# PEOPLE'S UNIVERSITY, BHOPAL

***(Applicable for Admitted from Academic Session 2019-20 onwards)***

Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | External (70) | Internal (30) | Total (100) | External (Nil) | Internal (Nil) | Total |
| MTCY 12101 | Cloud Computing | 3 | 1 | - | | | Min: 40 (D Grade) | | | Nil |

**Duration of Theory (Externals): 3 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 30** | Best of Two Mid Semester Test – Max Marks: 15 | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment / Quiz/attendance Max. Marks: Nil |

| | |
|---|---|
| **Pre-Requisite** | Nil |
| **Course Outcome** | 1.To learn how to use Cloud Services. |
| | 2.To implement Virtualization. |
| | 3.To build Private Cloud. |

| Unit | Contents (Theory) | Marks Weightage |
|---|---|---|
| I | **Understanding Cloud Computing** Cloud Computing, History of Cloud Computing, Cloud Architecture, Cloud Storage, Why Cloud Computing Matters, Advantages of Cloud Computing, Disadvantages of Cloud Computing and Cloud Computing Services | **14** |
| II | **Developing Cloud Services** Web-Based Application, Pros and Cons of Cloud Service Development, Types of Cloud Service Development, Software as a Service, Platform as a Service, Web Services, On-Demand Computing, Discovering Cloud Services Development Services and Tools. | **14** |
| III | **Cloud Computing For Everyone** Centralizing Email Communications, Collaborating on Schedules, Collaborating on To-Do Lists, Collaborating Contact Lists, Cloud Computing for the Community, Collaborating on Group Projects and Events, Cloud Computing for the Corporation. | **14** |
| IV | **Using Cloud Services** Collaborating on Calendars, Schedules and Task Management, Exploring Online Scheduling Applications, Exploring Online Planning and Task Management, Collaborating on Event Management, Collaborating on Contact Management, Collaborating on Project Management, Collaborating on Word Processing, Collaborating on Databases, Storing and Sharing Files. | **14** |
| V | **Other Ways to Collaborate Online** Collaborating via Web-Based Communication Tools, Evaluating Web Mail Services, Evaluating Web Conference Tools, Collaborating via Social Networks and Groupware. | **14** |

**Text Book/References Books/ Websites**


1. Gautam Shroff; Enterprise Cloud Computing: Technology, Architecture, Application Cambridge University Press, New Delhi
2. Judith Hurwitz, R.Bloor, M.Kanfman, F.Halper; Cloud Computing for Dummies: Wiley.
3. Ronald Krutz and Russell Dean Vines: Cloud Security;Wiley..


**Suggested List of Laboratory Experiments :- (Expandable): Nil**

# PEOPLE'S UNIVERSITY, BHOPAL

***(Applicable for Admitted from Academic Session 2019-20 onwards)***

Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | External (70) | Internal (30) | Total (100) | External (Nil) | Internal (Nil) | Total |
| MTCY12102 | Information Security and Quality Assurance | 3 | 1 | - | | | Min: 40 (D Grade) | | | Nil |

**Duration of Theory (Externals): 3 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 30** | Best of Two Mid Semester Test – Max Marks: 15 | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment / Quiz/attendance Max. Marks: Nil |

| | |
|---|---|
| **Pre-Requisite** | Nil |
| **Course Outcome** | 1.To be Familiar with Network security Policy. |
| | 2.To be familiar with Network threats. |
| | 3.To gain knowledge about quality Assurance . |

| Unit | *Contents (Theory)* | Marks Weightage |
|---|---|---|
| I | **Introduction:** IT security and intrusion Combo, Essential Terminologies, Security and its need, Aspects of Security, need for enhanced security, Information Security & Law, IPR, Patent Law, Copyright Law, Legal Issues in Data mining Security, Building Security into Software Life Cycle. | **14** |
| II | **Why IT is security Necessary:** IT security services life cycle, Operating system basics, objectives of operating system, Services provided by operating systems. | **14** |
| III | **Data communication Basics:** Networking basics, Data communication, OSI/ TCP models, Cyber Threats and Issues | **14** |
| IV | An approach towards intrusion: Intrusion basics, Intrusion methodology, types of intruders, challenges. Protecting your computer: Physical security, Laptop, Desktop, network components, Software security, Protecting against Intruders, viruses, spywares, unwanted e-mails. | **14** |
| V | **Software security for portable computers:** Social engineering, defending against social engineers, Phishers, Protecting Password, logging on safely and securely, tips for creating secure password, keeping password secure, selecting tools, safety rules. **Case studies:** Hack reports-2000, Reports-2005 to 2009, Picture into intrusion and cyber crimes-2009-2010, CERT-IN reports, security tools. | **14** |



**Text Book/References Books/ Websites**


1. Randy Weaver, " Network Infrastructure Security", Cengage Learning
2. Merkov, Breithaupt," Information Security", Pearson Education
3. Yadav, "Foundations of Information Technology", New Age, Delhi


**Suggested List of Laboratory Experiments :- (Expandable): Nil**

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***(Applicable for Admitted from Academic Session 2019-20 onwards)***

Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | | Total (100) | | | Total |
| MTCY12103 | Computer Forensic Science | 3 | 1 | - | External (70) | Internal (30) | Min: 40 (D Grade) | External (Nil) | Internal (Nil) | Nil |

**Duration of Theory (Externals): 3 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 30** | Best of Two Mid Semester Test Max Marks: 15 | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment Quiz/ Attendance Max. Marks: Nil |

| | |
|---|---|
| **Pre-Requisite** | Nil. |
| **Course Outcome** | 1.To Develop Problem Solving skills. |
| | 2.To gain ability to use Diplomacy . |
| | 3.To deal with Digital Evidences. |

| Unit | Contents (Theory) | Marks Weightage |
|---|---|---|
| I | **Basics of Cyber forensics:** need, illegal activities, principles of cyber forensics, Cyber crimes, where and when is it used, Cyber Law: Introduction, need, IT ACT, 2000, digital signatures, E-Governance, IT act-2008, Legal Perspective: searching for and seizing information's, introduction, information as contraband, instrumentally, information as evidence, privilege confidential information, searching for information. | **14** |
| II | **Digital Evidences:** Introduction, Digital Evidence, Types of Digital Evidence, What is Digital Forensics. How to Identify Digital Evidence, How to treat digital evidences, Software Tools Data Imaging and Imaging Forensics: Imaging, Image Analysis, Image Running Tools, Restore Access to EFS-Encrypted Files | **14** |
| III | **Recovering of Deleted Files and deleted partitions:** Recycle Bin, Recover deleted files in Windows XP or Vista, Recovering deleted files from Deleted Partition, Introduction to mobile and PDA forensics, Forensic Tools, Handset Tools, PDA Forensic, FORENSICS with PDA, Password Cracking, Brute Force Intrusion, Dictionary intrusion, RAR Password Crackers, Password Guessing, CMOS Level Password Cracking, PDF Password Crackers, Password Cracking Tools, Common Recommendations for Improving Password Security, Standard Password Advice. | **14** |
| IV | **Network Intrusions Investigation:** Sniffer, Network Addressing Schemes, Tool: TCPDump, Network Sniffer, HTTP Sniffer, Ether Detect Packet Sniffer, Ethereal, Honey Pot Log, Honey Net Log, Web Application Intrusions Investigation, Vulnerability of web services, Vulnerabilities, Web Application Intrusions ,SQL Injection Intrusion, Price Manipulation, Cross-Site Scripting, | **14** |

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| | | |
|---|---|---|
| | Other Web Application Intrusion, Web Application Forensic, Tools, | |
| **V** | **Trademark and Copyright Infringement Issue:** Introduction, Trademark, Copyright, Patent, Copyright Infringement, Report Generation, Importance of reports, REPOR T PREPARATION, Stages of Report Preparation, Gathering the Data, Analyzing and Sorting the Results, Outlining the Report, Case Studies and references | **14** |

**Text Book/References Books/ Websites**

1. Jerry Hatchett, Computer Forensics: A Real World Guide, Jul 2009, Auerbach Publications.
2. John R. Vacca, Computer Forensics: Computer Crime Scene Investigation, 2009, Firewall.
3. Inda Volonino, Reynaldo Anzaldua, Jana Godwin, Computer Forensics: Principles and Practices, Aug 2006, Prentice Hall

**Suggested List of Laboratory Experiments :- (Expandable): Nil**

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | | Total (100) | | | Total |
| MTCY1202 | Advance Computer Network and Wireless sensor Network | 3 | 1 | - | External (70) | Internal (30) | Min: 40 (D Grade | External (Nil) | Internal (Nil) | Nil |

**Duration of Theory (Externals): 3 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 30** | Best of Two Mid Semester Test-- Max Marks: 15 | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment/ Quiz/Attendance Max. Marks: Nil |

| | |
|---|---|
| **Pre-Requisite** | Basic knowledge of Networking. |
| **Course Outcome** | 1.To understand basic network structures. |
| | 2.Students will be able to create network and about networking devices. |
| | 3.Students will gain knowledge about woreless communication. |

| Unit | Contents *(Theory)* | Marks Weightage |
|---|---|---|
| I | **Introduction:** Introduction to Network models-ISO-OSI, and TCP/IP models. Review of Physical layer and Data link layers, Review of LAN (IEEE 802.3, 802.5, 802.11b/a/g, FDDI) and WAN (Frame Relay, ATM, ISDN) standards. | **14** |
| II | **Network layer** Internet architecture and addressing, internetworking, IPv4, ICMP, Routing Protocols- RIP, OSPF, BGP, IP over ATM. IPv6, Next Generation IP protocol, Wireless Networks, GSM, CDMA, Mobility in networks, Mobile IP, Mobile IP multicasting, BSD Sockets. | **14** |
| III | **Transport layer** Design issues, Connection management, Transmission Control Protocol (TCP), User Datagram Protocol (UDP), Finite state machine model. TCP extensions for high speed network, TCP/IP programming. | **14** |
| IV | **Introduction :** Fundamentals of wireless communication technology, the electro magnetic spectrum radio propagation, characteristics of wireless channels, modulation techniques, multiple access techniques, wireless LANs, PANs, WANs, and MANs, Wireless Internet. | **14** |
| V | **Introduction to adhoc/sensor networks**: Key definitions of adhoc/ sensor networks, unique constraints and challenges, advantages of ad-hoc/sensor network, driving applications, issues in adhoc wirelesss networks, issues in design of sensor network, sensor network architecture, data dissemination and gathering | **14** |

**Text Book/References Books/ Websites**


1. Youlu Zheng / Shakil Akhtar; Networks for Computer Scientists and Engineers; Oxford University Press
2. Forouzan; TCP/IP Protocol Suite; Tata McGraw Hill.
3. Andrew S. Tanenbaum; Computer Networks; PHI


**Suggested List of Laboratory Experiments :- (Expandable): Nil**

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | External | Internal | Total (100) | External | Internal | Total |
| MTCY1203 | Artificial Intelligence and Soft Computing. | 3 | 1 | - | (70) | (30) | Min: 40 (D Grade | (Nil) | (Nil) | Nil |

**Duration of Theory (Externals): 3 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 30** | Best of Two Mid Semester Test-- Max Marks: 15 | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment/ Quiz/Attendance Max. Marks: Nil |

| | |
|---|---|
| **Pre-Requisite** | Nil. |
| **Course Outcome** | 1.Students will have a broad understanding of the fundamental theories, concepts, and applications of computer science |
| | 2.An ability to analyze a problem and identify and define the computing requirements appropriate to its solution.. |
| | 3.An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.. |

| Unit | Contents *(Theory)* | Marks Weightage |
|---|---|---|
| I | **Artificial Intelligence**: Introduction, Various types of production systems, characteristics of production systems, breadth first search, depth first search techniques, other Search Techniques like hill Climbing, Best first Search, A* algorithm, AO* Algorithms and various types of control strategies. Knowledge representation issues, Prepositional and predicate logic, monotonic and non monotonic reasoning, forward Reasoning, backward reasoning, Weak & Strong Slot & filler structures, NLP. | **14** |
| II | **Neural Network:** Introduction to Soft Computing, Soft Computing Vs Hard Computing, Basic concept of neural networks, Mathematical model, Properties of neural network, Typical architectures: single layer, multilayer, competitive layer; Different learning methods: Supervised, Unsupervised & reinforced; Common activation functions; Feed forward, Feedback & recurrent N.N, Application of Neural Network. | **14** |
| III | **Neural Network Architecture**: Models Of Neural Network Architecture, Algorithm & Application of - McCulloh-Pitts, Hebb Net, Perceptron ( with limitations & Perceptron learning rule Convergence theorem), Back propagation NN, ADALINE, MADALINE, Discrete Hopfield net, BAM, Maxnet , Kohonen Self Organizing Maps, ART1,ART2 | **14** |
| IV | **Fuzzy Logic:** Fuzzy Sets, Fuzzy versus Crisp; Fuzzy sets—membership function, linguistic variable, basic operators, properties; Fuzzy relations—Cartesian product, Operations on relations; Crisp logic—Laws of propositional logic, Inference; Predicate logic—Interpretations, Inference; Fuzzy logic—Quantifiers, Inference; Fuzzy Rule based system; Defuzzification methods | **14** |
| V | **Genetic Algorithm**: Genetic Algorithm Basic concept; role of GA in optimization, Fitness function, Selection of initial population, Cross over(different types), Mutation, Inversion, Deletion, Constraints Handling; Evolutionary Computation; Genetic Programming; Schema theorem; Multi objective & Multimodal optimization in GA; Application— Traveling Salesman Problem, Graph Coloring problem, Hybrid systems, GA based BPNN (Weight determination, Application); Neuro Fuzzy Systems—Fuzzy BPNN--fuzzy Neuron, architecture, learning, application; Fuzzy Logic controlled G.A | **14** |

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***(Applicable for Admitted from Academic Session 2019-20 onwards)***

Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

**Text Book/References Books/ Websites**


1. .S. Rajasekaran & G.A. Vijaylakshmi Pai,, Neural Networks, Fuzzy Logic & Genetic Algorithms ", , PHI Publication
2. Elaine Rich & Kevin Knight, Artificial Intelligence , Prentice Hall of India, 2002.
3 Amit Konar, " Artificial Intelligence and Soft Computing ", McGraw-Hill,


**Suggested List of Laboratory Experiments :- (Expandable): Nil**

# PEOPLE'S UNIVERSITY, BHOPAL

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | | Total (100) | | | Total |
| MTCY1204 | Advance Computer Graphics and Multimedia | 3 | 1 | - | External (70) | Internal (30) | Min: 40 (D Grade | External (Nil) | Internal (Nil) | Nil |

**Duration of Theory (Externals): 3 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 30** | Best of Two Mid Semester Test – Max Marks: 15 | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment / Quiz Max. Marks:Nil |

| | |
|---|---|
| **Pre-Requisite** | **Nil** |
| **Course Outcome** | 1.To learn the basic principles of Multimedia. |
| | 2.Student will be able to learn advanced animation techniques. |
| | 3.Students will be able to learn creation of images through Programming. |

| Unit | *Contents (Theory)* | Marks Weightage |
|---|---|---|
| I | Introduction to raster & random graphics fundamentals, Display devices & comparison Point plotting, line drawing & circle drawing & their algorithm like DDA & Bressenham's, Video Basics, Adapter Cards (MCA, CGA, EGA, VGA, etc.) | **14** |
| II | Translation, Rrotation, Scaling, Shearing reflection, Inverse transformation, Homogeneous co-ordinate system, Matrices transformation, Composite transformation, Windowing and clipping, World co-ordinate system, Screen co-ordinate system, Viewing transformation, Line clipping, Cohen Sudherland, Midpoint line clipping algorithms, Polygon clipping: sudherland- Hodgeman, Weliler-Atherton algorithms. | **14** |
| III | Translation, Rotation, Scaling, Parallel and perspective projection, Types of parallel and perspective projection, Hidden surface elimination: Depth comparison, Back face detection algorithm, Painters algorithm, Z-buffer algorithm, Curve generation, Bezier and B-spline methods | **14** |
| IV | Basic Illumination Model, Diffuse reflection, Specular reflection, Phong Shading, Gourand shading, ray tracing, color models like RGB, YIQ, CMY, HSV. | **14** |
| V | An Introduction to Multimedia, Multimedia hardware, Multimedia System Architecture. Data & File Format standards. i.e RTF, TIFF, MIDI, JPEG, DIB, MPEG, Audio: digital audio, MIDI, processing sound, sampling, compression. Video: Avi, 3GP,MOV,MPEG , compression standards, compression through spatial and temporal redundancy. Multimedia Authoring tools | **14** |



**Text Book/References Books/ Websites:**

1.Donald Hearn and M.P. Becker;"Computer Graphics"; Pearson Pub.
2.William M. Newman; Principles of Interactive Computer Graphics; McGraw Hill.
3. Rogers:Procedural Elements of Computer Graphics; McGraw Hill.

**Suggested List of Laboratory Experiments :- (Expandable): Nil.**

# PEOPLE'S UNIVERSITY, BHOPAL

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | External | Internal | Total | External | Internal | Total (100) |
| MTCY1205 | Applied Cryptography | - | - | 2 | (Nil) | (Nil) | Nil | (70) | (30) | Min: 40 (D Grade) |

**Duration of Theory (Externals): Nil**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: Nil** | Best of Two Mid Semester Test – Max Marks: Nil | Assignment/Quiz/Attendance Max. Marks: Nil |
| **Practical Internal Max Marks: 30** | Lab work & Sessional – Max Marks: 15 | Assignment / Quiz Max. Marks: 15 |

| | |
|---|---|
| **Pre-Requisite** | **Nil** |
| **Course Outcome** | 1.students will be able to learn different cryptography methods. |
| | 2.Student will be able to learn about Digital signatures. |
| | 3.Students will be able to learn about ciphers and its use. |

| Unit | Contents *(Theory)* | Marks Weightage |
|---|---|---|
| I | Foundations – Protocol Building Blocks - Basic Protocols - Intermediate Protocols – Advanced Protocols - Zero-Knowledge Proofs - Zero-Knowledge Proofs of Identity - Blind Signatures - Identity-Based Public-Key Cryptography - Oblivious Transfer - Oblivious Signatures – Esoteric Protocols | **14** |
| II | Key Length - Key Management - Electronic Codebook Mode - Block Replay - Cipher Block Chaining Mode - Stream Ciphers - Self-Synchronizing Stream Ciphers - Cipher-Feedback Mode - Synchronous Stream Ciphers - Output-Feedback Mode - Counter Mode - Choosing a Cipher Mode - Interleaving - Block Ciphers versus Stream Ciphers - Choosing an Algorithm - Public- Key Cryptography versus Symmetric Cryptography - Encrypting Communications Channels - Encrypting Data for Storage - Hardware Encryption versus Software Encryption - Compression, Encoding, and Encryption - Detecting Encryption – Hiding and Destroying Information. | **14** |
| III | Information Theory - Complexity Theory - Number Theory - Factoring - Prime Number Generation - Discrete Logarithms in a Finite Field - Data Encryption Standard (DES) – Lucifer - Madryga - NewDES - GOST – 3 Way – Crab – RC5 - Double Encryption - Triple Encryption - CDMF Key Shortening - Whitening. | **14** |
| IV | Pseudo-Random-Sequence Generators and Stream Ciphers – RC4 - SEAL - Feedback with Carry Shift Registers - Stream Ciphers Using FCSRs - Nonlinear-Feedback Shift Registers - System-Theoretic Approach to Stream-Cipher Design - Complexity-Theoretic Approach to Stream-Cipher Design - N- Hash - MD4 - MD5 - MD2 - Secure Hash Algorithm (SHA) - One- Way Hash Functions Using Symmetric Block Algorithms - Using Public-Key Algorithms - Message Authentication Codes | **14** |
| V | RSA - Pohlig-Hellman - McEliece - Elliptic Curve Cryptosystems -Digital Signature Algorithm (DSA) - Gost Digital Signature Algorithm - Discrete Logarithm Signature Schemes - Ongchnorr- Shamir -Cellular Automata - Feige-Fiat-Shamir -Guillou-Quisquater - Diffie-Hellman - Station-to-Station Protocol -Shamir's Three-Pass Protocol - IBM Secret-Key Management Protocol - MITRENET - Kerberos - IBM Common Cryptographic Architecture. | **14** |

**Text Book/References Books/ Websites:**


1. Bruce Schneier, "Applied Cryptography: Protocols, Algorithms, and Source Code in C"
2. John Wiley & Sons, Inc, 2nd Edition, 1996.
3. Wenbo Mao, "Modern Cryptography Theory and Practice", Pearson Education, 2004


**Suggested List of Laboratory Experiments :- (Expandable):Nil.**

# PEOPLE'S UNIVERSITY, BHOPAL

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | External | Internal | Total | External | Internal | Total (100) |
| MTCY1206 | Networking and Soft computing Lab | - | - | 2 | (Nil) | (Nil) | Nil | (70) | (30) | Min: 40 (D Grade) |

**Duration of Theory (Externals): Nil**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: Nil** | Best of Two Mid Semester Test – Max Marks: Nil | Assignment/Quiz/Attendance Max. Marks: Nil |
| **Practical Internal Max Marks: 30** | Lab work & Sessional – Max Marks: 15 | Assignment / Quiz Max. Marks:15 |

| | |
|---|---|
| **Pre-Requisite** | **Nil** |
| **Course Outcome** | 1. . An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.. |
| | 2. Students will be able to create network and about networking devices.. |
| | 3.Students will be able to learn installation of network lab. |

| Unit | Contents *(Theory)* | Marks Weightage |
|---|---|---|
| I | Introduction to Network models-ISO-OSI, and TCP/IP models. Review of Physical layer and Data link layers, Review of LAN (IEEE 802.3, 802.5, 802.11b/a/g, FDDI) and WAN (Frame Relay, ATM, ISDN) standards. Introduction to Soft Computing, Soft Computing Vs Hard Computing, Basic concept of neural networks, Mathematical model, Properties of neural network, Typical architectures: single layer, multilayer, competitive layer; Different learning methods: Supervised, Unsupervised & reinforced; Common activation functions; Feed forward, Feedback & recurrent N.N, Application of Neural Network. | **100** |

**Text Book/References Books/ Websites: Nil**

**Suggested List of Laboratory Experiments :- (Expandable):**

1. Study of different types of Network cables
2. Study of Network Devices in Details
3. Study of Network IP
4. Study of basic network command and network configuration commands
5. Study of TCP/UDP Performance
6. Study the working of BGP and formation of BGP Routing table.
7. Simulate A*, AO*.
8. Simulate 8-Puzzle Problem.
9. To Implement And Function Using Adaline With Bipolar Inputs And Outputs.
10. To Implement And Function Using Madaline With Bipolar Inputs And Outputs.
11. To Implement Discrete Hopfield Network And Test For Input Pattern.

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| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | | Total | | | Total (100) |
| MTCY1207 | Applied Cryptography and Multimedia Lab | - | - | 2 | External (Nil) | Internal (Nil) | Nil | External (70) | Internal (30) | Min: 40 (D Grade) |

**Duration of Theory (Externals): Nil**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: Nil** | Best of Two Mid Semester Test – Max Marks: Nil | Assignment/Quiz/Attendance Max. Marks: Nil |
| **Practical Internal Max Marks: 30** | Lab work & Sessional – Max Marks: 15 | Assignment / Quiz/Attendance Max. Marks:15 |

| | |
|---|---|
| **Pre-Requisite** | **Nil** |
| **Course Outcome** | 1. . Student will be able to learn about Digital signatures. |
| | 2 Student will be able to learn advanced animation techniques... |
| | 3. Students will be able to learn creation of images through Programming. |

| Unit | Contents *(Theory)* | Marks Weightage |
|---|---|---|
| I | Foundations – Protocol Building Blocks - Basic Protocols - Intermediate Protocols – Advanced Protocols . Key Length - Key Management - Electronic Codebook Mode - Block Replay - Cipher Block Chaining Mode - Stream Ciphers - Self-Synchronizing Stream Ciphers - Cipher-Feedback Mode. Introduction to raster & random graphics fundamentals, Display devices & comparison Point plotting, line drawing & circle drawing & their algorithm like DDA & Bressenham's, An Introduction to Multimedia, Multimedia hardware, Multimedia System Architecture | **100** |

**Text Book/References Books/ Websites: Nil**

**Suggested List of Laboratory Experiments :- (Expandable):**

1. Write program for Mono alphabetic cipher
2. Implementation of Play Fair cipher
3. Implementation of Vigenere cipher (Polyalphabetic substitution)
4. Implement RSA asymmetric (public key and private key)-Encryption. Encryption key (e, n) & (d, n)
5. Generate digital signature using Hash code
6. Write a Program to generate a line using DDA algorithm.
7. Write a Program to generate a Circle .
8. Write a Program to perform Translation of a Line
9. Write a Program to perform 3 D Transformation..
10. Impliment a Program to generate a Bezier Curve..

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Programme: **Master of Technology** **Specialization: Cyber Security** **Semester –II**

| Subject Code | Subject Title | Credit | | | Theory | | | Practical | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | | Total (50) | | | Total |
| MT1208 | Audit Course - II (English For Research Paper Writing) | 2 | - | - | External (35) | Internal (15) | Min: 20 (D Grade) | External (Nil) | Internal (Nil) | Nil |

**Duration of Theory (Externals): 2 Hours**

| | | |
|---|---|---|
| **Theory Internal- Max Marks: 15** | Best of Two Mid Semester Test – Max Marks: Nil | Assignment/Quiz/Attendance Max. Marks: 15 |
| **Practical Internal Max Marks: Nil** | Lab work & Sessional – Max Marks: Nil | Assignment / Quiz Max. Marks: Nil |

| | |
|---|---|
| **Pre-Requisite** | **Nil** |
| **Course Outcome** | 1. Student will understand that how to improve your writing skills and level of readability. |
| | 2. Learn about what to write in each section of research article. |
| | 3. Understand the skills needed when writing a Title. |

| Unit | Contents (Theory) | Marks Weightage |
|---|---|---|
| I | Planning and Preparation; Word Order; Breaking up long sentences; Structuring Paragraphs and Sentences; Being Concise and Removing; Redundancy; Avoiding Ambiguity and Vagueness. | **07** |
| II | Clarifying Who Did What; Highlighting Your Findings; Hedging and Criticizing; Paraphrasing and Plagiarism; Sections of a Paper; Abstracts; Introduction. | **07** |
| III | Review of the Literature; Methods; Results; Discussion; Conclusions; The Final Check. | **07** |
| IV | Key skills are needed when writing a Title; key skills are needed when writing an Abstract; key skills are needed when writing an Introduction; skills needed when writing a Review of the Literature. | **07** |
| V | Skills are needed when writing the Methods; skills needed when writing the Results; skills are needed when writing the Discussion; skills are needed when writing the Conclusions; useful phrases; how to ensure paper is as good as it could possibly be the first- time submission | **07** |

**Text Book/References Books/ Websites**


1. R. Goldbort (2006) Writing for Science; Yale University Press (available on Google Books).
2. R. Day (2006) How to Write and Publish a Scientific Paper; Cambridge University Press
3. N Highman (1998); Handbook of Writing for the Mathematical Sciences; SIAM. Highman's book
4. Adrian Wallwork ; English for Writing Research Papers; Springer New York Dordrecht Heidelberg London; 2011


**Suggested List of Laboratory Experiments :- (Expandable): Nil**