



Department of Information Technology (In-house)
Syllabus of Bachelor of Computer Application (BCA)
(Effective from academic session 2019-20)

Semester-6

Name of the Course: BCA			
Subject: Digital Image Processing 7 Digital Image Processing Lab			
Course Code: BCA601 A+ BCA691A		Semester: 6th	
Duration: 36 Hours		Maximum Marks: 100 + 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical: 4 hrs./week		Continuous Assessment: 25	
Credit: 3 + 2		Practical Sessional internal continuous evaluation: 40	
		Practical Sessional external examination: 60	
Aim:			
Sl. No.			
1	To gain knowledge of about digital image .		
2	To gain knowledge of image processing techniques.		
3	To enhance programming skills to implement image processing algorithms.		
Objective:			
Sl. No.			
1	To introduce and discuss the fundamental concepts and applications of Digital Image Processing.		
2	To discuss various basic operations in Digital Image Processing.		
3	To know various transform domains.		
4			
Pre-Requisite:			
Sl. No.			
	Knowledge of mathematics and coordinate geometry.		
Contents			Hrs./week
Chapter	Name of the Topic	Hours	Marks
01	Introduction [4L] Background, Digital Image Representation, Fundamental steps in Image Processing, Elements of Digital Image Processing - Image Acquisition, Storage, Processing, Communication, Display.	4	10
02	Digital Image Formation [6L] A Simple Image Model, Geometric Model- Basic Transformation (Translation, Scaling, Rotation), Perspective Projection,	6	10



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	Sampling & Quantization - Uniform & Non uniform.		
03	Image Enhancement Spatial Domain Method, Frequency Domain Method, Contrast Enhancement -Linear & Nonlinear Stretching, Histogram Processing; Smoothing - Image Averaging, Mean Filter, Low-pass Filtering; Image Sharpening. High-pass Filtering, High-boost Filtering, Derivative Filtering, Homomorphic Filtering; Enhancement in the frequency domain - Low pass filtering, High pass filtering.	8	20
04	Image Restoration Degradation Model, Discrete Formulation, Algebraic Approach to Restoration - Unconstrained & Constrained; Constrained Least Square Restoration, Restoration by Homomorphic Filtering, Geometric Transformation - Spatial Transformation, Gray Level Interpolation.	9	15
05	Image Segmentation Point Detection, Line Detection, Edge detection, Combined detection, Edge Linking & Boundary Detection- Local Processing, Global Processing via The Hough Transform; Thresholding - Foundation, Simple Global Thresholding;; Region Oriented Segmentation - Basic Formulation, Region Growing by Pixel Aggregation, Region Splitting & Merging.	9	15
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester Examination		30
	Total:		100

Practical

Course Code: BCA691A

Credit: 2

Skills to be developed:

List of Practical:

1. As compatible with theory syllabus.

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Gonzalves	Digital Image Processing		Pearson
S. Sridhar	Digital Image Processing		Oxford

Reference Books:



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List of equipment/apparatus for laboratory experiments:							
Sl. No.							
1.		A computer with moderate configuration.					
2.		Matlab/ python opencv libraries					
End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.							
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 5	10	10				
B	1 to 5			5	3	5	70
C	1 to 5			5	3	15	
<ul style="list-style-type: none"> Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part. Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper. 							
Examination Scheme for end semester examination:							
Group	Chapter	Marks of each question	Question to be set	Question to be answered			
A	All	1	10	10			
B	All	5	5	3			
C	All	15	5	3			
Examination Scheme for Practical Sessional examination:							
Practical Internal Sessional Continuous Evaluation							
Internal Examination:							
Five No of Experiments							
External Examination: Examiner-							
Signed Lab Note Book(for five experiments)			5*2=10				
On Spot Experiment(one for each group consisting 5 students)			10				
Viva voce			5				



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Name of the Course: BCA			
Subject: Introduction to AI and Machine Learning			
Course Code: BCA601B + BCA 691B		Semester: 6th	
Duration: 36 Hrs.		Maximum Marks: 100 +100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical: 4 hrs./week		Continuous Assessment: 25	
Credit: 3+2		Practical Sessional internal continuous evaluation: 40	
		Practical Sessional external examination: 60	
Aim:			
Sl. No.			
1.	Define Artificial Intelligence (AI) and understand its relationship with data		
2.	Understand Machine Learning approach and its relationship with data science		
3.	Identify the application		
4.	Define Machine Learning (ML) and understand its relationship with Artificial Intelligence		
Objective:			
Sl. No.			
1.	Gain a historical perspective of AI and its foundations		
2.	Become familiar with basic principles of AI toward problem solving, inference, perception, knowledge representation, and learning.		
3.	Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.		
4.	Experience AI development tools such as an 'AI language', expert system shell, and/or data mining tool.		
5.	Experiment with a machine learning model for simulation and analysis.		
6.	Explore the current scope, potential, limitations, and implications of intelligent systems		
Pre-Requisite:			
Sl. No.			
1.	Basic Statistical and Computational knowledge		
Contents			4 Hrs./week
Chapte r	Name of the Topic	Hours	Marks
01	Artificial intelligence fundamentals	7	14

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	A.I. systems integrating approaches and methods.- Advanced search- Constraint satisfaction problems - Knowledge representation and reasoning - Non-standard logics - Uncertain and probabilistic reasoning (Bayesian networks, fuzzy sets).- Foundations of semantic web: semantic networks and description logics. - Rules systems: use and efficient implementation.- Planning systems		
02	Machine learning Computational learning tasks for predictions, learning as function approximation, generalization concept. - Linear models and Nearest-Neighbors (learning algorithms and properties, regularization). - Neural Networks (MLP and deep models, SOM). - Probabilistic graphical models. - Principles of learning processes: elements of statistical learning theory, model validation. - Support Vector Machines and kernel-based models. - Introduction to applications and advanced models. Applicative project: implementation and use of ML/NN models with emphasis to the rigorous application of validation techniques	7	14
03	Human language technologies Formal and statistical approaches to NLP. Statistical methods: Language Model, Hidden Markov Model, Viterbi Algorithm, Generative vs Discriminative Models Linguistic essentials (tokenization, morphology, PoS, collocations, etc.). Parsing (constituency and dependency parsing).Processing Pipelines. Lexical semantics: corpora, thesauri, gazetteers. Distributional Semantics: Word embeddings, Character embeddings. Deep Learning for natural language. Applications: Entity recognition, Entity linking, classification, summarization. Opinion mining, Sentiment Analysis. Question answering, Language inference, Dialogic interfaces. Statistical Machine Translation. NLP libraries: NLTK, Theano, Tensorflow	7	14
04	Intelligent Systems for Pattern Recognition Particular focus will be given to pattern recognition problems and models dealing with sequential and time-series data-Signal processing and time-series analysis-Image processing, filters and visual feature detectors-Bayesian learning and deep learning for machine vision and signal processing-Neural network models for pattern recognition on non-vectorial data (physiological data, sensor streams, etc)-Kernel and adaptive methods for relational data-Pattern recognition applications: machine vision, bio informatics, robotics, medical imaging, etc.-ML and deep	7	14



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	learning libraries overview: e.g. scikit-learn, Keras, Theano		
05	<p>Smart applications and Robotics</p> <p>Common designs for smart applications examples: fuzzy logic in control systems or cloud analysis of field sensors data streams Make or buy: selecting appropriate procurement strategies example: writing your own RNN architecture vs. using cloud services</p> <p>Development platforms for smart objects examples: Brillo (IoT devices) or Android TV (Smart TVs)</p> <p>Development platforms for smart architectures examples: TensorFlow (server-side RNNs), or the Face Recognition API (mobile) Cloud services for smart applications examples: Google Cloud Machine Learning API, Google Cloud Vision API, Google Cloud Speech API, or Deploying Deep Neural Networks on Microsoft Azure GPU VMs Deployment and operations examples: cloud hosting vs. device hosting, or harnessing user feedback to drive improvement</p> <p>Measuring success: methods and metrics examples: defining user engagement and satisfaction metrics, or assessing the naturalness of smart interactions</p> <p>Introduction to robotics: main definitions, illustration of application domains-Mechanics and kinematics of the robot-Sensors for robotics-Robot Control-Architectures for controlling behaviour in robots-Robotic Navigation-Tactile Perception in humans and robots-Vision in humans and robots-Analysis of case studies of robotic systems-Project laboratory: student work in the lab with robotic systems</p>	8	14
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester Examination	4	30
	Total:	40	100
<p>Practical Course Code: BCA691A Credit: 2 Skills to be developed:</p> <p>List of Practical:</p> <p>2. As compatible with theory syllabus.</p> <p>Assignments: Based on the curriculum as covered by subject teacher.</p>			
List of Books			



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Text Books:							
Name of Author		Title of the Book		Edition/ISSN/ISBN		Name of the Publisher	
Stuart Russell and Peter Norvig		Artificial Intelligence: A Modern Approach					
Nils J Nilsson		Artificial Intelligence: A New Sythesis					
Reference Books:							
Negnevitsky		Artificial Intelligence					
Akerkar Rajendr		Intro. to artificial intelligence					
AnandHareendran S and Vinod Chandra S		Artificial Intelligence and Machine Learning					
End Semester Examination Scheme.				Maximum Marks-70.		Time allotted-3hrs.	
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1,2,3,4,5	10	10				
B	3, 4, 5			5	3	5	60
C	1,2,3,4,5			5	3	15	
<ul style="list-style-type: none"> Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part. Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper. 							
Examination Scheme for end semester examination:							
Group	Chapter	Marks of each question	Question to be set	Question to be answered			
A	All	1	10	10			
B	All	5	5	3			
C	All	15	5	3			



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Name of the Course: BCA			
Subject: Advanced DBMS with PL-SQL & Advanced DBMS with PL-SQL Lab			
Course Code: BCA601C + BCA691C		Semester: 6th	
Duration: 36 Hours		Maximum Marks: 100 + 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical: 4 hrs./week		Continuous Assessment: 25	
Credit: 3 + 2		Practical Sessional internal continuous evaluation: 40	
		Practical Sessional external examination: 60	
Aim:			
Sl. No.			
1	To gain knowledge of advanced database management ideas.		
2	To gain knowledge of concurrency control and recovery management procedures.		
3	To gain skill to write database programs using SQL or PL-SQL.		
4			
Objective:			
Sl. No.			
1	Understand the concept of Database transactions management.		
2	Understand the concept of concurrency control techniques and recovery management.		
3	Gain idea about distributed DBMS.		
4	To gain skill to write PL-SQL.		
Pre-Requisite:			
Sl. No.			
1.	None		
Contents			Hrs./week
Chapter	Name of the Topic	Hours	Marks
01	Query Optimization Algorithm for Executing Query Operations: External sorting, Select operation, Join operation, PROJECT and set operation, Aggregate operations, Outer join, Heuristics in Query Optimization, Semantic Query Optimization, Converting Query Tree to Query Evaluation Plan, multiquery optimization and application, Efficient and extensible algorithms for multi-query optimization, execution strategies for SQL sub queries, Query Processing for SQL Updates	6	5
02	ARQuery Execution: Introduction to Physical-Query-Plan Operators, One-Pass Algorithms for Database, Operations, Nested-Loop Joins, Two-Pass Algorithms Based on Sorting, Two-Pass, Algorithms Based on Hashing, Index-Based Algorithms, Buffer Management, Parallel Algorithms for Relational Operations, Using Heuristics in Query Optimization, Basic Algorithms for Executing Query	6	5



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	Operations.		
03	Concurrency Control Serializability: Enforcing, Serializability by Locks, Locking Systems With Several, Lock Modes, Architecture for a Locking Scheduler Managing Hierarchies of Database Elements, Concurrency Control by Timestamps, Concurrency Control by Validation, Database recovery management	4	20
04	Transaction processing: Introduction of transaction processing, advantages and disadvantages of transaction processing system, online transaction processing system, serializability and recoverability, view serializability, resolving deadlock, distributed locking. Transaction management in multi-database system, long duration transaction, high-performance transaction system.	8	20
05	Object Oriented DBMS Overview of object: oriented paradigm, OODBMS architectural approaches, Object identity, procedures and encapsulation , Object oriented data model: relationship ,identifiers, Basic OODBMS terminology, Inheritance , Basic interface and class structure, Type hierarchies and inheritance, Type extents and persistent programming languages, OODBMS storage issues.	4	10
06	DDB: Distributed Database Introduction of DDB, DDBMS architectures, Homogeneous and Heterogeneous databases, Distributed data storage, Advantages of Data Distribution, Disadvantages of Data Distribution Distributed transactions, Commit protocols, Availability, Concurrency control & recovery in distributed databases, Directory systems, Data Replication, Data Fragmentation. Distributed database transparency features, distribution transparency.	4	5
07	Database application: Active database: starburst, oracle, DB2, chimera, Applications of active database, design principles for active rules, Temporal database, special, text and multimedia database. Video database management: storage management for video, video preprocessing for content representation and indexing, image and semantic-based query processing, real time buffer management.	4	5
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester Examination		30
	Total:		100
Practical Course Code: BCA691C Credit: 2			



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List of Practical:

Implementation of practicals are adhered to the theoretical curriculum.

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Henry F. Korth and Silberschatz Abraham	Database System Concepts		Mc.Graw Hill.
Ramez Elmasri, Shamkant B.Navathe	Fundamentals of Database Systems		Addison Wesleyl
Stefano Ceri	Distributed Databases: Principles and Systems		

Reference Books:

List of equipment/apparatus for laboratory experiments:

Sl. No.	
1	Computer with moderate configuration
2	DBMS Package

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 7	10	10				
B	1 to 7			5	3	5	70
C	1 to 7			5	3	15	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.



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Examination Scheme for end semester examination:				
Group	Chapter	Marks of each question	Question to be set	Question to be answered
A	All	1	10	10
B	All	5	5	3
C	All	15	5	3
Examination Scheme for Practical Sessional examination:				
Practical Internal Sessional Continuous Evaluation				
Internal Examination:				
Five No of Experiments				
External Examination: Examiner-				
Signed Lab Note Book(for five experiments)			5*2=10	
On Spot Experiment(one for each group consisting 5 students)			10	
Viva voce			5	



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Name of the Course: BCA			
Subject: Cloud Computing			
Course Code: BCA602A		Semester: 6th	
Duration: 36 Hours		Maximum Marks: 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 1 hr./week		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 4		Practical Sessional internal continuous evaluation:	
Aim:		Practical Sessional external examination:	
1	To gain knowledge of cloud computing.		
2	To gain knowledge of several application areas of cloud computing.		
3	To understand cloud computing platforms.		
4			
Objective:			
Sl. No.			
1	Understand the principles of cloud computing.		
2	Understanding SaaS, PaaS etc.		
3	To gain knowledge of applications of cloud computing.		
Pre-Requisite:			
Sl. No.	None		
Contents			Hrs./week
Chapter	Name of the Topic	Hours	Marks
01	Definition of Cloud Computing and its Basics Definition of Cloud Computing: Defining a Cloud, Cloud Types – NIST model, Cloud Cube model, Deployment models (Public , Private, Hybrid and Community Clouds), Service models – Infrastructure as a Service, Platform as a Service, Software as a Service with examples of services/ service providers, Cloud Reference model. Characteristics of Cloud Computing – a shift in paradigm Benefits and advantages of Cloud Computing Cloud Architecture: A brief introduction on Composability, Infrastructure, Platforms, Virtual Appliances, Communication Protocols, Applications, Connecting to the Cloud by Clients . Services and Applications by Type IaaS – Basic concept, Workload, partitioning of virtual private server instances, Pods, aggregations, silos PaaS – Basic concept, tools and development environment with examples SaaS - Basic concept	9	15



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	and characteristics, Open SaaS and SOA, examples of SaaS platform Identity as a Service (IDaaS) Compliance as a Service (CaaS)		
02	<p>Use of Platforms in Cloud Computing</p> <p>Virtualization technologies : Types of virtualization (access, application, CPU, storage), Mobility patterns (P2V, V2V, V2P, P2P, D2C, C2C, C2D, D2D) Load Balancing and Virtualization: Basic Concepts, Network resources for load balancing, Advanced load balancing (including Application Delivery Controller and Application Delivery Network), Mention of The Google Cloud as an example of use of load balancing</p> <p>Hypervisors: Virtual machine technology and types, VMware vSphere Machine Imaging (including mention of Open Virtualization Format – OVF) Porting of applications in the Cloud: The simple Cloud API and AppZero Virtual Application appliance</p> <p>Definition of services, Distinction between SaaS and PaaS (knowledge of Salesforce.com and Force.com), Application development Use of PaaS Application frameworks.</p> <p>Discussion of Google Applications Portfolio – Indexed search, Dark Web, Aggregation and disintermediation, Productivity applications and service, Adwords, Google Analytics, Google Translate, a brief discussion on Google Toolkit (including introduction of Google APIs in brief), major features of Google App Engine service.</p> <p>Amazon Web Service components and services: Amazon Elastic Cloud, Amazon Simple Storage system, Amazon Elastic Block Store, Amazon SimpleDB and Relational Database Service</p> <p>Windows Azure platform: Microsoft’s approach, architecture, and main elements, overview of Windows Azure AppFabric, Content Delivery Network, SQL Azure, and Windows Live services</p>	12	15
03	<p>Cloud Infrastructure</p> <p>Cloud Management :An overview of the features of network management systems and a brief introduction of related products from large cloud vendors, Monitoring of an entire cloud computing deployment stack – an overview with mention of some products, Lifecycle management of cloud services (six stages of lifecycle)</p> <p>Concepts of Cloud Security Cloud security concerns, Security boundary, Security service boundary Overview of security mapping Security of data: Brokered cloud storage access, Storage location and tenancy, encryption, and auditing and compliance Identity management (awareness of Identity protocol standards)</p>	7	20



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		be set		be set			
A	1 to 4	10	10				
B	1 to 4			5	3	5	70
C	1 to 4			5	3	15	
<ul style="list-style-type: none"> • Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part. • Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper. 							
Examination Scheme for end semester examination:							
Group	Chapter	Marks of each question	Question to be set	Question to be answered			
A	All	1	10	10			
B	All	5	5	3			
C	All	15	5	3			



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Name of the Course: BCA			
Subject: Information and Coding Theory			
Course Code: BCA602B		Semester: 6th	
Duration: 36 Hrs.		Maximum Marks: 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 1 hr./week		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 4		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1	Introduced to the basic notions of information and channel capacity.		
2	To introduce information theory, the fundamentals of error control coding techniques and their applications, and basic cryptography.		
3	To provide a complementary U/G physical layer communication		
4	To convolutional and block codes, decoding techniques, and automatic repeat request (ARQ) schemes.		
Objective:			
Sl. No.			
1	Understand how error control coding techniques are applied in communication systems.		
2	Able to understand the basic concepts of cryptography.		
3	To enhance knowledge of probabilities, entropy, measures of information.		
Pre-Requisite:			
Sl. No.			
1.	Probability and Statistics		
Contents			3 Hrs./week
Chapter	Name of the Topic	Hours	Marks
01	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.	12	23
02	DATA AND VOICE CODING	12	24



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	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). Denial of Service Attacks, DOS-proof network architecture, Security architecture of World Wide Web, Security Architecture of Web Servers, and Web Clients, Web Application Security – Cross Site Scripting Attacks, Cross Site Request Forgery, SQL Injection Attacks, Content Security Policies (CSP) in web, Session Management and User Authentication, Session Integrity, Https, SSL/TLS, Threat Modeling, Attack Surfaces, and other comprehensive approaches to network design for security		
03	ERROR CONTROL CODING Linear Block codes – Syndrome Decoding – Minimum distance consideration – cyclic codes – Generator Polynomial – Parity check polynomial – Encoder for cyclic codes – calculation of syndrome – Convolutional codes.	12	23
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester Examination	4	30
	Total:	40	100
List of Books			
Text Books:			
Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Simon Haykin	Communication Systems	4th Edition	John Wiley and Sons, 2001
Fred Halsall	Multimedia Communications, Applications Networks Protocols and Standards		Pearson Education, Asia 2002
Reference Books:			
Mark Nelson	Data Compression Book		Publication 1992
Watkinson J	Compression in Video and Audio		Focal Press, London, 1995



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End Semester Examination Scheme.		Maximum Marks-70.		Time allotted-3hrs.			
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1,2,3	10	10				
B	1,2,3			5	3	5	60
C	1,2,3			5	3	15	
<ul style="list-style-type: none"> • Only multiple choice type questions (MCQ) with one correct answer are to be set in the objective part. • Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper. 							
Examination Scheme for end semester examination:							
Group	Chapter	Marks of each question	Question to be set	Question to be answered			
A	All	1	10	10			
B	All	5	5	3			
C	All	15	5	3			



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Name of the Course: BCA			
Subject: E-Commerce			
Course Code: BCA602C		Semester: 6th	
Duration: 36 Hrs.		Maximum Marks: 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 1 hr./week		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 4		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1	To gain knowledge of fundamentals of e-commerce applications.		
2	To have an insight of e commerce platforms.		
3	To be able to build e-commerce applications.		
Objective:			
Sl. No.			
1	Understand fundamentals of E-commerce.		
2	Understand different Knowledge base systems.		
3	Understand designing of knowledge base Systems to improve the efficiency of organizations based on their need.		
Pre-Requisite:			
Sl. No.			
2.	None		
Contents			3 Hrs./week
Chapter	Name of the Topic	Hours	Marks
01	Introduction to E-Commerce Definition, Scope of E-Commerce, Hardware requirements, E-Commerce and Trade Cycle, Electronic Markets, Electronic Data Interchange and Internet Commerce.	6	10
02	Business to Business E-Commerce Electronic Markets, Electronic Data Interchange (EDI): Technology, Standards (UN/EDIFACT), Communications,	5	12



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	Implementations, Agreements, Security, EDI and Business, Inter-Organizational E-commerce.		
03	Legal issues Risks: Paper Document vs. Electronic document, Authentication of Electronic document, Laws, Legal issues for Internet Commerce: Trademarks and Domain names, Copyright, Jurisdiction issues, Service provider liability, Enforceable online contract.	5	12
04	Security Issues Security Solutions: Symmetric and Asymmetric Cryptosystems, RSA, DES, and Digital Signature, Protocols for secure messaging, Secure Electronic Transaction (SET) Protocol, Electronic cash over internet, Internet Security.	6	12
05	Business to Consumer E-Commerce Consumer trade transaction, Internet, Page on the Web, Elements of E-Commerce with VB, ASP, SQL.	8	12
06	E-business Internet bookshops, Software supplies and support, Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the net, E-Diversity, Case studies through internet.	6	12
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester Examination		30
	Total:		100

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
David Whitley	E-Commerce-Strategy, Technologies & Applications		
Kamlesh K. Bajaj	E-Commerce- The cutting edge of		



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	business						
Reference Books:							
W Clarke		E-Commerce through ASP					
End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.							
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 8	10	10				
B	1 to 8			5	3	5	60
C	1 to 8			5	3	15	
<ul style="list-style-type: none"> • Only multiple choice type questions (MCQ) with one correct answer are to be set in the objective part. • Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper. 							
Examination Scheme for end semester examination:							
Group	Chapter	Marks of each question	Question to be set	Question to be answered			
A	All	1	10	10			
B	All	5	5	3			
C	All	15	5	3			



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Name of the Course: BCA			
Subject: Values and Ethics in Profession			
Course Code: BCA603		Semester: 6th	
Duration: 36 Hrs.		Maximum Marks: 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs./week		End Semester Exam: 70	
Tutorial: 0		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 3		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1	To gain knowledge of the Organizational environment and ethics.		
2	To gain knowledge of the role of Ethics in Environment.		
3			
4			
Objective:			
Sl. No.			
1	Understand the Organizational environment and ethics.		
2	Understand the role of Ethics in Environment.		
3			
Pre-Requisite:			
Sl. No.			
3.	None		
Contents			3 Hrs./week
Chapter	Name of the Topic	Hours	Marks
01	Introduction to Ethical Theories Consequentialist and Non-consequentialist theories, Hedonism, Utilitarianism, Virtue Ethics, Ethical Relativism, Ethical Naturalism	4	10
02	Ethics and Morality Ethics and Morals, Ethics in Indian Tradition, Building character in workplace, Moral and Ethical Judgement: Canons of ethics, Ethics of duty, Ethics of responsibility	6	12



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03	<p>Ethics and Environment</p> <p>Rapid technological growth and depletion of resources, Sources of energy, Energy crisis, Reports of Club of Rome, Environmental degradation, Environmental Regulations, Environmental Ethics, Eco-friendly technologies, Sustainable Development, Important and recent national and international conventions on environment, Appropriate Technology Movement of Schumacher: Later developments</p>	8	12
04	<p>Technology and Developing Nations- Technology transfer</p> <p>Problems of technology transfer, Stages of technology transfer, Problems of technology transfer, Technology Impact Assessment, Problems of man machine interaction, Impact of Assembly line, Automation, Corporate Social Responsibility</p>	6	12
05	<p>Ethics of Profession</p> <p>Attributes of a profession, Science, Technology and Engineering as Knowledge and as Social and Professional Activities, Engineering profession: Ethical issues in engineering practice, Conflicts between business demand and professional ideals, Social and ethical responsibilities of Technologists, Codes of professional ethics, Whistle blowing and beyond. Case studies</p>	6	12
06	<p>Profession and Human Values</p> <p>Value Crisis in contemporary society, Nature of values: Value Spectrum of a 'good' life, Psychological values: Integrated personality; mental health, Societal values: The modern search for a 'good' society, justice, democracy, secularism, rule of law; values in Indian Constitution, Aesthetic values: Perception and enjoyment of beauty, simplicity, clarity</p>	6	12
	Sub Total:	36	70
	Internal Assessment Examination & Preparation of Semester Examination		30
	Total:		100



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List of Books							
Text Books:							
Name of Author		Title of the Book		Edition/ISSN/ISBN		Name of the Publisher	
David Whitley		E-Commerce-Strategy, Technologies & Applications					
Kamlesh K. Bajaj		E-Commerce- The cutting edge of business					
Reference Books:							
W Clarke		E-Commerce through ASP					
End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.							
Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 8	10	10				
B	1 to 8			5	3	5	60
C	1 to 8			5	3	15	
<ul style="list-style-type: none"> • Only multiple choice type questions (MCQ) with one correct answer are to be set in the objective part. • Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper. 							
Examination Scheme for end semester examination:							
Group	Chapter	Marks of each question	Question to be set	Question to be answered			
A	All	1	10	10			
B	All	5	5	3			
C	All	15	5	3			



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Name of the Course: BCA	
Subject: Major Project with Viva-Voce	
Course Code: BCA681	Semester: 6th
Duration: 36 Hrs.	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: 0	End Semester Exam: NA
Tutorial: 0	Attendance : NA
Practical: 0	Continuous Assessment: NA
Credit: 8	Practical Sessional internal continuous evaluation: 40
	Practical Sessional external examination: 60
Aim:	
Sl. No.	
1	Analyze and apply the role of client side and server side scripting languages.
2	Building team work.
3	
4	
Objective:	
Sl. No.	
1	Analyze and apply the role of client side and server side scripting languages.
2	Building team work.
3	