



**Department of Information Technology
Central University of Kashmir
Tullamull Campus, Ganderbal.**

Syllabus for B. Tech. CSE 8th Semester

[BoS 27/5/2020]

S. No	Course Code	Course Title	Credits	Evaluation		
				CIA	ESE	Total
1.	BTCS 801	Management Information Systems	4	40	60	100
2.	BTCS 802	Project	12	50	50	100
3.	BTCS ---	Elective 3	4	40	60	100
		Total	20			

ELECTIVE III						
S. No	Course Code	Course Title	Credits	Evaluation		
				CIA	ESE	Total
1.	BTCS 810	Computer Graphics	4	40	60	100
2.	BTCS 811	Data Mining	4	40	60	100
3.	BTCS 812	Internet Security and Cyber Law	4	40	60	100
4.	BTCS 813	Robotics	4	40	60	100

BTCS 801: Management Information System

Unit I

Foundations of Information systems and Management: Introduction, Components and resources and types of information systems and activities. Introduction to MIS and approaches to Management, MIS as a support to and a tool for management Process, Organization structure and Strategic Management of Business: Concept of Corporate Planning, Essentiality of strategic planning, development and types of strategies, MIS for Business Planning.

Unit II

Applications of MIS: Manufacturing Sector: Introduction, Personal, Accounting, Finance, Production, Materials and Marketing Management, MIS Applications in Banking and Insurance Sector. Service Sector: MIS applications in service industry. Cross-Functional Enterprise Systems. Implementation Challenges: Integration, implementing IT, Change Management.

Unit III

Decision support systems: Concept, Using Decision Support systems, Introduction to Artificial Intelligence. Security and Ethical Challenges, fault-tolerant systems, Cultural, political and Geo-economic challenges, global business/it strategies, applications, platforms and Data access issues

Unit IV

Business Process Reengineering (BPR): Business process, MIS and BPR. Business process reengineering Vs Software Reengineering. Business Process Outsourcing: What is BPO? Voice BPO i.e. Call center, non-voice BPO, Scope of BPO, challenges in BPO management etc.

References:

1. O'Brien J., "Management Information Systems" Tata McGraw-Hill Publishing Company Limited.
2. Jawadekar W., "Management Information Systems", Tata McGraw-Hill Publishing Company Limited.
3. Kenneth C Laudon, " Management Information Systems", Pearson Education.
4. V Rajaraman, "Analysis and design of Information Systems", PHI Learning Pvt. Ltd.
5. Rahul DE , "MIS:Management Information Systems in Business, Government and Society" , Wiley Publications

Elective 3

Computer Graphics

Unit I

Introduction to Computer Graphics: Applications of Computer Graphics. Graphic Display Devices_ Raster and Random. Flat panel display devices, Display Processor, Display Buffer, Concept of Double Buffering and Segmentation of Display Buffer. Color Displays: Shadow Masking and Beam Penetration methods, Use of Lookup tables. Graphics Input and Output Devices_ Description and Applications. Graphic Kernel System, Introduction to GKS, GKS primitives.

Unit II

2-D Graphics: Cartesian and Homogeneous Coordinate Systems. Line drawing algorithms (Bresenham's and DDA). Bresenham's Circle and Ellipse Drawing Algorithms. Character generation, 2-Dimensional Transformations. Concepts of Window & Viewport, Window to Viewport Transformations. Filling, Boundary and Floodfill algorithms.

Unit III

Clipping: Line Clipping Algorithms (Cohen-Sutherland Algorithm), Sutherland Hodgeman Polygon Clipping, Text Clipping, 3-D Graphics, Projections: perspective and parallel projection transformations. 3-Dimensional Transformations. Hidden Surface Removal Techniques, Z-Buffer Algorithm, Back Face Detection. Scan Line Algorithm. Painter's Algorithm.

Unit IV

Curves and Surfaces: Interpolation, Spline representation, Interpolation & Approximation Splines, Spline Specifications, Hermite Interpolation. Bezier-Curves & Surfaces, B-Spline Curves surfaces.

References:

1. Hearn and Baker "Computer Graphics", Pearson Education.
2. W.M. Newman and Sproull. "Principles of interactive Computer Graphics" ,TMH
3. Steven Harrington." Computer Graphics a Programming Approach" McGraw Hill.
4. James. D. Foley, AVandametal "Computer Graphics" Pearson
5. David F Rogers and J Alan Adams. "Procedural Elements of Computer Graphics" McGraw Hill
6. David F Rogers and J Alan Adams. "Mathematical Elements of Computer Graphics" McGraw Hill

Data Mining

Unit I

Introduction: Basic concepts of data mining, including motivation and definition; different types of data repositories; data mining functionalities; concept of interesting patterns; data mining tasks; current trends, major issues and ethics in data mining.

Unit II

Data: Types of data and data quality; Data Preprocessing: data cleaning, data integration and transformation, data reduction. Exploring Data: summary statistics, Association and Correlation Analysis: Basic concepts: frequent patterns, association rules - support and confidence.

Unit III

Frequent itemset generation - Apriori algorithm, FP-Growth algorithm; Rule generation, Applications of Association rules; Correlation analysis.

Clustering Algorithms and Cluster Analysis: Concept of clustering, measures of similarity, Clustering algorithms: Partitioning methods - k-means and k-medoids, Outlier detection and analysis.

Unit IV

Classification: Binary Classification - Basic concepts, Bayes theorem and Naïve Bayes classifier, Association based classification, Decision Trees, Random Forest; Perceptrons; Multi-category classification; Model overfitting, Evaluation of classifier performance - cross validation, ROC curves.

Applications: Text mining, Web data analysis, Recommender systems.

References:

1. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Introduction to Data Mining. Pearson (2005), India.
ISBN 978-8131714720
2. Jiawei Han and Micheline Kamber, Data Mining: Concepts and Techniques, Morgan Kaufmann, 3rd edition
(July 2011). 744 pages. ISBN 978-0123814791
3. Ian H. Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools

Internet Security and Cyber Law

Unit I

Introduction to cyber crime, Why individual go for crime, internet and security concepts, basics of cyber crime and criminals. Various cyber crime types, cost of information security.

Unit II

Motivation for Cyber Crime, Hacking, spam, DOS attack, phishing, identity theft, break-ins, credit card frauds, cybersquatting, software piracy, industrial espionage etc.

Unit III

Introduction, Theories, Classical Criminology, Trait Theories, Social Process Theories, Social Structure Theories, Conflict Theories, Integrated Theories, The Social and Economic Impacts of Cybercrime, Emerging Crime, Related Issues and Controversies. Laves safeguarding cyber space.

Unit IV

Cryptography, digital signatures, need and significance of digital signatures, methods of employing digital signatures, effects of digital signatures, future developments, digital certificates. Copy right, Patent.

References:

1. Vakul Sharma, "Handbook of Cyber Law": Macmillan Publishers India (2002).
2. Dr Majid Yar, "Cybercrime and Society": Sage Publications Ltd , 2006.
3. Vakul Sharma, "Information Technology Law & Practice Cyber Law & E Commerce", Universal Law Publishing Co Pvt Ltd (2011)
4. C.SamMcQuade, "Understanding and Managing Cybercrime", Prentice Hall, 2006.

ROBOTICS

Unit I: FUNDAMENTALS OF ROBOT

Robot – Definition – Robot Anatomy – Co-ordinate Systems, Work Envelope, types and classification – Specifications – Pitch, Yaw, Roll, Joint Notations, Speed of Motion, Pay Load – Robot Parts and Functions – Need for Robots – Different Applications

Unit II: ROBOT DRIVE SYSTEMS AND END EFFECTORS

Pneumatic Drives – Hydraulic Drives – Mechanical Drives – Electrical Drives – D.C. Servo Motors, Stepper Motor, Applications and Comparison of Drives End Effectors – Grippers – Mechanical Grippers, Pneumatic and Hydraulic Grippers, Magnetic Grippers; Two Fingere d ,Selection and Design Considerations

Unit III: SENSORS AND MACHINE VISION

Requirements of a sensor, Principles and Applications of the following types of sensors – Position of sensors, Piezo Electric Sensor, LVDT, Resolvers, Range Sensors : Lighting Approach, Laser Range Meters, Proximity Sensors : Inductive, Ultrasonic and Optical Proximity Sensors, Touch Sensors: Binary, Analog Sensors), Wrist Sensors. Signal Conversion, Image Storage, Image Processing and Analysis, Identification, Visual Serving and Navigation.

Unit IV: ROBOT KINEMATICS

Forward Kinematics, Inverse Kinematics and Differences; Forward Kinematics and Reverse Kinematics of Manipulators with Two, Three Degrees of Freedom (In 2 Dimensional), Four Degrees of Freedom (In 3 Dimensional). Robot programming Languages introduction– VAL Programming – Motion Commands, Sensor Commands, End effector commands, and Simple programs .

References:

1. M.P.Groover, “Industrial Robotics – Technology, Programming and Applications”, McGraw-Hill, 2001
2. Fu.K.S. Gonzalz.R.C., and Lee C.S.G., “Robotics Control, Sensing, Vision and Intelligence”, McGraw-Hill Book Co., 1987