

Program: B. Tech. (Computer Engineering)				Semester: V	
Course: Design and Analysis of Algorithms				Code: BTCO05009	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Internal Continuous Assessment (ICA) (Marks -50 marks)	Term End Examinations (TEE) (Marks- 100 in Question paper)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Pre-requisite: Programming for Problem Solving (BTCO02009), Discrete Structures (BTCO03010), Data Structures (BTCO03015)					
Objectives: <ol style="list-style-type: none"> 1. Demonstrate a familiarity with major algorithm design paradigm 2. Analyse the asymptotic performance of algorithms. 3. Synthesize efficient algorithms in common engineering problems with emphasis on parallel processing techniques. 					
Outcomes: After successful completion of this course, students will be able to <ol style="list-style-type: none"> 1. Comprehend the space-time complexity of algorithms. 2. Evaluate divide and conquer approach and greedy algorithms. 3. Analyze dynamic programming, Backtracking design paradigm and string matching algorithms. 4. Synthesize various algorithms in different programming environments. 					
Detailed Syllabus:					
Unit	Description				Duration
1	Introduction: What is Algorithms, types of Algorithms: greedy, divide & conquer, backtracking, etc. Analysis of Algorithms complexity. Background of different programming environments such as parallel, distributed and hybrid environment. Introduction of P, NP, NP Complete and NP hard problems.				05
2	Analyzing the Algorithms: Time and Space Complexity of Algorithms, Asymptotic notations, Asymptotic order, Properties of big oh, big omega, and big theta, Classifying functions by their asymptotic growth rates, Best case, average Case and worst case analysis. Master's Theorem and Substitution Method, Recursion Tree Method.				07



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3	Divide and Conquer Technique: The general method, control abstraction for divide and conquer, Finding the maximum and minimum: straightforward and recursive algorithm, Merge sort, Quick sort, Strassen's matrix multiplication, Time complexity analysis. Correlation with P, NP, NP completeness & NP hard problems	05
4	Greedy Technique: The general method, control abstraction, Optimal storage on tapes, Knapsack problem, Job sequencing with deadlines, Optimal merge patterns, Huffman codes, Case study on: Minimum spanning trees: Prim's and Kruskal's algorithm, Single source shortest path Dijkstra's algorithm. Correlation with P, NP, NP completeness & NP hard problems	08
5	Dynamic Programming: The general method, principle of optimality, Multistage graphs, Single source shortest path Bellman Ford algorithm, Case Study: All pairs shortest paths: Floyd's Warshall Algorithm, 0/1-knapsack, The travelling salesperson problem, Matrix Chain multiplication, Longest Common Subsequence problem. Correlation with P, NP, NP completeness & NP hard problems.	10
6	Backtracking: The general method, The n-queens' problem, Sum of subsets, Graph coloring, Hamiltonian cycles Efficiency of backtracking algorithms. Correlation with P, NP, NP completeness & NP hard problems.	05
7	String Matching Algorithms: The naïve string-matching Algorithms, The Rabin Karp algorithm, String matching with finite automata, The knuth-Morris-Pratt algorithm	05
	Total	45
Text Books: 1. Ellis Horowitz, and Sartaj Sahani, "Fundamentals of Computer Algorithms", University Press, 2 nd edition, 2008. 2. Thomas H. Cormen, Charles E., Leiserson, Ronald L. Rivest, "Introduction to Algorithms", MIT Press, 3 rd edition, 2009.		
Reference Books: 1. Sara Baase, Alan Van Gelder, "Computer Algorithms Introduction to Design		

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and Analysis", Addison-Wesley, 3rd edition, 2000

2. Aho, Hopcroft, Ullman, "Data Structures and Algorithms", Addison-Wesley, 2000.

Term Work:

1. Minimum Ten Practical experiments covering all the topics.
2. Minimum two class tests
3. Minimum Two assignments.



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Program: B. Tech. (Computer Engineering)				Semester: V	
Course: Image Processing				Code: BTCO05010	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial hours per week	Credit	Internal Continuous Assessment (ICA) (Marks -50 marks)	Term End Examinations (TEE) (Marks- 100 in Question paper)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Pre-requisite: Digital Signal Processing (BTCO05006)					
Objectives: <ol style="list-style-type: none"> 1. To provide the fundamental knowledge of Image processing and related algorithms involved in it. 					
Course Outcomes: After successful completion of this course, students will be able to <ol style="list-style-type: none"> 1. Outline the fundamentals of image processing. 2. Compute and analyse effects of various image transformation techniques in spatial and frequency domains 3. Analyse images using image segmentation and morphological operations. 4. Compress the images using basic transforms, wavelets and multiresolution techniques. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Digital Image Processing Systems: Introduction, structure of human eye, image formation in the human eye, Brightness adaptation and discrimination, Image sensing and acquisition, storage, Processing, Communication, Display Image Sampling and quantization, Basic relationships between pixels.				04
2.	Image Enhancement in the Spatial domain: Gray level transformations, Histogram processing, Arithmetic and logic operations, Spatial filtering: Introduction, Smoothing and sharpening filters.				07
3.	Image Segmentation, Representation and Description: Detection of discontinuities, Edge linking and Boundary				08



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	detection, Thresholding, Region based segmentation, Representation - Chain Codes, polynomial approximations, Signatures, Boundary Descriptors, Regional Descriptors	
4.	Morphological Image Processing: Introduction, Dilation, Erosion, Opening, closing, Hit -or-Miss transformation, Morphological algorithm operations on binary images, Morphological algorithm operations on gray-scale images.	06
5.	Image Transforms: Introduction to Fourier transform, Walsh transform, Hadamard transform, Discrete cosine transform, Slant transform, Optimum transform: Karhunen - Loeve (Hotelling) transform. Frequency domain filters: Smoothing and Sharpening filters, Homomorphic filtering.	07
6.	Wavelets and Multiresolution Processing: Image pyramids, Subband coding, Haar transform, Series expansion, Scaling functions, Wavelet functions, Discrete wavelet transforms in one dimension, Fast wavelet transform	07
7.	Image Data Compression: Fundamentals, Redundancies: Coding, Interpixel, Pyscho-visual, fidelity criteria, Image compression models, Error free compression, Lossy compression, Image compression standards: Binary image and Continuous tone still image compression standards.	06
	Total	45
Text Books: <ol style="list-style-type: none"> 1. R.C Gonzalez and Richard Woods, "Digital Image Processing", 7th Indian reprint, Pearson publication, 2012. 2. Anil K. Jain, "Fundamental of Digital Image processing", PHI, 2015. 		
Reference Books: <ol style="list-style-type: none"> 1. B. Chanda & D. Dutta Majumder, "Digital Image Processing and Analysis", PHI, 2009 		
Term Work: As per Internal Continuous Assessment (ICA) norms of the institute <ol style="list-style-type: none"> 1. Minimum 10 practical experiments covering all the topics. 2. Minimum two Assignments. 3. Two class tests. 		



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Program: B. Tech. (Computer Engineering)				Semester: V	
Course: Computer Networks				Code: BTCO05011	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Internal Continuous Assessment (ICA) (Marks -50 marks)	Term End Examinations (TEE) (Marks- 100 in Question paper)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Pre-requisite: Operating system (BTCO04016), Computer Organization and Architecture(BTCO03011)					
Objectives: This course provides the fundamental knowledge of computer networks through the understanding of ISO-OSI model.					
Course Outcomes: After successful completion of this course, students will be able to: <ol style="list-style-type: none"> 1. Discuss the fundamentals of computer networks, its types, transmission modes and different reference models. 2. Implement error free transmission of data and analyse data collision with various protocols. 3. Implement various routing and congestion control algorithms over a network. 4. Identify Quality of service parameters and addressing techniques. 					
Detailed Syllabus:					
Unit	Description				Duration
1	Introduction: Communicating in a network centric world, network as a platform, Architecture of the internet, Classification of Networks, Layered Models, Network Addressing, components of network, topology, and transmission mode, Internetworking devices				06
2	The physical Layer: Communication Signals, Purpose of the Physical Layer, Physical Layer Operation, Physical Layer Standards, Physical Layer Fundamental Principles, Physical Signaling and Encoding Physical Media: Types of Physical Media and Media Connectors, transmission impairment, Performance, Circuit and Packet Switching				04
3	The Data Link Layer: Data link layer design issues, error detection and correction, elementary data link protocols, Sliding Window Protocols,				06



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	Example of Data Link Protocol: HDLC.	
4	Medium Access Sub-layer: The channel allocation problem, Multiple Access Protocols, Ethernet, Data link layer switching, The LAN, WAN design issues.	06
5	The Network Layer: Network Layer Design issues, Routing Algorithms Congestion Control Algorithms, and Quality of Service, IPv4 and IPv4 Addresses : Introduction, Classful Addressing, Classless Addressing	09
6	The Transport Layer: Introduction to TCP, The TCP Service, Elements of Transport Protocols, A simple Transport Protocol, The TCP Segment Header, Connection Establishment, connection release, Modeling TCP Management. The Transport: UDP, Performance Issues.	08
7	The Application Layer: Client Server Paradigm, Peer to peer paradigm DNS, E-Mail Services and SMTP/POP Protocols, File Transfer Protocol (FTP), WWW Service and HTTP, SNMP Protocol.	06
	Total	45
Text Books: <ol style="list-style-type: none"> 1. Andrew S. Tanenbaum, "Computer Networks", Pearson Education, Fourth Edition, 2009. 2. TCP/IP Protocol Suite, Fourth Edition, Behrouz A. Forouzan, Mc Graw Hill Education. 		
Reference Books: <ol style="list-style-type: none"> 1. Mark Dye et.al, "Network Fundamentals", CCNA Exploration Companion Guide, Cisco Press, 2011. 2. Kurose, Ross, "Computer Networking: A Top-Down Approach ", 5th Edition, 2009, Pearson Education. 3. D.E. Comer, "Computer Networks with Internet Applications", 5th edition, Prentice Hall, 2008. 4. B.F. Forouzan, "Data Communications and Networking", TMH, second edition, 2008. 		
Term Work: As per Internal Continuous Assessment (ICA) norms of the institute <ol style="list-style-type: none"> 1. Minimum 10 practical experiments covering all the topics. (Open source tools such as Wireshark, Cisco Packet Tracer can be used) 		



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| <ol style="list-style-type: none">2. Minimum three Assignments.3. Two class tests. |
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Program: B. Tech. (Computer Engineering)				Semester: V	
Course: Data Mining				Code: BTCO05012	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Internal Continuous Assessment (ICA) (Marks -50 marks)	Term End Examinations (TEE) (Marks- 100 in Question paper)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Pre-requisite: Database Management System (BTCO04012)					
Objectives: The objective of the course is to provide the fundamentals and concepts of data warehouse and mining.					
Course Outcomes: After successful completion of this course, students will be able to <ol style="list-style-type: none"> 1. Learn the basic concepts of data mining, data exploration and pre-processing. 2. Implement & compare different approaches in classification and clustering of data 3. Implement and analyze various algorithms for Association Rule mining. 4. Learn advance topics and trends in data mining. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction to Data Mining: Why data mining, what is data mining, what kinds of data can be mined, kinds of patterns can be mined, technologies to be used, applications targeted, major issues in data mining, KDD Process				04
2.	Data Exploration and Preprocessing using R Programming Data objects and Types of Attributes; Statistical Description of Data; Data Visualization; Measuring similarity and dissimilarity.				08



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	Why Preprocessing? Data Cleaning; Data Integration; Data Reduction: Attribute subset selection, Histograms, Clustering and Sampling; Data Transformation & Data Discretization: Normalization, Binning, Histogram Analysis and Concept hierarchy generation.	
3.	Classification Basic Concepts; Classification methods: 1. Decision Tree Induction: Attribute Selection Measures, Tree pruning. 2. Bayesian Classification: Naïve Bayes' Classifier. Prediction: Structure of regression models; Simple linear regression, Multiple linear regression. Model Evaluation & Selection: Accuracy and Error measures, Holdout, Random Sampling, Cross Validation, Bootstrap; Comparing Classifier performance using ROC Curves. Combining Classifiers: Bagging, Boosting, Random Forests.	09
4.	Clustering What is clustering? Partitioning Methods (K-Means, KMedoids) Hierarchical Methods(Agglomerative , Divisive, BIRCH), Density-Based Methods (DBSCAN, OPTICS),Clustering with categorical attributes	07
5.	Mining Frequent Pattern and Association Rule Market Basket Analysis, Frequent Itemsets, Closed Itemsets, and Association Rules; Frequent Pattern Mining, Efficient and Scalable Frequent Itemset Mining Methods, The Apriori Algorithm, Generating Association Rules from Frequent Itemsets, Improving the Efficiency of Apriori, FP Growth; Mining Frequent itemsets using vertical data formats; Mining closed and maximal patterns;	07
6.	Advanced Topics: Introduction to Web Mining – Web content Mining, Web Structure Mining, Web usage mining; Spatial Mining – Spatial Data, Spatial data mining primitives, spatial rules, spatial clustering and classification algorithms; Temporal Mining – Modeling temporal events, Time series, pattern detection, sequence, Temporal Association rules; Stream data	08

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	mining; High Performance Computing for Data Mining	
7.	Trends in Data Mining: Additional themes in data mining, Trends in data mining	02
	Total	45
Text Books: <ol style="list-style-type: none"> 1) Paulraj Ponniah, " Data Warehousing Fundamentals for IT Professionals", Wiley; 2 editions, May 24, 2010 2) Jiawei Han, Micheline Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann; 3 edition, 2014. 		
Reference Books: <ol style="list-style-type: none"> 1) Alex Berson, S. J. Smith, "Data Warehousing, Data Mining & OLAP", McGraw Hill, 2008. 2) Daniel T. Larose, Chantal D. Larose, "Data Mining and Predictive Analytics", 2nd edition Wiley India.Wiley; 2 edition, May 24, 2010 		
Term Work: As per Internal Continuous Assessment (ICA) norms of the institute <ol style="list-style-type: none"> 1. Minimum 10 practical experiments covering all the topics. 2. Minimum two Assignments. 3. Two class tests. 		



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Program: B. Tech (Computer Engineering)				Semester: V	
Course: Web Programming				Module Code: BTCO05013	
Teaching Scheme				Evaluation Scheme	
Lecture (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Internal Continuous Assessment (ICA) (Marks - 50)	Term End Examinations (TEE) (Marks- 50 Practical Exam)
2	2	0	3	Marks Scaled to 50	Marks Scaled to 50
Prerequisite: Programming for Problem Solving (BTCO02009), Object Oriented Programming (BTCO03012), Programming Language (BTCO04013)					
Objectives: This course is designed to enable students for web application development with the understanding of fundamental principles of web technologies. Students will learn to develop Web applications using HTML, CSS, and rich interactive using PHP as server side technology.					
Outcomes: After completion of this course, students would be able to <ol style="list-style-type: none"> 1. Design user interface using HTML and CSS. 2. Design responsive and interactive web pages using client side, server side technologies 3. Understand and implement front end and back end connectivity. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	HTML: Introduction to Hypertext Markup Language, Web Page Structure, Basic Tags, attributes, heading, paragraphs, formatting, images, Links, Lists, Frames, Tables, Forms, HTML5- new elements, Input Types, media.				6



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2.	Cascading Style Sheets: Introduction to styles, Syntax & Rules, External, Internal/Embedded, Inline Style Sheets, conflicting styles, Property Value Forms, Font Properties, List Properties, Color & Background Properties, Text Properties, Image as bullets, Introduce different Box Model, CSS3-Backgrounds, Text effects, 2D & 3D transforms, transitions, animations. Responsive Websites design with HTML5 and CSS3.	5
3.	JavaScript- Client Side Programming: Introduction, Expressions, decision and control statements, functions, string, arrays, Java Script Objects, Events handling. Form validations using Java Script.	6
4.	PHP – Sever Side Programming: Introduction, variables, data types, constants, decision and control statements, PHP functions, Arrays, Form Handling, form validations, Pattern Matching, cookies, Session Tracking, Error handling.	7
5.	Database Access with PHP: Introduction to MySQL database system, PHP and MySQL database connectivity (Create, connect, select, insert, update, delete, where clause, group by clause, Order by clause).	2
6.	Web Application Framework and Development: Introduction to PHP frameworks-Laravel, CodeIgniter, Symfony, CakePHP, Deployment of PHP web application.	2
7.	Web Application Security: Introduction, Web Application Security Risks- Cross Site scripting, Injection, Broken Authentication, Session Management, Broken Access controls.	2
	Total	30



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Text Book:

1. Robert W. Sebesta, "Programming the World Wide Web", Pearson Education, 8th Edition, 2015
2. Dietel & Dietel, "Internet and world wide web", Pearson Publication, 5th Edition, 2016.

Reference Books:

1. DT Editorial Servies, "HTML5 Black book, covers CSS 3, Javascript, XML, XHTML, AJAX, PHP and JQuery, Dreamtech Press/Wiley India Pvt. Ltd., 2nd edition, 2016.
2. Achyut Godbole, "Web Technologies", THM, 2017.
3. Joel Sklar, et. al., "The web warrior guide to web design technologies", Cengage Learning, 5th Edition, 2015.

Web Reference:

www.owasp.org

www.w3schools.com

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks :20

Term Work Marks: 30

Term End Practical Exam: 50

Details of Term work: Tutorials/Quiz/Presentation/Viva/Project



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Program: B. Tech (Computer Engineering)				Semester: V	
Course/Module: Management Accounting for Engineers				Module Code: BTCO05014	
Teaching Scheme				Evaluation Scheme	
Lecture (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Internal Continuous Assessment (ICA) (Marks - 50)	Term End Examinations (TEE) (Marks- 100 in Question Paper)
2	---	---	2	Marks Scaled to 50	Marks Scaled to 50
Prerequisite: Nil					
Objectives: <ol style="list-style-type: none"> 1. To provide conceptual understanding of Cost and Management Accounting principles and practices relevant for business analysis and decision making. 2. To develop the ability to understand, analyze and use cost information in day-to-day business functioning. 3. To provide an understanding of measurement of cost and tracing the costs to products and customers. 4. To explain the role of relevant costs in decision making and developing better strategies. 5. To discuss contemporary issues in Cost and Management Accounting and their practical applications. 					



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Outcomes:

After completion of this course, participants should be able to;

1. Understand the principles of various Costing methods viz., Activity Based Costing (ABC) Method, Job and Process Costing Methods.
2. Preparation of cost sheet
3. Apply Cost-Volume-Profit Analysis in business decision making.
4. Analyze Price and Cost Variances
5. Using budgetary control techniques for managerial decision making
6. Apply different methods of Inventory management
7. Apply Activity Based Costing to generate reliable and accurate product cost data

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1	<p>Topic:</p> <p>Introduction to Cost accounting and Cost concepts:</p> <ul style="list-style-type: none">• Interface of Financial accounting with Cost accounting –• Methods of costing• Types of Costing• Classification of Costs based on Behaviour• Classification of Costs based on Behaviour <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill – Chapter1 and 2</p> <p>Outcome addressed 1</p>	2



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2	<p>Topic:</p> <p>Cost Concepts</p> <ul style="list-style-type: none">• Classification of Costs based on Degree of Traceability to the product• Functional Classification of Costs• Costs for Decision making and planning <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 2</p> <p>Outcome addressed 1</p>	2	
3	<p>Topic:</p> <p>Preparation of Cost sheet</p> <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 2</p> <p>Outcome addressed 2</p>	2	



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4	<p>Topic:</p> <p>Cost-Volume-Profit Analysis:</p> <ul style="list-style-type: none">• Concept of Marginal Costing• Cost-Volume-Profit relationship –• The break-even point – <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 16</p> <p>Outcome addressed 3</p>	2
5	<p>Topic:</p> <p>Cost-Volume-Profit Analysis:</p> <ul style="list-style-type: none">• Contribution margin concept –• Margin of safety	2



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	<p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 16</p> <p>Outcome addressed 3</p>	
6	<p>Topic:</p> <p>Cost-Volume-Profit Analysis:</p> <ul style="list-style-type: none"> Applying cost-volume-profit analysis – <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 16</p> <p>Outcome addressed 3</p>	2
7	<p>Topic:</p> <p>Decisions making:</p>	2



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	<ul style="list-style-type: none"> • Alternative choice decisions – • Limiting factor decisions • Add or drop products <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 17</p> <p>Outcome addressed 3</p>		
8	<p>Topic:</p> <p>Decisions making:</p> <ul style="list-style-type: none"> • Make or Buy decisions • Shut down decision • Special orders <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 17</p> <p>Outcome addressed 3</p>	2	



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9	<p>Topic:</p> <p>Variance analysis-</p> <ul style="list-style-type: none"> • Direct material variances • Cost Variance • Price Variance • Usage Variance <p>Readings:</p> <p>Cost accounting, 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 19</p> <p>Outcome addressed 4</p>	2
10	<p>Topic:</p> <p>Variance analysis-</p> <ul style="list-style-type: none"> • Direct labour variances • Cost Variance • Rate Variance • Efficiency Variance 	2



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	<p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 19</p> <p>Outcome addressed 4</p>	
11	<p>Topic:</p> <p>Budgetary Control</p> <ul style="list-style-type: none">• Flexible Budget <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 20</p> <p>Outcome addressed 5</p>	2
12	<p>Topic:</p> <p>Budgetary Control</p> <ul style="list-style-type: none">• Cash Budget	2



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	<p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 20</p> <p>Outcome addressed 5</p>	
13	<p>Topic:</p> <p>Inventory Management</p> <ul style="list-style-type: none"> • EOQ • Inventory levels- Minimum, Maximum, Re-order, Average • Inventory control Techniques- ABC Analysis, JIT method <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 3</p> <p>Outcome addressed 6</p>	2
14	<p>Topic:</p> <p>Activity Based Costing</p> <ul style="list-style-type: none"> • under costing and over costing- 	2



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	<ul style="list-style-type: none"> • traditional vs activity-based costing- • Evaluation of costs and benefits of implementing ABC systems <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 8</p> <p>Outcome addressed 7</p>		
15	<p>Topic:</p> <p>Activity Based Costing</p> <ul style="list-style-type: none"> • Application of Activity based costing in decision making <p>Readings:</p> <p>Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill - Chapter 8</p> <p>Outcome addressed 7</p>	2	
	Total	30	



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Text Book :

Cost accounting. 5/e, Lal. J., & Srivastava, S. (2013). New Delhi, Tata McGraw Hill.

Reference Books:

- Horngren, C., Datar, S. & Rajan, M. (2014). *Cost accounting: A managerial emphasis*. 15/e, New Delhi, Pearson Publication.
- Khan, M.Y., & Jain, P.K. (2007). *Cost accounting*. 7/e, New Delhi, Tata Mc- Graw Hill.
- Ramanathan, S. (2014). *Accounting for Management*. New Delhi, Oxford University Press.
- Shah, P. (2012). *Management Accounting*. 7/e, New Delhi, Oxford University Press.
- Sanyers, J., & Jenkins, & Arora. (2012). *Managerial Accounting*. 1/e, Delhi, Cengage Learning.

Internet References:

<http://icmai.in>

<https://www.cimaglobal.com>

Any other information:

Detail of Test: Questions based on concepts, applications and numerical

MT-01: Scope: Topics from Unit - 01 to 06 for 10 Marks

MT-02: Scope: Topics from Unit - 07 to 09 for 10 Marks

Test Marks – 20 Marks



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Term Work – 30 Marks

Details of Term work: Projects/Presentations application of concepts from on Unit 01 to Unit 15.



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Program: B. Tech. (Computer Engineering)				Semester: V	
Course: Environmental Studies				Code: BTCO05015	
Teaching Scheme				Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Internal Continuous Assessment (ICA) (Marks -50 marks)	Term End Examinations (TEE) (Marks- --- in Question paper)
2	0	0	0	Marks Scaled to 50	-
Pre-requisite: NIL					
Objectives: To enable students to become familiar with environmental issues.					
Course Outcomes: After successful completion of this course, students will be able to <ol style="list-style-type: none"> 1. Discuss the emergence of Strategic options for environmental decision-making. 2. Prepare Corporate Environmental Reports-Sustainability Reports/ TBL reports. 3. Discuss the foundations for corporate governance –non-financial implications and the significance of environmental governance and best practices. 					
Detailed Syllabus:					
Unit	Description				Duration
1	<ul style="list-style-type: none"> • Overview of the nature and significance of emerging global environmental issues and trends. • Major industrial and other environmental disasters like Bhopal Tragedy • International conventions like Montreal Protocol, Basal Convention Climate Convention and similar other developments and their significance in policy formulation 				

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	and policy enactment.	06
2	<ul style="list-style-type: none"> • Industrial Pollution- types of industrial pollution, - Hazardous Waste Management, Role of the industries in managing the industrial pollution. pollution prevention. • ISO 14000 EMS certification 	06
3	<ul style="list-style-type: none"> • Triple Bottom Line (TBL), Sustainability Reporting Practices - Strategic options for companies and competitive advantages for corporate reporting practices. Command and control strategies Vs market driven mechanisms. • Carbon Credits/ carbon trading. • Role of the Government in managing the environmental activities in all sectors. Organisational set up at the Central and state level to manage the environment. 	06
4	<ul style="list-style-type: none"> • Management Tools - Regulatory and legal instruments available for Environmental Management. Environmental Statement and Environmental Impact assessment (EIA) in all sectors. • Role of judiciary in managing the environment. Major Laws Air (P&C.P.) Act, Water (P & C.P) Act. Environment Protection Act EPA 1986. Wild life Protection Act etc., PIL 	06
5	<ul style="list-style-type: none"> • Urban Environmental problems specific to cities, waste management issues (both domestic and industrial). Garbage disposal and management, solid waste management options for waste minimization. • Role of Citizens, Role of NGOs/ Environmental Activists. • Environmental footprints. 	06
	Total	30
Text Books: 1. Environment Management by Dr. (Smt.).BalaKrishnamoorthy, Prentice Hall of India, New Delhi, 2005		



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Reference Books:

1. Environment planning and management in India Vol.I & II by Sapru R. K
2. Green Business: Making it work for your company by Wheatley Malcolm
3. Population, Environment and Development by Tata Energy Res. Institute
4. Environment (Protection) Act 1986 by Eastern Book Company
5. Human Health and Environment by Sinha A.K.
6. Handbook of Environmental Health and Safety by Koren H.
7. Environmental Issues and Themes by Agarwal S.K.
8. Environmental Devide: The Dilemma of Developing countries by Das R.C. and Others
9. Encyclopedia of environment, pollution, planning and conservation: State of India's
Environment: (A set of 6 volumes) by Trivedi
10. Earth summit 2002: A new deal by Dodds Felix
11. Economics of the Environment: Selected readings by Stavins Robert N.
12. Survey on Green Corporations – yearly Green rating published by Business Today
13. Journal of Down to earth published by Centre for Science and Education CSE.

Term Work: As per Internal Continuous Assessment (ICA) norms of the institute

1. Minimum two Assignments.
2. Two class tests.



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