VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

M.Sc. (Bio-Informatics)

Effective From 2007-08

SEMESTER - IV

Paper No	Paper Title	Th./Pr Per week	External Exam Duration	Marks		
				Int.	Ext.	Total
SEMESTER - IV						
BI401	Pharamacogenomics & Pharmacogenetics	6*	3 Hrs.	30	70	100
BI402	Data Warehouse & Data Mining	6*	3 Hrs.	30	70	100
BI403	Seminar			30	10	100
BI404	Project			75	175	250

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BI 401 : Pharamacogenomics & Pharmacogenetics

Unit-I

-- Introduction to Pharmacogenomics & Pharmacogenetics
-- Pharmacogenomics and the promise of Personalized medicine
-- Future of Pharmacogenomics

Unit- II

-- Pharmacogenetics of drug metabolism.
-- Receptors of drugs
-- Pharmacogenetics of drug transporters.
-- Clinical perspectives.

Unit-III

-- Technologies & Challenges of Pharmacogenetics
-- Technologies for analysis of SNPs.
-- Molecular diagnostics.
-- Metabonomics.

Unit-IV

-- Gene expression analysis in Pharmacogenetics & Pharmacogenomics.
-- Haplotype and Pharmacogenomics
-- Pharmacoepigenetics
-- Regulatory Perspectives on Pharmacogenomics.

Reference Books:

(1) **Bioinformatics:** From Genomics to drugs By Thomas lenganer.

(2) **Principal of Pharmacology**: By David E. Golan.

(3) **Pharmacogenomics:** An approach to new drug development By C. Chakraborty & A.Bhattacharya

(4) **Molecnlar modeline**- Principles and applications By Andrew R. Leach.

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BI 402 : Data Warehouse & Data Mining

UNIT - I

Introduction

1.1 Data Warehouse characteristics
1.2 Data Marts

Online Analytical Processing

1.3 OLTP and OLAP systems
1.4 Star schema for multidimensional view
1.5 Multi-fact star schema or snow flake schema
1.6 OLAP Tools

UNIT - II

Developing A Data Warehouse

1.7 Building a Data Warehouse
1.8 Architectural strategies & Design issues
1.9 Data Content
1.10 Metadata
1.11 Distribution of data
1.12 Tools for Data Warehousing
1.13 Performance considerations

UNIT - III

Data Mining

1.14 Introduction
1.15 Data Description
1.15.1 Clustering
1.15.2 Link Analysis
1.16 Predictive Data Mining
1.16.1 Classification
1.16.2 Regression
1.16.3 Time Series

UNIT - IV

1.16.4 Models & Patterns
1.16.5 Decision Trees
1.16.6 Multivariate adaptive regression splines
1.16.7 Rule Induction
1.16.8 K-nearest neighbour and memory based reasoning
1.16.9 Logistic regression
1.16.10 Discriminant Analysis
1.16.11 Generalized Adaptive models
1.16.12 Genetic algorithms
1.16.13 Pattern Structures

1.16.13.1 Patterns in Data Matrices
1.16.13.2 Patterns for Strings

2. Applications of Data Warehousing and Data Mining

REFRENCES

1. R. Kinball: Data Warehouse Toolkit – John Wiley & Sons
2. Efrem G. Mallach : Decision Support and Data Warehouse Systems – TMH
3. Paulraj Pulliah : Data Warehousing Fundamentals – Wiley
4. S. Anahory & D. Murray: Data Warehousing in the real world – Addison Wesley
5. R. Kinball, L.Reeves : The Data Warehouse Lifecycle Toolkit – John Wiley & Sons
6. David Hand, Heikki Mannila,Padhraic Smyth : Principles of Data Mining- PHI
7. C.S.R.Prabhu : Data Warehousing – PHI
8. Hillol Kargupta, Anupam Joshi, Yelena Yesha, Krishnamoorthy Sivakumar : Data Mining Next Generation Challenges & Future Directions – PHI
9. Jiawei Han, Micheline Kamber : Data Mining Concepts & Techniques
10. Dunham : Data Mining Introductory and Advanced Topics - Pearson

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BI-403 : Seminar

Students are required to prepare a seminar, which is based on any subject connected with bio informatics. The prior approval of the subject is necessary from the department. Seminar report to be prepared and to be presented before the examiners.

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BI-404 : Project

Students are required to undertake a project work of three months (Full Time) in any institute where work regarding bio informatics is carried out or in the department under supervision of a teacher assigned by the department. Project report to be prepared and to be presented before the examiners.