



List of New Course(s) Introduced

Department : Computer Science and Engineering

Programme Name : B.Tech.

Academic Year : 2017-18

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
01.	CS6TPE03	UNIX Operating System
02.	CS6TPE04	Multimedia System Design
03.	CS6TOE02	Robotics
04.	CS5TPE04	Mobile Communication
05.	CS5TOE02	Embedded System
06.	CS6TOE03	Operation Research
07.	CS6TOE04	Geo-Informatics and GIS Application
08.	CS5TPE03	Grid Computing
09.	CS5TOE03	Principle Of Management



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2017-18

School : School of Studies of Engineering and Technology

Department : Computer Science and Engineering

Date and Time : May 29, 2017 - 11:30 AM

Venue : E-Class Room

Department of Computer Science and Engineering

Minutes of the Meeting of Board of Studies for Computer Science and Engineering

A meeting of board of studies of Computer Science & Engineering, held on 29/05/17 at 1:00 PM in the office of Department of Computer Science & Engineering, Institute of Technology Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) The following attended the meeting:

1. Mr. Nishant Behar (Chairman)
2. Prof. N.S. Chaudhary (External Subject Expert)
3. Mr. Amit Sharma (External Industry Member)
4. Mr. Vaibhav Kant Singh (Member)
5. Dr. Manish Shrivastava (Invitee Member)
6. Dr. Amit Khaskalam (Invitee Member)
7. Mr. Devendra Kumar Singh (Invitee Member)
8. Mr. C.P. Dhuri (Invitee Member)
9. Mr. Satish Kumar Negi (Invitee Member)

- i. The Committee reviewed the proposed Syllabus and Scheme of B.Tech. Third Year and Scheme of Final Year.
- ii. The Examination Scheme and detailed Syllabus based on Choice Based Credit System (CBCS) of B.Tech IIIrd Year (V Semester & VI Semester).
- iii. The Examination Scheme and Detailed Syllabus based on Choice Based Credit System (CBCS) of B.Tech Final Year is approved by the Committee from 2017-18.
- iv. All the valuable suggestions made by Internal and External members are incorporated in the Syllabus and Scheme which are enclosed herewith.
- v. External Member Professor has joined the meeting through Video-Conferencing and has given his valuable suggestions which are incorporated in the Syllabus and Scheme Finalized for Third Year and Final Year respectively.

The above points are recommended by the committee.

 Dr. Manish Shivastava	 Mr. Nishant Behar (Chairman, BOS)	 Mr. Amit Sharma
 Dr. Amit Khaskalam	 Mr. Vaibhav Kant Singh	 Mr. Devendra Kumar Singh
 Mr. Satish Kumar Negi	 Mr. C.P. Dhuri	



Semester- V		Subjects	Period /week			Evaluation Scheme			Total Credit
S	N		L ¹	T ²	P ³	IA	ESE	TOTAL	
1	CS5TPC01	RDBMS	3	1	0	40	60	100	4
2	CS5TPC02	Foundation of Computer Science	3	1	0	40	60	100	4
3	CS5TPEXX	PE Choice-I Vth Semester	3	1	0	40	60	100	4
4	CS5TPEXX	PE Choice-II Vth Semester	3	1	0	40	60	100	4
5	CS5TOEXX	OE-I Vth Semester	3	0	0	40	60	100	3
PRACTICAL									
1	CS5LPC01	RDBMS Lab	0	0	3	30	20	50	2
2	CS5LPC02	Advance Programming Lab	0	0	3	30	20	50	2
3	CS5LPR01	Mini Project Lab-I in VB.NET	0	0	3	30	20	50	2
								Total Credits	25

IA- Internal Assessment, ESE - End Semester Examination

Open Elective Subjects Vth Semester				Professional Elective Subject Vth Semester			Credit
SN	Subject Code	Subject	Credit	SN	Subject Code	Subject	
1	CS5TOE01	Management Information System	3	1	CS5TPE01	VB.NET	4
2	CS5TOE02	Embedded System	3	2	CS5TPE02	Parallel Computing	4
3	CS5TOE03	Principle of Management	3	3	CS5TPE03	Grid Computing	4
4	CS5TOE04	Computer Oriented Numerical Methods	3	4	CS5TPE04	Mobile Communications	4

Semester- VI		Subjects	Period /week			Evaluation Scheme			Total Credit
SN	Subject Code		L ¹	T ²	P ³	IA	ESE	TOTAL	
1	CS6TPC01	Operating System	3	1	0	40	60	100	4
2	CS6TPC02	Design and Analysis of Algorithm	3	1	0	40	60	100	4
3	CS6TPEXX	PE Choice-I VI th Semester	3	1	0	40	60	100	4
4	CS6TPEXX	PE Choice-II Vth Semester	3	1	0	40	60	100	4
5	CS6TOEXX	OE-I Vth Semester	3	0	0	40	60	100	3
PRACTICAL									
1	CS6LPC01	Operating System Lab	0	0	3	30	20	50	2
2	CS6LPC02	Design and Analysis of Algorithm Lab	0	0	3	30	20	50	2
3	CS6LPR01	Mini Project Lab	0	0	3	30	20	50	2
								Total Credits	25

Open Elective Subjects VI th Semester				Professional Elective Subject VI th Semester			Credit
SN	Subject Code	Subject	Credit	SN	Subject Code	Subject	
1	CS6TOE01	Computer Graphics	3	1	CS6TPE01	Microprocessor and Interfaces	4
2	CS6TOE02	Robotics	3	2	CS6TPE02	Software Engineering	4
3	CS6TOE03	Operation Research	3	3	CS6TPE03	UNIX Operating System	4
4	CS6TOE04	Geo-Informatics and GIS Application	3	4	CS6TPE04	Multimedia System Design	4

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Department of Computer Science & Engineering, FI, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering
Subject Name: UNIX Operating System
Subject Code: CS6TPE03

UNIT-I

The Operating System, The UNIX Operating System, Knowing Your Machine, A Brief Session [Logging in with Username and Password, The Command, Displaying Both Date and Time, Clearing the Screen, The Calendar, Viewing Processes, Listing Files, Directing Output to a File, Counting Number of Lines in a File].

UNIT-II

The UNIX Architecture [Division of Labor : Kernel and Shell, The File and Process, The System Calls], Features of UNIX [Multiuser System, Multitasking System, Building Block Approach, UNIX Toolkit, Pattern Matching, Programming Facility, Documentation], Locating Commands [The PATH], Internal and External Commands, Command Structure [Options, Filename Arguments, Exceptions], Flexibility of Usage, Browsing the Manual Pages [man].

UNIT-III

GENERAL PURPOSE UTILITIES [The CALENDAR, DISPLAYING THE SYSTEM DATE, DISPLAYING A MESSAGE, AN ALTERNATIVE TO echo, THE CALCULATOR, RECORDING YOUR SESSION, EMAIL BASICS, THE UNIVERSAL MAILER, CHANGING YOUR PASSWORD, who, uname, tty, stty, CHANGING THE SETTINGS]

UNIT-IV

THE FILE [ORDINARY, DIRECTORY, DEVICE], THE PARENT CHILD RELATIONSHIP, THE HOME DIRECTORY, CHECKING YOUR CURRENT DIRECTORY, CHANGING THE CURRENT DIRECTORY, MAKING DIRECTORIES, REMOVING DIRECTORIES, ABSOLUTE PATH NAMES, RELATIVE PATHNAMES, LISTING DIRECTORY CONTENTS.

UNIT-V

DISPLAYING AND CREATING FILES, COPYING A FILE, DELETING FILES, RENAMING FILES, PAGING OUTPUT, PRINTING A FILE, KNOWING THE FILE TYPES, COUNTING LINES/WORDS/CHARACTERS, DISPLAYING DATA IN OCTAL, COMPARING TWO FILES, comm, CONVERTING ONE FILE TO OTHER, COMPRESSING AND ARCHIVING FILES, COMPRESSING AND DECOMPRESSING FILES.

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Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering

Subject Name: Multimedia System Design

Subject Code: CS6TPE04

UNIT I:

An introduction, Multimedia elements, Multimedia Applications, Multimedia System Architecture, Evolving Technologies for Multimedia Systems, Defining Objects for Multimedia systems, Multimedia Data Interface Standard, The need for data Compression, Multimedia databases.

UNIT II:

Compression and Decompression, Types of compression, Binary Image Compression schemes, Color, Gray Scale, Still-video image Compression, Video Image Compression, Audio Compression, Fractal Compression.

UNIT III:

Data and Format Standards, Rich-text Format, TIFF File Format, Resource Interchange File Format (RIFF), MIDI File Format, JPEG DIB File Format for still and Motion Images, MPEG standards Pen Input, Video and Image Display systems, Print Output Technologies, Image Scanners, Digital Voice and Audio, Digital Camera, Video Images and Animation, Full-Motion Video.

UNIT IV:

Storage and Retrieval Technologies, Magnetic Media Technology, Optical Media, Hierarchical Storage Management, Cache management for storage systems, Multimedia Application Design, Multimedia application classes, Types of multimedia systems, Components of multimedia systems, Organizing multimedia databases,

UNIT V:

Unified Communication, video conferencing and Chat, Multimedia Authoring and User Interface, Multimedia authoring system, Hypermedia application design consideration, User interface design, Object display/playback issues, Multimedia Operating Systems Introduction, real time, Resource management, process management, file systems.

Reference Books:

1. PrabhatK.Andleigh&KiranThakrar, *Multimedia System Design*, Prentice PTR, NJ.
2. Ralf Steinmetz and KlaraNahrstedt, *Multimedia Computing Communications and Applications, Innovating Technology*, Pearson Edu. Asia.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: **Bachelor of Technology Sixth Semester Computer Science and Engineering**

Subject Name: **Robotics**

Subject Code: **CS6TOE02**

UNIT – I

Introduction to Robotics Evolution of robots and robotics, progressive advancement in robots, definitions and classifications, laws of robotics, robot anatomy and related attributes, human arm characteristics, robot control system, manipulation and control, sensors in robotics, robots programming, the future prospects.

UNIT – II

Coordinate Frames, Mapping and Transforms Robot specification and notations, Coordinate frames, description of objects in space, transformation of vectors, inverting a homogeneous transform, fundamental rotation matrices, yaw pitch and roll, yaw pitch and roll transformation, equivalent angle.

UNIT – III

Symbolic Modelling of Robots – Direct Kinematic Model Mechanical structure and notations, description of links and joints, kinematic modelling of the manipulator, Denavit – Hartenberg notation, kinematic relationship between adjacent links, manipulator, transformation matrix, introduction to inverse kinematic model, Artificial Intelligence in robotics.

UNIT – IV

Robotic Sensors and Vision The meaning of sensing, sensors in robotics, kinds of sensors used in robotics, robotic vision, industrial applications of vision-controlled robotic systems, process of imaging, architecture of robotic vision systems, image acquisition, description of other components of vision system, image representation, image processing.

UNIT – V

Robot Applications Industrial applications, material handling, processing applications, assembly applications, inspection, application, principles for robot application and application planning, justification of robots, robot safety, non-industrial applications, robotic application for sustainable development & social issues.

Text Books:

1. R.K. Mittal & I.J. Nagrath, *Robotics & Control*, TMH Publications.
2. Yoram Korean, *Robotics for engineers*, McGraw Hill Co.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering

Subject Name: Operation Research

Subject Code: CS6TOE03

UNIT-I

Introduction to Operation Research, Origin and Development of Operation Research, Nature and Features of Operation Research, Scientific Method in Operation Research, Modelling in Operation Research, Advantages and Limitation of Models, General Solution Methods for Operation Research Models, Methodology of Operation Research, Operation Research and Decision-making, Applications of Operation Research, Opportunities and Shortcomings of Operation Research.

Unit-II

Introduction to Decision Analysis, Decision-making Problem, Decision-making Process, Decision-making Environment, Decisions Under Uncertainty, Decisions Under Risk, Decision-Tree Analysis, Decision-making with Utilities.

Unit-III

Introduction to Simulation, Why Simulation?, Process of Simulation, Simulation Models, Event Type Simulation, Generation of Random Numbers, Monte-Carlo Simulation, Simulation of Inventory Problems, Simulation of Queuing System, Simulation of Maintenance Problems, Simulation in Investment and Budgeting, Simulation of Job Sequencing, Simulation of Networks, Advantages and Limitations of Simulation.

Unit-IV

Introduction to Network Routing Problems, Network Flow Problems, Minimal Spanning Tree Problem, Shortest Route Problems, More Applications of Shortest Route Problem, Maximal Flow Problems, Minimum Cost Flow Problems, More Network Flow Problems, Insights into Big Networks.

Unit-V

Introduction to PERT and CPM, Network: Basic Components, Logical Sequencing, Rules of Network Construction, Concurrent Activities, Critical Path Analysis, Probability Considerations in PERT, Distinction between PERT and CPM, Applications of Network Techniques, Advantages of Network Techniques, Limitations and Difficulties in Using Network.

Reference Books:

1. N.D. Vohra, *Operation Research*, TMH Publication.
2. H. Gillette, *Operation Research*, TMH Publication.
3. M. Taha, *Operation Research*, TMH Publication.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: **Bachelor of Technology Sixth Semester Computer Science and Engineering**

Subject Name: **Geo-Informatics and GIS Application**

Subject Code: **CS6TOE04**

UNIT-I

Introduction to Data base systems - Data base system levels of abstraction in DBMS principles of data base. Model of real world. Introduction to data organization, information management system preliminary study of INGRES, ORACLE, RDBMS and DBASE. Introduction to Geographical Information Systems: Introduction maps and spatial information. Computer assisted mapping and map analysis. Geographic Information Systems. The components of geographical Information System. Future directions and trends in GIS.

UNIT-II

Data structures for Thematic maps. Data structures for Geographic Information Systems. Points, lines and areas. Definition of a map Geographic data in the computer. File and data processing, data base structures, perceived structures and computer representation and geographical data. Raster data structure, Vector data structures for geographical entities. Data structures for thematic maps - The choice between raster and vector. Digital Elevation Models: The need of DEMs, methods of representing DEMs. Image methods, data sources and sampling methods for DEMs. Products that can be derived from a DEM. Automated landform delineation from DEMs. Map projections in GIS.

UNIT-III

Data Quality, Errors and Natural Variation: Sources of error, Errors resulting from natural variation of from original measurements. Errors arising through processing, problem; and errors arising from overlay and boundary intersections. Errors resulting from rasterizing a vector map. Errors associated with overlaying two or more polygon networks. The nature of boundaries. The statistical nature of boundaries. Combining attributes from overlaid maps.

UNIT-IV

Classification methods: Classification, Multivariate analysis and classification, allocating individuals to existing classes. Expert systems for Geographical Information Systems. Classification methods in geographical information systems.

UNIT-V

Methods of Spatial interpolation. The available methods for interpolation, global methods of interpolation, location interpolators, optimal interpolation methods using spatial auto covariance. Extensions of crigging to large areas. Comparing crigging with other interpolation techniques. Choosing a Geographic Information System. Designing the needs for GIS. The



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering

Subject Name: Grid Computing

Subject Code: CS5TPE03

Unit - I [Cluster Computing]

Basic concept of distributed and parallel computing, shared memory, Scheduling Concept, Cluster computing-Introduction, Grid server and practical uses: Cluster and cluster Grids, cluster Vs Grid.

UNIT-II [Grid Computing]

Grid Computing: History of grid computing, Basic concept, benefits of grid computing, Grid vs. other Related Technologies, Grid Architecture, various kinds of Grids, and different topologies of the Grid, Grid Applications, Grid Components.

UNIT – III [Scheduling]

High performance Grid, HPC Grids; Data Grids; Alternatives to Data Grid – Data Grid architecture. Grid scheduler and a local resource scheduler, Grid Scheduling: Job Scheduling, Resource Scheduling, Various factors of Scheduling, Scheduling Procedure. Challenges in Grid Scheduling.

UNIT – IV [Implementation: Grid Simulation tool kit]

The open Grid services Architecture — Overview – implementing OGSA based Grids – Creating and Managing services – Services and the Grid – Service Discovery – Tools and Toolkits. Installation of Pre-requisites and Necessary Component, Installation of GridSim Toolkit, Salient Feature of GridSim, GridSim Architecture

UNIT - V

Application integration- Application classification – Grid requirements – Integrating applications with Middleware platforms – Grid enabling Network services – Managing Grid environments – Managing Grids – Management reporting – Monitoring – Data catalogs and replica management – portals – Different application areas of Grid computing.

Text Books

1. Ahmar Abbas, *Grid Computing, A Practical Guide to Technology and Applications*, Firewall Media.
2. Joshy Joseph and Craig Fellenstein, *Grid Computing*, Pearson Education.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: **Bachelor of Technology Fifth Semester Computer Science and Engineering**

Subject Name: **Mobile Communication**

Subject Code: **CS5TPE04**

UNIT – I

Introduction, issues in mobile computing, overview of wireless telephony: cellular concept, GSM: airinterface, channel structure, location management: HLR-VLR, Hierarchical, handoffs, and channel allocation in cellular systems, CDMA, GPRS.

UNIT –II

Wireless Networking, Wireless LAN Overview: MAC issues, IEEE 802.11, Bluetooth, Wireless multiple access protocols, TCP over wireless, Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications.

UNIT –III

Data management issues, data replication for mobile computers, adaptive clustering for mobile wireless networks, File system, Disconnected operations.

UNIT –IV

Mobile Agents computing, security and fault tolerance, transaction processing in mobile computing environment.

UNIT –V

Ad Hoc networks, localization, MAC issues, Routing protocols, global state routing (GSR), Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, applications.

Suggested Books & Reference:-

1. J. Schiller, *Mobile Communications*, Addison Wesley.
2. A. Mehrotra, *GSM System Engineering*.
3. M. V. D. Heijden, M. Taylor, *Understanding WAP*, Artech House.
4. Charles Perkins, *Mobile IP*, Addison Wesley.
5. Charles Perkins, *Ad hoc Networks*, Addison Wesley.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering

Subject Name: Embedded System

Subject Code: CSSTOE02

UNIT I

Hardware Fundamentals :- Gates , timing diagram , memory , microprocessor , buses , DMA, Interrupts:- Microprocessor architecture , interrupt basics, interrupt latency, shared data problem . System partitioning building the architectural model, Input and output processing, Hard ware and software partitioning Timing requirements.

UNIT II

Microprocessor selection , Microprocessor versus Micro- controller analysis CISC versus RISC Study of major embedded processor architectures Memory design , system optimization . Architecture for embedded software : Round robin, round robin with interrupts , function queue scheduling real time operating system.

UNIT -III

Real time operating system :- Tasks and task states, task and data, semaphores and shared data, Operating system services :- Inter task communication , timer services. Memory management ,event and interaction between interrupt routines and real time operating system . Software selection issues , selecting an RTOS TROS performance metrics . RTOS scalability and tool support ,compiler selection.

UNIT -IV

Embedded system design using a real time operating system : Encapsulating semaphores and queues hard real time scheduling considerations saving memory space.

UNIT V

Development tools and debugging: - Host and target machines, linker / locators, target system, testing instruction set, assert, macro. Establishing a software development environment C runtime environments embedded debuggers cross, Development methods embedded file formats, readers Creating object files the process loading software into remote targets.

References:

1. David E Simon, *An embedded software primer*, ISBN 0201- 61569-X.
2. Around S. Berger, *Embedded system Design*, ISBN 1- 57820-073-3.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering

Subject Name: Principle of Management

Subject Code: CSSTOE03

UNIT – I

Management concepts, Nature, Scope, Significance, Function and Principle of Management Concepts. Evolution of Management: Early Contribution, Taylor and Scientific management, Fayol's administrative management, Bureaucracy, Hawthorne Experiments and Human Relations.

UNIT – II

Planning- Concepts, Objectives, Goals, Components and Steps involved in planning process, MBO, Decision making process, Individual and Group Decision Making.

UNIT – III

Organizing- principles, Organization theories, Line & Staff Authority, Centralization, Decentralization, Delegation, Employee's empowerment, Span of control, Departmentation, Authority and Responsibility.

UNIT – IV

Staffing: Recruitment & Selection, Training & Development, Performance Appraisal Directing: Concept, Direction and Supervision, Co-ordination.

UNIT – V

Communication: Communication Process, Importance of Communication, Barriers to Communication, Controlling: nature, scope, functions, steps and process, control techniques.

Suggested Books & References:

1. Stoner & Freeman, *Management*, PHI.
2. Koontz, O'Donnell Wehrich, *Principles of Management*, McGraw Hill.
3. P F Drucker, *The Practice of Management*, Allied Pub.
4. Massie, *Essentials of Management*, AITBS.
5. Terry and Franklin, *Principles of Management*, AITBS.
6. R D Agarwal, *Organization and Management*, TMH.
7. H Koontz, *Management*, McGraw Hill.
8. Robbins & Dinzo, *Fundamentals of Management*, Pearson India.