BHARATHIDASAN UNIVERSITY

TIRUCHIRAPPALLI – 620 024

M. PHIL. COMPUTER SCIENCE (FT / PT) PROGRAMME

(For the candidates to be admitted from the academic year 2007-2008 onwards)

SEMESTER – I

	COURSE TITLE	MARKS			CREDITS
		IA	UE	Total	
COURSE–I	Data Warehousing & Data Mining	25	75	100	4
COURSE– II	Network Security	25	75	100	*4*
COURSE– III	Web Services	25	75	100	4

SEMESTER - II

COURSE– IV (ELECTIVE)	Open Source Lab	25	75	100	4
	Dissertation and Viva-Voce Viva Voce 50 marks Dissertation 150 marks	200 (150+50)			8

QUESTION PAPER PATTERN (Paper I – IV)

Part - A: Two questions from each unit (without choice). Each question carries 2 marks. (10 x 2 = 20)

Part – B: One "EITHER OR" questions from each unit Each question carries 5 marks (5 x5 = 25).

Part – C: One question from each unit. Each question carries 10 marks.

The candidate has to answer three questions out of the five questions (3 x 10 = 30)

M. Phil., Computer Science - Syllabus

Core Course I DATA WAREHOUSING AND DATA MINING

UNIT I: INTRODUCTION

Data Mining-motivation, importance-DM Functionalities, Basic Data Mining Tasks, DM Vs KDD,DM Metrics, DM Applications, Social implications.

UNIT II: DATA WAREHOUSING

Difference between Operational Database and Data warehouse-Multidimensional Data Model: From tables to data Cubes, Schemas, Measures-DW Architecture: Steps for design and construction of DW, 3-tier DW Architecture-DW Implementation: Efficient computation of DATA Cubes, Efficient Processing of OLAP queries, Metadata repository.

UNIT III : DATA PREPROCESSING, DATA MINING PRIMITIVES,LANGUAGES

Data cleaning, Data Integration and Transformation, Data Reduction. Discretization and concept Hierarchy Generation. Task-relevant data, Background Knowledge, Presentation and Visualization of Discovered Patterns. Data Mining Query Language-other languages for data mining

UNIT lV: DATA MINING ALGORITHMS

Association Rule Mining: MBA Analysis, The Apriori Algorithm, Improving the efficiency of Apriori. Mining Multidimensional Association rules from RDBMS and DXV. Classification and Predication: Decision Tree, Bayesian Classification back propagation, Cluster Analysis: Partitioning Methods, Hierarchical Method, Grid-based methods, Outlier Analysis.

UNIT V: WEB, TEMPORAL AND SPATIAL DATA MINING

Web content Mining, Web Structure Mining, Web usage mining. Spatial Mining: Spatial DM primitives, Generalization and Specialization, Spatial rules, spatial classification and clustering algorithms. Temporal Mining: Modeling Temporal Events, Times series, Pattern Detection, Sequences.

Text Book:

1.Jiawei I-lan, & Micheline kamber,"data Mining: Concepts and Techniques". Harcourt India Private Limited, First Indian Reprint,2001

REFERENCES:

1.Margaret H.Dunham,"Data Mining: Introductory and Advanced Topics".Pearson Education,First Indian Reprint,2003
2.Arun K. Pujari," Data Mining Techniques", University Press (India) Limited, First Edition,2001
3.Efrem Mallach,"Decision Support and Data Warehouse Systems", Mcgraw-Hill International Edition,2000

Core Course II NETWORK SECURITY

UNIT I:
Overview – Symmetric Ciphers : Classical Encryption Techniques

UNIT II :
Symmetric Ciphers : Block ciphers and the Data Encryption Standards Public-key Encryption and Hash Functions: Public-Key Cryptography and RSA

UNIT III:
Network Security Practices : Authentication applications – Electronic Mail Security

UNIT IV:
Network Security Practices : IP Security – Web Security

UNIT V:
System Security : Intruders – Malicious Software – Firewalls

Text Book:

1. William Stallings, ”Cryptography and Network Security – Principles and Practices”, Prentice-Hall, Third edition, 2003

References:

1. Johannes A. Buchaman , “Introduction to cryptography”, Springer-Verlag.
2. Atul kahate , “Cryptography and Network Security”, TMH

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Core Course III - Web Services

Unit – I
Introduction – What are web services? SOAP WSDL UDDI-Why Web Services are important ? - The evolution of web applications Not just another distributed computing platform – Web services and enterprises.

Unit –II
XML Fundamentals: XML: The Lingua Franca of web services- XML Documents-XML namespaces Explicit and Default namespaces, Inheriting namespaces, And not inheriting namespaces, Attributes and namespaces - XML Schema XML schema and namespaces, A first schema, Implementing XML schema types, The any Element, Inheritance, Substitution groups, Global and local type declarations, Managing Schemas, Schemas and instance documents, XML schema best practices- Processing XML SAX: Simple API for XML, DOM: Document object Model, XSLT, XPATH

Unit – III
SOAP and WSDL: The SOAP Model- SOAP- SOAP Messages SOAP Envelope, SOAP Header, SOAP Body, SOAP Faults- SOAP encoding – SOAP RPC- Using alternative SOAP Encodings, Document, RPC, Literal, Encoded SOAP RPC and SOAP Document-Literal, SOAP web services and the REST Architecture- Looking back to SOAP 1.1 Syntactic differences between SOAP 1.2 and SOAP 1.1- Changes to SOAP-RPC- SOAP

Encoding- WSDL structure, The stock quote WSDL interface, definitions, The type element, bindings, services, managing WSDL descriptions, Extending WSDL – Using SOAP and WSDL

Unit – IV

UDDI: UDDI at a glance- The UDDI Business registry- UDDI under the covers – Accessing UDDI- How UDDI is playing out - **Conversations:** Overview – Web Services – Web services Conversation Language – WSCL Interface components – The Bar scenario conversations – Relationship between WSCL and WSDL - **Workflow:** Business Process Management – Workflow and Workflow management systems – Business process execution language for web services

Unit – V

Transactions: ACID Transactions – Distributed Transactions and two phase commit – Dealing with Heuristic outcomes – Scaling transactions to web services – OASIS business transaction protocol – Other web services transaction Protocol - **Security:** Everyday security basis – Security is an end to end product – Web service security issues – Types of Security attacks and threats - Web services security road map

Text Book:

1. Developing Enterprise Web Services - An Architect's Guide – Sandeep Chatterjee, James Webber, Pearson Education– Second Indian Reprint 2005.

Reference Book:

1. Understanding SOA with Web Services, Eric Newcomer, Greg Lomow, Pearson Education, First Indian Reprint 2005.

Elective – Open Source Lab

List of sample Open source lab exercises which are not restricted to the examination

1. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.

2. Write a PHP program that adds products that are selected from a web page to a shopping cart

3. Write a PHP program to access the data stored in a mysql table
4. Write a PHP program interface to create a database and to insert a table into it.

5. Write a PHP program using classes to create a table
6. Write a PHP program to upload a file to the server
7. Write a PHP program to create a directory and to read contents from the directory

8. Write a shell program to find the details of an user session
9. Write a shell program to change the extension of a given file
10. Create a mysql table and execute queries to read, add remove and modify a record from that table

11. Write a PHP program to update and delete a table
12. Storing and Retrieving Information from files
13. Creating a User Registration form for an online shopping site
14. User Authentication Scripts
15. Building a Web-Based E-mail services