristics of one-way and collision-free functions.
10. 10. Describe and distinguish between different mechanisms to assure the freshness of a message.
11. Explain the role of third-party agents in the provision of authentication services.
12. Discuss the effectiveness of passwords in access control and the influence of human behavior.
13. Identify types of firewall implementation suitable for differing security requirements.

14. Apply and explain simple filtering rules based on IP and TCP header information.
15. Distinguish between firewalls based on packet-filtering routers, application level gateways and circuit level gateways.

Subject Matter:

1. Advanced Error Control Techniques in Network: Introduction, Basic BEC Techniques, Different Modified Techniques, Sastry's and Morris Modifications Other Modifications, Two Level Coding, Parity Selection in Two Level Coding, Packet Combining Scheme, Modified Packet Combining Scheme, ARQs for Variable Error Rate Channels/ YAO Technique, Chakraborty's Technique, New Schemes, ARQ Schemes Under Practical Situations, GBN and SRQ under different schemes, Issues of sending different signal waveforms for repeated retransmitted copies, Application of multilevel coding scheme in variable error rate channel, Majority Technique, Analysis of the majority scheme for SW ARQ.

2. Data /Network Security Techniques and Approaches: Introduction, Cryptography, Conventional Encryption, Classical Cipher, Substitution Codes, Transposition codes, Cryptanalysis of classical ciphers, General Attacks, Secret and Private Key Cryptography, Stream Cipher, Block Cipher, DES, Modes of operation of DES, Automatic Variable Key, Proof of DES, Merits and Demerits of DES, Quantification of Performance, TDES, IDEA, Advanced Encryption Standard/AES, Comparison of Secret Key Systems, Modes of operation of AES Limitations of AES, Limitation of Secret or Private Key Crypto systems, Key Transport Protocols, Needham – Schroeder Protocol, Key Agreement Protocol, Diffie-Hellman Protocol, Station to Station Protocol, Merkle's Puzzle Technique of key agreement, Quantum Security, Public Key Cryptography RSA Algorithm, How Secured is RSA Algorithm, Limitations of RSA Algorithm, Trapdoor Knapsack Problem, McEliece's Public Key; Comparison of RSA and TRAP DOOR Public Key Crypto systems; PUBLIC KEY CRYPTOGRAPHIC MECHANISMS, Digital Signature, Digital Signature under RSA algorithm; CHECK FUNCTIONS for authenticity, integrity and nonrepudiation of the message content, Non repudiation by digital signature of RSA, Strength of Mechanism; PGP (Pretty Good Privacy) Modern Crypto Systems, Integrated Solution of Security and Error Control; Internet Security. PGP (Pretty Good Privacy) Modern Crypto Systems, Integrated Solution of Security and Error Control; Internet Security, IPSec, SSL, TLS.

Reading List:

A. Books:

1. C.T. Bhunia - Information Technology Network & Internet - New Age Publication.
2. Atul Kahate - Cryptography and Network Security - Tata McGraw-Hill Education, 072008.
3. Information Warfare: How to Survive Cyber Attacks by Michael Erschloe.
4. Hacking Linux Exposed by Brian Hatch, James Lee and George Kurtz, Osborne/McGrawHil.
5. Incident Response by Kenneth R. van Wyk and Richard Forno, O'Reilly Media.
6. Incident Response: Investigating Computer Crime by Kevin Mandia, Chris Prorise, mcgraw-Hill Professional.
7. Hacker's Challenge by Mike Schiffman, McGraw-Hill/Osborne.
8. CERT Guide to System and Network Security by Julia Allen, Addison-Wesley Educational.

9. Authentication: From Passwords to Public Keys by Richard E. Smith, Addison-Wesley.
10. Web Hacking: Attacks and Defense by Stuart McClure, Saumil Shah, Shreeraj Shah, Addison-Wesley Professional.
11. Anti-Hacker Toolkit by Mike Shema, Bradley C. Johnson, Keith J. Jones, mitp-Verlag.

B. Magazine:

1. Information Security - SC Magazine, Haymarket Media Inc., United State.
2. InfoSec Magazines, United Kingdom.

C. Journals:

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2. International Journal of Information Security - Springer, United State.
3. Journal of Information Security and Applications - Elsevier, Netherland.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Physical Security Control

Module Code: MIS-202

Semester: 2nd

Credit Value: 5

Subject Matter:

- Distinguish between logical and physical security, and explain the reasons for placing equal emphasis on both.
- Recognize the importance of the physical security domain.
- Outline the major categories of physical security threats.
- Classify the techniques to mitigate risks to an organization's physical security.
- Classify the five main categories of physical security controls, including their strengths and limitations.
- Propose how smart cards can be used for physical access control.
- Categorize the different types of biometric access controls and determine their respective strengths and weaknesses.
- Outline the types of controls needed for secure operations of a data center.
- Explain the principle of least privilege.
- Differentiate between the principle of least privilege and the principle of separation of duties.
- Define the control mechanisms commonly found in data center operations.
- Create a model of controls that incorporates people, process and technology-based control mechanisms.

Reading List:

A. Books:

1. Lawrence Fennelly, "Effective Physical Security, Third Edition", Elsevier.
2. Philip Purpura, "Security and Loss Prevention", Butterworth-Heinemann
3. Carl A. Roper, "Physical Security and the Inspection Process", Butterworth-Heinemann
4. Robert D. McCrie, "Security Operations Management", Butterworth-Heinemann
5. Robert J. Fischer, Gion Green, "Introduction to Security", Elsevier
6. Michael Erbschloe, "Physical Security for IT", Elsevier

B. Journal:

1. Information Systems Security Association Journal
2. International Journal of Multimedia and Ubiquitous Engineering
3. The Datacenter Journal
4. Information Systems Audit and Control Association Journal

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Entrepreneurship & Innovation

Module Code: MIS-203

Semester: 2nd

Credit Value: 5

Objectives:

The course is design to meet the objectives of:

1. Give insights into the personality characteristics of an entrepreneurs and entrepreneurial manager.
2. Develop an understanding of how business opportunities are found by entrepreneurs and how they exploit them.
3. To enable the students in managing the growth of entrepreneurial firm.

Learning outcomes:

Upon Completion of the subjects:

1. Identify business opportunities and act upon those opportunities.
2. Write a business plan by identifying an opportunity.
3. Establishing and managing the growth of entrepreneurial firms

Subject Matter:

Unit I

The Entrepreneurial Perspective and Entrepreneurial Management

Concept and Definitions; Entrepreneurship and Economic Development; Classification and Types of Entrepreneurs; the entrepreneurial process, entrepreneurial motivation and competencies, entrepreneurship as a career option, future of entrepreneurship, traits & qualities of a successful entrepreneur, Manager Vs. Entrepreneur, difference between entrepreneurial manager and entrepreneur, qualities of a successful entrepreneurial manager, managerial versus entrepreneurial decision making.

Unit II:

The World of Opportunity, Business Plan and Entrepreneurial Support System

The opportunity, Idea versus Opportunity, sources of ideas and idea generation techniques, sources of opportunities, identification and selection of opportunities, the Business Plan, Components of a business plan, How to develop a good business plan?, Role of Entrepreneurial Institutions in Entrepreneurship Development, Director of Industries; DIC; SIDO; SIDBI; Small Industries Development Corporation (SIDC); SISI; NSIC; NISBUD; State Financial Corporation SIC, Various Schemes and Incentives.

Unit III:

Starting, Managing, and Growing with an Entrepreneurial Firm

The Entrepreneurial Team, dealing with the legal issues of a new venture creation, entrepreneurial finance, venture capital, initial public offering, creative sources of financing & funding: leasing, government grants & strategic partners, generating and exploiting new entries, strategies for growth and managing the implications of growth, franchising, internal versus external growth strategies, licensing and strategic alliances & joint ventures, and exit strategies.

Teaching/Learning/Practice Pattern:

Reading List:

A. Books:

1. Desai, Vasant, Small-Scale Industries and Entrepreneurship. Himalaya Publishing House, Delhi.
2. Kaulgud, Aruna (2003). Entrepreneurship Management. Vikas Publishing House, Delhi.
Cynthia, L. Greene (2004). Entrepreneurship Ideas in Action. Thomson Asia Pvt. Ltd., Singapore.
3. Timmons, Jerry A., and Spinelli, Stephen, 2009. New Venture Creation: Entrepreneurship for the 21st Century, 8th Edition, Boston, MA: Irwin McGraw-Hill
4. Entrepreneurship: Successfully Launching New Ventures by Barringer, Pearson Education Publishing
5. Hisrich, Entrepreneurship, Tata McGraw Hill, New Delhi, 2001

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Research Methodology

Module Code: MIS-204

Semester: 2nd

Credit Value: 5

Objectives:

The course is design to meet the objectives of:

1. Steps in Research, Motivation, Types, good research techniques.
2. Methods of Data collection, Processing, Analysis techniques of raw datas.
3. Hypothesis, Technical writing techniques etc.

Learning outcomes:

Upon Completion of the subjects:

1. Writing techniques of research paper.
2. Collecting raw data, processing data using mathematics computation, transformation, and other else.
3. Hypothesis techniques, Testing techniques of Hypothesis etc.

Subject Matter:

Unit I:

Research Methodology

Definition, Objective, Motivation, Types of Research, Significance, Criteria of Good Research

Defining the Research Problem

Definition of Research Problem, Selection of Problem, Necessity of defining the Problems, Techniques involves in defining the problem.

Research Design

Meaning of Research Design, Need for research Design, Features of a Good Design, Different Design Approach

Sampling Design

Census And Sample Survey, Implications Of A Sample Design, Steps In Sample Design, Criteria of Selecting A Sampling Procedure, Different Types of Sample Designs, How to Select A Random Sample? Random Sample From An Infinite Universe, Complex Random Sampling Designs.

Unit II:

Measuring and Scaling Techniques

Measurement in Research, Measurement Scales, Sources of Error In Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling, Scale Classification Bases.

Methods of Data Collection

Collection of Primary Data, Observation Method, Interview Method, Collection of Data, Collection of Secondary Data.

Processing and Analysis of Data

Processing Operations, Some Problems In Processing, Elements/Types Of Analysis, Statistics In Research, Measures Of Central Tendency, Measures Of Dispersion, Measures Of Relationship, Regression Analysis.

Unit III:

Sampling Fundamentals

Need For Sampling, Important Sampling Distributions, Central Limit Theorem, Sampling Theory, Concept Of Standard Error, Estimation, Estimating The Population Mean (M), Estimating Population Proportion, Sample Size And Its Determination

Testing of Hypothesis

What Is A Hypothesis? Basic Concepts Concerning Testing Of Hypotheses, Procedure for Hypothesis Testing, Measuring The Power Of A Hypothesis Test, Tests Of Hypotheses

Unit IV:

Analysis of Variance and Co-variance

Analysis of Variance (Anova), The Basic Principle of Anova, Anova Technique, Setting up Analysis of Variance Table, Coding Method,

Interpretation and Report Writing

Meaning of Interpretation, Technique of Interpretation, Precautions in Interpretation, Different Steps in Writing Report, Types of Reports, Precautions for Writing Research Reports

Reading List:

A. Books

1. C R Kothari, "Research Methodology- Methods and Techniques", New Age International Publications.
2. Ranjit Kumar, "Research Methodology", SAGE Publications.
3. James Arthur, Michael Waring, Robert Coe, Larry V Hedges, "Research Methods & Methodologies in Education", SAGE Publications.
4. Donald Howard Menzel, "Writing a technical paper", McGraw-Hill
5. R. Panneerselvam, "Research Methodology" PHI Publication
6. V.V Khanzone "Research Methodology- Techniques and Tools", APH Publisher
7. Raj Mohan Joshi, "Writing Skills for Technical Purpose", Isha Books

B. Journals:

Journal of Research Methods and Methodological Issues, ISSN 2150-8143.

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Syllabus for MS by Research (on line) in Information Security

Name of the Module: Knowledge Management

Module Code: MIS-205

Semester: 2nd

Credit Value: 5

Objectives:

This course focuses on how knowledge is created, captured, represented, stored and reused so as to fully leverage the intellectual assets of a firm. The tools and techniques for knowledge acquisition, assessment, evaluation, management, organization and dissemination are applied to business situations. Topics include knowledge generation, knowledge coordination and codification, knowledge transfer and reuse, technologies and knowledge management and knowledge management strategies.

Learning outcomes:

This course aims to develop the students basic conceptual and behavioral skills that are necessary for the effective development and utilization of organizational knowledge. At the end of the course, students are expected to be able assess an organizations knowledge capabilities, and to formulate strategies for their effective development, deployment, and utilization.

Subject Matter:

Unit I

Knowledge Economy-Concept of Knowledge; the Data-Information-Knowledge-Wisdom Relationship (Knowledge Hierarchy); Organizational Knowledge; Characteristics of Organizational Knowledge; Components of Organizational Knowledge (Tacit vs. Explicit Knowledge), Knowledge Management Strategy- Prioritizing knowledge strategies knowledge as a strategic asset. KM Strategy and Metrics, Guiding principles for managing knowledge Leadership and KM.

Unit II

Transformation of an Enterprise through Knowledge Management-Concept of Knowledge Management; Characteristics of Knowledge Management; Knowledge attributes- Fundamentals of Knowledge formation, knowledge sourcing, Knowledge Management application, Need for a Knowledge Management System; the Knowledge Management Process Framework; Knowledge Management Process; Knowledge Life Cycle.

Unit III

The Knowledge Organization-Knowledge Organization; Characteristics of Knowledge Organization; Knowledge Management and Organizational Learning; developing and sustaining knowledge culture, knowledge culture enablers, knowledge culture enhancement program, Knowledge Management Strategy and its Development; the Knowledge Managers Enabling

Knowledge Management through Information Technology-Role of Information Technology in Creating Knowledge-Management Systems; Organizational Culture for Knowledge Management-Need for Organizational Culture for Knowledge Management; Ways to Develop Knowledge-Sharing Culture.

Unit IV

Looking Ahead: Knowledge careers, practical implementation of knowledge management system, Future of Knowledge Management-Challenges to Knowledge Management; Future of Knowledge Management, KM Today and Tomorrow-Attention management, Idea factories/incubators. Customer relationship management (CRM), KM and organizational learning of the future (KM and e-learning, learning management systems, just-in-time learning, learning objects) KM and life-long learning, From killer applications to killer existence.

Reading List:

A. Books:

1. C.T. Bhunia (2003). Introduction to Knowledge Management, Everest Publishing House.
2. Amrit Tiwana, : The Knowledge Management Toolkit (Orchestrating IT, Strategy, and Knowledge Platforms, Pearson Education Limited.
3. Edited; D. Morey, M. Maybury and B. Thuraisingham, : Knowledge Management (Classic and Contemporary Works), Universities Press (India) Limited.
4. Edited; R. Gogula, : Knowledge Management A New Dawn, The Institute of Chartered Financial Analysis of India (ICFAI) Press.
5. Elias M. Awad, Hassan M. Ghaziri, : Knowledge Management, Pearson Education Limited.
6. G. Natrajan & S. Shekhar : Knowledge Management (Enabling Business Growth, Tata McGraw-Hill Publishing Company Limited, New Delhi.
7. G. Schreiber, H. Akkermans, A. Anjewierden, R. de Hoog, N. Shadbolt, W. V. de Velde and B. Wielinga, : Knowledge Engineering and Management, Universities Press (India) Limited.
8. H. C. Chaudhary, : Knowledge Management for Competitive Advantage (Changing the world through Knowledge), Excel Books.
9. M. Rao, : Leading with Knowledge (Knowledge Management Practices in Global InfoTech Companies), Tata McGraw-Hill Publishing Company Limited New Delhi.
10. O. P. Goyal, : Knowledge Management (Analysis Design for Indian Commercial Banking Sector), Kalpaz Publications, Delhi
11. W. R. Bukowitz and R. L. Williams, : The Knowledge Management Fieldbook, Pearson Education limited.
12. Davenport, T.H., and Prusak, L. Working Knowledge: How Organizations Manage What They Know, NetLibrary Incorporated, Boulder, CO, 1998.
13. Groff, T.R., and Jones, T.P. Introduction to Knowledge Management, Butterworth-Heinemann, San Diego, CA, 2003

B. Magazine:

1. Creating an Informal Learning Organization, Harvard Management Update.

C. Journals:

1. Knowledge-Worker Productivity: The Biggest Challenge, by Peter F. Drucker. California Management Review Reprint Series.
2. Looking Ahead: Implications of the Present, by Peter F. Drucker, Esther Dyson, Charles Handy, Paul Saffo and Peter M. Senge. Reprint 97503.
3. The State of the Notion: Knowledge Management in Practice, by Rudy Ruggles. California Management Review Reprint Series