

1- Data Warehousing

Outline Syllabus

1. Introduction to data warehouse
2. Data warehouse architecture.
3. Multidimensional model.
4. Data warehouse Optimization.
5. OLAP operations.
6. Building data warehouse.
7. Real-Time data warehouse.

2- Statistics and Data Analysis

Outline Syllabus

1. About descriptive analysis
2. Some known models
3. Parameter estimation and confidence intervals
4. Model validation
5. Practical work

3- Mining in massive data set

Outline Syllabus

1. Data mining introduction.
2. Map reduce and the new software stack.
3. Classification and regression.
4. Finding similar items.
5. Mining data streams.
6. Links analysis.
7. Frequent itemsets.
8. Clustering.
9. Dimensionality Reduction.



#### 4- Forecasting and time series

##### Outline Syllabus

1. What Is Forecasting
2. Forecasting Time Horizons
3. The Strategic Importance of Forecasting
4. Forecasting Approaches
5. Time-Series Forecasting
6. Associative Forecasting Methods: Regression and Correlation Analysis
7. Monitoring and Controlling Forecasts
8. Adaptive Smoothing
9. Focus Forecasting
10. Forecasting in the Service Sector

#### 5- Web Databases

##### Outline Syllabus

1. Relational Model
2. Entity Relationship Model
3. Advanced SQL
4. Applications Design and Development
5. XML
6. JSON
7. NO SQL
8. New SQL
9. Polyglot Persistence
10. Multi-model Databases



## 6- Game Theory

### Outline Syllabus

1. Course Introduction
2. Game theory toolbox
3. Moving together
4. Prisoners' dilemma
5. Taking turns
6. Hidden moves and risky choices
7. Mixing and evolving
8. Mystery players
9. Plaining again and again
10. Bargaining and negotiation

## 7- Information Systems based on Web Services

### Outline Syllabus

1. Web Service and SOA Fundamentals
2. SOAP: Simple Object Access Protocol
3. Describing Web services
4. Registering and Discovering Services
5. Service-Oriented Architectures
6. Service Composition And Business Processes
7. Semantic Web Services
8. The "intentional Service Oriented Architecture" approach (iSOA) File
9. iSOA-Based Application Modeling
10. Cloud Computing

## 8- Decision Theory

### Outline Syllabus

1. introduction to multi-criteria decisions
2. Modeling of administrative problems
3. Decision system in organizations



4. Auxiliary tools for modeling administrative problems
5. Simple models for making decisions
6. Decision trees
7. Utility theory
8. Add and drop models and analyze costs and profits
9. Multi-standard models
10. Decision support systems

## 9- Operations & supply chain management

### Outline Syllabus

1. Production Concepts, Evolution and Systems
2. Production Planning
3. Production Organization, Scheduling, MRP and KANBAN
4. Japanese Production Concepts, Pull Systems and Just in Time
5. Logistics & Supply Chain Management
6. Supply Management, Purchasing, Suppliers Selection
7. Distribution & Inventory Management
8. Transport Management, Assigning Factories to Warehouses
9. Outsourcing & Insourcing

## 10- Fundamentals of management and theories of organizations

### Outline Syllabus

1. Characteristics and main concepts of organizations
2. Environment of organizations
3. Main principles of management
4. Manager's function: planning, organizing, activating, control.
5. Organization theories

## 11- Introduction to business process design

### Outline Syllabus

1. Business Process Modeling, Simulation and Design



2. Business Process Modeling
3. BPMN: Past, Present, and Future
4. Advanced Concepts In BPMN

## 12- Introduction to economics

### Outline Syllabus

1. Scope and Key Concepts of Economics
2. Demand, Supply and Market Equilibrium
3. Consumer and Producer Surpluses
4. Elasticity
5. Perfect and Imperfect Competition
6. Marginal Analysis
7. Comparative Advantage

## 13- Operation Research

### Outline Syllabus

1. Graph theory
2. Flow problem
3. Linear Programming
4. Transportation problem
5. Scheduling problem
6. Integer programming
7. 0/1 programming
8. Branch and Bound
9. Dynamic programming

## 14- financial management and feasibility studies

### Outline Syllabus

1. Environmental and Legal Studies
2. Marketing feasibility studies
3. The technical study



4. Financial study

15- **Methodologies of Scientific Research**  
Outline Syllabus

1. Nature of Science and Characteristics of Scientific Knowledge
2. Classification of Sciences
3. Role of Logics and Mathematics in Science
4. Structure and Process of Scientific Research
  - a. Key Concepts and General Approaches
  - b. Typology of Scientific Research
  - c. Methodological Considerations
5. Scientific Progress and Epistemology of Science

Handwritten notes in Arabic script, including the word "المسوحة" (The Erased) and a signature.

