## CURRICULUM & SYLLABUS

### SEMESTER - I

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<th>SL. No.</th>
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OBJECTIVES
1. To understand the concepts and Practices of Teaching Methodology in Higher Education
2. To understand the Concept and Practices of Educational Psychology
3. To develop the awareness in modern teaching practices and evaluation
4. To provide systematic knowledge about motivation and emotion

UNIT - I
15

UNIT – II
10

UNIT – III
10

UNIT – IV
15
UNIT – V

TOTAL HOURS: 60

REFERENCE BOOKS:

CA401 RESEARCH METHODOLOGY IN COMPUTER APPLICATIONS 4 1 0 5

Objectives

- To understand about the Research Process, Design and Measurement
- To understand about Data Collection Techniques and Report Writing
- To understand about the research tools in computer Applications

UNIT I

Scientific research – Building blocks of science in research – Concept of applied and basic research – Quantitative and qualitative research techniques – Need for theoretical framework – Hypothesis development – Hypothesis testing with quantitative data – Research design – Purpose of study – Exploratory, Descriptive, Hypothesis testing.
UNIT II
Formulating a Research Problem - Reviewing the Literature - Formulating a Research Problem - Identifying Variables - Constructing Hypotheses.

UNIT III

UNIT IV

UNIT V

Total Hours: 60

REFERENCES:


CA402 RESEARCH TRENDS IN COMPUTATION AND ITS APPLICATIONS 4 1 0 5

Objectives

- To understand about the basic concepts of Algorithms
- To understand about the basic concepts of Distributed computing
- To understand about the basic concepts of Formal Language Theory
UNIT I: Algorithms & Computational Complexity

UNIT II: Distributed Computing

UNIT III: Logic in Computer Science

UNIT IV: Concurrency
Roadmap Of Infinite Results - Construction and Verification of Concurrent Performance and Reliability Models - Combining Nondeterminism and Probability - The Algebraic Structure of Petri Nets.

UNIT V: Formal Language Theory

REFERENCES:

# NOORUL ISLAM UNIVERSITY

## DEPARTMENT OF COMPUTER APPLICATIONS

### M.PHIL. COMPUTER APPLICATIONS

#### CURRICULUM & SYLLABUS

#### SEMESTER - II

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**LIST OF ELECTIVES**

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Objectives
- To understand the basics of cryptography
- Learn to find the vulnerabilities in programs and to overcome them,
- Know the different kinds of security threats in networks and its solution
- Know the different kinds of security threats in databases and solutions available
- Learn about the models and standards for security.

UNIT I ELEMENTARY CRYPTOGRAPHY

UNIT II PROGRAM SECURITY

UNIT III SECURITY IN NETWORKS

UNIT IV SECURITY IN DATABASES

UNIT V SECURITY MODELS AND STANDARDS

REFERENCES:

TOTAL: 60 PERIODS
CA4A2       DIGITAL IMAGE PROCESSING TECHNIQUES

L   T   P   C
4   1   0   5

Objectives
- To learn Image Fundamentals and Processing Techniques
- To be familiar with Image Transformations in Spatial Domain and Frequency Domain
- To learn various Filters for Image Restoration
- To study various Image Compression and Segmentation Techniques

UNIT I
12
Elements of digital image processing systems, Elements of visual perception, brightness, contrast, hue, saturation, Color image fundamentals - RGB, HSI models, Image sampling, Quantization, Two-dimensional mathematical preliminaries, 2D transforms -DFT, DCT, KLT, SVD.

UNIT II
12
Histogram equalization and specification techniques, Noise distributions, Spatial averaging, Directional Smoothing, Median, Geometric mean, Harmonic mean, Contraharmonic mean filters, Homomorphic filtering, Color image enhancement.

UNIT III
12

UNIT IV
12

UNIT V
12
Need for data compression, Huffman coding, Run Length Encoding, Shift codes, Arithmetic coding, Vector Quantization, Transform coding, JPEG standard, MPEG.

Total Hours: 60

REFERENCES:
CA4A3  
DATA MINING AND DATA WAREHOUSING

L  T  P  C  
4  1  0  5

Objectives
- To understand Data mining principles and techniques and Introduce Data Mining as a cutting edge business intelligence
- To expose the students to the concepts of Data Warehousing Architecture and Implementation.
- To study the overview of developing areas – Web mining, Text mining and ethical aspects of Data mining
- To identify Business applications and Trends of Data mining

UNIT 1  
Relation To Statistics, Databases- Data Mining Functionalities-Steps In Data Mining Process-Architecture of a typical Data Mining Systems- Classification of Data Mining Systems – Overview of Data Mining Techniques.

UNIT II  
Data Preprocessing-Data Cleaning, Integration, Transformation, Reduction, Discretization- Concept Hierarchies-Concept Description: Data Generalization And Summarization Based Characterization- Mining Association Rules In Large Databases.

UNIT III  
Classification And Prediction. Issues Regarding Classification and Prediction-Classification By Decision Tree Induction-Bayesian Classification-Other Classification Methods-Prediction-Clusters Analysis: Types of Data in Cluster Analysis-categorization of Major Clustering Methods: Partitioning Methods –Hierarchical Methods.

UNIT IV  
Data Warehousing Components –Multi Dimensional Data Model- Data Warehouse Architecture-Data Warehouse Implementation- -Mapping the Data Warehouse to Multiprocessor Architecture- OLAP–Need- Categorization of OLAP Tools.

UNIT V  
Applications of Data Mining-Social Impacts of Data Mining-Tools-An Introduction to DB Miner-Case Studies-Mining WWW-Mining Text Database-Mining Spatial Databases.

Total Hours: 60

REFERENCES:
1. Jiawei Han, Micheline Kamber, “Data Mining: Concepts and Techniques”, Morgan Kaufmann Publishers, 2002.

CA4A4

BIO INFORMATICS

L T P C
4 1 0 5

Objectives

- To learn the concepts of computer science that relate to problems in biological sciences
- To learn to use computer as a tool for biomedical research

UNIT I

Need for Bioinformatics technologies – Overview of Bioinformatics technologies Structural bioinformatics – Data format and processing – Secondary resources and applications – Role of Structural bioinformatics - Biological Data Integration System.

UNIT II

Bioinformatics data – Data warehousing architecture – data quality – Biomedical data analysis – DNA data analysis – Protein data analysis – Machine learning – Neural network architecture and applications in bioinformatics

UNIT III


UNIT IV


UNIT V


Total Hours: 60
REFERENCES:

MOBILE COMMUNICATION TECHNIQUES

Objectives

- To study about Fundamental Concept of Wireless.
- To study about Mobile device Technologies
- To study about Wireless networks.

UNIT I  12

UNIT II  12

UNIT III  12

UNIT IV  12

UNIT V  12

Total Hours: 60

REFERENCES:

CA4A6 SOFT COMPUTING TECHNIQUES

Objectives
- To learn Fundamentals of soft computing
- To understand soft computing techniques
- To Study the fundamentals of fuzzy systems
- To study about fuzzy algorithms

UNIT I 12
Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics

UNIT II 12

UNIT III 12

UNIT IV 12

UNIT V 12
Introduction to Genetic Algorithms (GA) – Applications of GA in Machine Learning - Machine Learning Approach to Knowledge Acquisition.

Total Hours: 60

REFERENCES:

CA4A7

VIRTUALIZATION SYSTEMS

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Objectives

• To learn Fundamentals of virtualization
• To understand memory management in virtualization
• To Study the fundamentals of I/O virtualization
• To study about virtualized computing and security

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Total Hours: 60
REFERENCES:

CA4A8

SOFTWARE RELIABILITY

Objectives
- To learn Fundamentals of software reliability
- To understand software reliability modeling
- To Study the fundamentals of measurement

UNIT I

UNIT II
Concepts – General Model Characteristic – Historical Development of models – Model Classification scheme; Markovian models – General concepts – General Poisson Type Models – Binomial Type Models – Poisson Type models – Fault reduction factor for Poisson Type models.

UNIT III

UNIT IV

UNIT V

Total Hours: 60

REFERENCES:
CA4A9 SOFTWARE REQUIREMENTS MANAGEMENT

Objectives

- To learn the overview of requirement engineering
- To understand requirements elicitation
- To Study about requirements analysis
- To study about requirements development
- To study about requirements management

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Validation objectives – Analysis of requirements validation – Activities – Properties – Requirement reviews – Requirements testing – Case tools for requirements engineering.

Total Hours: 60
REFERENCES: