CO3: Analyze cloud economics, address open challenges, and comprehend emerging paradigms like Edge Computing and Mobile Cloud Computing, applying theoretical knowledge to real-world scenarios effectively.

Syllabus:

Introduction to Parallel and Distributed Computing; Introduction to Cloud Computing; Characteristics and benefits of cloud computing; Historical developments and evolution of cloud computing: Distributed Systems, Virtualization, Web 2.0, Service-oriented computing.

Utility Computing; Cloud Computing Reference Model. Introduction to virtualization; Characteristics of virtualized environments; Taxonomy of virtualization techniques; Virtualization and cloud computing; Pros and cons of virtualization; Technology examples: Xen: paravirtualization, VMware: full virtualization, Microsoft Hyper-V.

Cloud Computing Architecture; Service models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS); Deployment models: Public, Private, Hybrid, Community; IaaS: Introduction to IaaS, Resource Virtualization i.e. Server, Storage and Network virtualization; PaaS: Introduction to PaaS, Cloud platform & Management of Computation and Storage; SaaS: Introduction to SaaS, Cloud Services, Web services, Web 2.0, Web OS; Case studies related to IaaS, PaaS and SaaS.

Economics of the cloud; Open Challenges in Cloud Computing; Introduction to emerging computing paradigms and research challenges: Edge Computing, Mobile Cloud Computing, Fog Computing etc.; Introduction to IoT Cloud; Study on simulators related to cloud computing and emerging computing paradigms.

Readings:

1. R. Buyya, C. Vecchiola, S. ThamaraiSelvi, Mastering Cloud Computing, McGraw Hill Education.

2. B. Sosinsky, Cloud Computing Bible, Wiley.

3. K. Hwang, G. C. Fox, J.Dongarra, Distributed and Cloud Computing: From Parallel Processing to the Internet of Things, Morgan Kaufmann

MCSC205 READING SKILLS [0-0-2]

Course Objectives: The course aims to develop an important skills of independent reading.

Course Learning Outcomes:

On completing this course, the student will be able to:

CO1: Develop a habit of independent reading.

CO2: Given a requirement, independently select sources of reading.

CO3: Read and assimilate independently.

This is a self-study course. The students will carry out extensive reading on a topic to be

assigned by the department.

MCSE201: DIGITAL IMAGE PROCESSING

Course Objectives: The objective of this course is to study the concept of digital image processing. The course should also cover the image enhancement in the spatial and frequency domain followed by the image morphological operations such as dilation, erosion, and hit-or-miss transformations. The course also covers image segmentation and image compression.

Course Learning Outcomes :

CO1 Explains theoretical and practical concepts of image acquisition, enhancement, compression and segmentation.
CO2 Introduces the concept of feature extraction of segmented images.
CO3 Provides an overview of various multimedia tools.

Syllabus:

Fundamental Steps in Image Processing: Element of visual perception, a simple image model, sampling and quantization, some basic relationships between pixel, image geometry in 2D, image enhancement in the spatial domain.

Introduction to spatial and frequency methods: Basic gray level transformations, histogram equalization, local enhancement, image subtraction, image averaging, basic spatial, filtering, smoothing spatial filters, sharpening spatial filters.

Introduction to the Fourier transformation: Discrete fourier transformation, fast Fourier transformation, filtering in the frequency domain, correspondence between filtering in the spatial and frequency domain smoothing frequency-domain filters, sharpening frequency-domain filters, homomorphic filtering,

Some basic morphological algorithms: Line detection, edge detection, gradient operator, edge linking and boundary detection, thresholding, region-oriented segmentation, representation schemes like chain codes, polygonal approximations, boundary segments, skeleton of a region.

Representation and Description:

Introduction to Image Compression: JPEG, MPEG, Wavelets

Readings

1. Rafael C. Gonzalez and Richard E.Woods, **Digital Image Processing**, Prentice–Hall of India, 2002

2. William K. Pratt, **Digital Image Processing: PIKS Inside** (3rd ed.), John Wiley & Sons, Inc., 2001