SOFT AND EV	<b>OLUTIONARY</b>	COMPUTING				
[As per Choice Bas	sed Credit System	(CBCS) scheme]				
(Effective from	the academic yea	r 2016 -				
2017) SEMESTER – VII						
Subject Code	15CS751	IA Marks	20			
Number of Lecture Hours/Week	3	Exam Marks	80			
Total Number of Lecture Hours	40	Exam Hours	03			
	CREDITS – 03					
Course objectives: This course will e	nable students to					
Familiarize with the basic cond	cept of soft comput	ing and intelligent sys	tems			
Compare with various intellige	ent systems					
• Analyze the various soft comp	uting techniques					
Module – 1			Teaching			
			Hours			
Introduction to soft computing: AN	N, FS,GA, SI, ES	5, Comparing among	8 Hours			
intelligent systems						
ANN: introduction, biological inspir	ation, BNN&ANN	, classification, first				
Generation NN, perceptron, illustrativ	e problems					
1 ext Book 1: Chapter1: 1.1-1.8, Ch	apter2: 2.1-2.6					
$\frac{1}{2} \frac{1}{2} \frac{1}$	·· · · · · 1 ··		0 11			
Adaline, Medaline, ANN: (2 generative prob	ation), introduction	i, BPN, KINN,HINN,	8 Hours			
Toxt Book 1. Chapter?: 3 1 3 2 3 3 3						
Modulo 3	.0,3.7,3.10,3.11					
Fuzzy logic: introduction human le	erning ability un	decidability probabi	ity 8 Hours			
theory classical set and fuzzy set fuzzy set operations fuzzy relations fuzzy						
compositions, natural language and fuzzy interpretations, fuzzy relations, fuzzy						
inference system, illustrative problems	inference system, illustrative problems					
Text Book 1: Chapter 5						
Module – 4						
Introduction to GA, GA, procedures	s, working of GA	, GA applications,	8 Hours			
applicability, evolutionary programm	ing, working of E	P, GA based Machin	ne			
learning classifier system, illustrative problems						
Text Book 1: Chapter 7						
Module – 5						
Swarm Intelligent system: Introducti	on, Background of	SI, Ant colony syster	n <b>8 Hours</b>			
Working of ACO, Particle swarm Inte	lligence(PSO).					
Text Book 1: 8.1-8.4, 8.7						
Course outcomes: The students should be able to:						
Understand soft computing techniques						
Apply the learned techniques to solve realistic problems						
Differentiate soft computing with hard computing techniques						
Question paper pattern:						
The question paper will have ten questions.						
Frach question will have questions covering all the topics under a module $\frac{1}{2}$						
The students will have to answer 5 full questions selecting one full question from						
each module	iun questions, sele	come one run questi				
each module.						

COMPUTER VISION AND ROBOTICS						
[As per Choice Based Credit System (CBCS) scheme]						
(Effective from the academic year 2016 -2017)						
SEMESTER – VII						
Subject Code	15CS752	IA Marks	20			
Number of Lecture Hours/Week	3	Exam Marks	80			
Total Number of Lecture Hours	40	Exam Hours	03			
	CREDITS – 03	•				
Course objectives: This course will e	nable students to					
Review image processing techn	iques for computer	r vision				
• Explain shape and region analy	sis					
• Illustrate Hough Transform and	l its applications to	detect lines, circles, e	llipses			
Contrast three-dimensional ima	ge analysis techniq	ues, motion analysis a	and			
applications of computer vision	algorithms	[]				
Module – 1	0		Teaching			
			Hours			
<b>CAMERAS:</b> Pinhole Cameras, I	Radiometrv – Me	easuring Light: Light	nt in 8 Hours			
Space, Light Surfaces, Important Sp	pecial Cases, Sou	rces, Shadows, And				
Shading: Oualitative Radiometry, S	ources and Their	Effects, Local Shad	ing			
Models, Application: Photometric	Stereo, Interret	flections: Global Sha	ding			
Models, Color: The Physics of Color.	Human Color Per	ception. Representing	8			
Color. A Model for Image Color. Surf	ace Color from Im	age Color.				
Module – 2		8				
<b>Linear Filters:</b> Linear Filters and Con	volution. Shift Inv	variant Linear Systems	s. 8 Hours			
Spatial Frequency and Fourier Transforms, Sampling and Aliasing, Filters as			.,			
Templates. Edge Detection: Noise. Estimating Derivatives. Detecting Edges.						
Texture: Representing Texture, Analysis (and Synthesis) Using Oriented						
Pyramids, Application: Synthesis by	Pyramids, Application: Synthesis by Sampling Local Models, Shape from					
Texture.		-				
Module – 3						
The Geometry of Multiple Views: T	wo Views, Stereor	osis: Reconstruction,	8 Hours			
Human Stereposis, Binocular Fusion,	Using More Came	ras, Segmentation by				
<b>Clustering:</b> What Is Segmentation?, Human Vision: Grouping and Getstalt.						
Applications: Shot Boundary Detection and Background Subtraction, Image						
Segmentation by Clustering Pixels, Se	gmentation by Gra	ph-Theoretic Clusteri	ng,			
Module – 4						
Segmentation by Fitting a Model: T	he Hough Transfor	rm, Fitting Lines, Fitti	ng <b>8 Hours</b>			
Curves, Fitting as a Probabilistic Infe	rence Problem, Ro	bustness, Segmentation	on			
and Fitting Using Probabilistic Met	hods: Missing Dat	a Problems, Fitting, ar	nd			
Segmentation, The EM Algorithm in Practice, Tracking With Linear Dynamic						
Models: Tracking as an Abstract Inference Problem, Linear Dynamic Models,						
Kalman Filtering, Data Association, A	Applications and Ex	amples.				
Module – 5						
Geometric Camera Models: Eleme	ents of Analytical	Euclidean Geometry	v, <b>8 Hours</b>			
Camera Parameters and the Perspective Projection, Affine Cameras and Affine			;			
Projection Equations, Geometric Camera Calibration: Least-Squares						
Parameter Estimation, A Linear Approach to Camera Calibration, Taking Radial						
Distortion into Account, Analytical	Photogrammetr	y, An Application: Mo	obile			
Robot Localization, Model- Based	Vision: Initial	Assumptions, Obtai	ning			

Hypotheses by Pose Consistency, Obtaining Hypotheses by pose Clustering,				
Obtaining Hypotheses Using Invariants, Verification, Application: Registration				
In Medical Imaging Systems, Curved Surfaces and Alignment.				
Course outcomes: The students should be able to:				
• Implement fundamental image processing techniques required for computer vision				
Perform shape analysis				
Implement boundary tracking techniques				
• Apply chain codes and other region descriptors				
• Apply Hough Transform for line, circle, and ellipse detections.				
• Apply 3D vision techniques.				
Implement motion related techniques.				
• Develop applications using computer vision techniques.				
Question paper pattern:				
The question paper will have ten questions.				
There will be 2 questions from each module.				
Each question will have questions covering all the topics under a module.				
The students will have to answer 5 full questions, selecting one full question from				
each module.				
Text Books:				
1. David A. Forsyth and Jean Ponce: Computer Vision – A Modern Approach,				
PHI Learning (Indian Edition), 2009.				
Reference Books:				
2. E. R. Davies: Computer and Machine Vision – Theory, Algorithms and Practicalities,				
Elsevier (Academic Press), 4 <sup>ui</sup> edition, 2013.				

[As ner Choice Rosed Credit System (CRCS) scheme]						
[As per choice based crean system (CDCS) selicine]						
(Effective from the academic year 2016 -						
2017) SEMESTER – VII						
Subject Code15IS753IA Marks20						
Number of Lecture Hours/Week 4 Exam Marks 80						
Total Number of Lecture Hours40Exam Hours03						
CREDITS – 03						
Course objectives: This course will enable students to						
Explain the Role of information management system in business						
• Evaluate the role of the major types of information systems in a busine						
environment and their relationship to each other						
Module – 1 Teachi						
Hours						
Information Systems in Business : Introduction, The real world of Information <b>08 Hou</b>						
Systems, Networks, What you need to know, The fundamental role of IS in						
business, Trends in IS, Managerial challenges of IT. System Concepts: A						
foundation, Components of an Information System, Information System						
Resources, Information System activities, Recognizing Information Systems.						
Fundamentals of strategic advantages: Strategic IT, Competitive strategy						
concepts, The competitive advantage of 11, Strategic uses of 11, Building a						
business processes Becoming on agile company Creating a virtual company						
Building a knowledge creating company						
Modulo 2						
Enterprise Business Systems: Introduction Cross functional enterprise 08 Hor						
applications. Enterprise application integration Transaction processing systems						
Enterprise collaboration systems, Functional Business Systems; Introduction						
Marketing systems Manufacturing systems Human resource systems						
Accounting systems, Financial management systems.						
Module – 3						
Customer relationship management: Introduction, What is CRM? The three <b>08 Hou</b>						
phases of CRM, Benefits and challenges of CRM, Trends in CRM Enterprise						
resource planning: Introduction, What is ERP? Benefits and challenges of ERP,						
Trends in ERP. Supply chain Management: Introduction, What is SCM? The role						
of SCM, Benefits and challenges of SCM, Trends in SCM.						
Module – 4						
Electronic commerce fundamentals: Introduction, The scope of ecommerce, 08 Hou						
Essential e-commerce, processes, Electronic payment processes. e-Commerce						
applications and issues: E-commerce application trends, Business-to- Consumer						
e-commerce, Web store requirements, Business-to- Business e-commerce, e-						
commerce marketplaces, Clicks and bricks in ecommerce						
Module – 5						
Decision support in business: Introduction, Decision support trends, Decision <b>08 Hou</b>						
support systems (DSS), Management Information Systems, Unline analytical						
decision support Knowledge management systems. Enterprise portals and						
Intelligence (AI) An overview of AI Expert systems						
Course outcomes: The students should be able to:						

- Describe the role of information technology and information systems in business
- Record the current issues of information technology and relate those issues to the firm
- Interpret how to use information technology to solve business problems

## **Question paper pattern:**

The question paper will have ten questions.

There will be 2 questions from each module.

Each question will have questions covering all the topics under a module.

The students will have to answer 5 full questions, selecting one full question from each module.

# **Text Books:**

1. James A.O'Brien, George M Marakas, Management Information Systems, 7<sup>th</sup> Edition, Tata McGrawHill. Chapter: 1, 2, 7, 8, 9, 13

## **Reference Books:**

- 2. Kenneth C. Laudon and Jane P.Laudon, Management Information System, Managing the Digital Firm, 9<sup>th</sup> Edition, Pearson Education.
- 3. Steven Alter, Information Systems the Foundation of E-Business, 4<sup>th</sup> Edition, Pearson Education.
- 4. W.S.Jawadekar, Management Information System, Tata McGraw Hill

STORAGE AREA NETWORKS						
[As per Choice Bas	ed Credit Syste	em (CBCS) scheme]				
(Effective from the academic year 2016 -2017)						
Subject Code	$\frac{5 \mathbf{E} \mathbf{W} \mathbf{E} \mathbf{S} \mathbf{I} \mathbf{E} \mathbf{K} - \mathbf{I}}{15 \mathbf{C} \mathbf{S} 75 4}$	VII IA Marks	20			
	1505754		20			
Number of Lecture Hours/ week	3	Exam Marks	80			
I otal Number of Lecture Hours		Exam Hours	03			
Course objectives: This course will e	CREDITS = 0	to				
• Evaluate storage architectures	mable students					
<ul> <li>Define backup recovery disast</li> </ul>	ster recovery b	usiness continuity and	renlicat	ion		
<ul> <li>Examine emerging technologi</li> </ul>	es including IP.	SAN	replicat	.1011		
Understand logical and physic	al components of	of a storage infrastruct	ire			
<ul> <li>Identify components of manage</li> </ul>	ing and monito	ring the data center	410			
<ul> <li>Define information security ar</li> </ul>	d identify diffe	rent storage virtualizati	ion tech	nologies		
Module – 1				Teaching		
				Hours		
Storage System Introduction to evolu	tion of storage	architecture, key data c	center	8 Hours		
elements, virtualization, and cloud con	mputing. Key d	ata center elements – H	Iost			
(or compute), connectivity, storage, and	nd application in	n both classic and virtu	al			
environments. RAID implementation	ns, techniques,	and levels along with	h the			
impact of RAID on application perfor	mance.Compon	ents of intelligent stora	age			
systems and virtual storage provision	oning and intel	lligent storage system				
implementations.						
Module – 2	* * 7* / **		G A M	0.11		
Storage Networking Technologies and Virtualization Fibre Channel SAN 8 Hour						
components, connectivity options, a	na topologies	including access prote	ection			
mechanism 'zoning", FC protocol stack, addressing a nd operations, SAN-based						
access over IP network Converged pr	y, ISCSI and I	nd its components. Nets	work			
Attached Storage (NAS) - compone	ents protocol	and operations File le	evel			
storage virtualization. Object based st	orage and unifie	ed storage platform.	0,001			
Module – 3						
Backup, Archive, and Replication T	This unit focuses	s on information availa	bility	8 Hours		
and business continuity solutions in	both virtualiz	ed and non-virtualize	d			
environments. Business continuity t	erminologies, p	planning and solutions	5,			
Clustering and multipathing architectu	are to avoid sing	gle points of failure, Ba	ickup			
and recovery - methods, targets and to	pologies, Data	deduplication and back	cup in			
virtualized environment, Fixed conten	t and data archi	ive, Local replication in	1			
classic and virtual environments, Remote replication in classic and virtual						
environments, Three-site remote repli	cation and cont	inuous data protection				
Module – 4						
Cloud Computing Characteristics	and benefits	This unit focuses on	the	8 Hours		
business drivers, definition, essential characteristics, and phases of journey to the			to the			
Cloud. ,Business drivers for Cloud computing, Definition of Cloud computing,						
Characteristics of Cloud computing, Steps involved in transitioning from Classic						
Cloud infrastructure components. Cla	ud migration as	s and deproyment mode	-15,			
Madula 5	uu inigiation co	mstuctations				

**Securing and Managing Storage Infrastructure** This chapter focuses on **8 Hours** framework and domains of storage security along with covering security. implementation at storage networking. Security threats, and countermeasures in

various domains Security solutions for FC-SAN, IP-SAN and NAS environments, Security in virtualized and cloud environments, Monitoring and managing various information infrastructure components in classic and virtual environments, Information lifecycle management (ILM) and storage tiering, Cloud service management activities

**Course outcomes:** The students should be able to:

- Identify key challenges in managing information and analyze different storage networking technologies and virtualization
- Explain components and the implementation of NAS
- Describe CAS architecture and types of archives and forms of virtualization
- Ilustrate the storage infrastructure and management activities

## **Question paper pattern:**

The question paper will have ten questions.

There will be 2 questions from each module.

Each question will have questions covering all the topics under a module.

The students will have to answer 5 full questions, selecting one full question from each module.

## **Text Books:**

- 1. Information Storage and Management, Author :EMC Education Services, Publisher: Wiley ISBN: 9781118094839
- 2. Storage Virtualization, Author: Clark Tom, Publisher: Addison Wesley Publishing Company ISBN : 9780321262516

## **Reference Books:**

NIL