Program Name	B. Tech. (Computer Engineering)	Semester – VII
Course Code	R4CO4002T	
Course Title	Cyber Security	
Prerequisite	Computer Network	

COURSE OUTCOMES: Students will be able to	
1.	Identify cybercrimes, and respective cyber laws
2.	Build the secure Network infrastructure and reduce the risk of attacks.
3.	Reduce the risk of data theft and web application attacks.
4.	Explore the Security and Forensic Best Practices in Advanced Domain.

COURSE CONTENTS		Hrs	CO
1.	**Cyber Threats and Attacks and laws**: What is Cyber Security, its needs, Security Parameters, Vulnerabilities, cybercrimes and stalking, Hacking Phases, Investigation of Cyber Crimes And evidential aspects of cyber laws, IT Acts-2000 and cybercrimes, IPR, Media Law, IPC for cyber-crimes, CrPC and IT Act 2000, International cyber laws, Cyber-crime case studies.	4	1,2
2.	**TCP/IP Stack:** Vulnerabilities and attacks on TCP/IP stack- DOS: R2L, U2R, probing, Vulnerabilities and Attack on Application Layer Protocols, Transport Layer (TCP/UDP), Internet Layer. Data communication/ Link Layer Attacks and Defense Mechanisms, Cryptanalysis Techniques and building robust algorithms of cryptography. .	7	1,2
3.	**TCP/IP Routing and security Protocols:** Vulnerabilities and Attacks On TCP/IP routing protocols and security protocols and their defense mechanisms.	7	1,2
4.	**Secure Network Design;** Networking Scanning- secure Network Architecture design, Network Security Devices-firewall's, intrusion prevention systems, router attacks and defense mechanism, network analysis Tools-wire shark and NMAP., Case Studies	7	2,3
5.	**Web Application Attacks and Security**-Web program security, OWASP And Defense Mechanism, access control hardening LINUX OS for cyber security- Web Server and data base servers' attacks and security and forensic, digital payments and dangers to credit cards on Net-SET	7	3
6.	**Advances in domain-** Hand Held Devices and cloud attacks, security and forensic. Security and Forensic Best practices, Case Studies	7	3,4

TEXTBOOKS

1. Dr. B.B. Meshram, Ms K.A. Shirsath, "TCP/IP and Network Security: Attacks and Defense Mechanisms with Open-Source Tools", Shroff Publishers & Distributors PVT. LTD, 1st edition, 2017
2. William Stallings, "Cryptography and Network Security", Pearson Education/PHI, 2006.

RECOMMENDED READING

1 Digital Forensics, DSCI - Nasscom, 2012.

2 Cyber Crime Investigation, DSCI - Nasscom, 2013

3 Charles Pfleeger, "Security in Computing", 4th Edition, Prentice Hall of India, 2006.

4 Joakim Kävrestad, "Fundamentals of Digital Forensics: Theory, Methods, and Real-Life Applications", Springer

Program Name	B. Tech. (Computer Engineering)	Semester – VII
Course Code	R4CO4001P	
Course Title	Data Mining and Data Warehousing Lab	
Prerequisite	Statistics, Data Structures and Algorithms	

COURSE OUTCOMES: Students will be able to	
1.	Investigate different data mining and data warehouse tasks and evaluate the algorithms with respect to their accuracy.
2.	Compare the results of a data mining exercise and analyze the results.
3.	Design a data mining solution to a practical problem.

LIST OF EXPERIMENTS:		Hrs	CO
1.	To perform a multidimensional data model using SQL queries. e.g., snowflake, star and fact constellation schema.	2	1
2.	To perform various OLAP operations such as: slice, dice, roll up, drill up etc.	2	1
3.	To perform data cleaning and preparing for operations	2	1,2
4.	Study of Decision Trees and other classification Algorithms.	4	2,3
5.	To perform association rule mining	4	2, 3
6.	Study of predictive algorithms.	2	2, 3
7.	Study of clustering and its different techniques.	4	2, 3
8.	To perform text mining on the given data warehouse and perform correlation analysis between for the given data sets	2	2, 3

TEXTBOOKS

1 Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction to Data Mining", Pearson Education, ISBN: 978-93-3257-140-2

2 Jiawei Han, Micheline Kamber, and Jian Pei, "Data Mining Concepts and Techniques", 3rd Edition, Morgan Kaufmann, ISBN: 978-93-80931-91-3

RECOMMENDED READING

1 M. Berry and G. Linoff, "Mastering Data Mining", John Wiley and Sons, 2nd Edition.

2 I.H. Witten and E. Frantk, "Data Mining: Practical Machine Learning Tools and Techniques", Morgan Kaufmann, 4th Edition.

Program Name	B. Tech. (Computer Engineering)	Semester – VII
Course Code	R4CO4001T	
Course Title	Data Mining and Data Warehousing	
Prerequisite	Statistics, Database, Data Structures and Algorithms	

COURSE OUTCOMES: Students will be able to	
1.	Perform the preprocessing of data and apply mining and data warehousing techniques on it.
2.	Identify and Implement association rules, classification, and clustering algorithms
3.	Solve real world problems in business and scientific information using data mining
4.	Use data analysis tools for scientific applications

COURSE CONTENTS		Hrs	CO
1.	**Introduction to Data Mining:** Introduction, Data Mining Techniques, Knowledge Discovery, KDD Process.	2	1
2.	**Data Warehouse and OLAP Technology for Data Mining**: Introduction to Data Warehouse, Data Cube and OLAP, Data Warehouse Design and Usage, Data Warehouse Implementation.	4	1
3.	**Data Processing**: Types of Data, Data Quality, Data Pre-processing, Data Cleaning, Outlier Detection, Missing Value Detection, Data Integration, Data Reduction, Data Transformation and Data Discretization, Similarity and Dissimilarity, Summary Statistics, Visualization,	7	1,2
4.	**Classification:** Decision Tree, Model Overfitting, Evaluating Performance of Classifier, Rule-Based Classifier, Nearest-Neighbor Classifier, Bayesian Classifier, ANN, SVM, Ensemble Methods, Class Imbalance Problems.	7	2,3
5.	**Association:** Frequent Item Generation, Rule Generation, Compact Representation of Frequent Itemsets, FP-Growth Algorithm	4	2,3
6.	**Clustering**: K-Means, Agglomerative Hierarchical Clustering, DBSCAN, Cluster Evaluation, Density-Based Clustering.	4	2,3
7.	**Web Mining:** Web Content Mining, Web Structure Mining, Web Usage mining.	3	2,3
8.	**Visualization:** Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating Between Different Classes, Mining Descriptive Statistical Measures in Large Databases.	4	4
9.	**Applications:** Anomaly Detection, Time Series Prediction, Visual and Audio Data Mining, Recommendation Systems.	2	3,4
10	**Advances in Data Mining.**	2	3,4

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TEXTBOOKS

1 Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction to Data Mining", Pearson Education, ISBN: 978-93-3257-140-2

2 Jiawei Han, Micheline Kamber, and Jian Pei, "Data Mining Concepts and Techniques", 3rd Edition, Morgan Kaufmann, ISBN: 978-93-80931-91-3

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1 M. Berry and G. Linoff, "Mastering Data Mining", John Wiley and Sons, 2nd Edition.

2 I.H. Witten and E. Frantk, "Data Mining: Practical Machine Learning Tools and Techniques", Morgan Kaufmann, 4th Edition.

Open Elective 2

Programme	B. Tech. (All Branches)	**Semester** - VII
Course Code	R4PE4601S	
Course Title	Entrepreneurship Development	
Prerequisites	None	

	Course outcomes: On the completion of this course, the learner will able to 1. Describe what it takes to be an entrepreneur 2. Analyze business opportunities and the basics to create, launch and manage new businesses 3. Develop Business Model for their Idea/Problem 4. Create MVP (Minimum Viable Product).
	Syllabus
1.	**Introduction** Discover yourself – Find you Flow, Effectuation, Identify your entrepreneurial style
2.	**Problem Identification and Idea generation** Identify Problems worth Solving, Introduction to Design Thinking, generate ideas that are potential solutions to the problem identified, GOOTB: Run problem interviews with prospects, Class Presentation: Present the problem you "love", Team Formation.
3.	**Customer Study and Value Proposition** Identify Your Customer Segments and Early Adopters - Market Types, Segmentation and Targeting, Defining the personas; Understanding Early Adopters and Customer Adoption Patterns, Customer identification, Market, Creative solution; Craft Your Value Proposition - Come up with creative solutions for the identified problems, Deep dive into Gains, Pains and "Jobs-To-Be-Done" (using Value Proposition Canvas, or VPC), Identify the UVP of your solution using the Value Proposition section of the VPC, Outcome-Driven Innovation.

4.	**Business Model Canvas** Get Started with Lean Canvas - Basics of Lean Approach and Canvas; Types of Business Models (B2B; B2C), Sketch the canvas- "Document your Plan A", Intro to Risks; Identify and document your assumptions (Hypotheses); identify the riskiest parts of your Business Plan, Risk identification, Class Presentation: Present your Lean Canvas.
5.	**Validation** Develop the Solution Demo - Build solution (mock-ups) demo, How to run solution interviews, GOOTB: Run Solution interviews, Does your solution solve the problem for your customers: The problem-solution test. Sizing the Opportunity - Differences between a Start-up venture and a small business; Industry Analysis: Understanding what is Competition and its role, Analyse competition; Building an MVP - Identification of MVP, Solution development, building products/services, Build-measure-learn loop for development
6.	**Money** Revenue streams, Pricing and cost, Financing Your New Venture - Venture financing, Investor expectations
7.	**Team building** Shared leadership, role of good team, how to pitch to candidates to join your startup Collaboration tools and techniques - Brainstorming, Mind mapping, Kanban Board, #Slack
8.	**Marketing and sales** Positioning of Product/Services, Channels and strategies, Building Digital Presence and leveraging Social media, Budgeting and planning. Sales planning - Buying decisions, Sales planning, setting targets, Unique Sales Proposition (USP); Art of the sales pitch (focus on customers' needs, not on product features), Follow-up and closing a sale; Asking for the sale.
9.	**Support** Planning and tracking - Importance of project management to launch and track progress, Understanding time management, workflow, and delegation of tasks. Business Regulation - Basics of business regulations of starting and operating a business; Importance of being compliant and keeping proper documentation; How to find help to get started.

	Text Books
1.	Roy R.: Entrepreneurship, Oxford University Press.
2.	Maurya A.: Running Lean: Iterate from Plan A to a Plan That Works. O'Reilly Media
	References
1.	Jeffry A: New venture creation, Tata McGraw Hill
2.	Osterwalder, A and Pigneur Yves: Business Model Generation: A Handbook for Visionaries, Game Changers and Challengers.
3.	Gupta T. S: Intellectual Property Law in India, Kluwer Law International.
4.	Saraswathi S.D: Effectuation: Elements of Entrepreneurial Expertise. Edward Elgar Publishing.
5.	Kim W. C. and Mauborgne R: Blue Ocean Strategy, Harvard Business School Press.
6.	Ries, E.: The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, The Crown Publishing Group

Program Name	B. Tech. (Computer Engineering)	Semester – VII
Course Code	R4CO4204P	
Course Title	Natural Language Processing Lab	
Prerequisite	Machine Learning	

COURSE OUTCOMES: Students will be able to	
1.	Perform and understand stages of NLP and their application using NLTK toolkit
2.	Use and processing of corpora, word embeddings in NLP experiments.
3.	Access and analyse data from social platforms and perform text classification.
4.	Implement Different approaches such as Supervised, Unsupervised and Knowledge-based approaches to NLP applications

COURSE CONTENTS		Hrs	CO
1.	Use of Natural Language Toolkit (NLTK): Computing with Language: Texts and Words, Tokenization, Segmentation, Texts as Lists of Words, Simple Statistic Generation	2	1
2.	Accept the Sentence as input and display Part of Speech Tags for the same. Also Perform dependency parsing and list out all dependency relations along with their operands/entities.	2	1
3.	A word can be simple or complex. For example, the word 'cat' is simple because one cannot further decompose the word into smaller parts. On the other hand, the word 'cats' is complex, because the word is made up of two parts: root 'cat' and plural suffix '-s'. Develop an Analyser/Generator with Simple User Interface to accept lanua as English / Hindi and a word as input. Now generate the following information for the same. Word, Root, PoS tag, Gender and Person (if noun), Case and Tense (if Verb)	2	1
4.	Probability of a sentence can be calculated by the probability of sequence of words occurring in it. We can use Markov assumption, that the probability of a word in a sentence depends on the probability of the word occurring just before it. Such a model is called a first order Markov model or the bigram model. Create a Bigram Language Model using given Corpora and generate the best possible word after a word (given as input).	2	1, 2
5.	Text Processing at the Lowest Level, Text Processing with Unicode, Regular Expressions for Detecting Word Patterns, Useful Applications of Regular Expressions, Normalizing Text, Regular Expressions	2	1
6.	Develop a Knowledge-based approach for Disambiguating the meaning of an input word from a given sentence.	2	2, 4
7.	Experiment to understand and illustrate the word-vectors	2	1, 2
8.	Develop a program to extract tweets from twitter platforms, Preprocess the data and store back the cleaned data in a .csv which related to a particular domain or specific hashtag value file.	2	3
9	Case study on Text Classification using supervised models	4	3,4
10	Case study on Text classification using Neural Network approach such as LSTM networks.	4	3, 4

TEXTBOOKS

1. Steven Bird, Ewan Klein and Edward Loper, “Natural Language Processing with Python”, O'Reilly Media, 2009.
2. Joseph D. Booth, “Natural Language Processing, Syncfusion”, Inc., 2018

RECOMMENDED READING

1 Dan Jurafsky, James H. Martin, “Speech and Language Processing, Stanford University”, 2017.

2 Shuly Wintner, “Formal Language Theory for Natural Language Processing”, ESSLLI, 2001.

3 Nitin Indurkhya and Fred J. Damerau, “Handbook of Natural Language Processing”, Second Edition, Chapman and Hall/CRC Press, 2010.

4 Tanveer Siddiqui, U.S. Tiwary, “Natural Language Processing and Information Retrieval”, Oxford University Press, 2008.

Program Name	B. Tech. (Computer Engineering)	Semester – VII
Course Code	R4CO4204T	
Course Title	Natural Language Processing	
Prerequisite	Machine Learning	

COURSE OUTCOMES: Students will be able to	
1.	Understand the applications and analysis of NLP.
2.	Demonstrate accomplishments of knowledge and comprehension of NLP.
3.	Compare and contrast approaches to NLP.
4.	Discuss the limitations and promise of NLP.

COURSE CONTENTS		Hrs	CO
1.	**Introduction to NLP:** History of NLP, Generic NLP system, levels of NLP, Knowledge in language processing, Ambiguity in Natural Language, Stages in NLP, Challenges of NLP. Various Applications of NLP- Machine translation, Named Entity Recognition, question answering system, Information retrieval, Text categorization, text summarization, Sentiment Analysis and so on.	3	1
2.	**Word Level Analysis:** Morphology in natural languages, Morphology analysis, Inflectional morphology & Derivational morphology, Regular expression, finite automata, finite state transducers (FST), Morphological parsing with FST, Lexicon free FST - Porter stemmer.	4	2
3.	**N-gram Language Models:** The role of language models, Simple N-gram models. Estimating parameters and smoothing - Laplace Smoothing, Add-k smoothing, Kneser-Ney Smoothing, Web and Stupid Back-off, Perplexity and Entropy, Evaluating language models.	4	2
4.	**Part of Speech Tagging:** Part of Speech Tagging, Tagset for English, Penn TreeBank Tagset for English, Rule-based Part-of-speech Tagging, Stochastic Part-of-speech Tagging, Transformation-Based Tagging, Issues –Multiple tags & words, Unknown words, class-based n–grams, Hidden Markov Models (Forward and Viterbi algorithms and EM training) for sequence labeling task of POS tagging.	4	2
5.	**Syntactic Analysis:** Context Free grammar Constituency, Context free rules & trees, Sentence level construction - Noun Phrase, Verb phrase etc. Need of Parsing, Dependency Parsing, Parsing in case of Ambiguity, Parsing, Different Parsing Algorithms - CFG, V Probabilistic Parsing.	5	2
6.	**Semantics Analysis:** Meaning representation, lexical semantics - sense relations, semantic roles, and primitive decomposition, WordNet - Relations among lexemes & their senses – Homonymy, Polysemy, Synonymy, Hyponymy. Ambiguity in Word Senses, Word Sense Disambiguation- Selectional restriction, machine learning approaches, dictionary-based approaches.	4	3

7.	**Distributional Semantics:** Distributional hypothesis, vector space models, etc. Distributed Representations: Neural Networks (NN), Backpropagation, Softmax, Hierarchical Softmax. Word Vectors: Feedforward NN, Word2Vec, GloVE, Contextualization (ELMo etc.) etc	4	3
8.	**Discourse Analysis:** Pragmatics and Discourse, Ambiguity in Discourse Analysis, Reference resolution, constraints on co-reference, algorithm for pronoun resolution, text coherence, discourse structure in brief.	3	4
9.	**Text Classification:** Preparing Data: Acquiring Text, Text Cleaning, Text Preprocessing with POS tagger, Parsers, Chunkers etc. Statistical analysis of text or sentences. Supervised approach using Classifiers such as Naive Bayes, SVM, Random Forest etc. NN-based Approaches such as LSTM-Based approach using word vectors etc. Dictionary-based or Unsupervised Approaches: Extracting Information using Corpus, evaluating statistical data, Linguistic Properties, WordNet etc.	3	4
10	**Advances in the domain and Case Studies from various applications of NLP such as** Question answering system, Information retrieval, Text categorization, text summarization, Named Entity Recognition, & Sentiment Analysis	4	4

TEXTBOOKS

1. Dan Jurafsky, James H. Martin, “Speech and Language Processing”, Stanford University, 2017

2. Christopher D.Manning and Hinrich Schuetze, “Foundations of Statistical Natural Language Processing”, MIT press, 1999.

RECOMMENDED READING

1 Joseph D. Booth, “Natural Language Processing”, Syncfusion, Inc., 2018

2 Shuly Wintner, “Formal Language Theory for Natural Language Processing”, ESSLLI, 2001

3 Steven Bird, Ewan Klein and Edward Loper, “Natural Language Processing with Python”, O'Reilly Media, 2009

Program Name	B. Tech. (Computer Engineering)	Semester – VII
Course Code	R4CO4002P	
Course Title	Cyber Security Lab	
Prerequisite	Computer Network	

COURSE OUTCOMES: Students will be able to	
1.	Identify cybercrimes, and respective cyber laws
2.	Build the secure Network infrastructure and reduce the risk of attacks.
3.	Reduce the risk of data theft and web application attacks.
4.	Explore the Security, Defense mechanism And Forensic Best Practices in Advanced domain.

LIST OF EXPERIMENTS: **Hrs CO**

1. **Cyber Crime**

(i)For a given case study on cyber-crime, **2 1**

1.Investigate the Cyber Crimes And evidential aspects.
2.identify the security parameters.
3. Identify the cyber laws for the punishment of **c**ybercrimes and stalking.

Run the following commands on your computer and analyze the results.

1 run c:\> ipconfig/all

2 run c:\> NETSTAT [-a] [-b] [-e] [-n] [-o] [-p proto] [-r] [-s] [-v] [interval]

3 ping IP Address

4 tracert type url or IP Address

5. c:\> arp-a

6. Find the open ports using NETWOX tools 67

7.Discuss the following internet address tools

1. Dig
2. Whois
3. Traceroute

8 Enumerate Remote Systems

2. **TCP/IP Security Model** 2 1,2

(i) The TCP/IP STACK deals with the various protocols at various layers of the TCP/IP stack like TCP/IP protocols, routing protocols and security protocols. Study the various protocols, identify vulnerabilities of these protocols and provide the defense mechanism. Identify the tools to do attack and defense mechanism tools.
OR. Download the open-source Linux operating system from the internet and study the code of TCP/IP Model, modify it and embed it in Linux and execute.
(ii) Perform Attacks on Cryptographic Algorithms and Design Robust RSA, DES, Stream Ciphers-RC4 etc. algorithms and implement and test them.

3. **Secure Network Design for Organization** 2 1,2,3

Design the campus wide network for the campus of the engineering college. Analyze The location of the core switch, distribution switch and access switch and departmental requirements for connectivity of the computers. Also specify the requirements for setting the data centre and firewall and IPS, Routing Requirements. Identify active and passive components specifications for the design of the network. Identify the vulnerabilities, attacks and defense mechanism for the security of organization's enterprise network. Formulate the organizational guidelines for network and computing infrastructure usage.

4. **Practical Experiment on Firewall** 2 1,3

(i) Each student shall Download and install each type of open-source firewall, perform the experiment and note the results. Write a report of your experimentations; and check with the domain expert

1. SHORELINE, JAY" S, GUARDDOG firewalls are classified as Packet Filtering firewalls
2 NETNANNY, CYBERPATROL, DANE GUARDIAN and GAUNTLET firewalls are classified as Data Filtering firewalls.
3. IPCOP and SMOOTHWALL firewalls are both Data Filtering as well as Packet Filtering firewalls.

(ii) Study the commercial software's (firewall and IDS) if you have access from any sources Write a report of your experimentations; and check with the domain.

5. **Implement Intrusion Detection Systems**. 2 2

Use the following steps:

1. Capture packets using windup/TCPDump and storing in packet.txt
2. Preprocess packet.txt to give input to the patterning matching algorithm.
3. Storing the normal and abnormal traffic patterns in pattern.txt file. You can use KDD cup data or create your own data for the experiment.
4. Pattern Matching step: if pattern in the pattern.txt file matches with any of the abnormal attack packet in packet.txt file, then the packet is abnormal packet otherwise it is normal packet
5. Display result as normal or abnormal packet (attack or intrusion).

6. **Protocol Analysis Tools.** 2 1,3

Download and install the following packet capture softwares on your computer(any one by each student)

1. Wireshark
2. TCPDUMP
3. WindowDump
4. NMAP

What are the facilities provided by the softwares? Illustrate the features of each softwares? Study and analyse following protocols or any other protocols of your choice.(any two by each students)

(i)ARP (ii) IP (iii) TCP (iv) DNS packet (v) SMTP protocol (vi) BGP

Show the report to your teacher

7.	**The Attacks On Web Application and Defense Mechanism** Consider the systems software's and applications software are loaded on web server, application server and database server. Gather the information about the enterprise for making the attacks. How can you do Top 10 OWASP attack. Apply secure software life cycle for the given case study. Write the secure code and provide the defense mechanism against Top 10 OWASP attack. You can use ESAPI Or Any Other Framework.	2	1,3
8.	**Hardening Linux and Database for Cyber Security** (i)Harden the Linux operating systems with respect to following 1. Basic security 2. File and directory security 3. Workstation security 4. Server security 5. Network services security (ii)Perform the experiment for Data base security using RBAC, DAC, MAC and identify the source of unauthorized users accessing the database. (iii) Identify the organizational Implications for organizational policy, web threats, security and privacy and incident handling	2	2
9.	Defense Mechanism Against Hackers Methodology. Illustrate the Hackers methodology with suitable experiment in order to improve the quality of the computing systems services of your organization. (Hint: Foot printing, Scanning, Enumeration, gaining access, escalating privileges, covering tracks, Creating backdoors, Denial of service) i) Which techniques and tools are used by the hacker at each phase of hacking of computing assets of your network/laptop/PC? ii) Perform the experiment for the passive attacks and active attacks on computing systems of your organization's data centre/laptop/PC and show the results to the owner of organization with snapshots. iii) Suggest the defense mechanism strategy/tools at every phase of hacking in order to protect the computing assets of your data centre. (iv) Cybercrime: Illustrations and case studies.	2	3,4
10	**GROUP PROJECTS** 1. Select any group project on following. Analyze design, implement and Test project (any one) Modification Of TCP/IP, Network Security, Web Application Security, Secure Life Cycle, Security. E Testing IPS, Firewall, Computer Hacking and Forensic Investigation, Mobile Security, Mobile Forensic, Cloud Security, Cloud Forensic, Security and forensic of Hand-held devices. OR Any Other Project Assigned by Teacher on Cyber Security.	2	3

TEXTBOOKS

1. Dr. B.B. Meshram, Ms K.A. Shirsath, "TCP/IP and Network Security: Attacks and Defense Mechanisms with Open-Source Tools", Shroff Publishers & Distributors PVT. LTD, 1st edition, 2017.

2. John Sammons, "The Basics of Digital Forensics: The Primer for Getting Started in Digital Forensics", Elsevier, 1st Edition, 2012.

RECOMMENDED READING

1 Charles Pfleeger, "Security in Computing", 4th Edition, Prentice Hall of India, 2006.

2 Roberta Bragg, M.r. Ousley. Keith Strassberg, "Network Security- The Complete Reference", Tata McGraw-Hill