



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

Academic Year : 2017-18

School : School of Mathematical And Computational Science

Department : Computer Science and Information

Date and Time : Aug 12th , 2017 - 01.00 PM

Venue : CSIT Department

The Board of Studies (BoS) of Department of Computer Science and Information, School of Studies of Mathematical and Computational Science, Guru Ghasidas Vishwavidyalaya, Bilaspur was held to design and discuss the introduction of new courses.

The following members were present in the meeting:

1. Prof. M. Surendra Prasad Babu (External Expert Member BoS, Dept. of Computer Science and System engineering, Andhra University)
2. Prof. A. K. Saxsena(Dean of School, Prof. ,Dept. of Computer Science and Information, GGU Bilaspur)
3. Mrs P.L. Pujari (Asst. Prof., Dept. of Computer Science and Information, GGU Bilaspur)

Following new courses are introduced in MCA. Bsc (CS)and MSc (CS)

1. Multimedia
2. Pattern Recognition
3. Mobile application Programming
4. C# and .NET framework
5. Big Data Analytics
6. Introduction to Computer Network
7. Introduction to Artificial Intelligence
8. Advanced Java Programming
9. Neural Network


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List of New Course(s) Introduced

Department : Computer Science and Information Technology

Programme Name : MCA

Academic Year : 2017-18

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
01.	MCA-205 (Elective-II(2))	Multimedia
	MCA-305 (Elective-IV(2))	Pattern Recognition
03.	MCA-405 (Elective-VI(1))	Mobile Application Programming
	MCA-405 (Elective-VI(2))	C# and .NET framework
04.	MCA-504 (Elective-VII(1))	Big Data Analytics

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Department of Computer Science & Information Technology Guru Ghasidas
Vishwavidyalaya, Bilaspur (C.G.)

SYLLABUS FOR MCA COURSE UNDER CHOICE BASED CREDIT SYSTEM (CBCS) *

Session 2017-2018 (On and after)

MCA

Note: The decision of the GG Vishwavidyalaya for implementing CBCS system on this course shall be final, rest will remain the same.

Semester 1

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MCA-101	Introduction to Information Technology	4		40	60	4
2	MCA-102	Computer programming & Numerical Methods	4		40	60	4
3	MCA-103	Discrete Mathematical Structures	4		40	60	4
4	MCA-104	Data Structures using C	4		40	60	4
5	MCA-105	Computer Organization	4		40	60	4
6	MCA-106	LAB: Data Structure using C		1		100	1
7	MCA-107	LAB-II: Computer Hardware and Digital Electronics		1		100	1
		Total	20	02	200	500	22

Semester 2

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MCA-201	Principles of Operating System	4		40	60	4
2	MCA-202	Object Oriented Programming with C++	4		40	60	4
3	MCA-203	Theory of Computation	4		40	60	4
4	MCA-204	Elective I	4		40	60	4
5	MCA-205	Elective II	4		40	60	4
6	MCA-206	OOP Lab (C++)		1		100	1
7	MCA-207	LAB based on Elective- II		1		100	1
		Total	20	02	200	500	22



Semester 3

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MCA-301	Probability and Statistics	4		40	60	4
2	MCA-302	Artificial Intelligence	4		40	60	4
3	MCA-303	Relational Data Base Management System	4		40	60	4
4	MCA-304	Elective III	4		40	60	4
5	MCA-305	Elective IV	4		40	60	4
6	MCA-306	RDBMS LAB		1		100	1
7	MCA-307	LAB based on Elective -III / IV		1		100	1
		Total	20	02	200	500	22

Semester 4

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MCA-401	Design and Analysis of Algorithm	4		40	60	4
2	MCA-402	Compiler Design	4		40	60	4
3	MCA-403	Optimization Techniques	4		40	60	4
4	MCA-404	Elective V	4		40	60	4
5	MCA-405	Elective VI	4		40	60	4
6	MCA-406	Computer Network LAB		1		100	1
7	MCA-407	Minor Project		1		100	1
		Total	20	02	200	500	22

Semester 5

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MCA-501	Soft Computing	4		40	60	4
2	MCA-502	Computer Graphics and Multimedia	4		40	60	4
3	MCA-503	Data Mining and Data Warehousing	4		40	60	4
4	MCA-504	Elective VII	4		40	60	4



5	MCA-505	Elective VIII	4		40	60	4
6	MCA-506	Lab based on MATLAB		1		100	1
7	MCA-507	Minor Project		1		100	1
		Total	20	02	200	500	22



Semester 6

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MCA-601	Major Project	-	-	-	500	15
		Total	-	-	-	-	15

Total Course Credits – 125

Note: Electives to be decided at the start of the respective semester

*** The syllabus is subjected to change as per the requirement.**



Electives

Sl.No	Paper Code	(I)	(2)	(3)
1	MCA-204 (Elective-I)	Computer Networks	System Analysis and Design	Introduction to Micro Processor
2	MCA-205 (Elective-II)	Object Oriented Software Engineering	Multimedia	Linux Operating System and Shell Programming
3	MCA-304 (Elective-III)	Advanced JAVA Programming	System Software	Neural Network
4	MCA-305 (Elective-IV)	Web Technology	Pattern Recognition	V.B.Net Programming
5	MCA-404 (Elective-V)	E-Commerce	Financial Accounting	Software Testing
6	MCA-405 (Elective-VI)	Mobile Application Programming	C# and .net Framework	Cloud Computing
7	MCA-504 (Elective-VII)	Big Data Analytics	Advanced Operating System	Parallel Processing
8	MCA-505 (Elective-VIII)	Management Information System	Network Security	Image Processing



MCA-205 ELECTIVE-II (2)

Multimedia

1. Introduction to Multimedia System Multimedia elements, Multimedia applications, Global structure, Technologies for Multimedia system. Multimedia: Media & Data Streams Multimedia: media & data streams, Properties, Traditional data stream characteristics, Data stream characteristics for continuous media, Information units.
2. Sound / Audio Sound Concepts, Music: MIDI Concepts, MIDI devices, MIDI messages, MIDI software, Speech: Speech generation, Speech Analysis, Speech Transmission. Image And Graphics Digital Image Representation, Image Formats, Graphics Formats, Image Processing: Image Synthesis, Image Analysis, Image Transmission.
3. Video & Animation Basic concepts, Television (Conventional systems, Enhanced definition systems, High Definition system), Computer based Animation.
4. Data Compression Storage space, Coding requirements, Source Entropy & Hybrid coding, Basic compression techniques, Introduction to following compression techniques: JPEG, H.261 (PX64), MPEG, DVI
5. Optical Storage Media & Retrieval Technologies Basic Technology, Video Disk & other WORMS, CD ROM, CD ROM Extended Architecture, Compact Disk Magneto optical.

Readings:

1. Multimedia System Design By P. K. Andleigh, Kiran Thakrar.
2. Multimedia Computing Communication & Application. By Ralf Steinmetz, & Klaranashtedt. (Pearson Education).



MCA -305 ELECTIVE IV (2)

Pattern Recognition

1. **Pattern Concept:** Meaning of pattern, examples of patterns, importance of study of patterns in machine learning, meaning of labels, attributes, features, dimensions in patterns with examples, pattern recognition and classification, meaning of machine learning
2. **Pattern Recognition and classification:** Meaning and importance in machine learning, supervised and unsupervised learning with meaning and examples, classifiers, k-nn classification and k-means clustering, implementation and applications
3. **Decision Trees:** Meaning of tree and hence decision tree, building a decision tree, decision tree induction, classification using a decision tree, classification using ID3
4. **Evolutionary Computing:** Meaning of evolutionary computing, various operators used in evolutionary computing, genetic algorithms and their applications, Particle Swarm Optimization and their applications, Multi-objective Genetic Algorithms with examples
5. **Ensemble of classifiers:** Meaning and importance of ensembles, boosting and AdaBoost algorithm, bagging and random forest, weak and strong learning, ensembles of classifiers with voting

Readings:

1. Pattern Classification: Duda, R.O, Peter Hart, David Stork, 2010, Wiley India
2. Data Mining: Concept and Techniques, Morgan and Kaufmann, 2001
3. Pattern Recognition: Rajjan Shinghal, Oxford University Press New Delhi, 2006
4. Ensemble Methods, Foundations and Algorithms, Zhi-Hua Zhou, A CRC Press, Chapman and HallBook, 2010
5. Pattern Recognition, Robi Polikar, Wiley Encyclopedia of Biomedical Engineering, 2006 John Wiley & Sons, Inc



MCA-405 ELECTIVE-VI (1)

Mobile Application Programming

- 1. Introduction of Mobile Application:** Fundamentals of mobile applications, mobile Application environment and mobile operating Systems, IDEs and various Tools.
- 2. Introduction of Mobility and Building blocks of Mobile Application.:** Mobile Application development Activity life cycle, Mobile Landscape, Mobile Platforms, overview of various Mobile application tools.
- 3. Mobile Operating Systems:** Android library and its characteristic, iOS library and its characteristic, Windows Phone 7 library and its characteristic
- 4. App functionality based User interface and Mobile functions:** Application user Interface designing, User Interface Element, Menu, interaction among the activities. Threads, Asynchronous task, Service – states and life cycles, Notifications, Broadcast receivers, Telephony and SMS API, Animation API multimedia –Audio/Video playback and record, location aware etc.
- 5. Mobile Application development in Android:** Android Architecture -Android Stack –Linux Kernel, Android Runtime Environment Dalvik virtual Machine, Android Emulator. Basics Application creation and deployment in Android, Introduction of mobile application database SQLite.

Readings:

1. Professional Mobile Application Development, Jeff Mcwherter, Scott Gowell, Wrox Publisher, 1st Ed. 2012
2. Sams Teach Yourself Android Application Development in 24 Hrs, Lauren Darcy and Shane Conder, 1sted.
- 3:-Android Programming, Bill Philips and Brain Hardy.
- 4:Android Recipes : A problem-Solution Approach ,Dave Smith and Jeff friesen.



MCA-405 ELCETIVE-VI (2)

C# and .NET Framework

- 1. Introduction to C# :** Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data types, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations
- 2. Object oriented aspects of C#:** Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions
- 3. Application Development on .NET:** Building Windows Applications, Accessing Data with ADO.NET
- 4. Web Based Application Development on .NET:** Programming Web applications with Web Forms, Programming Web Services
- 5. The CLR and the .NET Framework:** Assemblies, Versioning, Attributes, Reflection, Viewing Meta Data, Type Discovery, Reflecting on a type, Marshalling, Remoting, Understanding Server Object Types, Specifying a server with an Interface, Building a server, Building the Client, Using Single Call, Threads.

Readings

1. Programming in C#, E.Balagurusamy (Unit I, II)
2. Programming in C#, J. Liberty 2nd Edition – O'Reilly (Unit III, IV, V)



MCA 504 ELECTIVE –VII (1)

Big Data Analytics

1. **Understanding Big Data:** Datasets, Data Analysis, Data Analytics-Descriptive Analysis, Diagnostics Analytics, Predictive Analytics, Prescriptive Analytics, Big Data Characteristics – volume, velocity, variety, veracity, value, Different Types of Data – Structured Data, Unstructured Data, Semi-Structured Data
2. **INTRODUCTION HADOOP:** Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.
3. **HADOOP ARCHITECTURE :** Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read, NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Task trackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering –Monitoring & Maintenance.
4. **Theory and methods for big data analytics:** Regression Modeling, Multivariate Analysis, Bayesian Modeling, Inference and Bayesian Networks, Support Vector and Kernel Methods, Analysis of Time Series: Linear Systems Analysis, Nonlinear Dynamics, Rule Induction, Decision Trees.
5. **Programming with R :** Basic Syntax, Data types, Variables, Operators, Decision Making, Loops, Functions, Vectors, lists, Matrices, Arrays, Data Frames, R Data Interfaces – CSV Files, Excel Files, Database, R charts & graphs , R statistics – Mean, Median, Mode, Linear Regression.

Readings:

1. Chris Eaton, Dirk deRoos et al. , “Understanding Big data ”, McGraw Hill, 2012.
2. “Big Data Fundamentals: Concepts, Drivers & Techniques”, 1/e, 2016, Thomas Erl, Wajid Khattak, Paul Buhler, Prentice Hall.
3. “Big Data Analytics with R and Hadoop”, 1e, 2013, Vignesh Prajapati, Packt Publishing Ltd, UK.
4. “The Art of R Programming: A Tour of Statistical Software Design”, revised, 2011, Norman Matloff, No Starch Press
5. . "Hadoop: The Definitive Guide," 3/e, 2012, Tom White, O'REILLY Publications.
6. "Understanding Big Data: Analytics for Enterprise Class Hadoop and streaming Data" ,2012, Paul Zikopoulos, IBM, Chris Eaton, Paul Zikopoulos, The McGraw-Hill Companies.
7. "Analytics in a Big Data World: The Essential Guide to Data Science and its Applications", 2014, Bart Baesens, Wiley Publications .



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8. "Mining of Massive Datasets", 2012, Anand Rajaraman and Jeffrey David Ullman , Cambridge University Press



Department : **Computer Science and Information Technology**

Programme Name : **B.Sc(CS)**

Academic Year : **2017-18**

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
08.	PCSC-402	Introduction to Computer Network
09	PCSC-604	Introduction to Artificial Intelligence

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**Department of Computer Science & Information technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.
SYLLABUS FOR UG/PG INTEGRATED (CS) COURSE UNDER CHOICE BASED CREDIT SYSTEM (CBCS)**

Semester 1

Session 2017-18 (On and after)

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-101	Fundamentals of Computers and Programming Methodology	2		20	30	2
2	PCSC-102	Introduction to Logics of Computer	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Hindi	2		40	60	2
8		English	2		40	60	2
9	PCSC-103	Lab based on Computer Science		2	20	30	2



10		Lab based on Physics/Electronics		2	20	30	2
			18	4	260	390	22

Semester 2

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-201	Introduction to Data Structures	2		20	30	2
2	PCSC-202	Computer Programming using C	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Hindi	2		40	60	2
8		English	2		40	60	2
9	PCSC-203	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			18	4	260	390	22

Semester 3

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-301	Computer Based Numerical Methods	2		20	30	2
2	PCSC-302	Database Management Systems	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Environment - I	3		40	60	3
8	PCSC-303	Lab based on Computer Science		2	20	30	2
9		Lab based on Physics/Electronics		2	20	30	2
			17	4	220	330	21



Semester 4

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-401	System Analysis and Design	2		20	30	2
2	PCSC-402	Introduction to Computer Networks	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Environment - I	3		40	60	3
9	PCSC-403	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			17	4	220	330	21

Semester 5

Sno	Subject Code	Title	Credit		Marks		Remarks
			L	P	Internal	External	
1	PCSC -501	Introduction to OOPS (C++)	4		20	30	4
2	PCSC-502	Introduction to Operating Systems	4		20	30	4
3	PCSC-503	Internet Applications	4		20	30	4
4	PCSC-504	Introduction to Software Engineering	4		20	30	4
5	PCSC-505	Minor Project		4		100	4
		Total	16	4	80	220	20

Semester 6

Sno	Subject Code	Title	Credit		Marks		Remarks
			L	P	Internal	External	
1	PCSC -601	Programming in Visual Basic	4		20	30	4
2	PCSC-602	Introduction to JAVA	4		20	30	4
3	PCSC-603	Linux Operating System and Shell Programming	4		20	30	4
4	PCSC-604	Introduction to Artificial Intelligence	4		20	30	4
5	PCSC-605	Major Project		4		100	4
		Total	16	4	80	220	20

Total Course Credits – 126

*** The syllabus is subjected to change as per the requirement.**



Subject - Introduction to Computer Networks
Papercode-PCSC-402

Introduction: Goal and application, Network Hardware and Software, Connection oriented and connection less services, Types of computer Network: LAN, MAN, WAN, Topologies, Transmission mode.

Reference Models – The OSI Reference model, The TCP/IP Model, Function of the layers.

Physical Layer: Data and signal, Analog and digital Communication, Transmission Media Guided Media, Unguided Media, Transmission Impairment, Switching Techniques, Multiplexing – FDM, WDM, TDM.

Data Link Layer: Data Link Layer design issues Data link control: Framing, Flow control. Error detection and correction. Protocol: Stop and Wait Protocol, Sliding window protocol, introduction to MAC.

Network Layer : The Network Layer Design Issue, IP addressing, Address mapping, Multicasting, subnetting.

Readings:

1. Data Communications and Networking By Forouzan, Tata McGraw Hill Company.
2. Computer Networks By A.S. Tanenbaum
3. Computer Network By S.S.Shinde , New Age International Publisher.



Subject - Introduction to Artificial Intelligence
Paper Code - PCSC - 604

Introduction: Meaning, importance to make machines intelligent, challenges before AI, Different areas of A.I. Applications, exactness in AI solutions, meaning of natural language processing (NLP)

Problems Solving in AI: Understanding a problem, state space, state space search, production systems, some AI problems like Tic Tac Toe, 8 puzzle, cannibals and missionary, solution of a water jug problem using production system

Search Techniques: Meaning and importance, blind search and informative search techniques, depth first and breadth first search, algorithms and examples, best first search with examples

Knowledge Representation: Propositions and propositional logic, applications and examples, limitations, Predicate logic, converting from simple sentences to predicate, simple semantic net

LISP: Simple statements and programs using LISP

Readings:

1. E. Rich and K. Knight, Artificial Intelligence, Tata McGraw Hill.
2. LISP Programming: Any online tutorial / Lecture Notes



Department : Computer Science and Information Technology

Programme Name : M.Sc(CS)

Academic Year : 2017-18

List of New Course(s) Introduced

Sr. No.	Course Code	Name of the Course
06.	MSC-304 (Elective-III(3))	Neural Network
07.	MSC-304 (Elective-III(1))	Advanced Java Programming

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Department of Computer Science & Information Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
SYLLABUS FOR MSC COURSE UNDER CHOICE BASED CREDIT SYSTEM (CBCS) *

Session 2017-18(on and after)

M.Sc(CS)

Note: The decision of the GG Vishwavidyalaya for implementing CBCS system on this course shall be final, rest will remain the same.

Semester 1

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MSC-101	Introduction to Information Technology	4		40	60	4



2	MSC-102	Computer programming & Numerical Methods	4		40	60	4
3	MSC-103	Discrete Mathematical Structures	4		40	60	4
4	MSC-104	Data Structures using C	4		40	60	4
5	MSC-105	Computer Organization	4		40	60	4
6	MSC-106	LAB-I: Data Structure using C		1		100	1
7	MSC-107	LAB-II: Computer Hardware and Digital Electronics		1		100	1
		Total	20	02	200	500	22

Semester 2

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MSC-201	Principles of Operating system	4		40	60	4
2	MSC-202	Object Oriented Programming with C++	4		40	60	4
3	MSC-203	Theory of Computation	4		40	60	4
4	MSC-204	Elective I	4		40	60	4
5	MSC-205	Elective II	4		40	60	4
6	MSC-206	OOP Lab (C++)		1		100	1
7	MSC-207	LAB based on Elective-II		1		100	1
		Total	20	02	200	500	22



Syllabus for MSC [on and after 2017]

Semester 3

Sno	Subject Code	Title	Credit		Marks		Credits
			L	P	Internal	External	
1	MSC-301	Probability and Statistics	4		40	60	4
2	MSC-302	Artificial Intelligence	4		40	60	4
3	MSC-303	Relational Data Base Management System	4		40	60	4
4	MSC-304	Elective III	4		40	60	4
5	MSC-305	Elective IV	4		40	60	4
6	MSC-306	RDBMS LAB		1		100	1
7	MSC-307	LAB based on Elective III / IV		1		100	1
		Total	20	02	200	500	22

Semester 4

M.Sc. (CS)IV th Semester			
S.No.	Subject Code	Subject	Total Marks
1.	M.Sc. (CS)401	Major Project (Viva Voce)	500
Total			500

ELECTIVES

Sl.No	Paper Code	(1)	(2)	(3)
1	MSC-204 (Eletive-I)	Computer Networks	System Analysis and Design	Introduction to Micro Processor
2	MSC-205 (Elective-II)	Object Oriented Software Engineering	Multimedia	Linux Operating System and Shell Programming
3	MSC-304 (Elective-III)	Advanced JAVA Programming	System Software	Neural Network
4	MSC-305 (Elective-IV)	Web Technology	Pattern Recognition	Compiler Design

*** The syllabus is subjected to change as per the requirement.**



Syllabus for MSC [on and after 2017]

MSC-304 ELECTIVE-III (1)

Advanced Java Programming

1. **Basics of Core JAVA:** class, interface, exception handling. **Collections** : Collection Interfaces, Concrete Collections, The Collections Framework **Multithreading** : Creating thread and running it, Multiple Thread acting on single object, Synchronization, Thread communication, Thread group, Thread priorities, Daemon Thread, Life Cycle of Thread.
2. **Networking:** Internet Addressing, InetAddress, Factory Methods, Instance Methods, TCP/IP Client Sockets, URL, URL Connection, TCP/IP Server Sockets, Datagrams. **Java Database Connectivity (JDBC):** Merging Data from Multiple Tables: Joining, Manipulating, Databases with JDBC, Prepared Statements, Transaction Processing, Stored Procedures.
3. **Servlets:** Servlet Overview and Architecture, Interface Servlet and the Servlet Life Cycle, Handling HTTP get Requests, Handling HTTP post Requests, Redirecting Requests to Other Resources, Session Tracking, Cookies, Session Tracking with HttpSession
4. **Java Server Pages (JSP):** Introduction, JavaServer Pages Overview, A First JavaServer Page Example, Implicit Objects, Scripting, Standard Actions, Directives, Custom Tag Libraries, **Enterprise Java Bean:** Preparing a Class to be a JavaBean, Creating a JavaBean, JavaBean Properties, Types of beans, Stateful Session bean, Stateless Session bean, Entity bean
5. **Remote Method Invocation:** Defining the Remote Interface, Implementing the Remote Interface, Compiling and Executing the Server and the Client, **Struts:** Basics of Struts, Struts : What and Why? , Model1 vs Model2 , Struts2 Features, Steps to create Struts application , Understanding Action class , Understanding struts.xml file

Readings:

1. "Advanced Java 2 Platform HOW TO PROGRAM" by H. M. Deitel, P. J. Deitel, S. E. Santry – Prentice Hall
2. "Beginning Java™ EE 6 Platform with GlassFish 3 From Novice to Professional" by Antonio Goncalves – Apress publication



MSC-304 ELECTIVE-III (3)

Neural Network

1. **Introduction:** What is a neural network, benefits, model of a simple neuron, various components and their meaning used in the simple model of an artificial neuron
2. **Models of Neural Networks:** Single layer, multi layer perceptrons, types of transfer functions, recurrent networks , calculation of output in forward propagation in these networks, linearity and nonlinearity in models,
3. **Supervised and Back Propagation Networks:** Meaning of supervised learning with examples, Learning rules, errors and their calculations, learning in a neural network, training and testing of a neural network in prediction for single layer only, local minima, momentum, over-fitting in neural networks
4. **Unsupervised learning:** Meaning of supervised learning with examples and applications, learning with a teacher, Self Organized Feature Maps (SOFM), Kohonen Network learning and their examples
5. **Applications:** Neural Networks and their applications in classification, prediction, identification



Readings:

1. Neural Networks: A Comprehensive Foundation: Simon Haykin, Prentice Hall [2001 or later]
2. Neural Network Design: Hagan, Demuth, Beale, Thomson Learning, [2001 or later]
3. Introduction to Neural Networks Using MATLAB 6.0: Sivanadam, Sumathi, Deepa, The McGraw Hill[2006 or later]

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