Course Code: CSDT124C	**Course Name: Soft Computing**	**Total Lectures (30 Hours)**
Teaching Scheme : 4 hrs/week	**Examination Scheme:** **IA: 15 Marks** **UE: 35 Marks**	**No. of Credits 2**
Course Prerequisites:	• A strong mathematical background • Proficiency with algorithms • Critical thinking and problem solving skills	
Course Objectives:	• To introduce the ideas of soft computational techniques based on human experience. • To generate an ability to design, analyze and perform experiments on real life problems using various Neural Learning Algorithms. • To conceptualize fuzzy logic and its implementation for various real world applications. • To apply the process of approximate reasoning using Neuro-Fuzzy Modeling. • To provide the mathematical background to carry out optimization using genetic algorithms.	

Chapter	**Course Contents**	**No. of Lectures**
1	**Introduction to Soft Computing** Neural Networks: Definition, Advantages, Applications, Scope. Fuzzy logic: Definition, Applications. Genetic Algorithms: Definition, Applications.	2
2	**Neural Network** Fundamental Concept: Artificial Neural Network, Biological Neural Network, Brain vs. Computer-Comparison Between Biological Neuron and Artificial Neuron (Brain vs. Computer), Artificial Neurons, Neural Networks and Architectures: Neuron Abstraction, Neuron Single Functions, Mathematical Preliminaries, Neural Networks Defined, Architectures: Feedforward and Feedback, Salient Properties of NeuralNetworks Geometry of Binary Threshold Neurons and Their Networks: Pattern Recognition and Data Classification, Convex Sets, Convex Hulls and Linear Separability, Space of Boolean Functions, Binary Neurons are Pattern Dichotomizers, Non-linearly Separable Problems, Capacity of a Simple Threshold Logic Neuron, Revisiting the XOR Problem, Multilayer Networks, How Many Hidden Nodes areEnough? Learning and Memory: An Anecodatal Introduction, Long Term Memory, The Behavioral Approach to Learning, The Molecular Problem of Memory, Learning Algorithms, Error Correction and Gradient	15

	Descent Rules, Learning Objective for TLNs, Pattern Space and Weight Space. Linear Seperabilty, Hebb Network, Perceptron Network. α- Least Mean Square Learning.	
3	**Fuzzy Set Theory** Brief Review of Conventional Set Theory, Introduction to Fuzzy Sets, Properties of Fuzzy Sets, Operations on Fuzzy Sets, Crisp Relation, Fuzzy Relation, Tolerance and equivalence relation, Fuzzy Tolerance and equivalence relation, Fuzzy Max-Min and Max-Product Composition, Membership Functions, Fuzzification, Defuzzification to crisp sets, λ-Cuts for fuzzy Relations, Fuzzy (Ruled-Based) system, Graphical technique of inference, Membership value assignment-Intuition, Inference.	9
4	**Genetic Algorithms** What are Genetic Algorithms? Why Genetic Algorithms? Traditional Optimization and Search Techniques,Simple GA, Terminologies and Operators in GA, Encoding, Selection, Crossover, Mutation, Search Termination, Constraints in GA	4

References:

Sr. No.	Title of the Book	Author/s	Publication
1	Fuzzy Logic With Engineering Applications	Timothy Ross	Wiley Publication
2	Introduction to Soft Computing	Deepa & Shivanandan	Wiley Publication
3	Genetic Algorithms in Search, Optimization and Machine Learning	David E. Goldberg	Pearson Education
4	Fundamentals of Neural Networks – Architectures, Algorithms, And Applications	Laurene Fausett	Pearson Education
5	Neural Networks	Satish Kumar	Tata McGrawHill

CSDP124C: Soft Computing Practical Assignment

Implement the programs in C/C++/Java/MATLAB

Sr. No	Assignment
1.	Write a program to implement Fuzzy Operations Union Intersection Complement Algebraic sum Algebraic product Cartesian product
2.	Write a program to implement De Morgans law.
3.	Write a program to implement Max-Min Composition and Max-Product Composition.
4.	Write a program to implement lambda cut
5.	Write a program to implement Activation Function.
6.	Write a program to implement Perceptron Learning Rule
7.	Write a program to implement Hebb's Rule
8.	Write a program to implement Feed Forward Network
9.	Write a program for building an Artificial Neural Network by implementing the Back propagation Algorithm and test the same using appropriate data sets.
10.	Write a program for solving linearly separable problem using Perceptron Model.
11.	Write a program to develop supervised learning algorithm
12.	Write a program to study and analyze genetic life cycle

Course Code: CSDT 114C	**Course Name: Web Services**	**Total Lectures (30 Hours)**
Teaching Scheme : 4 hrs/week	**Examination Scheme: IA: 15 Marks UE: 35 Marks**	**No. of Credits 2**
Course Prerequisites:	• Strong knowledge about Java programming. • Good Understanding of Object Oriented Programming concepts. • Must be familiar with XML.	
Course Objectives:	• To understand the details of web services technologies like WSDL,UDDI, SOAP • To learn how to implement and deploy web service client and server • To explore interoperability between different frameworks • To understand the concept of RESTful system.	
Chapter	**Course Contents**	**No. of Lectures**
1	**Web Service and SOA fundamentals** **Introduction to Web Services** — The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services. **Web Services Architecture** — Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication models, basic steps of implementing web services.	6
2	**SOAP: Simple Object Access Protocol** Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP communication model, Building SOAP Web Services, developing SOAP Web Services using Java, Error handling in SOAP, Advantages and disadvantages of SOAP.	8

3	**Unit III : Describing and Discovering Web Services** **WSDL -** WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL, Service discovery, role of service discovery in a SOA, service discovery mechanisms, **UDDI** – UDDI Registries, uses of UDDI Registry, Programming with UDDI, UDDI data structures, support for categorization in UDDI Registries, Publishing API, Publishing information to a UDDI Registry, searching information in a UDDI Registry, deleting information in a UDDI Registry, limitations of UDDI.	8
4	**Unit IV : The REST Architectural style :** Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services	8

References:

Sr. No.	Title of the Book	Author/s	Publication
1	Building Web Services with Java, 2nd Edition	S. Graham and others	Pearson Edn., 2008.
2	J2EE Web Services	Richard Monson-Haefel	Pearson Education.
3	Java Web Services Programming,	R.Mogha,V.V.Preetham	Wiley India Pvt.Ltd.
4	XML, Web Services, and the Data Revolution	F.P.Coyle	Pearson Education

CSDP114C: Web Services Practical Assignments

Pre-requisites

- Strong knowledge about Java programming / PHP / .Net Framework
- Good Understanding of Object Oriented Programming concepts.
- Must be familiar with XML.

Objectives

- To understand how to develop web services using Java/PHP/.Net

Sr. No.	Assignment
1.	Create 'Dynamic Web Project', which will host your web service functionality to greet the user according to server time and create 'Dynamic Web Project', which will host the client application that will send user name and test the web service.
2.	Create 'Dynamic Web Project', which will host your web service functionality to convert Celsius to Fahrenheit and create 'Dynamic Web Project', which will host the client application that will send Celsius and test the web service.
3.	Create 'Dynamic Web Project', which will host your web service functionality to find the factorial of given number and create 'Dynamic Web Project', which will host the client application that will send positive integer number and test the web service.
4.	Create 'Dynamic Web Project', which will host your web service functionality to validate email id (use regular expression) and create 'Dynamic Web Project', which will host the client application that will send email id and test the web service.
5.	Create 'Dynamic Web Project', which will host your web service functionality to validate user name and password (use database for storing username and password) and create 'Dynamic Web Project', which will host the client application that will send user name and password and test the web service.
6.	Create 'Dynamic Web Project', which will host your web service functionality to select employee details (use database for storing emp details (eno, ename, designation, salary)) and create 'Dynamic Web Project', which will host the client application that will send employee name and display the details.
7.	Create 'Dynamic Web Project', which will host your web service functionality to select Movie details (Movie(mno, mname,release_year) and Actor(ano,aname), 1 : M cardinality) and create 'Dynamic Web Project', which will host the client application that will send actor name and display the details.
8.	Create 'Dynamic Web Project', which will host your web service functionality to validate mobile no (use regular expression: should contain only 10 numeric no) and create 'Dynamic Web Project', which will host the client application that will send mobile no and test the web service.
9.	Create 'Dynamic Web Project', which will host your web service functionality to convert Rupees to Dollar, Pound, Euro,….. and create 'Dynamic Web Project', which will host the client application that will send amount in Rupees & type of conversion and tests the web service.

10.	Create 'Dynamic Web Project', which will host your web service functionality to give the suggestion for given key word and create 'Dynamic Web Project', which will host the client application that tests the web service.
11.	Create 'Dynamic Web Project', which will host your web service functionality to find area and volume of the circle and create 'Dynamic Web Project', which will host the client application that tests the web service.
12.	Create 'Dynamic Web Project', which will host your web service functionality to find number of vowels in the given string and create 'Dynamic Web Project', which will host the client application that tests the web service.
13.	Create 'Dynamic Web Project', which will host your web service functionality to convert decimal number to Binary, Octal, Hexa Decimal and create 'Dynamic Web Project', which will host the client application that will send decimal number & type of conversion and test the web service.
14.	Create 'Dynamic Web Project', which will host your web service functionality to validate user name and password (use database for storing username and password) and create 'Dynamic Web Project', which will host the client application that will send user name and password and test the web service.
15.	Create 'Dynamic Web Project', which will host your web service functionality for returning book price and create 'Dynamic Web Project', which will host the client application that will send Book Name